

An Action Research Inquiry into Professional Training and Development for Addressing Complex Urban Problems

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Abstract

The world is becoming increasingly urbanized. Municipal, metropolitan, regional and national governments, companies, international organizations, financiers, technology developers and civil society across the globe are faced with increasingly complex problems to transform the potential challenge of rapid urbanization into an opportunity to foster development and prosperity in societies. Cities are under immense pressure to address environmental sustainability issues. In addition, utilizing the potential of technologies and innovations, often under the label of ‘Smart City’ initiatives, to enhance the performance in terms of efficiency, resilience and sustainability has become an important priority on many cities’ agendas. In this complex urban context, urban infrastructures, which are best conceptualized as complex socio-technical systems, play a crucial role in attaining the desired performance for cities.

Governance of urban infrastructures plays a pivotal role in enabling cities to deliver quality services to citizens. Addressing complex problems associated with governance of large urban infrastructures calls for a genuine holistic-multidisciplinary approach. However, literature shows that urban practitioners (both in the public and private sector) seldom approach complex urban problems from such a holistic and multidisciplinary perspective, and technical and discipline-specific approaches continue to prevail.

The current literature also highlights the important role that *professional training* can play in helping urban practitioners to adopt such a perspective. Yet, only a limited number of studies have attempted to shed light on the challenges associated with training urban practitioners to adopt a holistic perspective; even fewer studies go on to propose effective strategies for dealing with those challenges in practice. This thesis precisely sheds light on this understudied domain of research.

Action Research is used as the research methodology in this thesis. A full-scale Executive Master program on innovative governance of large urban systems (IGLUS) was developed and served as the empirical context of the research. The thesis reports the processes undertaken for the design, implementation, and continuous evaluation of the IGLUS Executive Master. Building upon this solid empirical basis, it also provides a systematic and structured illustration of some of the most important challenges associated with training urban practitioners to adopt a more holistic-multidisciplinary perspective to address complex urban problems. Strategies for effectively dealing with these challenges, and ultimately delivering a transformative learning experience, are also proposed.

The key findings of this thesis are that *critical reflection* is instrumental to developing meaningful learning experiences for adult learners. Developing and using *conceptual frameworks* can serve as an invaluable pedagogical exercise; supporting the meaning-making processes for both the educators and learners. Helping adults to effectively engage in *critical reflection in and on their actions* is absolutely essential, but is an inherently complex and delicate task. Thus, delivering a learning

experience on the basis of promoting critical reflection requires a genuinely *innovative, reflective and comprehensive approach towards the design and delivery* of the training programs; in these settings *knowledgeable, dedicated and creative program managers and educators* play a pivotal role.

Keywords:

Professional Training and Development, Multi-disciplinary and Holistic Perspective, Critical Reflection, Transformative Learning, Action Research, Urban Infrastructure, Governance, Complex Socio-Technical System, Sustainability, Innovation

Abstrakt

Die Welt ist zunehmend urbanisiert. Regierungen auf Ebenen der Gemeinden, Metropolen, Regionen und Nationalstaaten, Privatunternehmen, internationale Organisationen, Geldgeber, Technologieentwickler sowie die Zivilgesellschaft weltweit sind gefordert, die zunehmend komplexe Aufgabe zu lösen, die potentiell rapide Urbanisierung in eine Chance für Entwicklung und Wohlstand in Städten umzuwandeln. Städte sind unter immensem Druck, Nachhaltigkeits- und Umweltprobleme anzugehen. Überdies ist die Anwendung des Potentials von Technologien und mit dem Konzept von ‚Smart City‘ verbundenen Innovationen wichtiger Bestandteil der Tagesordnung vieler Städte geworden, um die Leistungen in Bezug auf die Effizienz, Resilienz und Nachhaltigkeit zu fördern. In all diesen Bereichen spielen urbane Infrastrukturen, welche am besten konzeptualisiert werden als komplexe sozio-technische Systeme, eine Schlüsselrolle, um die gewünschten Leistungsmerkmale von Städten zu erzielen.

Die Lenkung und Verwaltung von urbanen Infrastrukturen ist ein wichtiges Element, um Städten die Bereitstellung von hochqualitativen Dienstleistungen an ihre Bürger zu ermöglichen. Um komplexe Probleme bezüglich der Verwaltung großer urbaner Infrastrukturen zu bewältigen, sind holistisch-multidisziplinäre Ansätze gefragt. In der Fachliteratur zeigt sich jedoch, dass urbane Fachpersonen (sowohl im öffentlichen wie im privaten Sektor) solche Probleme selten von einem holistischen und multidisziplinären Standpunkt betrachten, was hauptsächlich damit begründet werden kann, dass technische, disziplinspezifische Ansätze noch vorherrschen.

Die aktuelle Literatur betont ebenfalls die Wichtigkeit von Weiterbildungen für Berufstätige hinsichtlich dem Erlernen dieses Ansatzes. Allerdings haben bisher nur eine beschränkte Anzahl Studien auch die Herausforderungen die mit der Ausbildung von Berufstätigen in urbanen Bereichen verbunden sind untersucht; noch weniger Studien sind weitergegangen und haben effektive Strategien vorgeschlagen, wie mit solchen Herausforderungen in Realität umgegangen werden kann. Diese Doktorarbeit beleuchtet diesen vernachlässigten Bereich der Forschung.

In dieser Doktorarbeit wird als Methodologie die Aktionsforschung verwendet. Ein vollumfänglicher *Executive Master zu Innovative Governance of Large Urban Systems (IGLUS)*, wurde entwickelt und dient als Kontext für die Forschung. Diese Doktorarbeit beschreibt den Entwurf, die Umsetzung und die kontinuierliche Evaluation des *IGLUS Executive Master*. Auf dieser soliden empirischen Basis aufbauend wird ebenfalls eine systematische, strukturierte Veranschaulichung einiger der wichtigsten Herausforderungen im Zusammenhang mit der Ausbildung von Stadtplanern dargestellt, um eine in grösserem Masse holistische, multidisziplinäre Perspektive zu komplexen urbanen Gefügen zu gewinnen. Strategien zum effektiven Umgang mit diesen Herausforderungen sowie schlussendlich eine transformative Lernerfahrung werden ebenfalls vorgeschlagen.

Als Schlüsselergebnisse dieser These haben sich herausgestellt, dass die *kritische Reflektion* als Instrument dienen muss, um bedeutende Lernerlebnisse für Erwachsene zu schaffen; Dass die Entwicklung und Verwendung von *konzeptuellen Bezugssystemen* als Übung von unschätzbarem Wert ist, um den Sinnschaffungsprozess sowohl für Lehrer wie Lernende zu unterstützen.

Erwachsenen zu ermöglichen, sich in *kritische Reflektion in* sowie *über ihre Tätigkeiten* zu begeben, ist essentiell, jedoch auch inhärent komplex und delikat. Daher bedingt die Bereitstellung von Lernerlebnissen auf Basis kritischer Reflektion einen genuin *innovativen, reflektierenden und umfassenden Ansatz hinsichtlich dem Entwurf und der Umsetzung* der Ausbildungsprogramme. In diesem Kontext spielen *gutfundierte, engagierte und kreative Programmanager und Lehrer* eine Schlüsselrolle.

Schlüsselwörter:

Professionelle Ausbildung und Entwicklung, Multi-Disziplinarität und holistisch perspektiv, Kritische Reflektion, Lernen, Aktionsforschung, urbane Infrastruktur, Führung, komplexe sozio-technische Systeme, Nachhaltigkeit, Innovation

Résumé

Le monde devient progressivement urbanisé. Les gouvernements municipaux, régionaux et nationaux, les entreprises, les organisations internationales, les investisseurs, les développeurs de nouvelles technologies ainsi que la société civile dans le monde entier font face à des défis de plus en plus complexes qui ont pour objet de transformer l'urbanisation potentiellement rapide en une opportunité pour promouvoir le développement et la prospérité dans les villes. Les villes se trouvent sous pression immense de trouver des solutions à des enjeux liés à l'environnement et au développement durable. Par surcroît, l'utilisation du potentiel des technologies et innovations associées aux 'Smart Cities' afin de renforcer la performance en termes d'efficacité, résilience et durabilité est devenue une priorité importante dans les agendas de nombreuses villes. Dans chacun de ces domaines, les infrastructures urbaines, qui sont conceptualisées au mieux comme des systèmes sociotechniques complexes, jouent un rôle-clé afin de fournir la performance souhaitée aux villes.

La gouvernance des infrastructures urbaines joue un rôle-pivot afin de rendre possible aux villes de fournir des services de qualité à leurs citoyens. Traiter de problèmes complexes associés à la gouvernance de grandes infrastructures urbaines demande une approche originalement holistique et multidisciplinaire. Pourtant, la littérature montre que les praticiens urbains (tant dans le secteur public que privé) approchent rarement des défis urbains complexes d'une perspective holistique et multidisciplinaire, surtout parce que des approches techniques et spécifiques aux domaines prévalent encore.

La littérature actuelle souligne le rôle important que des formations de professionnels peuvent jouer afin d'aider aux praticiens urbains d'adopter cette approche. Cependant, un nombre d'études limité ont éclairé les défis associés à la formation de praticiens urbains. Encore moins d'études vont au-delà et proposent des stratégies effectives pour répondre à de tels défis en pratique. Cette thèse éclaire justement ce domaine sous-étudié de la recherche.

La recherche-action est utilisée comme méthodologie de recherche dans cette thèse. Un programme *Executive Master* intitulé *Innovative Governance of Large Urban Systems (IGLUS)* a été mis sur pieds et sert de contexte pour ce travail de recherche. Cette thèse rapporte les processus entrepris pour la conception, l'implémentation et l'évaluation continue du *IGLUS Executive Master*. Développant sur cette base empirique solide, ce travail fournit une illustration systématique et structurée de certains défis-clés liés à la formation de praticiens urbains afin d'adopter une approche plus holistique et multidisciplinaire pour traiter de problèmes urbaines à caractère complexe. Des stratégies pour répondre à de tels défis et pour finalement fournir une expérience d'apprentissage transformative sont également proposées.

Les découvertes-clés de cette thèse sont que la *réflexion critique* est instrumentale afin de développer une expérience d'apprentissage pertinente pour les apprenants adultes ; le développement et l'utilisation de *cadres conceptuels* peut servir d'exercice de valeur inestimable afin de supporter le

processus de création de sens tant pour les éducateurs que pour les apprenants. Il s'est avéré absolument essentiel d'aider aux adultes de s'impliquer dans une *réflexion critique dans et sur leurs actions*, mais c'est également un défi très complexe et délicat. Par conséquent, fournir une expérience d'apprentissage visant à promouvoir de la réflexion critique demande une approche originalement *novatrice, réflexive, et compréhensive vis-à-vis la conception et la mise à disposition* de programmes de formation ; dans ce contexte, des *éducateurs et gérants de programme dévoués et créatifs* jouent un rôle-pivot.

Mots-clés :

Formation et développement de professionnels, multidisciplinarité et holistique perspective, réflexion critique, apprentissage, recherche-action, infrastructure urbaine, gouvernance, systèmes sociotechniques complexes, durabilité, innovation

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To my family:

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And

To the meaning of my life, my dearest; *Rojin*.

List of abbreviations

AUS	American University of Sharjah
BAU	Bahçeşehir University
BCG	Boston Consulting Group
DBX	Dubai
EPFL	École Polytechnique Fédérale de Lausanne
EU	European Union
GDL	Guadalajara
GMA	Guadalajara Metropolitan Area
HK	Hong Kong
HKUST	Hong Kong University of Science and Technology
ICT	Information and Communication Technology
IGLUS	Innovative Governance of Large Urban Systems
IoT	Internet of Things
IST	Istanbul
ITS	Intelligent Transport Systems
KHAS	Kadir Has University
KPI	Key Performance Indicator
LSE	London School of Economics
OECD	Organisation for Economic Co-operation and Development
PPP	Public Private Partnership
Tec	Tecnológico de Monterrey - Monterrey Institute of Technology and Higher Education
UAE	United Arab Emirates
UITP	L'Union internationale des transports publics - International Association of Public Transport
UN	United Nations
UNEP	United Nations Environment Programme
UN-Habitat	United Nations Human Settlements Programme
WB	The World Bank

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“We teach to change the world.”

Stephen Brookfield, 1995

Chapter 1 – Introduction

In this Introductory chapter, I will discuss why this project is a timely and relevant research endeavor. I will also elaborate on my personal motivations¹ in this research project and clarify the definitions of the main concepts which are frequently used throughout this report. Finally, I outline the structure of this research.

This research sheds light on the challenges associated with *training urban practitioners* to adopt a more holistic-multidisciplinary approach in addressing complex problems in governance of large urban infrastructure systems; and effective strategies to deal with these challenges. The thesis is based on an Action Research inquiry into a professional training program which was catering a global group of urban practitioners; the IGLUS Executive Master.

Due to the interdisciplinary nature of this research project, the question about the exact domain which this research belongs to does not have a simple answer. But, it is important to note that the core focus of this research is on professional training and development and learning, while the governance of urban infrastructures is the context of this inquiry.

¹ The scientific justifications behind conducting this Action Research inquiry will be discussed in chapter 2 and chapter 3 of this thesis.

1.1 A timely, and relevant research for a world of complex challenges

This thesis is a timely research as it corresponds to some of the main challenges that our world is facing today, and will continue to face for years ahead, namely: rapid urbanization and development challenges, the emergence of disruptive innovations in the urban infrastructure sector due to the prevalence of the ICTs, and an increasing awareness about the importance of addressing environmental sustainability challenges, such as climate change.

The core argument of this section is that in order to deal with these three important challenges (which will be discussed briefly in the coming sub-sections) *collaboration* among different actors and adopting *holistic-multidisciplinary* approaches are inevitable. Coordinating the collaborative arrangements among a complex network of actors is an inherently difficult task. Therefore, addressing *governance* challenges to effectively coordinate such collaborations and to promote the adoption of holistic-multidisciplinary approaches is absolutely essential in today's urban world. This research project strives to address this need by contributing to more effective design and delivery of professional training and development programs that cater to urban practitioners.

1.1.1 Urbanization and development

In 2008, for the first time in human history, the number of people living in urban settlements surpassed the number of people living in non-urban settlements (UN-Habitat State of the World's Cities 2012/2013). *Urbanization* is one of the most important global trends of the 21st century (Ritzer 2012). It is projected that urban population will continue to grow at a rapid pace throughout the next few decades, and by 2030, around 70% of the global population is expected to live in urban agglomerations (United Nations World Urbanization Prospects, 2014).

This rapid growth of urban population results in an increasing demand for basic services, such as safe and sufficient water, clean and reliable energy, decent mobility and secure housing (Elias, et al., 2016, Hill, et al., 2014). In order to meet the increasing demand for urban infrastructure services a significant capacity for new urban infrastructures must be planned, developed and operated alongside improving the current utilization of existing urban infrastructures (World Economic Forum 2014, Urban Land Institute and Ernst & Young 2013). Indeed, It is projected the global annual spending and investment in infrastructures will grow from 4 trillion USD in 2012 to 9 trillion USD by 2025², from which an important portion shall be dedicated to providing enough urban infrastructures to satisfy the surging demands of the emerging urban population for basic services such as access to clean water, reliable energy, decent mobility and housing³.

² Source: PwC report in association with Oxford Economics, titled "Capital project and infrastructure spending outlook to 2025"

³ As an example, according to an OECD report published in 2007:

"A large share of investments will be undertaken in the developing world, where countries such as China, India and Brazil will be spending billions of dollars on infrastructures... For OECD countries as a whole, investment requirements in

Urban infrastructures are complex socio-technical systems that are expensive, complex and time consuming to develop and often have very long life-times (Hughes 1987, Marckard 2010, Ramaswami, et al., 2016). If infrastructure initiatives are planned, developed, operated and maintained correctly, they can result in immense cost saving in service provision thanks to economies of scale, and can have priceless positive effects on the well-being and growth of societies (Cohen 2006). However, if the planning, development, operation and/or maintenance of infrastructure initiatives are not properly managed, it can result in catastrophic failures (Graham 2010) and/or waste of resources and opportunities (Levitt, et al., 2010, Dodson 2009, Grandy 2006). Policy makers, politicians, managers, engineers and, more broadly speaking, urban practitioners are at the front end of dealing with the numerous, complex and pressing challenges to ensure that urban infrastructure initiatives will effectively and efficiently deliver the intended outcomes for society and contribute to the prosperity, resilience and sustainability of cities.

1.1.2 Emergence of disruptive innovations in Urban Infrastructures - Smart Cities

Urban infrastructure systems are traditionally perceived as sluggish and stable, but, due to the *prevalence of ICT-enabled disruptive innovations*, or the commonly called “*Smart*” *technologies*, they are currently undergoing drastic changes (Christensen 2013, Schaffers, et al., 2011, Caragliu, et al., 2011, Hollands 2015, Ramaswami, et al., 2016). In the so-called ‘Smart Cities’, Smart Urban Infrastructures are commonly believed to be the future means of service delivery. In these ‘Smart Cities’ drastic improvements in the efficiency of current infrastructures are promised (Finger and Portmann 2016) and new ways of service delivery have been conceptualized and are becoming a reality at an astonishing pace (e.g. emergence of smart mobility solutions, smart grids, etc.) (Kehoe, et al., 2011, Gungor, et al., 2011).

The transitions of Legacy Cities towards Smart Cities have already begun, but the complexities of ensuring smooth and effective transitions cannot be disregarded (Hollands 2015, Ramaswami, et al., 2016). This transition process introduces new challenges to the existing management and governance practices at the city, metropolitan, regional or even national levels; adding turbulence to the traditionally more stable governance practices (Batty, et al., 2012; for a critical discussion of the issue see Hollands 2015).

The rapid introduction of services based on the sharing economy, such as Uber and Airbnb (which are often proliferated thanks to the prevalence of ICT-backed innovations) are just early examples of drastic changes that have brought complicated challenges into conventional management and governance practices in cities (Miller 2016). These rapid changes feed in to the current state of urgency, confusion and frustration among urban practitioners who are left uncertain of how to manage these new challenges being introduced throughout the digital era. Urban practitioners are at

electricity transmission and distribution are expected to more than double through to 2025/30, in road construction almost to double, and to increase by almost 50% in the water supply and treatment sector.” (OECD, infrastructure to 2030, vol. 2, p. 13)

the front end of dealing with these challenges to ensure that their cities and citizens are able to harness the opportunities introduced by these disruptive innovations, while also avoiding the backlash from a turbulent transition period (i.e. avoiding lock-in in immature technologies while supporting innovations, integrating legacy and new systems, avoiding social segregation, etc.).

1.1.3 Environmental sustainability and climate change

It is now widely accepted that we are at a tipping point; we must either address the *environmental sustainability challenges, especially the climate change* (some say it may even be too late) or take a significant risk with our lives as well as those of the future generations⁴. Cities are increasingly recognized as one of the most important levels at which environmental sustainability challenges should be addressed (Hodson and Marvin 2010, Bulkeley 2010, Bulkeley and Betsil 2005).

It is estimated that urban areas are responsible for around 80% of global GDP, 75% of natural resource consumption, 60-80% of Global GHG emissions and are home to more than 50% of the global population (UNEP 2012). Therefore, the potential contributions that cities could make to address environmental challenges are immense (as both the source and solution of the problems). However, due to the embeddedness of urban infrastructure systems in existing socio-technical regimes (Geels 2004, Grin et al., 2010) and the established living routines of the citizens, transforming cities to function, and the citizens to live, in a more environmentally sustainable fashion is inherently challenging. Therefore, it will be difficult, if not impossible, to rapidly revitalize conventional unsustainable service provision and consumption practices in cities (Tukker, et al., 2008, Verbong, et al., 2013). Institutional inertia (Childers 2014), lock-ins in technological legacy systems (Grin, et al., 2010) and the vested interests of influential groups (Geels 2014) are among the many factors that can hinder effective sustainability transitions. Needless to say, policy makers, managers, politicians, engineers and more broadly speaking urban practitioners are at the front end of dealing with these challenges to help the transition of cities towards environmental sustainability.

1.1.4 A world of collaboration

To be able to successfully address such complex challenges in cities, collaboration among a large number of actors is essential (Bettencourt and West 2010, Dodgson and Gann 2011, Finka and Kluvánková 2015). The complexity of problems in the urban contexts has increased to a level that no single actor can have the necessary knowledge, expertise, power and resources to tackle them independently (Coutard 2002, Ramaswami, et al., 2016, Nam and Pardo 2011).

⁴ According to the International Panel on Climate Change (IPCC):

“Continued emission of greenhouse gases will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive and irreversible impacts for people and ecosystems. Limiting climate change would require substantial and sustained reductions in greenhouse gas emissions which, together with adaptation, can limit climate change risks” (IPCC - Climate change 2014: synthesis Report, p.13)

Technology, economics, politics, social factors and ecological considerations have become so tightly interwoven that cities can no longer rely on extensive top-down and hierarchical approaches to address their complex problems (Bettencourt and West 2010, Coutard 2002). Therefore, we are currently facing with situations where different actors are (or should be) *collaborating* in the decision-making processes and in the implementation of these decisions as a *network of actors*⁵ (Ramaswami, et al., 2016).

This claim can be attested by the fact that over the past few years, governance-based approaches have begun to dominate over traditional government-based approaches when it comes to steering the affairs, and satisfying the demands, of societies⁶ (Harvey 1989, Mayntz 2006, Swyngedouw 2005, Sørensen and Torfing 2007); this especially holds true in the context of urban infrastructure systems (Coutard 2002, Stocker 1998, Guy, et al., 2011).

1.1.5 Importance of Governance

The complex set of relationships in networks of actors results in significant complexities for coordination of necessary collaborations among different actors to realize any preconceived objectives in urban infrastructure systems (Coutard 2002, Agranoff and McGuire 1999, Torrance 2008). This is why in most of the above-mentioned domains of urban challenges, governance is known to be a critical factor (Khan 2013, Ernstson, et al., 2010, Bulkeley and Betstill 2005, Loorbach, et al., 2016, Ernst, et al., 2016, Scholl and AlAwadhi 2016) for ensuring that the proper decisions are being made, effectively implemented and carefully evaluated in order to tackle the fierce problems that cities are facing.

The effective deployment of technological solutions and innovations into infrastructure systems is very much dependent on the institutional capacities that will promote, or hinder, the effective utilization of the technological capabilities in a socio-technical system (Finger, et al., 2005,

⁵ For example, in a typical major infrastructure development project (e.g. developing a new urban metro system that is aimed at improving the accessibility of growing urban population to public transport, enhancing the efficiency and convenience of public transport network by deploying new trains, and reducing the GHG emission in cities by reducing traffic congestion), contributions from a large number of actors must be considered; for example, the technology vendors who provide the required pieces of technology and innovation (e.g. locomotives, sensors, etc.), the system developers who make use of the available pieces of technology to develop and deliver solutions to address the needs of the modern societies (e.g. private or public engineering companies), the operators who operate and often maintain the system once developed, the financiers who provide the funding for the implementation of large scale projects (banks, pension funds, governments, private institutions through PPP contracts), NGOs who often represent citizens and activists (e.g. environmental NGO), and politicians and decision makers who are involved in setting the policy agendas and action plans (e.g. city/metropolitan council, mayor, city manager, etc.).

⁶ There are many factors that underline this shift from government to governance which are not the subject of this thesis, but to note a few I should mention the increased popularity of market based approaches to provision of public services and liberalization and privatization trends in the last decades of the 20th century, increasing consensus about ineffectiveness of top-down and government based approaches to deal with complex demands of societies, increasing sophistication of technological systems and immense specialization to deal with the sophisticated nature of the technological systems, etc.

Frantzeskaki and Loorbach 2010). Indeed, the technological capacities that are available to address many of today's urban challenges (such as driverless cars, decentralized energy production units, sensors that automatically manage energy consumption in houses, etc.) are already far in advance of the institutional capacities that should support the diffusion and the effective utilization of these technological solutions⁷ (the field of governance of socio-technical transitions is indeed aimed at helping to close this gap, e.g. see Geels and Schot 2007). This can result in an in-coherence between the intuitions and technologies in the domain of urban infrastructure systems (Finger, et al., 2005), which can ultimately negatively impact the performance of cities.

Therefore, it can be argued that an important step towards addressing today's urban challenges would include the development and use of more innovative governance and management approaches to close such incoherencies between institutional and technological capabilities. More precisely, the missing part of the puzzle to effectively approach the complex challenges in the urban world is not necessarily leap frog advances in technological developments, but is to find effective governance mechanisms that can guide the many influential actors -who can affect, and are affected by decisions and actions at the urban level- to collaborate with each other so that they can effectively address the complex and multifaceted challenges that face their urban systems.

1.1.6 Importance of Multidisciplinary and holistic approaches⁸

Complex urban challenges are multi-dimensional. The multi-faceted and systemic nature of complex urban problems (Scott and Storper 2015) -which has attracted more attentions in academia and practice in the recent years thanks to understanding of cities and infrastructures as sociotechnical systems (see chapter 2 of this thesis for a more detailed discussion)- implies that addressing such challenges in cities in an effective manner calls for genuine holistic-multidisciplinary approaches (EU report on Cities of tomorrow; October 2011, Stubbs, et.al. 2000, Nielson 2012, Culwick and Patel 2016).

On the other hand, as discussed in previous sub-sections, collaborative arrangements to address these complex urban challenges involves a variety of different actors (Finka and Kluvánková 2015, Ramaswami, et al., 2016) with diverse knowledge, expertise and interests such as engineering firms, politicians, activist, governments, financiers, etc. This implies that without adopting a holistic-multidisciplinary perspective among all of these actors, addressing complex urban problems might face with significant hurdles due to persistence of difficulties in synergizing and leveraging on the competencies of the involved actors (Scholz, et al., 2006, Rogers, et al., 2015).

⁷ The current pressures on cities and national governments to catch up and close the gap between the existing institutional setups and the available infrastructure technologies are a clear example in support of this argument (e.g. see Dinar 2016 discussion about the importance of improving institutions, and not only technologies in the water sector).

⁸ The importance of adopting a holistic-multidisciplinary approaches in dealing with complex urban problems is discussed in more detail in the literature review chapter.

1.1.7 Training, a path toward addressing complex urban challenges

As briefly discussed in the previous paragraphs, the urbanized world of the 21st century is dealing with numerous complex challenges and/or opportunities (e.g. rapid urbanization, climate change and environmental sustainability, as well as transition from legacy to smart infrastructure systems). Collaboration among the different actors is key for dealing with these complex challenges. Governance plays an essential role in ensuring that the required coordination among these actors is in place, so that as a result of these collaborative arrangements, society's demands can be fulfilled in an effective and efficient manner. In addition, without adopting a multidisciplinary-holistic approach, complex urban challenges can hardly be addressed. It is for these reasons that this project adopts a special focus on fostering multidisciplinary-holistic approaches for addressing complex governance problems among urban practitioners.

While acknowledging its limitations, this research aims at contributing to addressing some fierce urban challenges discussed in the previous sections by providing deeper insights into how we can improve the way we train, and re-train urban practitioners to address complex challenges associated with the governance of large urban infrastructure systems from a more holistic-multidisciplinary point of view.

To that effect, through an Action Research inquiry, this thesis, describes and critically reflects on, the process of developing and delivering a brand-new, full-scale Executive Master program on the governance of large urban infrastructure systems (the IGLUS program) that catered to a group of international practitioners. The aim of the IGLUS professional training program was to help urban practitioners to address complex problems in governance of large urban infrastructure systems from a more holistic-multidisciplinary perspective.

1.2 My personal motivations

My personal motivations behind this research project pertain to three main areas: my passion for contributing to the development agenda and improving the quality of lives of people across the world, and especially in developing and emerging countries; my practical interest in helping organizations and institutions (being public, private or multilateral) to realize the potential benefits associated with the notions of smart cities and smart infrastructure systems; and my keen desire to improve educational practices. Indeed, the objectives of this research project lies at the intersection of my areas of interest (development, innovation, education), and with that I became strongly motivated to conduct this research upon my initial engagement with this project.

Firstly, my passion to contribute to the “development” agenda was one of my strongest motivations throughout this project. I believe that in today's urbanized world, supporting development and prosperous living conditions is closely tied to improving the performance of cities in the domains of

efficiency, resilience and sustainability. This is especially important in the context of developing and emerging countries, who will undoubtedly face higher levels of growth in their urban populations.

Secondly, my interest in helping cities –as both incubators and test beds for innovation- to effectively transform to more efficient, resilient and sustainable systems by benefiting from technological and institutional innovations was another strong motivation for me to engage in this intensive research endeavor. In the time of conducting this research project, the concept of Smart Cities, which is envisioned on the basis of advances in ICTs and the disruptive trend towards the emergence of the IoT (Internet of Things), is still in its infancy, but still stands as a promising vision to improve the performance of cities and their infrastructure systems. For a person who has been trained as an Industrial Engineer and later continued his studies and worked in the field of Management and Business Administration, helping urban practitioners to materialize the vision of Smart Cities in the real world was quite an inspiring goal.

And last, but not least, my keen interest in improving educational practices played an instrumental part in motivating me to engage in this research project. As a person who could have experienced the different sides of the educational process, as receiver of education, as an educator, and as a program manager, I have always been passionate about improving educational practices that are truly meaningful for the learners.

1.3 Clarification of the main concepts

In this thesis, I have commonly referred to a number of core concepts. To minimize potential confusions about the intended meaning of these terms throughout the thesis, I shall provide my intended definitions of these concepts early on in this report.

Complex problem: The definition of the word complex by Merriam-Webster is “*a whole made up of complicated or interrelated parts*”⁹; the word problem is defined as “*an intricate unsettled question*”¹⁰. In this thesis, a complex problem is understood as a problem which is composed of a set of several other interrelated problems, each with different dimensions which are inter-related with each other. Therefore, by introducing an initiative to address one of these problems or dimensions, the other inter-related problems will be also affected and often change in a way that is hard to predict. So, in this context, a complex problem is a set of interwoven problems that cannot be effectively addressed by breaking it down into several sub-problems and trying to resolve each in isolation, otherwise more unintended problems will emerge in the system.

Governance: “*Governance is the means by which order is accomplished in a relation which potential conflict threatens to undo or upset opportunities to realize mutual gains*” (Williamson 1998, p. 37). My main focus in conceptualizing governance in this project is on the

⁹ <http://www.merriam-webster.com/dictionary/complex> (Accessed 16 August 2016)

¹⁰ <http://www.merriam-webster.com/dictionary/problem> (Accessed 16 August 2016)

involvement of several public and/or private actors, (such as technology providers, system developers, system operators, financiers, NGOs, civic society, universities and research institutes, regulators, authorities), in addition to the traditionally considered role that national and local governments, play in the processes of decision making and implementation in the context of large urban infrastructure systems, and the *complexities that are inherent to the coordination of these networks of actors*.

Urban infrastructure system: The term infrastructure is defined in the Cambridge dictionary as: *“the basic structure of an organization or system which is necessary for its operation, esp. public water, energy, and systems for communication and transport¹¹”*. An urban infrastructure system in this thesis is defined as manmade Large Technical Systems (Hughes 1987) that are developed, operated and maintained to fulfill some basic (and often important) needs of the city dwellers (both residential and non-residential) in large scales. Examples of urban infrastructure systems are water and sanitation infrastructures, transportation infrastructures, energy infrastructures, etc.

Holistic approach: The term holistic is defined by Merriam-Webster as *“relating to or concerned with wholes or with complete systems rather than with the analysis of, treatment of, or dissection into parts¹²”*. In this thesis, the term ‘holistic approach’ refers to treating complex problems as complete wholes and not reducing them to a combination of sub-parts/sub-problems.¹³

Multidisciplinary approach: The Oxford dictionary defines the term multidisciplinary as *“combining or involving several academic disciplines or professional specializations in an approach to a topic or problem¹⁴”*. In this thesis, the term ‘multidisciplinary approach’ refers to considering the different important, and inter-related dimensions to a problem, even though they might belong to different academic or professional domains (e.g. considering technical limitations, financial considerations, social impacts and political implications of a decision at the same time)¹⁵.

Training module: A training module in this thesis refers to each of the intensive 2-week training events that covered a series of important topics and is often composed of 30-40 training sessions and 3-4 field visits.

Training session: In this thesis, a training session refers to an independent session of training where a lecturer (or a group of lecturers) presented his/her teaching material, engaged in class discussions and/or asked the participants to conduct some individual or group learning activities. A training session typically lasted between two and four hours.

¹¹ <http://dictionary.cambridge.org/dictionary/english/infrastructure> (Accessed 16 August 2016)

¹² <http://www.merriam-webster.com/dictionary/holistic> (Accessed 16 August 2016)

¹³ In some parts of this report, “holistic approach” and “Integrated approach” are used interchangeably.

¹⁴ <http://www.oxforddictionaries.com/definition/english/multidisciplinary> (Accessed 16 August 2016)

¹⁵ In some parts of this report, “multi-disciplinary”, “inter-disciplinary”, “trans-disciplinary” and “cross-disciplinary” are used interchangeably.

Reflection: Reflection is an elusive concept to define, though it is very close to our minds. Dewey writes: *“Reflection involves not simply a sequence of ideas, but a consequence—a consecutive ordering in such a way that each determines the next as its proper outcome, while each in turn leans back on its predecessors... Reflection is turning a topic over in various aspects and in various lights so that nothing significant about it shall be overlooked—almost as one might turn a stone over to see what its hidden side is like or what is covered by it.”* (Dewey 1910 reproduced in 1997, p.2, p.57). In this thesis, the term reflection (and its family of words such as reflective, reflect, etc.) refers to treating the inputs that one encounters (an observation, a lecture, an experience, a discussion, etc.) by deeply examining their underlying roots and assumptions as well as their broader meaning and implications, often by considering them against previous knowledge and experiences.

Conceptual framework: According to Miles and Huberman: *“a conceptual framework explains, either graphically or in narrative form, the main things to be studied—the key factors, constructs or variables—and the presumed relationships among them. Frameworks can be rudimentary or elaborate, theory-driven or commonsensical, descriptive or causal”* (Miles and Huberman 1994, p.18). In this thesis, the term conceptual framework mostly refers to a simple graphical representation of important factors and their relationships that ultimately affect a problem-situation (e.g. performance of an infrastructure system).

1.4 Structure of this thesis

This thesis is structured into six chapters. After this chapter (Introduction), in chapter 2 (Literature Review) the readers are provided with an overview of existing literature that (i) highlights the importance of adopting a holistic-multidisciplinary perspective in addressing complex urban challenges, (ii) illustrates the current shortcoming in existing capabilities of the practitioners to adopt such a perspective, and how current training practices have contributed to this competency gap, (iii) and elaborate the research gap in studying the challenges associated with training urban practitioners to adopt such a holistic-multidisciplinary perspective and developing effective strategies to overcome them.

Chapter 3 (Methodology) provides the readers with the main research questions that are investigated in this thesis, an explanation of the philosophical standpoint in this research and the selected research methodology (Action Research) that will be used to answer the research questions and ultimately address the elaborated research gap. The chapter also outlines the research design, data collection and analysis strategies as well as the practical steps taken to ensure the quality of the research, the generalizability of the findings and the ethical considerations.

Chapter 4 (Case Studies – Action Research Inquiry Cycles) is composed of four case studies; namely the IGLUS-Guadalajara, IGLUS-Istanbul, IGLUS-Hong Kong and IGLUS-Dubai training modules, each of which is associated with one cycle of Action Research inquiry in this thesis. Together, these four

case studies shape an extensive case study that provides the readers with an in-depth and detailed description of four cycles of Action Research inquiry (Planning, Action, Observation and Reflection) into the training practices in the IGLUS Executive Master program, as well as the learning experience of an international group of urban practitioners (and a limited number of Master and PhD students) who attended the in this professional training program from June 2014 to February 2015.

Chapter 5 (Data Analysis) provides a comprehensive analysis of the empirical data of the thesis which have been reported in the case studies and by doing so, highlights eleven main challenges associated with training urban practitioners to adopt a more holistic-multidisciplinary perspective in addressing complex problems in governance of large urban infrastructure systems. Based on a reflective analysis of the actions taken throughout the IGLUS training program, the chapter also outlines twelve practical strategies to effectively address the challenges highlighted in this thesis. The chapter is concluded by discussing the findings of this thesis in light of academic literature; especially with reference to the Transformative Learning Theory, which is mainly used to discuss the strategies outlined throughout this Action Research project.

Finally, chapter 6 (Conclusion) concludes the thesis by providing a summary of the key findings, the contributions of the thesis to the existing body of academic knowledge and the practical implications of the findings. Also, this chapter elaborates on the limitations of the research and the promising strands for future research that could complement the findings of this study.

Chapter 2 – Literature review

In this chapter, I review the literature to highlight the research gap that this research project aims to shed light on. To that effect, I review academic literatures and professional reports that highlight the importance of adopting holistic and multidisciplinary approaches towards addressing complex urban problems and also highlight the significant shortcomings in training urban practitioners and professionals to do so in their real practices. I will then review the existing contributions in the academic literature that have investigated this broadly recognized problem to elaborate the research gap which is the subject of this project.

2.1 Introduction

Cities are one of the most complex systems in today's world; they are affected by economic, political, technological, social and environmental factors and provide vital services to more than half of the world's populations (Tarr 1984, Batty 2008, Feng et.al. 2009, Graham 2010, UN-Habitat 2013, Bettencourt 2015, Tiwari 2016). For successful governance and management of cities, we must have a clear understanding of the nature of these complex systems. Urban planners have been trying to identify the fundamental nature of cities throughout the past few decades (Bettencourt 2015). Other academic disciplines including, but not limited to, geography, sociology, political science and

economics have been also studying cities for several decades to better understand these multi-dimensional phenomena (e.g. see Pacione 2009, Sassen 2000, Stoker 2000, Pierre 2000, Naik et al., 2015, McCann 2001). Despite all the achievements and findings from different academic disciplines, our understanding about the complex nature of cities is still limited and highly fragmented (Wirth 1938, Batty 2008). Consequently, most of our urban management and planning practices are far from effective in addressing pressing urban challenges. In the coming paragraphs, I will briefly review some of the prevalent approaches to conceptualize cities, with an especial focus on conceptualization of cities as socio-technical systems.

2.2 The concept of 'city'

Due to the common usage of the concept of the 'city' in different academic disciplines and contexts, it is hard to find a commonly accepted definition of this concept among urban scholars. Especially, prior to the end of 20th century, when interdisciplinary research approaches started to gain more popularity among researchers (Klein 1990, Lattuca 2001), different conceptualizations of 'city' were highly disciplinary; associated with different academic fields. This has resulted in the proposition of different conceptualizations that often share little common ground. For example, for many sociologists, acceptable definitions about city were the ones that could capture the city's distinctive features as a mode of human group life (e.g. see Simmel 1903, Wirth 1938, pp. 1-4). Economists often use microeconomic theories to explain the land allocation to different activities in cities and corresponding growth issues. Therefore, the economic conceptualizations of the city were often shaped around the supply and demand of urban land for different purposes, employment opportunities, and transportation infrastructure, as well as their effects on the size and growth patterns of cities (e.g. see Mills 1972, Fujita 1989, Arnott and McMillen 2008, Cappelletti and Helsley 1989, Elkin 2015). For political scientists, the study of regional and metropolitan governance structures has been one of the main subjects of interest throughout the past century (Savitch and Vogel 2009). For them cities (or metropolitan regions) were often conceptualized as jurisdictions which could become subject to different governance arrangements in order to achieve public policy goals, such as economic growth, integration of citizens' voices in decision making, etc. (e.g. see V. Ostrom, et.al. 1961, Young 1976, Mossberger and Stoker 2001, Pierre 2014).

2.2.1 Understanding city as a complex sociotechnical system

Guy, Marvin and Moss (2001) express that the conventional understanding of cities was often based on either a *technical view*, which conceptualizes cities as "homogenous physical space made up of buildings, pipes, and wires...", or a *social view*, which "see[s] cities as populated by isolated decision makers who need to be persuaded to adopt sustainable lifestyles" (Guy et.al, 2001, p 31). However throughout the past few years¹⁶, this disciplinary conceptualization of cities has been criticized (see

¹⁶ "only since the mid-1990s have significant steps been made to link urban studies and technology studies in researching the interdependencies of urban and infrastructure development" (Moss 2009, p. 1487)

for example Guy, et.al, 2001, Batty 2008, Bettencourt 2015) and some scholars have adopted a more interdisciplinary approach to the conceptualization focusing especially, on conceptualizing cities as sociotechnical systems. Thomas P. Hughes' seminal work on the study of networked infrastructures as Large Technical Systems (LTS) can be seen as one of the early steps in this direction (Hughes 1983)¹⁷. Joel Tarr, a famous historian of urban technologies, conceptualizes the city as the result of interaction between *technology* and *society*:

"Cities develop because technology, in coordination with other social, cultural, political and economic factors, makes possible the production of surplus." (Tarr, 1984, p.5)

The main point of differentiation between the sociotechnical system perspective and conventional perspectives in urban studies can be seen as its emphasis on the *co-evolution* of the technical and social sub-systems in the broader urban system. More precisely, the sociotechnical perspective is aimed at explaining the changes in cities and urban infrastructures from a historical, path dependent, point of view, and considering the effects of both technical and social systems on each other - not by looking at each of them independently (e.g. see Monstadt 2009, pp 1927-1929, Finger, et al., 2005, Kaijser 2004, Guy, et al. 2001). In other words, the sociotechnical conceptualization of the city recognizes at least two sub-systems that, together, shape urban life; firstly, the physical subsystem including buildings, roads, electricity grid, etc. (which are often called infrastructures or technical networks), and secondly, the human (or social) subsystem that includes human actions and interactions (Hillier 2012, Van Dam 2009).

Urban infrastructures, or the physical sub-system of the city, are seen as a necessary (but not independently sufficient) requirement to have functional cities (UN-Habitat 2013, Wellman and Spiller 2012, Hodson and Marvin 2009). In other words, urban infrastructures are seen as the 'bedrock' of modern cities that provide essential services to ensure the functionality of the city (Guy, et al., 2011, Graham 2010). Although urban infrastructures are sometimes presented as the physical sub-system of the sociotechnical systems, it is important to note that they are not only comprised of technical artifacts. Indeed, in addition to the technical dimensions, urban infrastructures have important economic, social, political and ecological dimensions as well. Therefore, many authors conceptualize urban infrastructures as sociotechnical systems, and not purely technical systems (Graham and Marvin 2001, Coutard 2002, Edwards 2003, Guy, et al., 2001, Rutherford and Coutard 2014).

Another important characteristic of cities is the interrelatedness of their urban infrastructures systems (Van Dam 2009, Hamada 2014). For example, the housing and transportation infrastructures are highly interrelated; on one hand, land use patterns influence transportation demand, and on the other hand, the accessibility of different locations via the transportation network also influences the spatial distribution of residential and commercial buildings. Similar kinds of interrelations can also be identified among other urban infrastructures (see Pandit, et al., 2015). Some

¹⁷ It is important to note that the concept of 'socio-technical' was initially developed in the field projects conducted by the Tavistock institute during 1950s (Trist 1980), but it is widely accepted that Hughes work on 'networks of power' brought the systemic understanding of technology to the field of infrastructure studies.

authors claim that cities should be understood as systems of systems due to the interconnected nature of urban infrastructures (Farber and Martin 2015).

Sociotechnical systems are often complex (Geels 2005). Especially when *cities* are conceptualized as sociotechnical systems, they are often understood as *complex sociotechnical systems* (Hillier 2012). Addressing complex problems in cities, understood as sociotechnical systems, by using conventional reductionist management and policy-making approaches is usually believed to be problematic. Adopting such approaches have often resulted in failure in the long term and led to creation of more irreversible problems, instead of resolving the targeted issues (Forrester 1969, Rittel and Webber 1973, Bettencourt 2015).

Over the past few years, due to the prevalence of understanding cities as sociotechnical systems and the emerging consensus about the fact that conventional reductionist approaches had significantly failed to address complex urban problems throughout the 20th century, there has been a growing emphasis on the necessity of adopting holistic and multidisciplinary approaches to address complex urban issues. In the coming paragraphs, I will take a closer look at both the academic literature and professional reports that highlight the importance of adopting holistic and multidisciplinary approaches for addressing complex urban problems.

2.3 Literature on the importance of holistic-multidisciplinary approaches

The importance of adopting holistic, multidisciplinary approaches towards addressing complex urban challenges is highlighted both in the academic literature and professional reports. In the coming paragraphs, I firstly cover some of the professional reports that highlight the importance of multidisciplinary-holistic perspectives in dealing with such complex problems and then review the academic literature on this topic.

2.3.1 Professional reports

Many international organizations, cities and companies are publishing reports, guidelines or strategy documents on how cities should deal with fierce urban challenges. For example, in a 2011 report titled 'Cities of tomorrow, challenges, visions, ways forward' the European Commission Directorate General for Regional Policy raised the importance of adopting holistic and integrated approaches to ensure sustainable development in cities.

"...The challenge of moving toward shared visions and holistic sustainable development models is to a certain extent the challenge of reaching a better and shared understanding of urban realities... The great challenges that European cities face have no straightforward or simple solutions. Their often

contradictory interlinkages demand holistic and integrated approaches that are able to balance different interests and objectives.” (EU report – Cities of tomorrow, October 2011, p. 61-65)

The Leipzig Charter (2007) and the Toledo Declaration (2010) are two important political agendas for the member states of the EU about urban development. In both of these documents adopting ‘integrated urban development policy approaches’ is put as one of the first priorities for EU member states. It is evident that adopting an integrated approach to urban policy making cannot be fulfilled without the ability of the policy makers and practitioners to understand complex urban challenges from a holistic and multidisciplinary perspective.

The United Nations Environment Program (UNEP) published a report titled “Sustainable, Resource efficient cities – Making it happen” in 2012. In this report, importance of integrated and systemic approaches in managing the transition of cities toward sustainability is one of the key messages to the city practitioners.

“In respect of urban infrastructure choices, however, integration remains the key challenge. This paper attests to the need for greater integration and coordination between the policies, regulations, governance frameworks, legislature and institutional hierarchies under which cities and city-sectors are governed. Formulating well-integrated development strategies for current infrastructure choices is essential to ensure long-term urban sustainability.” (UNEP, Sustainable, resource efficient cities, 2012, p.9)

In a comprehensive report titled ‘leveraging urbanization in South Asia’ by the World Bank Group, *lack of integrated approaches* to management and planning of cities is recognized as the bottleneck to addressing many of urban challenges in cities of South Asia, and improvements in this domain are recommended as an effective strategy to address such challenges (Ellis and Roberts 2016).

Besides the big international organizations, in the past few years consulting firms have also become very active in publishing advisory and consultancy reports about cities. For example, in 2008, Siemens sponsored a report about sustainable urban infrastructures in London in collaboration with the Economist Intelligence Unit and McKinsey & Company consulting firm, which are both very active in publishing reports about urban issues around the world. In this report, the importance of holistic perspectives for cities is nicely elaborated in the words of Mr. Charles Secrett, special Adviser to the Mayor of London on Climate and Sustainability issues from 2004-2008:

“... Perhaps most important, cities have the ability to see things holistically. Mr Secrett argues that the biggest challenge is the need to move from a silo-based set of policies to a truly integrated development strategy.” (Sustainable Urban Infrastructures, London edition – a view to 2025, Siemens 2008, p. 16)

Another article by urban experts at McKinsey & Company in 2013 raised the importance of multidisciplinary planning skills in cities (Bouton, et al.,2013).

Alongside the emphasis of professional reports on the importance of holistic-multidisciplinary approaches for tackling complex urban challenges, the importance of such approaches is also widely highlighted in the academic literature.

2.3.2 Academic literature

Over the course of the past few years, many urban scholars have raised the importance of adopting holistic and multidisciplinary approaches towards addressing complex urban challenges. The starting point for promoting such approaches can be traced back to the emergence of *systemic understanding* of the city. For example, in a discussion about reductionist versus holistic approaches for the analysis of urban issues, Bertuglia and Rabino mention the emergence of the *ecosystems* perspective as a pivotal point for greater acceptance of holistic approaches among urbanists (Bertuglia and Rabino 1994). Stubbs, et al., emphasize the ‘increasing awareness’ for understanding cities as systems with complex interrelations among their subsystems and highlight the importance of integrated approaches to urban management to tackle urban complexities (Stubbs, et.al. 2000).

The prevalence of systemic understanding of cities goes back to 1960s¹⁸; however nowadays, it is widely accepted that addressing urban challenges without focusing on their complex nature and interrelations among their many subsystems will often result in failure (Bettencourt 2015). But, the focus on the importance of more holistic-multidisciplinary approaches towards tackling complex urban challenges does not mean that the traditional disciplinary knowledge of planning, urban design, public administration, etc. are fundamentally useless or irrelevant. Indeed, these traditional perspective are often seen as ‘not adequate on their own’. In the words of Neilson:

“The traditional urban disciplines of town planning, urban design, architecture, engineering, urban economics, sociology, and environmental science provide necessary inputs to the urban management task, but none is adequate on its own – integration and cross-disciplinary action are almost always essential. Furthermore, traditional tools of town planning -plan making and development regulation- while necessary, are insufficient to bring altogether all the element that modern city building and management require.” (Nielson 2012, p.13)

Stephen Graham highlights the importance of adopting a “multidimensional and interdisciplinary perspective” towards the analysis of urban infrastructures.

“The essential dialectical connection between infrastructure networks and the nature of modern urbanism necessarily mean that any analysis of urban infrastructure networks must adopt a multidimensional and interdisciplinary perspective.” (Graham 2000, p.115)

In his review of *urban management* in academic literature Ronald McGill concluded that a holistic approach is a must for successful urban management in the context of developing countries (McGill 1998). Kunz et al., support the position that integrated approaches are essential for tackling water challenges in cities, but dismiss the common trend of using ‘integrated, holistic and systems approach’ as buzz words and propose a conceptual framework that is aimed at matching problem complexity with management response in the context of water management (Kunz, et al.,2013). Ioan-Franc et al., emphasize the ineffectiveness of adopting traditional sectoral approaches for dealing with economic challenges in cities and propose an ‘integrated urban governance’ approach to deal

¹⁸ In the US context, the prevalence of understanding the city as a complex phenomenon and criticizing the more orthodox understanding of the cities is often associated with the seminal book by Jane Jacobs; *The death and life of great American cities* (1961) (Bettencourt 2013).

with interdisciplinary urban challenges (Ioan-Franc et al., 2015). Valentine and Heiken (2000) stress “the need for a new look at cities” in order to better manage 21st century cities and also emphasize the importance of an integrated understanding of cities as systems of systems.

Sustainability and resilience have become two buzz words in the academic and professional urban communities in recent years (Stumpp 2013). In addition to the concepts of sustainability and resilience, interest in the concept of smart cities has also surged since the 2000s (Hollands 2008). So, it is insightful to briefly look at some of the academic literature that addresses the importance of holistic-multidisciplinary approaches as a foundation for realizing these three (often interrelated) visions for cities.

About thirty years ago, the publication of the report *Our Common Future* (widely known as the *Brundtland Report*) attracted the attention of scholars and policy makers to the importance of sustainability issues. The classical definition of sustainable development by Brundtland, given as: “development which meets the needs of the present without compromising the ability of future generations to meet their own needs”, is still widely used in academic and professional communities (Drexhage and Murphy 2010, Brundtland et al., 1987).

Resilience can be defined as the ability of the system to retain its essential functions, structures and feedbacks while experiencing shocks (Walker et al., 2006). The concept of urban resilience has received more attention from scholars and policy makers in light of increasing natural disasters such as floods, landslides, storms and heat waves in urban agglomerations, which are widely associated with climate change. In both of the urban sustainability and urban resilience discourses, there is a strong focus on the complex and systemic nature of problems that must be addressed in order to achieve sustainability and resilience.

In the context of sustainable urban development, Yigitcanlar and Teriman highlight the importance of holistic and integrated planning processes as a leverage to achieve sustainability in cities (Yigitcanlar and Teriman 2015). Ahern discusses the importance of interdisciplinary collaboration, both in research and practice, to address sustainability challenges in the modern urban world (Ahern 2011). Pickett, et al., argue that holistic approaches towards decision making is one of the three main features of ‘sustainable cities’ (Pickett, et al., 2013). Evans and Marvin (2006) illustrate the importance of interdisciplinary approaches in research programs investigating sustainable cities.

Lizzaralde et al., focus on the importance of analyzing the relationships among interconnected variables from a holistic perspective and with a long-term horizon, in both of the urban sustainability and urban resilience paradigms (Lizzaralde et al., 2015). Collier et al., discuss that the ‘resilience’ discourse that has been taking place over the past few years has resulted in “a more integrated, multi-disciplinary and open planning system” (Collier et al., 2013, p. S22). Jabareen highlights the importance of considering the “multidisciplinary and complex nature” of the notion of resilience in the urban context (Jebareen 2013).

Within the context of smart cities, the interdependence of different urban systems is highly recognized, and indeed one of the main promises of the ‘smart city’ discourse is to improve the city’s

performance by using advanced technologies (mainly ICTs) to better manage cities as complex sociotechnical systems (Bowerman, et al.,2000). So, it is not surprising that academic literature on smart cities focuses overwhelmingly on the importance of holistic, multidisciplinary and integrated approaches to tackle urban challenges. For example, Letaifa highlights the importance of the holistic conceptualization of different elements of smart cities as a precondition for strategizing for smart cities (Letaifa 2015). Angelidou emphasizes the importance of interdisciplinary strategic planning for smart cities and discusses the existing shortcomings in current planning practices for smart cities (Angelidou 2014).

The role of urban practitioners in the process of implementing any ambitious urban agenda is prominent. The success of planned developments is very much dependent on the people who will materialize the plans; and not only on the embedded ideas in them (Sidabutar et.al. 1991). The presented review of professional reports and academic literature in previous paragraphs highlights that adopting a holistic-multidisciplinary perspective for tackling complex urban problems is an important piece of advice for cities¹⁹. However, as it will be discussed in the next sections, there is a significant gap in training and re-training practices to enable urban practitioners to materialize this tall order of ‘analyzing complex urban problems from a holistic and multidisciplinary perspective’. Simply put, urban practitioners are almost always advised to follow some strict advice, while at the same time it is widely recognized that the current training practices are not preparing them to do so. In the coming paragraphs, I will elaborate this argument by using insights from professional reports and academic literature.

2.4 Literature on the current shortcomings in training urban practitioners

In discussing the common typologies of urban structures, Alexander (1965) points to the psychological tendencies of human beings, including researchers, to reduce the complex organizations to non-overlapping units. So it should not be a surprise that traditionally, most academic disciplines have studied ‘cities’ through a reductionist approach (Allen 2012). In this view, cities are seen as a set of relatively independent problems that should be managed in order to achieve an optimal performance (Bettencourt 2013).

¹⁹ In the ‘complexity science’ school of thought, which mostly relies on computer modeling of complex systems such as cities, it is assumed that cities as complex systems have important features such as non-ergodicity, phase transition, emergence and universality, which differentiate them from simple and complicated systems. Due to these characteristics, it is argued that the traditional management and planning approaches are not applicable for tackling the complex class of urban problems (e.g. see Batty 2010, Rydin, et al. 2012, Bettencourt 2015) because the behavior of the system is not predictable and far from any equilibrium. It is important to note that in-line with the main objectives and focus of this project which is about training of practitioners and not using a complexity science approach to simulate urban systems, when I use the term ‘complex’ in this research I don’t mean it in the context of ‘complexity science’ perspective about cities.

The predominance of the reductionist perspective has affected academic and professional training programs that are aimed at preparing urban practitioners to fulfill their duties in cities. Predominance of disciplinary academic and professional training programs, such as transport engineering, water resources engineering, architecture, urban design, public administration, or social work, which could be found in almost any university throughout the past years (as is still the case in many university), illustrate this phenomenon. However, as discussed in the previous sections of this chapter, there is a growing emphasis on the importance of adopting a holistic and multidisciplinary perspective in analyzing and tackling complex urban challenges. But, despite all these recommendations, there is a serious concern about the ability for urban practitioners to really do so, and the role academic and professional training and education initiatives to address this gap is not deniable (e.g. see Wakely 1997; UN-Habitat practice note on 'Training for better cities', 2012; Hegarty and Holdsworth 2015).

In the following paragraphs, I provide a review of both professional reports and academic literature that highlight the shortcomings in training urban practitioners to adopt a holistic and multidisciplinary approach towards tackling complex urban problems in practice. This will provide a basis to illustrate the research gap that this project is trying to address.

2.4.1 Professional reports

The report by the Urban Task Force in the UK, which was aimed at identifying the factors that led to the decline of English cities and proposing strategies to overcome this challenge in the turn of the millennium, highlighted the lack of training of urban practitioners with an interdisciplinary mindset as one of the policy areas that needs more attention and investment.

"Policy changes will only deliver the desired urban renaissance if they are implemented by people with the skills to make them work. In many aspects of urban development, we have let our skills-base decline to unacceptable levels.... We urgently need more people with expertise in urban design, planning and property development within central and local government.... We also require a steady flow of new professionals to push forward urban development in the future. Career training for relevant professions currently lacks a sufficient inter-disciplinary dimension." (Towards an urban renaissance, 1999, p.10)

An analysis of a major training initiative to support the 'integrated urban infrastructure development program' in Indonesia showed that despite the initially declared objectives of the program, the focus of the trainings stayed limited to one sector and multidisciplinaryity could not be achieved (Sidabutar et.al. 1991). In a report sponsored by Siemens in 2007 about the main challenges that Mega Cities will be facing in the coming years, GlobeScan and MRC McLean Hazel consulting firms studied 25 Mega Cities around the globe and concluded that "holistic solutions are desired, but difficult to achieve." (Megacity challenges, a stakeholder perspective, Siemens 2007, p.4). In another Siemens' sponsored report (2008), an illustrative quotation from the Arup's director and leader of global planning business, Mr. Peter Head, highlights that city departments are often unable to look at policy issues from a holistic perspective.

"The public sector has great difficulty because, traditionally, departments of transport, environment, those addressing social issues in cities and in regions, economic departments, have all operated independently. Very rarely are they able to look at joined up policy."(Sustainable Urban Infrastructures, London edition – a view to 2025, Siemens 2008, p. 17)

Another interesting report, published by Arup and Future Cities Catapult in 2014, looked into the potential global market for 'integrated urban solutions' by 2030 and attempted to determine how the UK could benefit from this market. The findings propose that the market for 'integrated urban solutions' is worth 200 Billion GBP and that the UK can substantially benefit from this market thanks to their business capabilities that have resulted from 'multi-disciplinary teams' as well as their research and academic capabilities to *"develop integrated city solutions and training urbanists in multidisciplinary ways of thinking and working"* (Walt et al., 2014, p.2). The findings of this report clearly address the importance of integrated, holistic and multidisciplinary approaches to deal with urban challenges and the difficulty to achieve such approaches, which is perceived as a business opportunity both for practitioners and academic institutions in the UK.

2.4.2 Academic literature

In addition to the professional reports that highlight the gap between the expectations and abilities of urban practitioners to approach urban challenges from a holistic-multidisciplinary perspective, this gap is also highlighted in the academic literature. For example, Rodwin et al., explain that urban scholars who work in traditional academic disciplines, which are indeed the main stream in academia, have lower chances of benefiting from a multidisciplinary perspective:

"... These opportunities [to benefit from multidisciplinary and holistic perspectives] are not excluded from those working in conventional disciplinary boundaries, but they are more difficult to exploit in departments where the rewards are largely for those working with the discipline." (Rodwin et al., 2013, p. 198)

They continue their discussion and raise another important point regarding the common disconnect between the academics and practitioners (especially in the field of urban planning) and propose that "competitive professional degrees" might be a solution to solve such a disconnect:

"Academics in the school fear that if they identify with the professional faculty they may become second-rate practitioners and lose status within their academic discipline, but if they identify with the discipline, they risk neglecting the essential needs of the city-planning professionals. These conflicts might be resolved, Glazer suggests, if the professional degree could be made competitive with the disciplinary degree." (Rodwin et al., 2013, p. 258)

As a result of these two obstacles in traditional academia, it can be argued that universities are facing problems training urban practitioners with the necessary competencies that are needed for tackling complex urban challenges from a holistic-multidisciplinary approach. For example, Chakrabarty (2001) claims that due to a lack of a 'holistic' and 'full length' course of education for training professional urban managers, it is difficult to realize an integrated urban management approach in

practice as disciplinary perspectives for dealing with urban challenges are still predominant. Rizzo and Galanakis (2015) discuss the need to apply a 'transdisciplinary' approach to the study of urbanism and introduce some radical proposals to the field of architecture education to transform the "design practice" into a more "socially and politically relevant field" by introducing changes into the curriculum of architecture programs.

Charles Landry (2012) investigates the consequences of "inadequate training", "self-justification" and a "lack of integration" among urban professionals; he discusses how these factors, among many other factors, hinder urban practitioners creativity when addressing dynamic urban problems and when communicating with each other in order to address urban challenges from an integrated perspective.

In his discussion of the concept of 'urban management', Richard Stern (1993) argues that in order to tackle urban problems, both sectoral and inter-sectoral approaches are required. However, he claims that since traditional academic disciplines (e.g. geography, economics, planning, etc.) define urban issues from their own perspectives and train urban practitioners based on their respective approaches, urban professionals usually work in a sectoral fashion and the inter-sectoral approach is often missing.

Wakely (1997) highlights the importance of 'training establishments' in capacity building among urban professionals, but criticizes them for their inability to adopt to the rapidly changing requirements of practitioners in municipalities and metropolitan governments. He explains that "inertia", a "lack of contact with practice" and "tradition" result in an increasing mismatch between the offerings of training establishments and the real needs of urban practitioners, and thus he also calls for a major re-thinking of the roles and practices that the training establishments should take on in order to address this challenge. Along the same line of thought, Conn (1993) explains the process of designing a new curriculum for integrated waste management and discusses the difficulty of initiating interdisciplinary courses in universities, especially in comparison to traditional disciplinary courses. He also highlights the fact that initiating change in the curriculum of university programs is often a slow and incremental process, especially when programs are subject to *accreditation*. These factors can further intensify the training gaps that are illustrated by Wakely.

Steinberg and Miranda (2005) review the Peru Urban Management Education Program (PEGUP) which was aimed at promoting the Local Agenda 21²⁰ for environmental sustainability in urban areas of Peru by providing academic education and technical support to municipalities over four years. The authors claim many achievements for the program in regards to making the university education more relevant to the practical needs of cities and urban practitioners, network building, etc. However, one of main obstacles that they raise in the PEGUP initiative is the limited motivation and lack of involvement of academic partners in such practical projects.

Roseland (2000) reviews urban planning paradigms and concludes that main stream urban planning training programs, based on Friedmann's planning theories, have limited value in preparing urban professionals and practitioners to address sustainable development challenges in cities. Instead, he

²⁰ <https://sustainabledevelopment.un.org/outcomedocuments/agenda21> [Accessed 13 April 2016]

proposes that urban planners who are concerned with sustainability challenges should get insight from other disciplines and paradigms to enhance their theoretical insight on these issues.

Ciomasu (2013) look at the current state of decision-making processes in cities when dealing with the global urban challenges of resilience and sustainability. He claims that the current movement towards developing a more interdisciplinary understanding of urban disaster management is still “a work in progress” and proposes that “learning by doing” can be considered a promising strategy to deal with such shortcomings.

“...the current situation in terms of urban disasters at the global level arguably reflects (a) city unsustainability, associated with (b) a fundamental incapacity of science as a whole to provide an integrated knowledge base for sustainability making. Current merging efforts between disciplines are encouraging, but they are still very much a ‘work in progress’” (Ciomasu 2013, p. 1805)

Grimaldi and Fernandez (2016) analyzes the curricula of universities in Barcelona to see how well they can potentially train future urban practitioners that are needed for realizing the vision of *Barcelona Smart City*, which is already proposed by the Barcelona city council. Their findings indicate that there is a significant gap between the training programs currently available at the universities of Barcelona and the expected competencies of future practitioners for *Barcelona Smart City*. Their main recommendations to fill this gap focus on *breaking the disciplinary silos* and *introducing more interdisciplinary courses* to enable graduates from relevant academic fields (i.e. science, engineering, IT and telecom, business administration, etc.) to capture the holistic and multidisciplinary perspective that is needed for future urban professionals.

Siwiling (2015) agrees with the argument that a detailed and cross-disciplinary understanding of multiple issues in management of urban infrastructures are important, but argues that:

“This is certainly radical stuff for a profession trained to manage ‘large technical systems’ by building organizational cultures that value above all the logics of technocratic rationality, quantification and specialization” (Siwiling 2015, p. 23)

As illustrated in the previous paragraphs, both academic literature and professional reports highlight the difficulties associated with the realization of adopting holistic-multidisciplinary perspectives in dealing with complex urban challenges. Especially in the academic literature, the ineffectiveness of the training practices in place to prepare urban practitioners and professionals to adopt such an approach towards dealing with real world urban problems is well illustrated. However, there are few studies that deeply and comprehensively investigate the challenges in training urban practitioners with such a holistic and multidisciplinary perspective. Indeed, most of the above mentioned articles just highlight the problems, but do not investigate them in detail, nor do they provide practical recommendations to overcome them (e.g. see Grimaldi and Fernandez 2016, Ciomasu 2013, Roseland 2000).

In the coming paragraphs, I review the existing contributions in the literature that are aimed at addressing this research arena. Based on this review, I will highlight the research gap which is the subject of this thesis.

2.5 Literature that aims to close this gap

There are several bodies of literature that may shed light on the challenges associated with training urban practitioners (professionals) to adopt a holistic-multidisciplinary perspective when addressing complex urban challenges. When I only focused my bibliographic search on studies that have investigated the challenges associated with training urban professionals to address complex *management* and *governance* challenges in urban infrastructure systems (as sociotechnical systems) from a holistic-multidisciplinary point of view (which is the precise focus of this research project), I found very few academic contributions that remained relevant to my research question. Thus, to provide a thorough review of the literature on this topic and to gain maximum exposure to research findings that could help me address my research concerns, I looked at a much broader body of literature; these are discussed below²¹.

2.5.1 Literature on the challenges and strategies to train practitioners to address complex management/governance problems in urban infrastructure systems

There are very few contributions in the academic literature that address this issue. In most cases, scholars who highlight the shortcomings of current practices used to deal with complex challenges related to urban infrastructures propose general recommendations such as introducing a more interdisciplinary approach into the training of urban practitioners, changing the silo-based disciplinary perspectives on urban issues, etc.²². However, these studies often stop at this very abstract level of discussion and seldom explore the details of the challenges associated with realizing their generic recommendations. For example, as discussed before, Grimaldi and Fernandez (2016) highlight the gap between university curriculums and the requirements for Barcelona to realize its smart city vision. However, they don't provide any concert analysis of the necessary steps required to make their recommendation, to "introduce more interdisciplinary courses in the curricula of universities", feasible in real practice.

Shnyrenkov and Pryadko (2015) discuss the importance of providing a broader understanding of cities as complex systems (including a network of infrastructures) to students of civil engineering programs and new initiatives in place at some Russian universities to offer social science course units to Bachelor and Master students in civil engineering. However, they do not provide any details on the processes and challenges associated with the implementation of these initiatives or their outcomes.

²¹ It is important to note that in this chapter, I mainly focus on the empirical bodies of literature; and will not investigate the more fundamental theories of learning and education. Later in the analysis chapter, I benefit from more theoretical bodies of literature (mainly Transformative Learning Theory) to discuss the findings of this Action Research inquiry. This choice is very much in-line with my methodological choice which is not aimed at theory testing, but is rather focused on better understanding and improvement of practices through conducting systematic and reflective inquiries.

²² Indeed, most of the papers on this subject are focusing on the Higher Education training programs and to my knowledge almost no study has focused the challenges in professional training of urban practitioners to address complex urban issues from a holistic and multidisciplinary perspective.

Holden et.al. (2008) explain the process of developing a single graduate course about green buildings and sustainability in Canada. The course had a team of five instructors and had two main components. The first part of the course was comprised of classroom sessions where different instructors and professionals discuss issues relevant to the curriculum of the course in a panel format. The second part of the course was based on students engagement through predefined projects designed by the instructors. The authors discuss two main issues that affected the learning outcomes of the course; firstly, the '*classroom composition*' which is about the diversity of participants in the course and secondly the '*course composition*' which is about the activities designed for the course. According to the authors, in this initiative the class discussions became very abstract in order to accommodate contributions from different fields. The abstract lectures were mixedly perceived by learners as negative or positive, based on their different preferences. The authors highlight the importance of practitioners' input in order to give concrete examples of abstract concepts that were raised in class discussions. Another important issue highlighted in this study is the importance of the "self-directedness" of participants in such a learning experience, which in some cases resulted in participant dissatisfaction (graduate students) due to their desire for more support from the course instructors. Last but not least, the importance of "reflection" on the learning experiences for both instructors and participants is highlighted as one of major conclusions of this study.

There are also some studies about improving the training programs that address only one specific infrastructure sector such as waste, transport and energy. These studies often look at the shortcomings associated with training managers and engineers with managerial responsibilities that are specific to a single infrastructure. The overlying objective of these studies is often to design strategies to improve sector specific training programs by introducing more holistic and interdisciplinary approaches to the analysis of "technical and engineering problems" in addition to improving the technical capabilities of trainees²³.

Some of these studies are indeed published in the late 80s and early 90s and can be seen as a reaction to shortcomings that were associated with purely engineering approaches to management of infrastructure projects throughout that period. For example, Dimitriou (1988) studied the training needs of "manpower" to manage urban transport projects in four Asian cities and designed a new training program in Indonesia to promote more multidisciplinary and inter-agency approaches among project managers in charge of urban transport development projects. He puts a special focus on the "importance of alignment between the learning objectives of the training and the practical needs of a project", and he propose a combination of "off the job and on the job training modules" to achieve this goal. Grieg (1995) highlights the importance of implementing integrated approaches for water management and proposes the "case method" as an effective strategy to provide the students of civil engineering programs with a better cross-disciplinary understanding of the issues in water management. He further suggests that using the case method can be useful in the broader context of infrastructure and environmental education.

²³ It is interesting to note that the very basic assumption behind these studies can be a subject for further research, because they often discuss the importance of holistic approaches while they just focus on one single infrastructure; which is somehow a contradictory logic.

Conn (1993) discusses the process of creating an “integrated waste management curriculum” in the US and mentions the difficulties associated with this process due to the resistance of faculty members in universities. Due to such disciplinary resistance in academia, he proposes that using ‘continuing education’ programs might be an effective tool to promote such efforts to introduce more integrative and holistic approaches to waste management. Although such contributions are aimed at identifying the shortcomings associated with training urban practitioners to adopt more holistic and multidisciplinary approaches, they are mainly focused on promoting such a perspective in “one specific sector/infrastructure”, and rarely consider the inter-relatedness of urban infrastructures and their complex socio-technical natures.

In more recent studies, Ferreira, et al., (2013) conducted an online survey and asked ‘academics’ to highlight the most relevant topics that should be included in the Mobility and Transport Studies curriculum for training ‘practitioners’. They report that “*the respondents generally support curricula that facilitate a holistic, non-specialised, understanding of mobility and transport issues*” (Ferreira et.al. 2013, p. 501). However, they stop at this point and don’t discuss how this goal can be achieved in practice.

Mateo-Babiano and Burke (2013) studied the curriculum of some of the transportation planning programs in Australia. They highlight the missing link between transportation planning training and the practical needs of professionals- specifically the importance of understanding the issues from a deep, yet multidisciplinary perspective. They also discuss their personal experience using ‘*experiential learning approaches*’ to teach transportation planning, which is generally believed to be beneficial for ‘practice oriented trainings’ (Friedmann and Aboyni 1976, Friedman and Hudson 1974); however, they conclude that due to time and resource limitations, this approach could not be fully utilized in their course and their progress remained limited to conventional theory and concept teaching.

Batterman et.al. (2011) provide a list of competencies that they believed to be important for graduates in the fields of energy and sustainability, and they discuss the challenges associated with incorporating these competencies (many of which fall into the categories of multi/inter-disciplinarity) into the curriculum of university programs. They continue with reporting the current state of training programs at the University of Coimbra in Portugal with regard to these competencies. However, they do not provide any significant insight into the challenges that must be faced in order to improve the training practices and better incorporate these competencies, nor do they discuss how these challenges can be overcome in practice.

As discussed in the previous paragraphs of this section, there are very few studies about the challenges related to training urban practitioners to better address complex problems associated with urban infrastructures from a holistic-multidisciplinary point of view. There are hardly any studies that go a step further and examine some strategies that could help overcome such challenges. But to ensure that no relevant study is missing from my review of the literature, I broadened the scope of my bibliographic search to focus on training programs that are aimed at preparing the practitioners to deal with the more broadly defined ‘urban problems’ and not only ‘urban infrastructure’ related problems. In the next section, I discuss this body of literature.

2.5.2 Literature on challenges and strategies to train practitioners to address complex urban problems

Even without limiting my literature review to 'urban infrastructure' systems, there are still very few contributions that address challenges related to training urban professionals to address broadly defined complex urban problems from a holistic and multidisciplinary point of view and/or provide strategies to overcome them. And in the few contributions that can be found in the literature, the propositions that are made by researchers usually remain very generic and are often based on common insight and experience, and only occasionally are they the result of rigorous research procedures. For example, in his proposal to enhance the quality of professional education for urban planners Saltzman (1970) discusses the importance of *more interaction among 'discipline-oriented' and 'problem-oriented' faculty members* in urban planning departments, but his arguments are mainly based on his experience and not a comprehensive research project. When discussing the requirements for an enriched conceptualization of 'urban management', Stern (1993) addresses the importance of more interaction between researchers and managers who deal with urban issues, but does not provide any concrete recommendations for how this can be accomplished in reality and leaves it as an open question:

"... there needs to be a higher degree of interaction between active researchers in the urban research community and the national and international project managers who are dealing directly with 'urban management' projects. How this interaction might be structured is an open question..." (Stern 1993, p. 138)

Gunsekera (1989) highlights the main challenges as well as important success factors for launching a training program for 'urban development managers'. Although the focus of this training initiative was not on improving the holistic and multidisciplinary analytical capabilities of practitioners, his findings are interesting to note here. Through a study where he follows a training class of 15-20 practitioners from four different backgrounds (managers, planners, trainers, specialists/engineers) the author illustrates several important challenges that must be overcome for successful training programs: first, *managing the diverse expectations* of the participants and second, *creating a critical mass*. He also highlights several factors for 'effective urban management training' (p. 154-155), such as creating a *match between the training offering and needs; being part of system development package; support of organizations who send the trainees, including significant practical components in the course structure; clarity of objectives of the course; etc.*

Bately and Devas (1988) discuss some general considerations for training urban managers by using their general insight about British aid programs for training of urban managers. They emphasize the importance of developing *a close link between the training and operational programs by using 'action-training' models, training the whole institutions instead of isolated trainees, and focusing on problem solving and analytical skills instead of narrowly defined textbook learnings.*

Steinman (2003) used 'problem based learning' strategies to teach a graduate course at the Georgia Institute of Technology about 'Sustainable Urban Development' over a period of four years. Although the title of the course is 'Sustainable Urban Development', the course has been structured around

student projects designed to improve sustainability measures across the university campus. The author highlights the importance of '*designing of feasible project*', '*providing enough guidance*', '*keeping the enthusiasm*', and '*understanding the long time required for implementation of projects*' as some of her main findings. However, her remarks remain very broad and lack any significant explanation about the details of the process. Manisa (2012) reports the attempts to improve interdisciplinarity in architectural education, but the paper Basically summarizes the general curriculum structure of several diploma programs in place at Yildiz University (Turkey) from 2004 to 2009 (in one small table) and lacks any substantial explanation of the process or challenges underway of this initiative.

Morrel et.al (2012) use their experience in the HP learning factory to discuss their proposal to incorporate IT and sustainability topics in the curriculum of engineering programs (Bachelor and Master level) to address the multidisciplinary aspects of 'sustainable cities'. Their main proposition is to offer *elective workshops* in addition to traditional engineering courses (figure 2.1). However, except for proposing some generic workshop topics, the authors do not provide any concrete proposal for how this approach might be put into practice or how it might help the university to prepare the students to become competent practitioners in future who can address complex urban problems from a holistic and multi-disciplinary perspective.

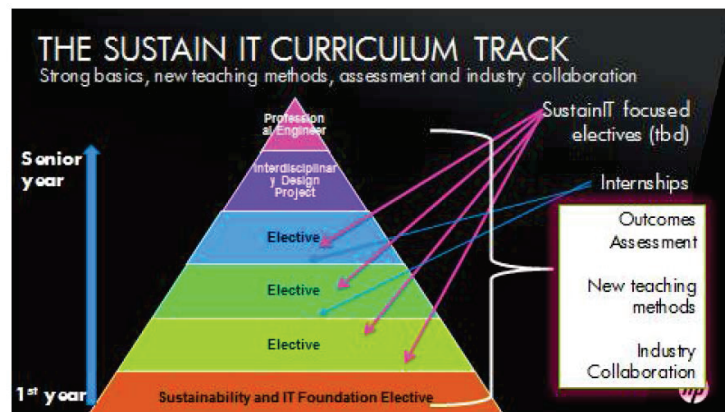


Figure 2.1- example of curriculum proposal
Source: Morrel et al.,2012, p5

Garcia, et.al (2010) discuss the important dimensions in curriculum of training programs for social workers whom are expected to deal with complex social problems in communities from an interdisciplinary point of view. Their findings from six focus groups, mainly composed of practitioners, highlight the importance of an '*interactive curriculum*', which promote dialog and discussion in small groups; the '*recognition and enhancement of existing knowledge of participants*'; '*using team teaching*' as a possible way to bring practical expertise alongside academic theories; and

'reflection and critical thinking'. The authors however do not investigate the challenges associated with the implementation of these recommendations, nor do they discuss how these challenges can be overcome in practice.

Kurland, et.al. (2010) report a case study about the process of developing an undergraduate interdisciplinary course on sustainability and how it helped in creating a sustainability network in the California State University Northridge. Although this case is about an undergraduate course its findings are relevant to the subject of this research especially because the founder of this project was a faculty member in the Department of Urban Studies. Among the challenges faced throughout this experiment, the authors mention the *'lack of shared vocabulary'* among the participants in the course and *'different styles of lecturers'* as two of the main difficulties during the course. Additionally, the student experience in the class was more along the lines of a *'multi-disciplinary' learning experience, instead of an 'interdisciplinary' experience*. Two other important challenges discussed in this study are reported as a *'lack of clear and consistent leadership'* and *'different styles of lecturers'*. The authors provide some generic recommendations to overcome these challenges, but do not go into detail on the validity or applicability of their recommendations.

As discussed in the previous paragraphs, there are few contributions in the literature that are aimed at improving training practices in order to enhance the competencies of urban practitioners to address complex urban problems from a holistic-multidisciplinary point of view. However, most of these studies are focused on university education (for undergraduate and graduate students) and rarely address professional training programs. These published studies often just report some of the challenges faced throughout the students' training and often propose some generic recommendations to overcome these challenges without providing clear roadmaps for the implementation of these recommendations in the real world. Last but not least, these studies often fail to provide any significant empirical support on the effectiveness of these generic recommendations.

2.5.3 Literature on education for sustainable development

Over the past few years, there is an increasing recognition of the role of education in sustainable development (Jabareen 2012). This is partly the result of UNESCO's focus on Education for Sustainable Development, or in short- ESD initiatives (DESD 2005-2015, UNESC education strategy 2014-2021). As a result, some universities have started to incorporate the *'sustainability dimension'* into the curriculums of different academic programs, especially in the Bachelor and Master programs of engineering majors. Accordingly, a large number of papers have been published to report these initiatives and pedagogical models associated with them.

These studies are mainly in the context of higher education (Banai 2012), and broadly fall into the category of *'education for sustainability'* literature. Although academic training programs are different from professional training programs and the focus of education in the sustainability

literature is often on bachelor and master engineering programs, due to the complex and multidisciplinary nature of the issues in the sustainability discourse, the findings from these initiatives could shed some light on the challenges related to training professionals to address complex problems with a holistic and multidisciplinary approach. So, I will also briefly review some recent publications in this field which are related to urban challenges.

Jabareen (2012) argues that there is a lack of clearly defined sustainability education framework in the literature and proposes his own framework to address this shortcoming. Although his framework is purely conceptual and is based on his experience in teaching bachelor and master courses in urban fields, he proposes some practical teaching strategies such as using *'team projects'*, *'Action Research as individual practical assignment'* and *'workshops'* in sustainability education (Jabareen 2012, pp. 2260-2261). Banai (2010) reviews six pedagogical principles in sustainability education, namely *'holistic thinking'*, *'critical thinking and reflective practice'*, *'long term orientation'*, *'communication and collaboration'*, *'feedback'* and *'learning in cyberspace'*. He then argues that these principles are very much in line with underlying values of sustainable urban planning. Thus, he concludes that in training for sustainable urban development these principles should be seriously exercised. However, he does not provide any practical insight on how these principles should be implemented in practice.

Pijwaka, et.al. (2013, p.25) argue that *"Although sustainability has a growing presence in the planning and design professions, little guidance is available on how to incorporate sustainability into planning and design education programs"*. To address this shortcoming, they report a four step initiative (spread over 5 years) to incrementally familiarize undergraduate students with complex dimensions of sustainability in an urban planning course at Arizona State University. They started by asking the students to conceptualize sustainability, to use some of the concepts in planning exercise and finally considering broader dimensions (justice, environment, equity, etc.,) in their planning exercise. The authors provide ample detail on the process of implementing their idea in a real case and evaluate their achievements. However, the research findings remain limited to the proposition that *the complexity of concepts should be increased incrementally in teaching undergraduate students about sustainability issues*.

Altomonte, et.al. (2014) explore the results of the European EDUCATE²⁴ project to investigate the obstacles to incorporating sustainability into architecture and urban design educational programs and propose strategies to overcome them. Despite the aspirations of this paper, their analysis remains very generic and the challenges are not clearly explored; the strategies proposed to overcome these barriers are too generic as well. For example, one of the main challenges that they highlight is the disconnect between the different disciplines that are important to sustainable development and difficulties to bring them under the curricula of architecture program. Respectively, their proposed strategy is to *'break the traditional disciplinary compartments'*.

Korobar and Siljanoska (2015) highlight the importance of interdisciplinarity in planning for *'sustainable urbanism'* but criticize the current training practices as being too *'architecture-centric'*.

²⁴ Environmental Design in University Curricula and Architectural Training in Europe

“Efforts that have been made to respond to the growing pressure of interdisciplinarity have mainly been accommodated by tangential inclusion of disciplines in social sciences leaving unhindered the leading role of architectural knowledge as represented through urban design or townscape issues and a lasting preoccupation with building codes and rules to the extent to which they influence architectural ‘freedom of expression’” (Korobar and Siljanoska 2015, p.121)

They propose some generic strategies to improve the training program for sustainable urbanism, such as the use of *‘problem based learning’* approaches and *‘case studies’* as well as benefiting from *‘action learning and Action Research approaches’*.

Staniškis and Katiliūtė (2015) explain the main guidelines followed to design an environmental management master and PhD program at the University of Kuanas (Lithuania). They highlight the importance of using an *‘interdisciplinary approach’* by *‘offering a mix of mandatory and optional courses’* on a diverse range of topics; maintaining a *‘strong research connection’* by linking assignments of optional course to research projects; promoting *‘practical education’* by providing collaboration opportunities for MSc and PhD students to work on industrial projects; and finally an *‘integrated program’* by combining theoretical and hands-on experience as the main guidelines to ensure the quality of their programs. Desha, et.al. (2015) highlight the importance of *‘collaboration between universities, industry and government agencies’*, *‘evaluation and feedback’*, *‘flexibility’* and *‘focus on real world problems’* as some of the main learnings that they had during the curriculum development for an energy efficiency training program in Australia. Other examples of such studies include Mälkki and Paatero’s (2015) study of curriculum planning for energy engineering education at the University of Aalto (Finland), and a study by Dimitrova (2014) about the process of incorporating sustainable development principles into the curriculum of the urban planning program in Bulgaria.

The *‘education for sustainability’* literature is very diverse and there is no golden recipe for a successful environmental education initiative (Plamer 2002). Vincent and Focht (2011) note that *‘flexibility’* and *‘adaptability’* are important features of many interdisciplinary environmental programs in the American higher education system. However, they argue that these characteristics are also seen as a weakness that can undermine these programs’ legitimacy due to concerns from learners, universities and employers about the depth and rigor of interdisciplinary training practices and, consequently, potentially a lack of important competencies among graduates of such programs. They propose that further research should be done in this area to help improve the program and curriculum development process in this field.

As discussed in the previous paragraphs, there are some studies in the ESD literature that highlight the challenges underway of teaching university students to address complex sustainability issues in urban contexts from a more holistic and multidisciplinary approach. However, as in the previously reviewed bodies of literature, these studies also often report very generic findings about the challenges and very rarely propose well-researched strategies to overcome these challenges.

2.5.4 Literature on using computer software in addressing complex urban challenges

Last but not least, there are many publications about the importance of using computer software (Decision Support Systems, expert systems), simulation models (Agent based simulations, System Dynamics) as well as information systems (GIS, UIS, SIS) to deal with complex urban issues, especially in the contexts of water management and land-use and transportation planning²⁵. These articles highlight the importance of computer-aided systems in helping managers and policy makers to deal with highly complex urban challenges from a holistic point of view through better utilization of data and the computational power of computers.

The core argument in these articles is that due to the limited abilities of human agents to collect and process large amounts of data, the role of computer systems in dealing with complex urban problems is undeniable. Although these arguments have their own merit and are attracting more and more attention in both the academic and professional urban societies, they are outside the scope of this research. The reason behind my argument is that the focus of this research is to train urban practitioners to analyze and address complex problems in management/governance of urban infrastructures from a holistic-multidisciplinary point of view in their daily practices, while the focus of these technical articles is often on proposing computer aided solutions for better decision making, with less focus on the human users and more focus on better utilization of available data sources and computational techniques.

So, I acknowledge that the broad technical literature on computer aided decision support systems can definitely bring value to improve the ability of practitioners to utilize data for making decisions about complex urban challenges from a more holistic point of view. However, I do not incorporate this literature in my thesis because my research focus is one step before using computer systems for analyzing data by practitioners. More precisely, this research project is mainly aimed at changing the practitioner's analytical approach from a reductionist-disciplinary approach to a more systemic-multidisciplinary one.

²⁵ Examples of such studies are: Meney and Pantelic 2015 on using AHP techniques (Analytical Hierachry Process) in decision making for water and waste water treatment, O'Connor, et al. 2010 on using computer software for water management, Van Dam 2009 on using Agent Based Modeling to understand socio-technical systems, Lehmann et.al. 2013 for a review of articles about solid waste management by using simulation and modeling, Bhamidipati, et al. 2016 on simulation of infrastructures for asset management, Tsolakis and Anthopolous 2015 for a review and a special case of using SD to model eco-cities, Han and Kim 1989 on the role of information systems for urban planning and Kumar, et al 2016 on using fare-card data to advice transportation planning processes.

2.6 The identified research gap and the focus of this research project

As discussed in the previous paragraphs of this chapter, the existing bodies of academic literature and professional reports highlight the importance of adopting a holistic and multidisciplinary perspective in dealing with complex urban challenges. This argument is also valid when one focuses on governance and management of urban infrastructures to address complex problems associated with these sociotechnical systems. However, the existing training practices that should prepare future urban professionals, and/or help the existing urban practitioners to update their knowledge and skills, in order to address such complex problems from a holistic and multidisciplinary point of view are often criticized as not being effective enough to fulfill their promises.

Despite the recognition of this gap in the literature, there are very few systematic inquiries investigating the challenges associated with training urban practitioners to address complex problems in cities in general, and more specifically in urban infrastructures, from a holistic-multidisciplinary point of view. Furthermore, there are hardly any reports of empirical research on developing effective strategies for overcoming such challenges in the real world of professional training programs for urban practitioners. Table 2.1 provides a summary of the key findings among the existing studies that could partially shed light on this research gap and were identified in my extensive bibliographic research.

Table 2.1 – Summary of key findings of existing studies that shed light on the challenges in training practitioners to adopt a more holistic-multidisciplinary perspective, and strategies to overcome them

Authors	Context	Main findings/contributions
Holden et.al. (2008)	Developing a single graduate course about green buildings and sustainability in Canada	<ul style="list-style-type: none"> Keeping the theoretical discussions at a highly abstract level to enable participants from different background to engage in the course Using practitioners' input in the class to provide concrete examples Importance of reflection on the learnings, for both practitioners and students
Dimitriou (1988) – Transport Grieg (1995) – Water	Sector specific training programs (only addressing one infrastructure)	<ul style="list-style-type: none"> Usefulness of a combination of off the job and on the job training modules Usefulness of case methods to improve cross-disciplinary understanding of civil engineering students
Saltzman (1970) Stern (1993)	Improving urban planning courses Developing relevant urban management courses	<ul style="list-style-type: none"> Interaction between researchers and managers Interaction among 'discipline-oriented' and 'problem-oriented' faculty members
Steinman (2003)	Problem based learning strategies to teach one course improve sustainability initiatives on Georgia Tech campus	<ul style="list-style-type: none"> design of feasible projects keeping the enthusiasm appreciating the long time required for the implementation of projects

Kurland, et.al. (2010)	Undergraduate interdisciplinary course on sustainability	<ul style="list-style-type: none"> • 'lack of shared vocabulary' among the participants • 'different styles of lecturers and 'lack of clear and consistent leadership'
Garcia, et.al (2010)	Training program for social workers who deal with complex societal problems	<ul style="list-style-type: none"> • 'interactive curriculum' • 'recognition and enhancement of existing knowledge of participants' • 'using team teaching'
Pijwaka, et.al. (2013, p.25)	Education for Sustainable Development	<ul style="list-style-type: none"> • "Although sustainability has a growing presence in the planning and design professions, little guidance is available on how to incorporate sustainability into planning and design education programs".
Korobar & Siljanoska (2015) / Scholz, et al., (2006) Staniškis & Katiliūtė (2015) Vincent & Focht (2011)	Education for Sustainable Development	<ul style="list-style-type: none"> • Use of workshops / Transdisciplinary Case Studies (TCS) • Problem based learning / Importance of projects • Mix of mandatory and elective courses • Collaboration of university and non-university stakeholders • Flexible curriculum

This research project is aimed at addressing this research gap. More precisely, this research sheds more light on the challenges associated with training an international group of urban practitioners to address complex problems in governance and management of urban infrastructure systems from a holistic-multidisciplinary point of view. In addition, this research aims to develop some strategies to overcome these barriers and test if they are effective in practice.

To that effect, this research is developed around a full-scale Executive Master program geared towards urban practitioners; the IGLUS Executive Master. The IGLUS Executive Training program focuses on complex management/governance challenges in urban infrastructure systems. As will be discussed in the coming chapter, my methodology to address the elaborated research gap in this chapter is Action Research.

The reasons behind choosing Action Research as the methodological choice in this research project are the subject of next chapter of this thesis, but interestingly in the review of academic literature presented in this chapter, several papers emphasize the usefulness of Action Research as a powerful research methodology for inquiries into this topic. For example, Steinberg and Miranda (2005) highlight the importance of Action Research in combination with training initiatives as a 'successful formula' for educating professionals in urban development initiatives. Jensen (2016) proposes that Action Research can be useful for developing degree programs in the field of sustainable development²⁶. Korobar and Siljanoska (2015) argue that action learning and Action Research can be useful for improving interdisciplinary training practices for sustainable urbanism. Zubber-Skerrit

²⁶ Although this publication is published in a peer review journal (Cleaner Production), the arguments and structure of the paper are far from being clear and the research which was reported by the author do not satisfy quality criteria of Action Research, from my personal point of view. However, I am not in a position to doubt the authenticity of findings of this paper by Jensen.

(2015) strongly argues for the usefulness of action learning and Action Research strategies within the context of professional learning and adult education programs.

In the next chapter, I further elaborate on my methodological choice in this research.

Chapter 3 - Methodology

In this chapter I will elaborate the main philosophical and epistemological assumptions that guided my inquiry in this research project. I will also explain the research methodology which is used in this project. My position in this inquiry is explained and justified. Besides, the research design is outlined and the measures to ensure the quality of this research process are discussed. Last but not least, the ethical considerations associated with the research design and methodology are discussed.

3.1 Broader context of the project

This research project was defined around an Executive Master program that was focused on innovative governance of large urban systems. The Executive Training program was part of a larger research and education initiative called IGLUS; IGLUS Stands for Innovative Governance of Large Urban Systems. The IGLUS project was a global initiative at EPFL, CDM, MIR and was aimed at addressing fierce urban challenges thanks to training and research.

The Executive Training program was aimed at fulfilling a major objective within the larger context of the IGLUS project: to help urban practitioners to improve the performance of cities by tackling

complex problems related to governance of cities' large infrastructure systems by adopting holistic, multidisciplinary approaches. This was to be achieved by training practitioners with practice-relevant, yet scientifically rigorous knowledge.

I was hired for the period of 2012 to 2016 as a PhD student and as the coordinator of this Executive Training program. At the beginning of my collaboration in this project, in 2012, the Executive Training program was not yet realized and limited progress had been made in terms of both a detailed conceptualization of the program curriculum and the practical implementation of the project. This was a big challenge for me since I had to work on the implementation of the project in order to prepare my research setting. However, such challenges for preparation of the research setting is common for researchers who are engaged in field research (Herr and Anderson 2004).

3.2 Research questions and objectives

As a professional researcher; being a PhD student at EPFL, and the coordinator of the IGLUS Executive Training program, I²⁷ was interested in answering the following research questions based on the case of IGLUS Executive Training program:

What are the key challenges associated with training urban practitioners to analyze, and ultimately approach, complex urban problems from a holistic-multidisciplinary perspective?

And what are effective strategies to address these challenges in professional training programs?

The main research question, and the subsequent follow-up question, are rooted in the observation that although there is a strong and longstanding emphasis on the importance of holistic-multidisciplinary approaches for addressing complex urban problems in the academic literature and professional reports (e.g. Rittel and Webber 1973, Force 1999, State of world cities by UN-Habitat 2013), urban practitioners are not systematically trained to address complex urban problems from such a perspective. In most cases, urban practitioners are trained in specific disciplinary fields (e.g. civil engineering, architecture, public administration, economics, urban sociology, etc.). They often focus on their 'professional domain' (i.e. transport, energy, water, etc.) in their practices with very limited (if any) attempts to address urban challenges from a holistic-multidisciplinary point of view²⁸. Put it simply, there exists a tall order about the necessity of adopting holistic-multidisciplinary approaches by city practitioners to address complex urban problems, but little

²⁷ It is important to note that in this thesis, in some occasions I use the pronouns 'we' or 'our' instead of "I" or "my". These cases shall be limited to those instances when other people, such as the Academic Director of the program and my supervisor, lecturers, participants or contact persons in universities were also involved in the decisions, actions or conclusions that are discussed in the thesis.

²⁸ A great illustration of this point is the significant difficulties in implementation of the highly appreciated idea of integrated land-use and transport planning in cities (see for example: Waddell 2011, Godschalk 2004)

support is offered in professional training and development programs to enable them to do so in practice.

This research project was aimed at developing a roadmap for turning the 'idea' of empowering urban practitioners to 'adopt a holistic-multidisciplinary approach in analyzing complex problems' into a 'reality' in the context of IGLUS project. To that effect, two main objectives were considered for this research:

- 1) *Investigating the challenges associated with training urban practitioners to address complex problems in governance of large urban infrastructure systems from a holistic-multidisciplinary approach*
- 2) *Developing effective strategies to tackle the above mentioned challenges and testing the viability of these strategies in practice*

To this effect, the IGLUS Executive Training program, which was aimed at training urban practitioners about governance of large urban infrastructure systems, was chosen as the context of this research. The findings of this research were expected to be relevant and solid contribution to the academic literature, and at the same time to be useful to help improve the quality of the trainings provided in the IGLUS program.

3.3 Choice of Methodology

3.3.1 Research paradigm and the world view

Guba and Lincoln define a paradigm as *"a set of basic beliefs (or metaphysics) that deal with ultimates or first principles. It represents a worldview that define, of its holder, the nature of the 'world', the individual's place in it and the range of possible relationships to that world and its parts"* (Guba and Lincoln 1994, p.107). They discuss four major inquiry paradigms in social science, namely: positivism, post-positivism, critical theory and constructivism. Creswell (2013, p.6) uses the term 'worldview' as *"a set of beliefs that guide action"* (originally defined by Guba (1990, p.17)) as an equal term for paradigm. Acknowledging the ongoing debate about worldviews in the scientific community, Creswell proposes four major worldviews about knowledge claims, namely: positivism, constructivism, advocacy/participatory and pragmatism.

Providing a detailed review of different research paradigms is beyond the scope of this chapter. Instead, in the coming paragraphs I will briefly address six common research paradigms that are usually addressed in the academic literature (Creswell 2012, Guba and Lincoln 1994), namely: positivism, post-positivism, critical theory, constructivism, advocacy/participatory and pragmatism.

Guba and Lincoln propose three fundamental types of questions to explain a paradigm (1994, p. 108):

1. *“Ontological question: what is the form and nature of the reality and, therefore, what is there that can be known about it?”*
2. *Epistemological question: what is the nature of relationship between the knower or would be knower, and what can be known?*
3. *Methodological question: how can the inquirer (would-be knower) go about finding out whatever he or she believes can be known?”*

Based on these three dimensions, Guba and Lincoln compare the four main paradigms of research (positivism, post-positivism, critical theory and constructivism). I have adopted their updated categorization (Lincoln, Lynham and Guba 2011, p. 100) and extend it for two additional paradigms (pragmatism and advocacy/participatory) in table 3.1. Through a comparison of the different research paradigms (outlined in table 3.1) and my ontological, epistemological and methodological assumptions in this project (as outlined in table 3.2) I found the pragmatic research paradigm to be the most appropriate philosophical framework for this project. This argument will be explained in more detail in the proceeding.

This research project strongly focuses on addressing a real world problem thorough a systemic inquiry process²⁹. The research question that guides this research originated from the observation of a shortcoming in professional education. And, this research aims at finding solutions to enhance the learning outcomes of such training programs for urban practitioners. So, the ultimate goal of this research was not simply to reach a more complete understanding of our phenomena of interest, but instead to better understand the actions/interventions that may help improve the phenomena’s functionality, and to investigate if those actions/interventions can lead to some improvements in the current state of the system. Therefore, our assumptions about the purpose of this inquiry are very close to the ontological assumptions of the pragmatic research paradigm, which is interested in finding out what works the best, not what is the ultimate truth (Cresswell 2013). Last but not least, as a graduate student in engineering and business administration involved in different applied research projects throughout the past 8 years about the nature and purpose of scientific inquiry, I find the pragmatic research paradigm to be the most closely related research paradigm to my personal views.

In addition to the match between the aims of this project and my personal perspective on scientific inquiry with the ontological assumptions in the pragmatic research paradigm, the choice of pragmatic research paradigm in this research project can be well justified at the epistemological and methodological levels, as well. This research project encompasses several stakeholders whose viewpoints were very important to our inferences. In addition to myself, as the coordinator of the training program and a researcher, the director of the program, Prof. Matthias Finger, had a very strong interest in improving the IGLUS program based on findings from this project and his view points were important in guiding the project and interpreting the results of this inquiry. Additionally, the partner universities, firms and international organizations who provided input to the IGLUS program had a special interest in the results of the trainings, thus their viewpoints should have been

²⁹ In the next sections I discuss how this research is different from normal problem solving endeavors

taken into account as well. Last but not least, the participants in the training program were also very important stakeholders in this research project for at least two reasons. Firstly, this research project (which was associated with the IGLUS training program) could have important impacts on the knowledge and competencies of the practitioners who participated in the IGLUS Executive Training program. Thus, the opinions of this group about the results of this inquiry were of high importance for us. Secondly, since these practitioners all had personal opinions on many of the issues that were subject of the training program (as experts), their opinions of the project results were even more important than non-expert participants'. The very nature of having a variety of perspectives about almost all elements of the project, and my role to reconcile them in this project, is very much in line with the epistemological assumptions of the pragmatic research paradigm (see table 3.1 for more details on epistemological assumptions of different research paradigms).

To explain the methodological match between the pragmatic research paradigm and this project, I should note that the research methodology used in this research project is Action Research³⁰ (AR). Action Research, as a research methodology, was originally developed based on the notion of reflective inquiry, which has its roots in the works of John Dewey (McKernan 1988, Berns 2005, Kemmis and McTaggart 2007, Cohen. Et.al 2007, Anderson and Herr 2014), one of the main philosophers who influenced the pragmatic research paradigm (Cresswell 2013). McCutcheon and Jung (1990) discuss that Action Research is compatible with different research paradigms (interpretive, positivist and critical). Some authors like Stringer (2013) and Gray (2013) associate Action Research to the constructivist paradigm due to its common reliance on qualitative methods. Another group of AR researchers, like Reason and Heron, attribute participatory forms of AR to the participatory research paradigm, which is close to constructivism (Heron and Reason 1997). Following a seminal publication by Carr and Kemmis (1986), there has been a growing tendency to use critical theory (Frankfurt School) as a basis for justifying the merits of Action Research (Cohen et.al. 2007). However, some other scholars like Ivanovna (2014), Greenwood and Levin (1998), and many of the Scandinavian Action Research scholars discuss the pragmatic nature of Action Research inquiry (Nielsen and Nielsen 2006).

Despite all the divergences in the AR community, which is a relatively fragmented community (Bradbury 2015), there is general agreement in the AR community that Action Research as a methodology is very eclectic in choosing its methods (McNiff and Whitehead 2011, Stinger 2007) to deal with practical demands of dealing with real world problems (Zuber-Skeritt 2015, for more references please see table 3.4). As it will be illustrated in the next pages, in this project several different data collection and analysis methods are used to address a research question that is aimed at resolving a real world problem; thus, I agree that in this project, the methodological assumptions are very much in line with the methodological assumptions of the pragmatic research paradigm.

³⁰ The reasons behind choosing this methodology, special characteristics of this research methodology and its implications for my research is elaborated in the next sections.

Table 3.1 – Six main research paradigms

	Positivism	Post-positivism	Critical theory	constructivism	Advocacy/ participatory	pragmatism
Ontology	Naïve realism - There is a 'real' reality, though apprehendable	Critical realism - There is a 'real' reality, but only imperfectly apprehendable	Historical realism - There is a virtual reality shaped by social, political, cultural, economic, ethnic and gender values which is crystalized over time	Relativism - local and specific constructed realities	Participative reality - subjective/objective reality, co-created by mind and give cosmos	Mixed - Less interested in determining what is the truth than finding what works.
Epistemology	Dualist, Objectivist: If research is well done by researchers who try to remain objective and don't influence the outcomes, results are true.	Modified objectivist; critical tradition/community: the goal is objectivity but it is impossible to achieve, so the results are probably true	Transactional/subjectivist: mediated findings (through the researcher's perspective)	Transactional/subjectivist: created by findings researcher and participants who are linked together	Critical subjectivity in participatory transaction with cosmos; extended epistemology of experiential, propositional and practical knowings: Co-created findings	Many different viewpoints are accepted; pluralistic means are needed to reconcile those perspectives
Methodology	Experimental/manipulative; verification of hypothesis; mainly quantitative methods	Modified experimental/manipulative; falsification of hypotheses; may include qualitative and quantitative methods and use qualitative validity techniques (i.e. triangulation) to reduce the bias	Dialogic/dialectical; using dialogue to uncover subjugated knowledge	Hermeneutical/dialectical; conducting research through dialogue	Political participation in collaborative action inquiry; primacy of practical; use of language grounded in shared experiential context	The focus is a real world problem and the appropriate methodology is what results in the intended change in the practice, mixed methods are very common.

Adopted from Lincoln, Lynham and Guba 2011, p. 100 – extended and slightly modified by the author based on Cresswell 2013 and Harvard's Q platform³¹

³¹ <http://isites.harvard.edu/icb/icb.do?keyword=qualitative&pageid=icb.page340910> – Accessed on 15 Jan. 2016.

Table 3.2 compares the philosophical assumptions made in this project to the pragmatism paradigm. As it can be seen in the table, the philosophical assumptions underlying this research project are very much in line with the pragmatic world-view on all the three levels of ontology, epistemology and methodology.

Table 3.2 – Comparison of philosophical assumptions in this project and the pragmatic research paradigm

	This research project	Pragmatism paradigm
Ontological assumptions	We wanted to address the challenges in training practitioners to address complex problems using a holistic- multidisciplinary approach, and in this regard, improve the quality of the IGLUS Executive Master program.	Mixed – Less interested in determining what is the truth than finding what works.
Epistemological assumptions	The project had several stakeholders with diverse perspectives whose opinions were very important (i.e. myself, the director of the program, partner universities, external partners, participants).	Many different viewpoints are accepted; pluralistic means are needed to reconcile these perspectives
Methodological assumptions	This inquiry started from observing a real world problem and having a strong desire to resolve it. The appropriate methodology was developed accordingly in order to address the practical research question. Several methods for data collection and analysis are combined to ensure the best possible results.	The focus is a real world problem and the appropriate methodology is what results in the intended change in the practice, mixed methods are very common.

I will explain the details of my methodological choice further in the coming pages.

3.4 Action Research as my Methodology

Cresswell (2013) points to the ‘match between the problem and approach’ as one of the main selection criteria for determining an appropriate research approach. In the pragmatic research paradigm, as adopted in this project, the starting point for the inquiry is the definition of the problem; and the methodology is subsequently chosen on the basis of its appropriateness to address the problem. Thus, I have chosen Action Research as my methodology because of its appropriateness to the research problem I am investigating. In the coming paragraphs, I briefly recall the objectives and context of this research and then provide some general arguments why Action Research is an appropriate methodology for this research. However, I will not go into the details of Action Research methodology as it is fully covered in the next section of this chapter. I will then address why other research methodologies are not superior to my choice in this research project.

3.4.1 Match between the goals of the project and AR

The aim of this research project is to understand the main challenges associated with training urban practitioners to adopt holistic-multidisciplinary approaches when addressing complex urban infrastructure governance problems and developing strategies to tackle these challenges. Indeed, this research project has been originally defined around the IGLUS Executive Master program and one of the objectives of this research endeavor was to improve the quality of this specific training program; alongside contributing to the existing body of knowledge about design and implementation of effective professional training programs in the urban context. In other words, the outcomes of this research were expected to be scientifically rigorous, while remaining practically relevant. This dual objective is also reflected in the double role I play in the project, acting as both coordinator of the IGLUS training program and a professional researcher.

Action Research is aimed at developing practice relevant knowledge, through critical reflection on actions, in order to improve practices in specific contexts and also contribute to the scientific body of knowledge (Bradbury 2015, Zuber-Skerritt 2015, Reason and Bradbury 2008, Hinchey 2008, McNiff and Whitehead 2011, Kemmis and McTaggart 2007). An emphasis on improvement of practices, or in Stringer's words: "making a difference", and putting action at the center of research process is one of the most important features differentiating Action Research from traditional research methodologies (Herr and Anderson 2005 & 2014, Stringer 2013, Tripp 2005). Therefore, considering that one of the main objectives of this research project is to improve the practice of professional training (not only study it), by using the IGLUS Executive Training program as the research context, Action Research seemed to be the natural choice among different potential methodologies for this project.

3.4.2 Match between my position in this project and the positionality of researcher in AR

In Action Research, the traditional distinction between the researchers and practitioners (who are often the subjects of traditional research) is challenged and the research is often conducted by those who are insiders to the subject of inquiry and/or feel a strong responsibility for the practices that they are investigating (Kemmis and McTaggart 2007, Herr and Anderson 2005 & 2014, McNiff and Whitehead 2011, Bradbury 2015). My position throughout this research inquiry was an insider researcher, and not an outsider detached from his research subject. Holding this position is widely accepted in the AR tradition, while it is highly controversial in traditional research methodologies (Herr and Anderson 2005, pp 29-48, McNiff 1995). Acknowledgement of this positionality and encouragement for AR researchers to clearly express their insider position, when it is so³², in AR inquiries are also strong reasons for choosing AR as the research methodology of this project.

³² For a thorough discussion on different positionality of researchers in AR inquiries, see Herr and Andersson 2004, pp. 29-48

3.4.3 Match between the context of the project and AR

Action Research is widely, and indeed mostly, used in educational research settings (both in schools and professional education) to improve the learning of both the educators and the recipients of the education (Elliot 1990, Carr and Kemmis 1986, McKernan 1988, Kemmis and McTaggart 2007, Stringer 2013, Herr and Anderson 2014). Since this research project was developed around a global professional training program, Action Research was considered as one of the top candidates for this inquiry due to its perfect match with the research context.

3.4.4 Comparison of AR with other common research methodologies

Considering the above mentioned arguments, Action Research seemed to be the best methodology choice for this research project. The persuasive fit between AR and my research objectives and the research context was the most important reason for choosing my methodology. However, to make the final decision about my methodology choice, I also compared AR with other common research methodologies used in social science to make sure that my choice is the most appropriate methodology for this project. Table 3.3 provides a summary of the main research methodologies and is used as a basis for evaluating their fits with the objectives outlined for this research.

Based on the brief comparison in table 3.3 quantitative methods like econometrics or simulation are not good matches with the purpose and type of problems that this research is dealing with. Among the qualitative methodologies, the types of problems that case study methodology addresses (to provide an in-depth understanding of a case) are relatively close to the problem that we studied in this research. However, the purpose of the case study methodology (understanding) does not align with the purpose of this research (understanding and changing). The other methodologies are even less justifiable for this project due to the different focus and type of problems which they are suitable for.

As is illustrated in table 3.3 and explained in previous paragraphs, Action Research is the most suitable research methodology for the purpose of this project and, more generally, for the type of problem that this research is dealing with. Based on this comparison, and the inherent merits of Action Research discussed previously, I can confidently conclude that AR is *the* research methodology that is best adapted to this project.

Table 3.3 – Comparison of different research methodologies

Characteristics	Quantitative methodologies			Qualitative methodologies					
	Econometrics	Experiments/ simulations		Case study	Phenomenology/ Ethnomethodology	Action Research	Ethnography	Grounded theory	Narratives and life histories
Focus/purpose	Analyzing large-scale data in order to make generalization	Finding cause and effect relationships/ understanding the impacts of potential interventions under controlled condition		Developing an in-depth description and analysis of a case or multiple cases	Understanding the essence of the experience	Pragmatic co-creation of practical knowledge	Describing and interpreting a culture-sharing group	Developing a theory grounded in data from the field	Exploring the life of an individual
Type of best problems suited for	Testing hypothesis by using context-free data	Understanding the relationships among a limited number of variables under controlled conditions		Providing an in-depth understanding of a case of cases	Needing to describe the essence of a lived phenomena	Finding solutions for real problems to meet the real needs in specific contexts / improving practices and promoting collaboration	Describing and interpreting the shared patterns of a culture of a group (qualitative data)	Grounding a theory in the views of participants (using extensive amount of qualitative data)	Needing to tell stories of individual experiences
References	Adopted from Cohen, et al., p 84	Adopted from Cohen, et al., p 84		Adopted from Cresswell 2013 p.104	Adopted from Cresswell 2013 p.104	Adopted from Bradbury 2015 p.1-85 Cohen et.al. 2007 p. 85	Adopted from Cresswell 2013 p.104	Adopted from Cresswell 2013 p.104	Adopted from Cresswell 2013 p.104
Match between the purpose of methodology and aims of this research	---	---+		---+	---	+++	---	---+	---
Match between the types of problems addressed by methodology and this project	---	---		---+	---	+++	---	---	---

On the basis of general characteristic, a research methodology might look appropriate for a research inquiry in the first look. However, choosing a research methodology for a rigorous inquiry in social science requires much careful investigation of the underlying assumptions and details of the methodology. So, in the next section I will elaborate the details of the Action Research methodology.

3.5 A detailed look at Action Research as a methodology

3.5.1 Action Research as a methodology

In this section, I further elaborate on the use of Action Research as the main research methodology in the research project. Since Action Research is a relatively new research approach to main stream academic contexts and its application may be controversial for some scholars (Herr and Anderson 2004, Stringer 2014), I provide a more detailed review of the family of AR methodologies in this section and then discuss my specific methodology and research design in this project.

3.5.1.1 Definition

Having first appeared in the academic literature in the 1950's, Action Research is a relatively new research methodology. Most references recognize Kurt Lewin's work on 'Action Research and the minority problems' (Lewin 1946) as the starting point for the conceptualization of Action Research as a social research methodology (Tripp 2005). Publication of the book 'Action Research to Improve School Practices' (S.M. Corey 1953) brought more attention to this methodology in U.S. (McNiff and Whitehead 2011). Since then, AR has rapidly grown to become one of the most used methodologies in the field of education research. According to Cohen, et al., *"the scope of Action Research as a method is impressive. It can be used in almost any setting where a problem involving people, tasks and procedures cries out for solution, or where some change of feature results in a more desirable outcome"* (L. Cohen et al., 2007, p. 297). Greenwood and Levin (1998, p.8) support this statement and emphasize the implications of using Action Research in a diverse set of fields such as social work, education, engineering, planning, and psychology, etc.

Action Research is concerned with actions, or cycles of actions, that are aimed at improving practices in organizations or communities (Herr and Anderson 2014). Ernest Stringer describes Action Research as a systematic investigation approach that helps people to find effective solutions in localized contexts (Stringer 2007). McNiff and Whitehead (2011) define Action Research as a form of inquiry aimed at helping the practitioners to improve their job practices. John Elliot (1991, p. 49) proposes that the *"fundamental aim of Action Research is to improve practice rather than to produce*

knowledge. The production and utilization of knowledge is subordinate to, and conditioned by, this fundamental aim". In their Handbook of Research Methods in Education, Cohen, Manion and Morrison (2007) discuss six potential purposes for Action Research inquiries, these are given as:

1. *"To plan, implement, review and evaluate an intervention designed to improve practice/solve local problem*
2. *To empower participants through research involvement and ideology critique*
3. *To develop reflective practice*
4. *To promote equality/democracy*
5. *To link practice and research*
6. *To promote collaborative research"* (adopted from L. Cohen, et.al. 2007, p. 85)

Although Action Research has a strong focus on improving practices in real world settings, it is different from the traditional problem solving practices as Kemmis and McTaggart (1992, p.10) mention: *"to do Action Research is to plan, act, observe and reflect more carefully, more systematically, and more rigorously than one usually does in everyday life"*.

McKernan defines Action Research as *"a form of self-reflective problem solving, which enables practitioners to better understand and solve pressing problems in social settings"* (McKernan 1988, p. 6). Donald Schon (1991, p. 320) also highlights the importance of reflection by emphasizing the 'competence for systemic reflection' as a corner stone of action-science³³ practices.

After reviewing different definitions of Action Research from leading scholars in the field, Ivankova (2014, pp 27-29) proposes Hinchey's definition as one of the most comprehensive definitions of Action Research. According to Hinchey, Action Research is defined as:

"A process of systematic inquiry, usually cyclical, conducted by those inside a community rather than outside experts; its goal is to identify action that will generate improvement the researchers believe important" (Hinchey 2008, p.4).

In their highly cited Handbook of Action Research, Peter Reason and Hilary Bradbury define Action Research as:

"A participatory process concerned with developing practical knowing in the pursuit of worthwhile human purposes. It seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and their communities" (Reason and Bradbury 2008, p. 4).

Since the various definitions of AR cover some (and not all) of the different features of the family of AR methodologies, in the next section I provide an overview of main features of the AR methodologies.

³³ Action Science is often seen as one of the branches of Action Research.

3.5.1.2 Main features of the family of AR methodologies

Based on the review of Action Research methodology literature, I have synthesized a summary of the main characteristics of Action Research; the results are summarized in table 3.4. According to the references mentioned in this table, the inquiries that are conducted by using methodologies that belong to the Action Research family share most of these common features (detailed explanation in table 3.4):

1. Aimed at improving actions/practices
2. Aimed at providing a better understanding of the complexities of the investigated practices (development of practice-relevant knowledge)
3. Systematic and purposeful
4. Based on critical reflective processes
5. Have a special focus on context specificities
6. Often participatory/collaborative
7. The researcher is closely attached to the researched (in contrast to the detachment between the researcher and researched, which is more typical of traditional research)
8. Often challenge the status quo (especially in emancipatory AR)
9. Expected to pass the double standards of scientific rigor and practical relevance

Table 3.4 - Main features of Action Research (source: author's own compilation)

Main features	Description	Main authors who address the feature
Action oriented interventions - improved practices	Action Research is about purposeful interventions that are aimed at improved practices in special settings (classroom, clinics, neighborhoods, etc.)	Lewin, Corey, Argyris, Putnam, McLain, Schon, McKernan, Greenwood and Levin, Elliot, Avison, McNiff, Whitehead, Kemmis, Carr, McTaggart, Cohen, Manion and Morrison, Tripp, Hinchey, Stringer, Anderson and Herr, Reason, Bradbury, Ivankova
Development of practice-relevant knowledge / theories in use and espoused theories	Action Research should result in a better understanding of the complexities in the practices under investigation	Lewin, Argyris, Putnam, McLain, Schon, McNiff, Whitehead, Kemmis, Carr, McTaggart, McKernan, Tripp, Greenwood and Levin, Hinchey, Stringer, Anderson and Herr, Reason, Bradbury, Ivankova
Systematic	Action Research is a systematic process of inquiry that follows rigorous procedures for data collection and analysis.	Lewin, Corey, Argyris, Putnam, McLain, Schon, McKernan, Avison, McNiff, Whitehead, Kemmis, Carr, McTaggart, Cohen, Manion and Morrison, Tripp, Hinchey, Stringer, Anderson and Herr, Reason, Bradbury, Ivankova
Critical self-reflection / Cyclical nature	In the Action Research process, the researcher critically reflects on his/her own practices and assumptions in order to design interventions (plan actions) and evaluate the results of these actions.	Lewin, Argyris, Putnam, McLain, Schon, McKernan (not in 1991 handbook), Avison, McNiff, Whitehead, Kemmis, Carr, McTaggart, Tripp, Hinchey, Anderson and Herr, Reason, Bradbury, Ivankova
Context specificity	Action Research is concerned with addressing challenges in special local settings and always starts with a 'small' focus. In most cases, action inquiries are not aimed at providing grand theories (an exception: Action-Science starts from contextual problems but aims at finding general theories of action)	Lewin, Corey, Argyris, Schon, McKernan, Elliot, Avison, McNiff, Whitehead, Kemmis, Carr, McTaggart, Tripp, Hinchey, Stringer, Anderson and Herr, Reason, Bradbury, Atkins and Wallace
Collectiveness / Participatory / Collaborative / Research by or with, not on people (seen as a technique, seen as a principle)	Action Research is often a collaborative process; collaboration might be with other Action Researchers or through the direct participation of stakeholders in the Action Research project	Lewin, Corey (partly), Elliot, Greenwood and Levin, Avison, Carr, Kemmis, McTaggart, McKernan, Tripp (partly), Stringer, Reason, Bradbury, Ivankova
Attachment of the researcher to the researched (in contrast to the detachment of research from the researched in tradition research)	Action Research is value laden and is conducted by those who feel responsible for a shortcoming.	Lewin, Corey, McKernan, Elliot, Avison, McNiff, Whitehead, Kemmis, Carr, McTaggart, Tripp, Hinchey, Stringer, Anderson and Herr, Reason, Bradbury, Ivankova
Social improvement - Emancipatory - Democratization - Community focus - Empowerment - Challenging the status quo	Action Research is a socially critical process that aims to improve issues related to social justice, equality, labor relations, poverty reduction, etc.	Corey, McKernan, Elliot, McNiff, Whitehead, Kemmis, Carr, McTaggart, Hinchey, Stringer, Anderson and Herr, Reason, Bradbury, Ivankova
Passing the double standards of applicability and scientific rigor / enhancing practices and improving knowledge simultaneously	The results of action oriented inquiries should be theories that pass two tests: They should be able to improve the practices and also meet the high standards of scientific knowledge (fallibility, clear propositional formulation, etc.). This view is mostly present in the action science discourse and is contradicted by some AR scholars like Jack Whitehead (2009) who emphasize the importance of adopting living educational theories as an alternative for propositional theories.	Argyris et al., Schon. Cohen et al.,

3.6 The fit between main features of AR and this research

Based on the summary of the general features of Action Research methodology (table 3.4) and considering the characteristics of this research project, it is now possible to conduct a more detailed analysis of whether or not AR is the most appropriate research methodology for this project. Table 3.5 illustrates how different features of AR are matching the characteristics of this research project.

Table 3.5 – comparison of main features of AR inquiries and this project (source: author's own compilation)

Main features of AR	Characteristics of this project
Action oriented (purposeful interventions – improved practices)	This research was developed around an Executive Training program, IGLUS, and one of the main focuses of the research was to improve training practices that can help practitioners to adopt holistic analytical approaches towards the analysis of complex problems.
Development of practice-relevant knowledge (better understanding of the practices)	The research question that has driven this research project was rooted in the observation of a practical challenge and the research was aimed at understanding the real world challenges associated with training practitioners to analyze complex-multidisciplinary urban phenomena and develop effective strategies to tackle them.
Systematic	This project was based on a rigorous and systematic inquiry procedure that ensured the careful planning of each training module and consecutive data collection and analysis steps for each of the training modules (Action Research cycles).
Critical self-reflection / Cyclical nature	The modular structure of the training program provided a great opportunity for cycles of critical reflection on our actions. As will be discussed in the coming chapters, on account of the cyclical nature of these critical reflections, we were able to modify our training strategies for the IGLUS program from the first to the fourth training module; resulting in a new design for the next editions of the program.
Context specificity/Small focus	The focus on the project was the first edition of the IGLUS Executive Training program with a small number of participants (10-15 urban practitioners) who attended the training modules from 2014 to 2015.
Collectiveness / Participatory / Collaborative / Research by or with, not on people (seen as a technique / seen as a principle)	This project had several stakeholders whose points of view should have been taken into account throughout the different steps of the project. Most importantly, the participants in the training modules were always encouraged to share their knowledge and opinions regarding the content of the sessions as well as their learning experience throughout the training modules. I should mention that the collaboration level in this research is less than what PAR inquiries propose (which will be discussed in the coming paragraphs), but our project meets higher than the expected levels of collaboration deemed acceptable in the broader Action Research community.
Attachment of the researcher to the researched	My position in this research project can be best described as a professional, but Insider researcher. I was actively engaged in the IGLUS project and felt responsible for the quality of our training program, but in the same time I was also had a strong commitment to conduct a professional research inquiry as a PhD student at EPFL.
Social improvement/ Emancipatory, Democratization/ Community focus/ Empowerment/ Challenging the status quo	Emancipatory goals are mostly a feature of PAR, Radical AR or Critical AR approaches. In several other traditions of AR such as traditional AR, improvement of practices is more highlighted than challenging the societal status quo. The main aim of this project was to improve training practices and not to challenges or change the broader social context in which our participants were working.
Passing the double standards of applicability and scientific rigor (relevance to the practice and improving knowledge simultaneously)	In addition to reporting our findings in this thesis in the light of academic literature, we were discussing our action plans for each of the action inquiry cycles (training modules) and the consecutive results from them by a diverse group of stakeholders from academia, participants and expert-lecturers (from organizations) which helped us to ensure both scientific rigor and practical relevance of our findings.

Using table 3.5, I would argue that the characteristics of this research project are in great coherence with the main features of Action Research inquiries. So, besides the general arguments in favor of choosing AR as my methodology in this project, I shall argue that a close investigation of principles and assumptions in the AR tradition of inquiry reinforces my decision to choose AR as the main methodology in this project.

Considering the fact that Action Research is a family or research traditions, and not only one, in the next section I will elaborate my specific choice of Methodology among different traditions of AR inquiries.

3.7 Specific choice of methodology from the AR family

3.7.1 Different varieties of Action Research Methodology

The broad family of Action Research includes several methodologies which are labeled with a diverse set of names in the Action Research literature, such as educational Action Research, participatory Action Research, critical Action Research, radical Action Research, feminists research, collaborative enquiry, etc. (Anderson and Herr 2005, p. 2). The different traditions of Action Research attribute different levels of importance to the main characteristics that are associated with the broad family of Action Research methodology (Tripp 2005). Although these AR traditions share some common principle features, such as action oriented focus, in some cases they have different epistemological assumptions (Nielsen and Nielsen 2006). So, a careful selection of the appropriate Action Research methodology based on the research context and the research question, among the diverse set of methodologies in the Action Research family is a necessity without which the research project might lose its intellectual rigor and coherence (Avison 1999, Anderson and Herr 2014).

In the coming paragraphs I will provide an overview of some of the main methodologies that belong to the Action Research family and summarize them in table 6. This overview shall explain the logic behind my specific choice of methodology and help to further clarify the basic philosophical, epistemological and ontological assumptions that underlie this research project.

Some of the main authors in the field of Action Research have attempted to provide an overview of the different sub-categories that have been developed since the first appearances of the term 'Action Research' in the academic literature, as introduced by Collier (1945) and Lewin (1946). For example, Anderson and Herr (2004, pp 11-25) review different traditions of Action Research such as Action Research in organizational development and learning; Action science; Participatory research and the seminal contributions of Paulo Freire; Participatory evaluation; Action Research in education; the teacher as a researcher movement in Britain; the practitioner researcher movement in North America; and Action Research as self-study or autoethnography. Another contribution by Zuber-

Skerritt (2015) highlights Action learning; Life-long action learning; Traditional/practical Action Research; Educational action learning; Collaborative Action Research; Participatory Action Research; Critical Participatory Action Research; Action science; and Appreciative inquiry as the main varieties of Action Research methodologies. Kemmis and McTaggart (2007, pp. 272-276 written for: strategies of qualitative inquiry, Denzin and Lincoln 2007) discuss seven major approaches to Action Research: namely, Participatory Research, Critical Action Research, Classroom Action Research (educational), Action Learning, Action Science, Soft Systems Approaches and Industrial Action Research. Greenwood and Levin (1998, p. 128) underscore “*southern participatory Action Research, feminist research, organizational learning, human inquiry, cooperative inquiry, action inquiry, education base approaches to Action Research, participatory evaluation and participatory rural appraisal*” as main varieties of Action Research and introduce their own approach which they call Pragmatic Action Research. In another publication, McNiff and Whitehead (2011, pp 11-13) discuss Participatory Action Research, feminist participatory Action Research, educational Action Research, practitioner Action Research, action learning and action science, self-study Action Research, first-person Action Research and living theory Action Research. Finally, O’Brien (1998) considers Traditional Action Research, Contextual Action Research (Action Learning), Radical Action Research and Educational Action Research to be the four main approaches to Action Research.

The fact that different labels are used for traditions with some common overlap as well as the distinctions made between the three primary schools of thought in the Action Research literature have made it difficult to clearly distinguish and compare the underlying assumptions of specific AR traditions. In order to clearly illustrate the main features and assumptions of my specific choice of methodology from all possible options in the suite of AR methodologies, in the coming paragraphs, I will briefly review the eight most important Action Research traditions as well the three main schools of thought in the field and further justify my choice on the basis of this review.

3.7.1.1 Traditional Action Research

Traditional Action Research is usually associated with the works of Kurt Lewin and his iterative inquiry cycles of planning, acting, observing and reflecting (Herr and Andeson 2014). Although an overview of the definitions of Action Research was provided in the previous paragraphs, I shall use the words of Argyris and Schon to recall the definition of traditional Action Research:

“... Action Research takes its cues – its questions, puzzles, and problems- from the perceptions of practitioners within particular, local practice contexts. It bounds episodes of research according to the boundaries of the local context. It builds descriptions and theories within the practice context itself, and test them there through double burden of testing hypotheses and effecting some (putatively) desirable change in the situation” (Argyris and Schon, 1989, p.612).

Traditional AR is often conducted by professional researchers (generally consultants or change agents) and focuses on issues related to efficiency and improving practices (Herr and Anderson 2005). In this tradition, analysis is usually focused at the individual or group level and rarely includes broader societal factors (Brown and Tandon 1983).

3.7.1.2 Action Research in organizational development (OD)

The origins of using Action Research for organizational change and development goes back to Kurt Lewin, who is known as the father of the field of organizational development. Nowadays, AR is a widely used inquiry strategy that is used to understand the process of organizational change and to improve efficiency in organization. According to Cummings and Worley: *"the Action Research model will continue to be the dominant methodological basis for planned change in the near future"* (2014, p.26).

In most OD models, the role of an OD consultant (an Action Researcher) is widely recognized as the facilitator of the learning and change process in the organization. During the OD process, members of the organization will learn how to implement a planned change in the organization while the OD consultant will gain an improved understanding of the process of facilitating a complex change process.

3.7.1.3 Participatory Action Research (PAR)

Participatory Action Research (PAR) is one of the most recognized traditions of Action Research—largely due to its controversial approach to social research that often results in challenges to the status quo, (Anderson and Herr 2004). In PAR, the researcher works with and for the community throughout all phases of the project; simply put, it is a methodology that conducts research *with* people, not *on* people. Paulo Freire's (1970) work on education of illiterate adults in Brazil and other Latin American countries is usually associated as one of the main origins of PAR (McArdle & Reason 2008).

Kemiss and McTaggart discuss seven main features of PAR. They propose that PAR is: 1) a social process, 2) participatory, 3) practical and collaborative, 4) emancipatory, 5) critical, 6) reflexive and 7) aimed at transforming both theory and practice (Kemiss & McTaggart 2007, pp.280-283).

PAR projects usually have two objectives; the first objective is to generate knowledge and action that is useful for the community to overcome their immediate problems (e.g. to educate illiterate adults). The second objective of PAR is to empower the local stakeholders at a deeper level so that they are able to 'see through' the existing power structure and challenge the status quo in order to bring about social justice and greater equality to their society (McArdle & Reason 2008). In PAR, there is a strong emphasis on the participatory nature of the research. Participation should not be only understood as a means to overcome political obstacles in the change process nor as a mere expression of democratic principles. In PAR, participation is 'the' means to re-interpret results during the Action Research process and also a strong tool to 'discipline the subjectivity' of the stakeholders (including the researcher) in the AR process (McTaggart 2002).

3.7.1.4 Action Science

Argyris and Schon, who are the main theorists of action science define it as:

“a form of Action Research that, although it shares the values and strategy described above [about Action Research], places a central emphasis on the spontaneous, tacit theories-in-use that participants bring the practice and research, especially wherever feelings of embarrassment or threat come into play” (Argyris and Schon 1989, p. 613).

In their book, ‘Action Science’ Argyris, Putnam and Smith note that action science seeks knowledge that serves action. They define the action scientist as *“an interventionist who seeks both to promote learning in the client systems and to contribute to general knowledge. This is done by creating conditions for valid inquiry in the context of practical deliberation by members of client systems”* (Argyris et.al. 1985, p. 36). Action science, and especially its founding theorist; Argyris, aims to solidify the scientific dimension of Action Research by criticizing the increasing weight of problem solving focus against theory building/testing focus in the Action Research community (Anderson and Herr 2004).

3.7.1.5 Action Learning

Some scholars distinguish Reginald Revans as the originator of action learning, especially in the field of management (Pedler 2011). Revans emphasizes the importance of ‘action’ and ‘questions that arise from practice’ to the process of learning and talks about ‘learning by doing’, explaining that no learning can occur without action and no action can be taken without learning (Revans 1982).

According to Zuber-Skerritt *“action learning means learning from action or concrete experience, as well as taking action as a result of this learning”* (Zuber-Skerritt 2001, p.2). Simply put, action learning is based on the idea that people can learn from each other’s experiences (Kemmis and McTaggart 2007). Some scholars call action learning ‘contextual Action Research’ and focus on the importance of involving all parties and stakeholders in a holographic learning experience, meaning that each actor should understand the inner-workings of the whole system and not only his or her part of the work (O’Brien 1998). Action Learning facilitators are involved in developing such arenas for experience sharing and collective reflection on the practices in order to help the stakeholders gain a better understanding of the problems and consequently find more effective solutions to tackle them.

3.7.1.6 Educational Action Research

Education is one of the most prevalent contexts for Action Research inquiries (Greenwood and Levin 1998). The intellectual roots of educational AR go back to John Dewey, an education philosopher, who emphasizes the importance of human experience (i.e. that of professional educators) as an important source for knowledge generation (Herr and Anderson 2004, O’Brien 1998, Dewey 1938).

Educational Action Research is aimed at improving the educational experiences (for the educator, students, society, etc...) by empowering the educators and education researchers to systematically reflect on their educational practices and come up with action plans to improve them. This methodology has been widely used in school settings (classroom Action Research, teacher as researcher, etc...). Elliot (1991) considers different activities such as teaching, educational research,

curriculum development and evaluation to be integral dimensions of education AR. Carr and Kemmis (1986) define educational Action Research as:

"... a term used to describe a family of activities in curriculum development, professional development, school improvement programs, and systems planning and policy development. These activities have in common the identification of strategies of planned action which are implemented, and then systematically submitted to observation, reflection and change. Participants in the action being considered are integrally involved in all of these activities." (pp.164-165)

It is also worth noting that educational Action Research has several varieties inside itself, such as classroom AR, critical AR, etc. (Kemmis and McTaggart 2007). In earlier conceptualizations of educational Action Research, it was widely accepted that external education researchers should conduct classroom Action Research projects in collaboration with the teachers. However, during 1960s the movement of 'teachers as researcher' in Britain challenged the central/federal curriculum development approaches and tried to put the teachers in the core of educational research and practices (to make decisions); transitioning their role from their more traditional position as implementers of what has been designed and decided for them to active forces in decision making processes. In summary this constituted a movement changing the social context, and not only the educational practices (Elliot 1991, McKernan 1988, Kemmis and McTaggart 2007). After this period, Action Research in education became so prevalent that many authors, especially those in the field of education, no longer differentiate between Action Research and educational Action Research.

3.7.1.7 Emancipatory Action Research

Many scholars in the field of Action Research believe that researcher and/or community empowerment is a corner stone of Action Research (Cohen, et al., 2007, Invakova 2014). Carr and Kemmis (1986) claim that emancipatory AR is the form of Action Research that best adheres to the values of critical educational science. Zuber-Skerritt defines emancipatory Action Research as a *"collaborative, critical and self-critical inquiry by practitioners (e.g. teachers, managers, etc.) into a major problem or issue of mutual concern in their organisation"* (Zuber-Skerritt 2001, P. 19). She strongly emphasizes the role of 'practitioners' who own the problems in solving their own problems and improving the condition 'for themselves'. However, some other scholars, such as Paulo Freire, focus on the importance of empowering suppressed groups (e.g. illiterate adults in Brazil, farmers in rural areas) and improving social justice and equity in the society (not only in the practitioner's professional context). Kemmis and McTaggart (2007) explain the emancipatory dimensions of PAR as:

"Participatory Action Research is emancipatory... [it] aims to help people recover, and release themselves from, the constraints of irrational, unproductive, unjust, and unsatisfying social structures that limit their self-development and self-determination. It is a process in which people explore the ways in which their practices are shaped and constrained by wider social (cultural, economic, and political) structures and consider whether they can intervene to release themselves from these constraints—or, if they cannot, how best to work within and around them to minimize the extent to which they contribute to irrationality,

lack of productivity (inefficiency), injustice, and dissatisfactions (alienation) of people whose work and lives contribute to the structuring of a shared social life". (Kemmis and McTaggart, p. 282)

Due to its agenda of challenging the status quo of power and resource distribution, emancipatory Action Research can often become a very political process (Ivankova 2014). For example, in some feminist Action Research projects aimed at creating social justice for women, political tensions associated with changing the power distribution between genders can be readily observed (Reid 2008).

3.7.1.8 Participatory Evaluation

Rossi et al., (2003) define Program Evaluation, or Evaluation Research as *"a social science activity directed at collecting, analyzing, interpreting, and communicating information about the workings and effectiveness of social programs"* (p.2). Evaluation as a field places a special focus on practice and uses relevant theories from other disciplines to develop toolkits for the collection, analysis and interpretation of data (Shadish, et al., 1991).

Throughout the 60s and 70s, the field of evaluation was under criticism (from insiders and outsiders) being marked as irrelevant to the majority of stakeholders under evaluation, instead favoring decision-makers and project sponsors; it was equally criticized for being too rational (Herr and Anderson 2004, Weiss 1986). Robert E. Stake's concept of 'responsive evaluation' (1975) and the notion of the 'fourth generation of evaluation' proposed by Guba and Lincoln (1989) both propose a different approach to evaluation research in order to address such shortcomings; they emphasize the importance of changing the focus of evaluation from the programs preconceived intentions to emerging issues deemed important to the program's practitioners and stakeholders. Additionally, they also discuss the importance of including the stakeholders in the evaluation as co-owners, instead of just focusing on the sponsor of the project (Abma 2005).

These changes have resulted in the increased prevalence of more participatory evaluation approaches, which share much of the same ground as participatory Action Research approaches (Herr and Anderson 2004), especially with regard to the perceived importance of including the stakeholders in the research process. As an example of the close relationship between participatory evaluation and Action Research, I shall note Michel Quinn Patton's (1999) idea that in some contexts, it is better to label "standard evaluation" projects as 'Action Research' projects because while they are not fundamentally different; the relabeling removes the negative psychology connotation that is associated with the term 'evaluation'.

3.7.2 Three main schools of thought in the Action Research family

In addition to the scholars who have discussed the different varieties of Action Research employed in practice, several authors have also categorized AR methodology into different schools of thought

based on their theoretical differences. Grundy (1982) is among the first scholars who proposed a categorization of Action Research methodologies by talking about **technical, practical** and **emancipatory** Action Research. Car and Kemmis (1986) built on Habermas's theory of knowledge-constitutive interests and propose the same categories of Action Research as Grundy. Zuber-Skerritt (2001) also uses the same three categories for classifying the main schools of Action Research. Tripp (2005) recognizes five major 'modes' of Action Research by extending the original three-class categorization by Grundy and, in his classification; Tripp places a special focus on the 'objectives and values of the Action Researchers':

- **Technical Action Research:** the Action Researcher makes use of an existing practice from other contexts to improve similar practices in her or his context. The aim of the technical mode of Action Research is to improve the current situation by using existing solutions from other contexts (Cohen et.al. 2007). In the Technical AR, an Action Researcher will often help the practitioners implement appropriate solutions.
- **Practical Action Research:** the Action Researcher designs an intervention (set of actions) to improve her or his practice. Practical Action Research provides more room for the reflective practitioner to decide on major elements of the intended change.
- **Political Action Research:** the Action Researcher tries to change the constraints that affect the practice, he or she has to exercise power which enters the research into political domains (not meaning politics in the daily language, but the political power relations).
- **Socially critical Action Research:** the Action Researcher is not only concerned about improving his or her practices, but also wants to improve *social justice* in his or her research context (not necessarily the entire society, but in the professional context). Socially critical Action Research has a large overlap with political Action Research.
- **Emancipatory Action Research:** the Action Researcher tries to empower individuals or groups whom he or she believes are not capable of exercising their own rights (e.g. freedom, autonomy, etc.) due to illegitimate power structures, interpersonal constraints, etc. Emancipatory AR aims to improve the larger social context and is not bound to the professional context of the Action Researcher as it is with socially critical AR.

McKernan (1996, P. 15-25) proposes three 'theoretical models' of Action Research that focus on the differences in 'epistemology and objectives' between the AR methodologies.

- **Scientific Action Research:** promoted by Lewin and early starters of AR (Corey, etc.), focuses on the use of inductive procedures and following orderly research processes meanwhile addressing the ongoing learnings of the researcher throughout the process (Lewin procedure, Taba-Noel procedure, Lippitt-Radke procedure).
- **Practical-Deliberative Action Research:** puts a stronger focus on understanding the practice and solving immediate problems. The reflective-deliberative actions, and the process of inquiry, are seen as being equally as important as the results of the inquiry. (Elliot model, Ebbut model, etc.).
- **Critical-Emancipatory Action Research:** was developed in Australia (Deakin University, Kemmis, et.al) and rejects the positivist emphasis on the primary importance of knowledge

for problem solving and instead focuses on the importance of critical inquiry by practitioners to overcome constraints.

McNiff and Whitehead (2011, pp. 11-14) recognize two general schools of thought in the Action Research community, namely the 'interpretive Action Research' camp and the 'living theory Action Research' camp. Their categorization is mainly based on the assumption of *who* should conduct an Action Research project:

- **Interpretive Action Research:** in this school, it is widely accepted that the proper way to do Action Research is to have an 'external researcher' conduct research on the activities of the practitioners, so that the professional Action Researchers act as facilitators. In this school, there is a general tendency towards propositional theory development and testing.
- **Living theory Action Research:** in this school, it is widely accepted that the 'practitioners' are able to, and should, take the lead in order to explain their practices. In this school, Jack Whitehead is a strong advocate of using "living theories" instead of propositional theories to report the results of Action Research inquiries. (Whitehead 2007)

In another categorization, Avison (1999) distinguishes four major classes of Action Research. His categorization is based mainly on the reason for conducting the Action Research project:

- **Action Research:** is primarily focused on changing practices through a reflection on actions.
- **Action science:** tries to resolve conflicts between espoused and applied theories and enhance efficiency and effectiveness of individuals and groups by finding 'theories of practice'.
- **Participatory Action Research:** has a strong emphasis on participant collaboration in the research process and the influences that the research process may have on the participants' lives.
- **Action learning:** is mostly used for programmed instruction and experiential learning and is conducted by facilitating the learning process and knowledge exchange among practitioners.

As it can be seen from this overview, the labels of different Action Research approaches and schools of thought have several areas of overlap and the terms are not always clearly defined by their advocates. To avoid confusion between terminologies, in this report I will refer to the labels of the eight main AR approaches that were previously defined above and the three main schools of thought (technical, practical, and emancipatory).

To provide a more coherent understanding of these variants, I have mapped the most common varieties of AR in Figure 3.1 based on the preceding review of the different AR methodologies.

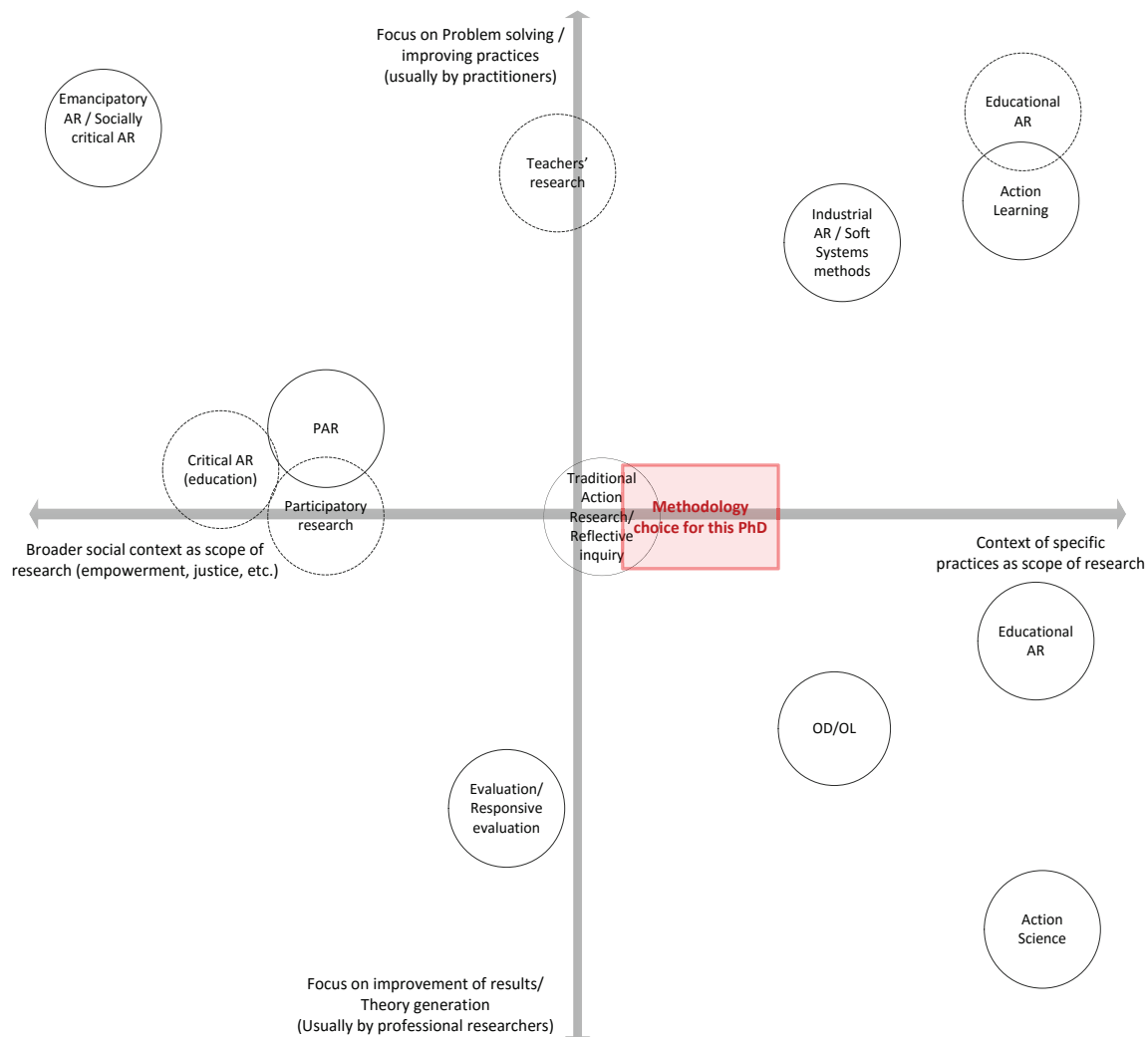


Figure 3.1. Classification of AR methodologies
Source: author's own compilation

As explained earlier in this chapter, Action Research has evolved over the past few decades and has turned into a large family of research methodologies. Different variants of AR methodologies share common principles, but significant differences exist between them and must be taken into account to ensure the scientific and methodological rigor of the research.

Using the classification in Figure 3.1 and considering my research context, my research question and my philosophical perspective (pragmatism), I have chosen to use traditional Action Research as the principle methodological framework for this research project. In the proceeding sections, I will elaborate my research design, on the basis of this choice.

3.8 Specific choice of methodology based on the fit between the research context, research question, worldview and different AR variances

3.8.1 Traditional Action Research as my main methodological framework

From the reviewed varieties of Action Research methodologies, traditional Action Research seems to be the most appropriate methodological choice for this research (red rectangle in figure 1). This choice is based on the broadly defined objectives of the project, the scope of this project, and my double role as a professional researcher and manager/coordinator of the IGLUS training program.

The objectives of this research project are two-fold. Firstly, this research project was aimed at shedding more light on the challenges associated with training practitioners to address complex problems from a multidisciplinary-holistic perspective and developing strategies to tackle them. Secondly, the research was aimed at contributing to the quality of the IGLUS Executive Master (a professional training program). These two objectives are a reflection of my double role in the broader IGLUS project; being a professional researcher (a PhD student at EPFL) and in the same time the coordinator of the training program. Referring to Figure 3.1, my double role in the project and the corresponding objectives of this research project suggest that the proper choice of methodology for this research is situated somewhere in the middle of the vertical axis on Figure 3.1 (practice vs. theory / practitioner vs. professional researcher).

The scope of this research project was relatively narrow. This research was mainly aimed at addressing the challenges associated with training practitioners about complex-multidisciplinary concepts within the context of the IGLUS project and was not defined to change or challenge the broader societal factors that might affect the existing shortcomings in such professional trainings³⁴. Referring back to the classification of AR methodologies illustrated in Figure 3.1 and considering the scope of this research project, I argue that the proper methodological choice for this research shall lie on the right side of horizontal axis of Figure 3.1 (broader societal scope vs practice specific scope).

As a result of the above-mentioned analysis, I argue that the proper research methodology from the AR family should lie somewhere in the middle of Figure 3.1 in the region highlighted by the red rectangle. As traditional AR is the closest methodology to this area, I have chosen traditional AR as the methodological framework for this project. I should also mention that in accordance with my choice of the pragmatic research paradigm, I have also incorporated an eclectic mix of compatible features from other AR methodologies that I found to be useful for understanding my research dilemmas and to solve the challenges I faced throughout the project - to this core methodological

³⁴ The definition of the project scope is also very much in line with the pragmatic research paradigm.

choice. In the coming sections of this chapter, I will elaborate on the details of my research methodology and research design.

3.9 Outlining the details of traditional AR as my methodology

The original conceptualization of an Action Research inquiry by Kurt Lewin (1946) includes a cycles of inquiry that is composed of four main steps, namely; *planning, execution, reconnaissance or fact finding and evaluation*. Lewin's formulation of AR methodology has often been adapted in the literature by renaming the different steps (compared to his original writing in 1946) to *Plan, Act, Observe* and *Reflect* (for examples see Cohen, et al., 2007, Ivankova 2015). Although different varieties of AR methodologies have different epistemological and methodological assumptions, many researchers have adopted these four main steps, with minor modifications, to develop a variety of AR methodologies (Ivankova 2015). For example, Tripp (2005) proposes four steps of *planning, action, describing/monitoring* and *evaluation* in his Action Research cycle. Kemmis and McTaggart (2007), propose an AR spiral that constitutes of a four-step *plan, action, observation* and *reflection*. Stringer (2007, 2013) propose repetitive cycles of *look, think, and act* as a basic AR routine. Sagor (2010) propose a four-stage model that includes *clarifying the vision; articulating theories; implementing action* and *data collection; reflecting on the data* and *planning informed action*. Ivankova (2015) develop a six-step model that is comprised of *diagnoses, reconnaissance, planning, action, evaluation* and *monitoring*.

Due to general acceptance of the Lewin's traditional four-step model of Action Research inquiry (plan, act, observe and reflect), I will use this generic AR model as the basis for my methodological framework and adopt it to the specific context and objectives of my research. Figure 3.2 illustrates my Action Research framework in this project. In the coming paragraphs, I shall explain the details of this framework within the context of this research project.

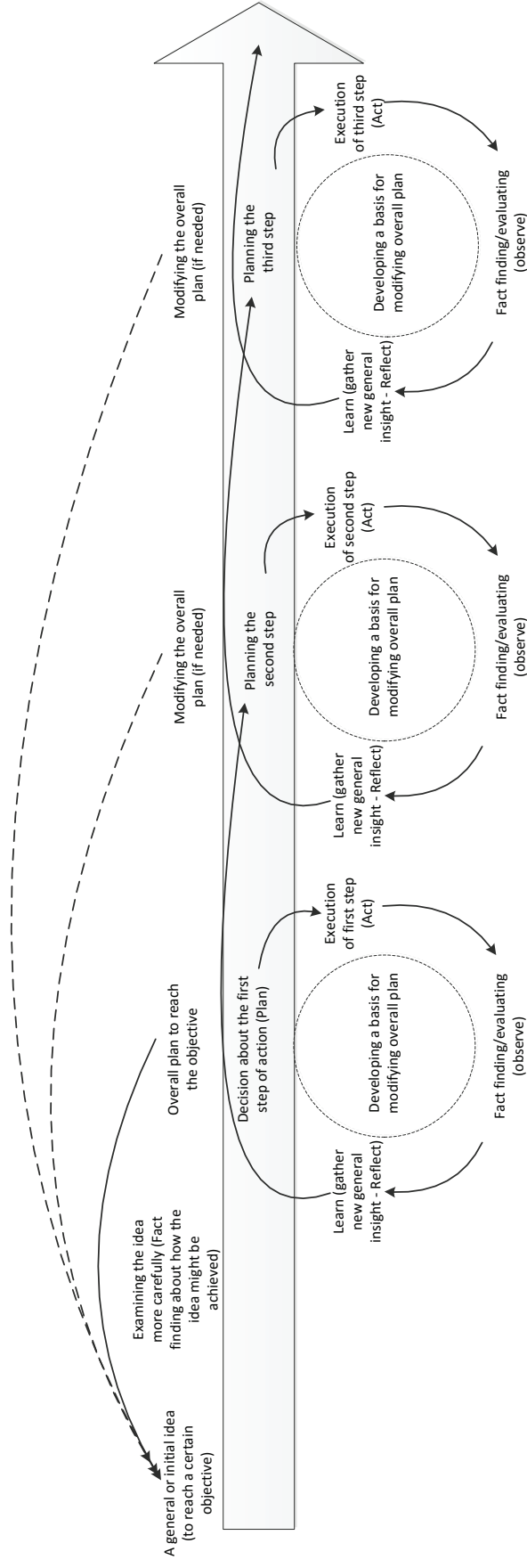


Figure 3.2 – Action Research framework

Source: Author's own work, based on Lewin 1946 and Ivankova 2014,

1) A general or initial idea

AR inquiries start with a general, or initial idea. Lewin explains: *“planning starts usually with something like a general idea. For one reason or another it seems desirable to reach a certain objective. Exactly how to circumscribe this objective, and how to reach it, is frequently not too clear”* (Lewin 1948, p. 205). In this first stage, formulation of the problem, which is perceived critical, should be done relatively loosely (Cohen et.al. 2007). These general ideas, or as Argyris and Schon call them *cues* or *puzzles*, often originate from the practitioners’ experience and perceptions (Argyris and Schon 1989); and are not based on extensive bibliographical research. In other words, the first step of an AR inquiry involves defining an area of practice that is to be studied or improved and then developing a general idea about -or a loose formulation of - the problem that needs to be addressed in order to achieve desirable objectives.

The initial idea behind this research project was to improve the quality of Executive Trainings for city managers. This general idea was raised by the director of the IGLUS project. Based on the director’s observations, as a researcher and expert in the field of networked industries (infrastructures) as well as his extensive experience in executive education, he believed that the current training programs for urban practitioners did not effectively address the multidisciplinary and complex nature of governance of large urban systems. After some preliminary discussions, I joined the project as a PhD student and coordinator of the IGLUS master program in order to address this general concern.

2) Examining the initial idea

The second step involves more thoroughly examining the initial idea by finding and analyzing more information about the situation (Lewin 1948, Elliot 1991, Ivankova 2015). In this stage, the general or initial idea (often originated from practice) is studied in more details by what Lewin calls ‘fact finding’, which is aimed at developing an overall plan to reach the intended objectives. In this stage, reviewing the academic literature and researching what other researchers and practitioners have done in similar projects can be very helpful (Cohen, et al., 2007, Hinchey 2008, Mertler 2013).

As an initial step, when I first began my collaboration in this project, I conducted a comprehensive literature review and initiated several rounds of discussions with different stakeholders involved in the project to more concretely define the agenda for this research project and also define a practical focus for the IGLUS Executive Master Program on the basis of the general idea behind the broadly defined IGLUS project. I spent almost one year of my research on this phase of the project. In this stage, as well as all the proceeding steps of my project, I collaborated very closely with the director of the IGLUS project, who was also my academic supervisor, to make sure that my findings were practically nurturing the initial idea that started the project.

3) Devising an overall plan

Successful examination of initial idea (stage 2 of the process) should result in the emergence of an 'overall plan' for how to realize the intended objectives and should also clarify the first step of action in the overall plan (Lewin 1948). In devising the overall plan, the general or initial idea may be modified as well (Elliot 1991).

It is important to note that the overall plan in an Action Research inquiry is not a rigid framework that deterministically defines all the necessary steps of the inquiry process; instead, it acts as a general guideline to help maintain the focus of the AR inquiry. Indeed, each cycle of the inquiry is aimed at developing a basis for modifying or improving the overall plan and could result in the modification of the general or initial idea (feedback arrows illustrated in Figure 3.2).

Action Research is an emergent process (Herr and Anderson 2005, Stake 2013). As a result, and because one cannot initially predict how many cycles of reflective inquiry are required before the intended objectives are achieved, the overall plan is often also flexible in terms of the timeframe.

Another practically important consideration for ensuring a successful AR inquiry is to maintain a small focus (Colin et.al. 2007, McNiff and Whitehead 2011, Atkins and Wallace 2012, Mertler 2013), as a specific focus is necessary to be able to critically reflect on the practices under inquiry. Accordingly, the overall plan should result in a manageable process where the researcher can handle the difficulties of conducting research about a complex real world problem.

For this research project, developing the overall plan and preparing the research setting was completed in the first 18 months of my research. Since the IGLUS training program should have been developed from scratch, and in the same time my research agenda should have been framed, a lot of back and forth between development of the overall plan of my research and the development of the training program (which was my research setting) took place throughout this period.

In the overall plan laid out for this project, we considered the first edition of the IGLUS Executive Master, which included seven 2-week training modules, as the initial research scope and maximum available time for this AR inquiry³⁵. In this plan, we decided to consider the governance challenges associated with five main urban infrastructures³⁶ as the context for analyzing complex and multidimensional nature of governance of large urban systems.

We have also decided that I shall participate in each and all of the training modules as the moderator and facilitator of the program. The most important reason behind this decision was to be able to directly investigate the challenges associated with realizing our initial idea in practice (empowering urban practitioners to address complex governance challenges from a multidisciplinary-holistic point of view) and to be able to develop strategies to overcome them throughout the course of this

³⁵ In the next steps of the project, we recognized that the proper scope for this AR inquiry is in fact the first four training modules of the program and changed our overall plan accordingly. I come back to this point in the coming paragraphs.

³⁶ Our final choice of infrastructures were energy, transport, green spaces, housing and water and waste water. It is important to note that this final selection of infrastructure was only made after many revisions on the curriculum of the program.

project. In addition, my presence in all the training session could help us to ensure that the quality standards expected from an Executive Training program offered by EPFL were upheld³⁷.

4) Deciding on the first/second/third/... action step (Planning)

Decisions about the first action step of the AR inquiry are usually made during the development of the overall plan. The next action steps are planned in detail throughout the AR process based on learnings from previous AR inquiry (see Figure 3.2) through a process that Lewin calls *reconnaissance* (Lewin 1948, Ivankova 2015, McNiff and Whitehead 2011).

As explained before, because of its highly systematic nature, AR inquiry is different from traditional problem solving methods or consultancy processes (Table 3.4). In each cycle of the AR inquiry, the researcher must carefully plan the actions (or interventions) that are going to be implemented (Burns 2005, Cohen et.al. 2007, Mertler 2013). Action plans, subsequently developed for each cycle, should clarify the intended objectives and detail the process of intervention and data collection tools that are critical for a successful action inquiry cycle.

Although AR inquiries follow a rigorous planning process, it is important to keep in mind that flexibility is also an important characteristic of the AR process (Burns 2005, Ivankova 2015, Zuber-Skerritt 2015). Due to the emergent nature of AR inquiry, there might be occasions where the researcher finds an opportunity for intervention that was not originally foreseen in the action plan of the cycle. Whilst Action Researchers are advised to be as precise as possible in the planning phase, they should also stay alert and be creative in order to benefit from any opportunities that might emerge during an AR cycle (Herr and Anderson 2004).

In this project, each cycle of the inquiry was accompanied with a rigorous planning process. The planning of each AR cycle was started almost 3 months before the corresponding training module. In these planning processes, we actively involved the partner university that hosted the module as well as some of the external partners (i.e. firms and international organizations). In addition to collaborating with the partners of the project in the planning phases, in each step of this AR inquiry we were critically examining our initial assumptions (among the organizing team at EPFL) based on our observations and reflections made during the previous training modules. The details of the planning phase for each AR cycle are discussed in detail in the coming chapters.

5) Executing the (first/second/third...) action steps (Acting)

The next step, after planning the intended interventions in an AR cycle is to implement them (Lewin 1948). As discussed in the previous sections, purposeful intervention is one of the main qualities

³⁷ Because most of the lectures in the program were offered by partner universities, companies and international organizations, my presence in the training session as the representative of EPFL was necessary to ensure the quality standards of EPFL in all the session.

differentiating AR inquiries from traditional interpretive and positivistic research approaches. Action Researchers are interested in 'trying out' a way forward that can improve the current practices, and not only in studying them as an outsider (McNiff and Whitehead 2011, p. 90). The execution steps in an AR inquiry are where the planned actions (or interventions) are implemented in the real context and the actual results became observable to the researcher.

In this project, each of the 2-week training modules of the IGLUS Executive Master was designed as an action arena where we could implement the planned interventions and observe how effective they were for addressing the main objectives of the project. In most cases the interventions were based on the initial plans for the cycle. However, there were also several instances where in situ opportunities and obligations required immediate decision-making and respective actions causing deviations from the original plans. In these cases, and in line with the general recommendations made in the AR literature, I adopted a flexible intervention strategy and used these opportunities to further investigate my research question. The planned interventions and their impacts on the program are fully described in the coming chapters.

6) Fact finding and evaluation of the actions (Observing)

Fact-finding, or what Lewin sometimes associated with the term 'reconnaissance' is a core component of an AR cycle and should ideally fulfill four main objectives (Lewin 1948). It should evaluate the action against the initial expectations. It should provide the Action Researcher with an opportunity to learn or 'gather general insight' about the intervention (which is the subject of next step of the cycle). It should also provide a more solid basis for planning the next action step; last but not least, it should provide input for the potential modification of the overall plan (Lewin 1948, Car and Kemmis 1986). An important element in this step is effective data collection that is necessary to facilitate the investigation of the consequences of the interventions (McNiff and Whitehead 2011). A wide variety of data sources are recommended in the AR literature for this step, including participant observation, questionnaires, focus groups, documents, reports, interviews, surveys, and audio/video records (Stringer 2007, Hinchey 2008, McNiff and Whitehead 2011).

Because in an AR inquiry, the researcher is not an outsider keeping their distance from the object of study, the issue of subjectivity and bias needs to be carefully considered throughout the process. This is not to say that Action Researchers should follow positivistic approaches to reduce the subjectivity to the highest possible extent. Instead, Action Researchers must try to 'discipline the subjectivity' throughout the inquiry process (McTaggart 2002).

Triangulation is a common strategy in qualitative research to ensure the credibility of the research findings (Miles and Huberman 1994). Denzin's typologies of triangulation (Denzin 1978) are widely accepted by research methodology references as effective tools to enhance the credibility and reliability of research findings. Based on Denzin's typology, four types of triangulation are recognized, namely: data triangulation (use of several data sources), investigator triangulation (use of several researchers), theory triangulation (use of several theories to interpret a single set of data)

and methodological triangulation (use of multiple methods to investigate a problem) (Patton 2015, p 316).

Data source triangulation (different people, times, etc.) and methods triangulation (using observation, interview, etc.) are especially widely used by Action Researchers (Anderson and Herr 2005). Triangulation in data sources, which requires the use of three or more data sources, can help control bias during the data collection phases of an AR inquiry and can also enhance the trustworthiness of the findings (Cohen, et al., 2007, Hinchey 2008, Sagor 2010, Ivankova 2015).

In this project, we used a systematic approach to collect data and evaluate our achievements made in each of the AR cycles (each of the 2-week training modules) by using at least five major data sources. I used several data sources and gathered data in an almost continuous data collection process as the corner stone of my triangulation strategy. The major data sources used in the project were direct observation, interviews, focus groups, questionnaires (short surveys), and written records of participants (essays) as well as documents (slides), video records, audio records and photos. Methods triangulation was also used in this research and will be discussed later in this chapter.

7) Learning from the actions, by gathering new general insight (Reflecting)

Learning from the actions and ultimately gaining a better understanding of the practice is one of the main objectives of an AR inquiry (see Table 3.4 for more details). As explained in the previous paragraphs, learning is one of the main outcomes of the reconnaissance process for Lewin (Lewin 1948). In Action Research, learning is not equal to the accumulation of information, but is rooted in Dewey's conceptualization of learning as the result of reflection on experiences (Dewey 1938, Schon 1991). Critical reflection on the experiences that emerge from the interventions is the key element for learning in an AR inquiry (Argyris et.al. 1987, Heron and Reason 2006, Kemmis and McTaggart 2007, McNiff and Whitehead 2011, Bradbury 2015, Ivankova 2015, Zubber-Skerit 2015). Such critical reflections are important both during the interventions (reflection-in-action; in words of Schon 1983, 1991) and after the action phase (reflection-on-action; in words of Schon 1983, 1991).

We had two main goals for our critical reflections in this AR inquiry. Firstly, we were interested in understanding how we could improve the efficiency of the learning processes in IGLUS trainings by overcoming operational obstacles through the implementation of our interventions (very similar to the idea of single loop learning in Argyris and Schon 1974). Secondly, we were trying to critically investigate our underlying assumptions in the design of such programs and introduce necessary interventions to change these core assumptions in order to improve the quality of the trainings on a deeper level (very similar to the idea of double loop learning in Argyris and Schon 1974). Examples of both kinds of reflections and consecutive learnings in the project are presented in the next chapters of this report.

From another point of view, it is important to mention that in this project I had a special focus on both types of reflections introduced by Schon; namely reflection-in-action and reflection-on-action (Schon 1991). Many of our interventions, and consecutive learnings for the project, emerged during

the training modules as a result of reflection-in-actions and shaped a substantial part of the learnings acquired throughout this AR inquiry. In addition to 'reflection-in-action' (Schon 1991, p.50), I also conducted a more traditional reflection-on-actions, especially after concluding the empirical part of the project (while writing the dissertation). This double reflection (in-action and on-action) has equally influenced the structure of this thesis. The 'reflections-in-action' are mainly illustrated in each of the case studies while the 'reflections-on-action' are illustrated in the short reflective discussions at the end of each case and primarily in the overall analysis chapter.

8) Modifying the overall plan (if needed), repeating the cycle from step 3 (if needed), end of the process

AR inquiries are cyclical (Bradbury 2015, Stringer 2013, 2007, Kemmis and McTaggart 2007). The output from one AR cycle becomes the input for the next. As such, in an AR inquiry once the researcher finishes the first cycle of inquiry, he or she should prepare the next cycle of inquiry (starting again from step 3) (Lewin 1948, McKernan 1988, Elliot 1991, Zuber-Skerritt 2015). Additionally, in the light of the learnings from an AR cycle, the overall plan of the inquiry might be modified (Lewin 1948, Elliot 1991).

Although AR inquiries are cyclical, it doesn't mean that they are endless. According to Coghlan and Brannick, the decision of when to conclude an AR inquiry is made either on the basis of predetermined time limits (e.g. a study investigating learning dynamics in a one-semester course) or the judgment of the researcher(s) that the project has achieved its intended goals³⁸ (Coghlan and Brannick 2014, p.92).

In this project, the learnings from each of the AR cycles was a major input for planning the next training modules and its associated AR inquiry; as well as our overall planning for the training program. As will be elaborated in the coming chapters, each of our AR cycles (and their associated training modules) were planned in detail only after we could reflect on the learnings we had from the previous cycles. Thus, the overall planning of this research, as well as that of the IGLUS training program, was continuously adapted as a result of our findings from each of the AR cycles³⁹.

In the initial planning stage of this research, each of the training modules in the first edition of the program was considered as a *potential* intervention setting. However, as it will be illustrated in the coming chapters, throughout the course of this research project we realized that the objectives of our interventions, with regard to the focus of this research project, were actually fulfilled at the end of the fourth training module of the program. In other words, after the fourth training module, we were facing data saturation with regard to the main research question of this research project. Thus, we decided that only four cycles of AR inquiries (Guadalajara, Istanbul, Hong Kong, and Dubai) would constitute the core empirical material for this dissertation, even though the training program

³⁸ To recall: the general objectives of AR inquiries are 1) improving practice and 2) enhanced understanding of the practice (see table 4 for more details)

³⁹ Although it is challenging to deal with such changes in an academic Action Research project, such modifications are common experiences in Action Research dissertations (Herr and Anderson 2014, Tripp 2005)

continued for another three modules after Dubai and additional editions of the program were already being organized.

3.9.1 Overall research design (4 AR cycles)

This project is built on the traditional AR model, which has been explained in detail in the above paragraphs. Figure 3.3 outlines the overall research design in this project.

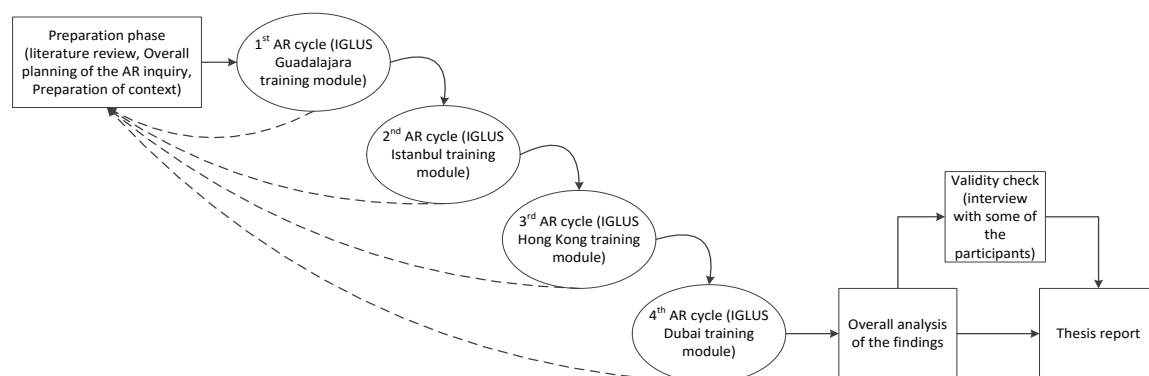


Figure 3.3 – Research design

This dissertation is based on four cycles of AR inquiry, corresponding to four IGLUS training modules. After conducting four complete cycles of AR (each cycle being made up of four phases of plan, act, observe, and reflect), which were individually analyzed in the reflection steps of this inquiry process, I have conducted an overall analysis across all four AR cycles to illustrate the main findings of the project, as seen as a whole. By doing so, in addition to the learnings from each of the AR cycles, I could extract some general findings that could not be captured by only looking at each of the AR cycles as separate cases.

Once I completed the separate analysis of each of the AR inquiries and the overall analysis, I conducted four interviews with the program participants to check the validity of my analysis and findings. Since the interviewees were present in at least three out of the four training modules analyzed, they were able to provide valid feedback on my analysis based on their experience in the course.

The final step in this research process was to report the findings, which is of course a mandatory step for fulfilling the PhD requirements, but is also a necessary step for every Action Research inquiry (Hinchey 2008, McNiff and Whitehead 2011).

3.9.2 Data Sources

As explained in the previous section of this chapter, there are many data sources that can be used in an AR inquiry. In this project, I used 5 major sources of data; namely observation, written records from the participants, interviews, short surveys and focus groups.

3.9.2.1 Observation

The first and primary source of data in this project was direct observation. Observational data provides an in-depth and detailed description of the setting that was observed (Patton 2015). Observation can provide more valid and authentic data in comparison to mediated or inferential methods (Cohen, et al., 2007). Observation is one of the most common data gathering strategies for AR inquires (McKernann 1991, 1996, 2006, Kemmis and McTaggart 2007, Stringer 2004, 2013, McNiff and Whitehead 2011, Ivankova 2015). My formal roles as the coordinator and moderator of the program, as well as that of a professional researcher, enabled me to observe and collect data during each of the training modules directly from the field.

Several varieties of observation strategies are discussed in the research methodology literature. From a broad perspective, observations can be placed along a continuum from unstructured observations – where the researcher looks at the observational data before suggesting an interpretation about the phenomenon of interest; to highly structured observations – where the researcher uses the observational data to confirm or reject a preconceived hypothesis about the phenomena of interest (Cohen, et al., 2007). In Action Research inquiries, due to the emergent nature of the inquiry, unstructured observations are very common (McKernann 1991, 1996, 2006). In this project, I mainly used unstructured observations as my data collection method.

An important debate in the research methodology literature surrounding observations, especially unstructured observations, involves the type of data that should be gathered during the observation (Patton 2015, Cohen, et al., 2007). Different authors propose a list of categories for observational data collection such as *acts, events, critical incidents, settings, relationships*, etc. (Cohen, et al., 2007). Patton (2015) discusses the importance of ‘sensitizing concepts’ over ‘operationalized concepts’ for guiding qualitative data collection. After reviewing different propositions for important data elements that should be captured in an observational inquiry, Cohen et al., (2007, p. 407) suggest that observational data “*should be comprehensive enough to enable the reader to reproduce the analysis that was performed*”. In my observations, I tried to take these considerations into account and to follow the guidelines proposed by Cohen et al. During the training modules I focused especially on the following observational elements:

- Participant behavior during the training sessions (questions, engagement in the class, etc...);
- Interactions between the lecturers and the participants (discussions, etc...);

- Context of the training modules (different cultural settings in different host university/city, different cultures among the participants, different types of lecturers, etc...);
- Participant reaction to my interventions throughout the training modules.

Although these four elements were the center of my focus during observation, I was also trying to follow Paton's recommendation (2015, pp. 361-3) and stay conscious and open to other elements that could be important for my understanding of the situation, but were not necessarily part of these sensitizing concepts.

To further illustrate the details of my observational data gathering strategy, Patton's framework depicting the 10 dimensions that are important in observations is adapted in Figure 3.4 (2015, pp 356-7).

Although observation is a very strong tool to provide a context-rich, detailed understanding of the subject of study, it is always important to consider possible challenges related to data reliability and validity due to potential biases and cognitive limitations of human observers (Cohen, et al., 2007). To this effect, in addition to working on improving my observational data gathering process I also incorporated other sources of data into my triangulation strategy to improve the credibility of my findings; these sources are explained in the proceeding sections.

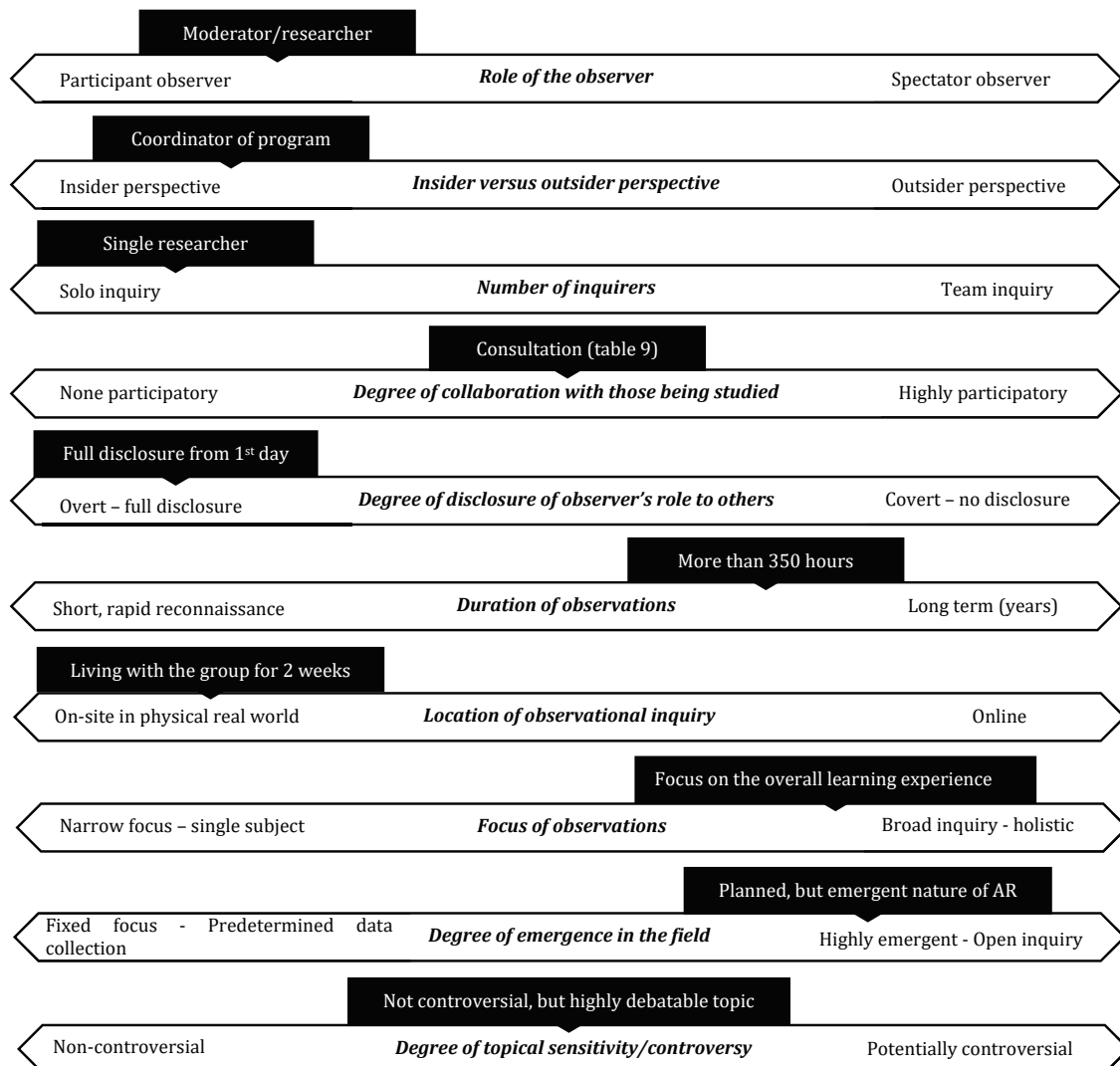


Figure 3.4 – Illustration of my observation strategy
Based on Paton 2015

3.9.2.2 Written records from the participants

The second most important data source for this project was essays written by the participants of each of the training modules (preparatory and wrap-up essays). Written records and documents are widely used in AR inquiries (Hinchey 2008, String 2013, McNiff and Whitehead 2011, Ivankova

2015), and the pre- and post- module essays by the participants proved to be a major source of data that enabled me to get a different perspective aside my personal observations about the program.

3.9.2.3 Interviews

Interviews are also a common data collection method in AR inquiries (Hinchey 2008, Stringer 2013, Ivankova 2015), and formal and informal interviews made up the third source of data in this research. In addition to my formal roles in the project that provided me with the opportunity to collect data during the training sessions of the program, living with the participants in the host city for two weeks also helped me to establish a very close relationship with the group. These informal relationships and the friendly atmosphere among the participants enabled me to conduct informal interviews (often in form of personal chats and discussions after the classes) throughout the project to gather more information about the participants' points of view and learning experiences in the program. In addition, I also conducted four formal interviews with participants⁴⁰ in order to check the validity of my findings at the end of my research process.

3.9.2.4 Short surveys

Using both qualitative and quantitative data is becoming more common in AR inquiries (Ivankova 2015). To have some quantitative measures about the quality of the training sessions of the program, I collected some data using short questionnaires (surveys) as my fourth data source in this project. The short evaluation surveys were specifically designed for each of the training sessions in all training modules of the program. These short surveys used a 5-point Likert scale to evaluate the quality of the training sessions from the participant's point of view. In these anonymous questionnaires, participants were also encouraged to provide written feedback about any issues they may have wanted to raise about the training sessions. It is important to note that these small surveys were not the primary source of data, and they were created to provide some tangible (quantitative) measures about the quality of training sessions; as a complement to main qualitative data collection methods.

3.9.2.5 Focus groups

The fifth source of data in this project was focus groups during the training modules. Focus groups are also an important data collection method in AR inquiries, especially in more participatory/emancipatory approaches to AR (Stringer 2013, Hinchey 2008, McNiff and Whitehear

⁴⁰ The interviewees for the validity check interviews were selected among those participants who had attended in at least three out of the four training modules of the program which are reported in this thesis. Based on the direct participation of these participants in the training modules and living the experience of attending the training modules, they were highly credible to testify the accuracy of my case reports and my findings from the cases.

2011). In AR inquiries, focus groups can sometimes be very similar to group interviews (Stringer 2007). In each of the training modules (AR cycles), a dedicated wrap-up session was designed at the end of the two weeks of training. These wrap up sessions were designed as focus groups with the agenda of providing an overview of what has been discussed in the training sessions and how it relates to the learning objectives of the program, having each participant review and share about their learning experiences from the two weeks of training, and openly discussing the strengths and weaknesses of the training module.

3.9.2.6 Supplementary sources

Most of the training sessions of the program were video-recorded (when not possible, audio recorded) and in many cases photographs were taken to capture important information from the training sessions. In addition, almost all of the training materials (slides) used by different lecturers during the program were collected. Table 6 provides a detailed summary of the main data sources used in this project.

Table 3.6 – Main sources of data in this project

Data source	Amount of data which is systematically collected and analyzed	Purpose of using this data source in the project
<i>Direct observation</i>	More than 350 hours over the course of 9 months	Collecting first hand, context-rich data about the real and complex dynamics in the training modules
<i>Essays of participants in the program</i>	More than 500 pages of records	Understanding the viewpoints of participants in the program from their original writings / data triangulation
<i>Evaluation survey of sessions</i>	More than 120 training sessions were evaluated (in average by 10 participants)	Having a quantifiable measure of the quality of each training session / data triangulation
<i>Focus groups</i>	4 sessions	Getting immediate feedback from the participants about their learning experience in a training module / exchange of ideas in a group setting / data triangulation
<i>Formal interviews</i>	4 interviews	Validity check of the results
<i>Other sources</i>	Video and audio recordings of the sessions (more than 150 hours) / Pictures / Teaching materials (more than 120 presentations) / Informal interviews	Used as supplement and reference when needed

3.10 Unit of analysis

The unit of analysis in this research is each of the training modules. This choice was based on the focus of my inquiry- understanding the challenges associated with training urban practitioners to adopt multidisciplinary-holistic perspectives when analyzing complex problems and finding strategies to overcome these challenges. Since each of the training modules in this project was subject to interventions associated with an AR cycle, the outcomes of each training module was expected to be different from the previous ones (in terms of achieving the goals of the research). Therefore, it is plausible to think of the training module as the unit of analysis in this Action Research inquiry.

To clarify this choice, it is useful to also briefly discuss why the chosen unit of analysis was not the individual participant, a group of participants or each of the training sessions, which were other close candidates for the unit of analysis in this research.

The main focus in this project is on the training practices and not the personal learning experiences of the participants, thus it would be inappropriate to treat the individual practitioners as the unit of analysis. Similarly, using a group of participants as our unit of analysis would also be ill suited to answer the main research questions of this thesis. For example, the process of content preparation for the training sessions and collaborating with our partners proved to be a very important factor for improving the quality of the trainings, these aspects could not be captured if the unit of analysis was chosen as the group of participants. Finally, by definition we know that complex-multidisciplinary concepts cannot be understood in discrete analytical steps (Ackoff 1997), and as the sum of training sessions are necessary to convey the multidisciplinary perspective of the Executive Master's Program, treating each individual training session as the unit of analysis would also not be appropriate for this research project.

After clarifying the unit of analysis in this research, I should now briefly discuss the data analysis procedure undertaken in this project.

3.11 Data analysis

As discussed in the previous sections of this chapter, I used several sources of data in this Action Research inquiry, most of which fall into the category of qualitative data. I adopted an *inductive analysis strategy* to analyze this data. *Inductive analysis* is highly recommended when the focus of the research is discovery of new patterns and categories from the data (Patton 2015). Due to the exploratory and descriptive nature of this research, inductive analysis seemed to be more appropriate in comparison to deductive analysis strategies.

Many AR scholars recommend using well-known coding and categorizing methods as the core element of qualitative data analysis for Action Research inquiries (Hinchey 2008, McNiff and

Whitehead 2011, Ivankova 2015, Herr and Anderson 2005). Ernest T. Stringer, a highly referenced author in the field of AR, recommends two major processes for ‘distilling’ and organizing the data in AR inquiries; namely ‘*categorizing and coding*’ and ‘*analyzing key experiences*’, which can be used separately or in combination with each other (Stringer 2013, pp 139-147). In this research, I have used both methods, ‘analyzing key experiences’ and ‘coding and categorizing’, respectively for analyzing the observational data and the participants’ written records.

3.11.1 Analysis of key experiences (incidents)

In this project, the ‘analysis of key experiences’ method was mainly used for analyzing the data gathered from my direct observations. In AR inquiries, the aim of this type of analysis is to elaborate on events that seem to have an important impact on the experiences of the main stakeholders in the inquiry (Stringer 2007). I found this type of analysis especially useful for analyzing my observational data about the learning dynamics in the IGLUS training modules because my presence, as the moderator, in all the training sessions enabled me to capture the most influential events that occurred during the training program.

Stringer’s original formulation of this method places a special focus on *individuals* as the unit of analysis (2007, pp 103-107). He proposes five steps for analyzing key experiences:

- 1) Reviewing the data
- 2) Identifying key experiences (for each participant)
- 3) Identifying the main features of each experience
- 4) Identifying the elements that shape the experience
- 5) Identifying themes (by finding the common experiences, features and elements among participants)

Since the unit of analysis in my research is each of the training modules (and not individuals), Stringer’s method could not be used in my research without some modifications. Inspired by the five steps of Stringer’s process and Tripp’s discussion on critical incidents in training (Tripp 2011) and by focusing on the training modules as the unit of analysis, I decided to analyze the key incidents in my AR inquiry through four steps:

- 1) Reviewing the data for each of the training modules
- 2) Identifying the key incidents for each of the modules
- 3) Identifying the main factors/elements that resulted in emergence of the incident
- 4) Identifying themes by looking at incidents across all the training modules

Using this process for each of the training modules, I identified the key incidents that were informative for my research and outlined the main elements that resulted in emergence of these incidents. It is important to note that some of these incidents occurred repeatedly throughout a training module. Accordingly, in the coming case studies, that discuss each of the modules, I present different pieces of asynchronous information to highlight and discuss the corresponding incidents.

After identifying the key incidents and explaining the main elements and factors that shaped them, and in order to enhance the validity of my report, I discussed the findings with my supervisor who was the academic director of the program and was fully informed about each of the training modules. Once the report of key incidents was complete, it was ready for the last step of the process (identifying themes), which will be primarily discussed in the final analysis chapter of this report.

3.11.2 Coding and categorization

In this project, coding and categorizing were used mainly for analysis of texts that were obtained from the participants' essays. Three rounds of coding were conducted to develop meaningful categories out of the inputs from the participants' essays. In the first round of the coding process, I read all the participants' essays (done separately for the preparatory essay and the wrap up essay) and extracted the most important sections from each essay. This initial data categorization was based on the relevance of the text to the broad questions that were sent to the participants (as guidelines for them to write the essays). In cases where the participants' essay had information that was not directly related to the guiding questions, they were put in an independent category. The result of this first round of coding was condensing the long writings of the participants (around 10 pages each) into a concise set of extracts that included the important information from the essay and were associated with my very broad initial categories (a 2 page summary).

The second round of the coding process was based on the extracts prepared from the participants' essays. In this round, I combined all the quotes from the participants' answers together for each of the broad categories, making a horizontal summary across all the essays. By reviewing the quotes several times, I extracted both the common themes and unique points that the participants raised in their essays. The result of this round of the coding process was a limited number of representative quotes from the participants' essays that provided valuable insight for my research question and/or the guideline questions that were communicated with the participants for writing their essays. By extracting the direct quotes from the participants' original writings, I tried to follow the 'verbatim principle'⁴¹ to the maximum possible extent in my research. Using this strategy is highly recommended for AR inquiries (Stringer 2007).

The third round of the coding process was conducted on the selected quotes. In this round, I reviewed all the selected quotes to come up with main issues that were presented in the selected quotes.

3.11.3 Analysis of survey data

In addition to the qualitative data collected through observation, interviews, focus groups and documents, I also collected quantitative data through short surveys. The results of the surveys are

⁴¹ Verbatim principle: "using terms and concepts drawn from the words of the participants themselves" (Stringer 2007, p.99)

aggregated and presented in charts to provide a complimentary insight to the quality of the training modules in each of our AR inquiries. Since the survey was not our main method of data collection, the analysis was limited to basic data aggregation and visualization.

3.11.4 Multiple layers of analysis

In line with the recommended approach for reporting the results of Action Research inquiries (McKernan 1989, Tripp 2003), this research is reported in a case study format (four case studies). As it can be found in the next chapters of this report, the result of applying these two analysis methods on my qualitative data is significantly present in the content and structure of each of the case studies.

As with the initial analysis of the raw data that was used to write the case studies, in the final analysis chapter (where the findings from all four case studies are combined and analyzed), codes and incidents are also used as the main building blocks for analysis. This is also very much in line with the nature of analysis in AR inquiry where analysis is multilayer; starting from the *“initial meaning making”* (what I report in the cases) to *“revising the data for a more thorough and holistic understanding”* (what I present in the final analysis chapter of this report) (Herr and Anderson 2004, p. 81).

3.12 Participants in the research and level of participation

3.12.1 Participants

Participants in this research were primarily practitioners enrolled in the IGLUS Executive Master Program. In addition to these practitioners, some local practitioners and Master’s students also occasionally attended the training modules. The details explaining why we chose to work with this complex mix of participants in the project are described in the coming case study chapters. The profile of participants in each of the training modules is also outlined in each of the upcoming case studies.

3.12.2 Level of participation

Since collaboration is one of the main elements of AR inquiries, I should to briefly discuss the level of participation of our participants in this research project. Table 3.7 is based on the classification of different type of participations in AR inquiries by Herr and Anderson (2014, p. 51).

Table 3.7 – levels of participation in AR inquiries

Mode of participation	Involvement of participants
<i>Co-option</i>	When the participants have no real input or power
<i>Compliance</i>	When the researchers decide on the agenda and participants are assigned with some tasks
<i>Consultation</i>	When participants opinions are asked, but researchers analyze and decided on the course of actions
<i>Cooperation</i>	When participants work with the researcher to determine the priorities, but the researcher remain responsible to direct the process
<i>Colearning</i>	When participants and researchers share their knowledge to create new understanding and develop joint action plans with facilitation of researchers
<i>Collective action</i>	When participants set their own agenda and mobilize resources to implement it in the absence of outsider initiation or facilitation

Source: adopted from Herr and Anderson 2014, p. 51

Using this categorization scheme, the participation of the participants in this research process can best described as '*consultation*'. We often asked the opinions of the participants on different issues related to the training program, which were used as input for this research project, but in almost all cases the decisions about the course of actions were made by myself and the director of the program. It is important to note that although some authors (especially those specializing in PAR and emancipatory AR) place an extensive focus on the importance of higher levels of participation in AR inquiries (e.g. Kemmis and McTaggart 2007), many other distinguished authors in the AR community consider 'consultation' as the minimum accepted level of participation in AR inquiries (e.g. Bradbury 2010).

3.13 Ethical considerations

Since Action Research is an interventionist approach and can affect the participants (positively or negatively) throughout the research process, consideration of ethical issues is essential to AR inquiries (McNiff and Whithead 2011, Tripp 2005). Cohen et al., (2007, p.52) consider 'informed consent' to be the *bedrock* of ethical procedures in social research. Informed consent is defined as a procedure in which individuals decide to (or not to) participate in an investigation after being informed of the facts that might influence their decision (Crandall 1978). Informed consent has four

main elements (Cohen, et al., 2007), namely: competence (participants should be mature enough to make correct decisions on the basis of the information provided), voluntarism (individuals must be able to freely decide), full information (should attempt to provide complete information; although impossible in practice) and comprehension (participants must fully understand the research project and potential risks).

All the participants in the IGLUS training program, which is the context of this research project, were adults (minimum age of 25) with at least a bachelor degree (some also held a Master's degree) and some professional working experience. Due to their educational and professional background, the participants could fully and freely decide on their own whether or not to participate in this project. Thus, the principles of competence and voluntarism are fully addressed in this research procedure.

At the beginning of their participation, the participants were explicitly informed that this educational program also had some research purposes. In addition, the participants had also been informed that despite all the preparations and planning for the program, the first edition of this training initiative might have some shortcomings in terms of implementations and conceptualization due to the logistical complexities of the program and its intellectually challenging topic. They were also informed that their input, as members of the first class of the program, would be considered as a key tool for improving future editions of the program. As such, the principle of full information was also addressed to the greatest possible extent in this research procedure. Additionally, because all of the participants had professional backgrounds in areas of urban management and governance, they were able to understand the complex nature of this training and its associated research inquiry. Understanding such complexities and recognizing that the IGLUS training program is trying to address them, was in fact of the main motivations for many of the participants to participate in this program. With this, I can also count the principle of comprehension as being addressed through this research procedure.

Although the principles of informed consent were almost fully considered in this inquiry process, it is important to acknowledge that this inquiry was not posing any significant risk to the participants in the program. Due to the profile of the audiences (as adults with extensive educational and professional backgrounds) and the type of interventions implemented (no experimentations on individuals, but observing learning challenges and testing different training strategies to deal with them), the risks associated with this research were significantly lower than its potential benefit which, from an ethical point of view, puts this project on an even safer side (Cohen, et al., 2007).

Another important consideration is that the identities of the participants in the program are not revealed in this report. Protection of participants' identity, while keeping the reported data transparent and well organized, is achieved using a comprehensive system of coding that can be found in the case studies and the Annex of this thesis.

3.14 Ensuring research quality

The issue of trustworthiness of research findings is an important consideration in the research community. In the conventional social research paradigm (positivism), answering to questions about four topics are believed to provide a solid basis for defending the trustworthiness of research; these are given as 'truth value', 'applicability', 'consistency' and 'neutrality'. Accordingly, four criteria of 'internal validity', 'external validity', 'reliability' and 'objectivity' have evolved in response to these questions which are widely accepted as the core measures for ensuring the trustworthiness of research in the conventional research paradigm (Lincoln and Guba 1985, pp. 290-293).

Although these criteria are valid and widely accepted for positivistic research, as Lincoln and Guba argued, they are not easily transferable to other research perspectives:

"It should be evident that these formulation of criteria intended to respond to the four basic questions are themselves dependent for their meaning on the conventional axioms. Such as naïve realism and linear causality. We shall have more to say about that later, but for the moment the point to be made is that criteria defined from one perspective may not be appropriate for judging action from another perspective" (Lincoln and Guba 1985, p. 293).

This line of thinking is also present in writings from other prominent authors in the field of qualitative research methods. For example, Patton discusses seven alternative perspectives (and not only one associated with positivism) to ensure quality of research, namely traditional scientific criteria, constructivist criteria, artistic and evocative criteria, participatory and collaborative criteria, critical change criteria, system thinking and complexity criteria and pragmatic criteria (Patton 2015, pp. 680-697).

Following the same line of thinking about the dependence of quality measures on specific research perspectives, and adhering to the argument made by Herr and Anderson that *"Action Research should not be judged by the same validity criteria with which we judge positivistic and naturalistic research"* (Herr and Anderson, 2004, p. 53), I have adopted some widely accepted quality measures in the Action Research community as my guideline to ensure high quality research outputs in this project. The second and third editions of the Sage handbook of Action Research (Reason and Bradbury 2008, Bradbury 2015) outline seven major quality dimensions for Action Research inquiries. Table 3.8 outlines these major dimensions, their definitions and how they are addressed in this research.

In addition to the quality considerations for the AR inquiries, it is also important to note that in both the data collection and data analysis phases I have tried to ensure the credibility of my findings by using different triangulation strategies. As explained in previous sections, I used several data sources (observation, participant's essays, interviews, short surveys, etc.) in the data gathering process, as is commonly recommended in order to deal with the potential limitations of qualitative data collection. Next, in the analysis phases I employed two different methods of data analysis (coding and categorization and analysis of key experiences) to enhance the validity and credibility of my findings. By considering the specific quality choice points for AR inquiries and using different triangulation

strategies in the data collection and analysis phases, I tried my best to maintain the highest possible quality standards for this research project.

Table 3.8 – Quality choice points for Action Research inquiries

Quality choice point*	Description of the choice point*	Evaluation of this AR inquiry against the choice points	Success/failure
Articulation of objectives	<i>"The extent to which the Action Research explicitly addresses its objectives"</i>	Overt clarification of the research questions and objectives both to the participants in the project and in the dissertation	+++
Partnership and Participation	<i>"The extent to and means by which the Action Research reflects or enacts participative values and concerns for the relational component of research. By the extent of participation we are referring to a continuum from consultation with stakeholders to stakeholders as full co-researchers"</i>	Consultation with the participants in the project to design interventions for our AR cycles and also to reflect on the results of each intervention	++-
Contribution to the Action Research theory-practice	<i>"The extent to which the Action Research builds on (creates explicit links with) or contribute to a wider body of practice knowledge and/or theory that contributes to the Action Research literature"</i>	<p>The research is based on a thorough review and synthesis of AR methodologies that resulted in the articulation of traditional AR methodology in a more systematic and detailed manner, which (to our knowledge) was not available in the AR literature at the time of writing this report.</p> <p>Additionally, the practical illustration of conducting this project in its unique context (involvement of several universities, firms, organizations, participants) could be a useful guide for future AR researchers who might be involved in equally complex projects.</p>	++-
Appropriate methods and process	<i>"The extent to which the Action Research process and related methods are clearly articulated and illustrated. By illustrated we mean that empirical papers show and not just tell about process and outcomes by including analysis of data that include the voices of participants in the research"</i>	The different steps of the AR inquiry process are fully outlined and explained in the methodology chapter and the details are presented in the four empirical case studies as well as in the final analysis chapter	+++
Actionability	<i>"The extent to which the Action Research provides new ideas that guide action in response to need"</i>	Due to the complex nature and the special context of this project, there are many illustrations of decisions and actions for resolving emergent issues that occurred in this project and could potentially	+++

		reoccur in another AR inquiry taken in the same context (Executive Trainings)	
Reflexivity	<i>"The extent to which self-location as a change agent is acknowledged. By self-location we mean that authors take a personal, involved and self-critical stance as reflected in clarity about their role in the Action Research process, clarity about the context in which the research takes place, and clarity about what led to their involvement in this research"</i>	My double role in this project was overtly communicated with the stakeholders and the motivations behind this research were clearly conveyed. The project was developed on the basis of critical self-reflection attitude among the core IGLUS team; which indeed resulted in significant changes both from the first AR cycle to the next AR cycles as well as from the first edition of the training program to its second edition.	+++
Significance	<i>"The extent to which the insights of the Action Research are significant in content and process. By significant we mean having meaning and relevance beyond their immediate context in support of the flourishing of persons, communities and the wider ecology"</i>	Due to the detailed documentation presented in this work, as well as strong link with the academic literature, the process of conducting this AR inquiry and its findings could be useful for researchers and practitioners who are involved in the design/implementation and evaluation of Executive Training programs. And as cities are being increasingly recognized as important actors for addressing global challenges, the contribution of this research, which was enhanced quality of Executive Trainings about governance of urban infrastructures, could also be very valuable to stakeholders outside of this project (this is also reflected by an increased interest in the IGLUS project observed after modifications were made based on the results of this AR inquiry).	+++
* Labels of choice points and descriptions are quoted from Bradbury 2015 - p. 8			

3.15 Generalizability of findings

The last issue that I would like to cover in this chapter is the generalizability of the research findings. Finding generalizable knowledge claims is often seen as one of the main objectives of scientific research in the positivistic (sometimes associated with quantitative) paradigm (Lincoln and Guba 1985). However, the generalizability of findings from AR inquires (in its positivistic sense) is debated by many prominent authors in this field (see for example Stringer 2007 p.192, Herr and Anderson 2004, pp 61-64). As a great illustration of this debate, I shall use the words of Argyris and Schon (p. 613):

“... their [Action Researchers’] generalizations are unlike the ‘covering laws’ to which normal social science aspire; they do not describe relationships in which the values of a group of dependent variables are uniquely determined by the values of a group of independent ones. Rather, their generalizations tend to describe thematic patterns derived from inquiry in one setting the valid transfer to other settings of which depends on confirmation there by further experiment.” (Argyris and Schon, 1989, p. 613)

The findings of this AR inquiry, as those of many other AR projects, have limited generalizability if one considers the positivistic understanding of generalizable findings. However, my findings could be considered generalizable in similar contexts where practitioners or researchers are interested in understanding the potential challenges associated with training a group of practitioners about a complex-multidisciplinary concept and developing plausible strategies to overcome them. For example, those who are trying to develop a new Executive Training program to train practitioners to effectively analyze a complex system from a multidisciplinary perspective (in a different context from urban infrastructure) could make use of many lessons from reading this report. Additionally, those who aim to modify an established training program with a uni-disciplinary focus to become a program that enables its participant to analyze the complex real world problems from a holistic-multidisciplinary approach (as is increasingly valued in professional modern practices) could benefit from the findings of this research. Based on these arguments, I believe that my findings from this Action Research project are generalizable to the extent that is widely accepted in the Action Research community.

Chapter 4 - Case studies

In this chapter, I present four case studies, each corresponding to one of the first four training modules from the first edition of the IGLUS Executive Master program. Each case study is associated with one Action Research inquiry cycle, which constitute the core methodology of this research project. The case studies are developed on the basis of a similar protocol, covering: the preparation of the module (Planning of the AR cycle), important incidents during the module (Actions and Observations in the AR cycle), and after-the-module activities (Reflections on the AR cycle).

4.1 IGLUS Guadalajara case study

4.1.1 Introduction

4.1.1.1 Overview of the training module

The IGLUS-Guadalajara module was the first training module of the IGLUS Executive Master. This module took place in June 2014 in the Guadalajara Metropolitan Area (GMA). Table 4.1.1 outlines the overall program of the IGLUS-Executive Master and highlights the position of the IGLUS-Guadalajara module in relation to the overall Executive Master program⁴².

Table 4.1.1 – IGLUS-Guadalajara training module position in the overall IGLUS Executive Master program

Guadalajara	Istanbul	Hong Kong	Ras Al-Khaimah Dubai	Detroit Chicago	Seoul	Rhine-Ruhr
Social Challenge (June 2014)	Cultural Challenge (Sept. 2014)	Optimization Challenge (Nov. 2014)	Sustainability Challenge (Feb. 2015)	Economic Challenge (April 2015)	Technological Challenge (June 2015)	Metropolitan Challenge (Sept. 2015)
Housing and Use of Land	Disaster Management	Sustainable Transport & Housing	Innovative Finance of Urban Mobility	Utilities Regulation and pillars of Sustainability	Smart Transport	Regional governance
Transport and Mobility	Green infrastructures	Metropolitan Finance	Governance of sustainable Water & Waste systems	Industrial ecology	Smart Energy and Water	Metropolitan mobility
Human and Citizen Security	City Governance	Energy, Water and Wastewater	Urban resilience & Environmental sustainability	Sustainable Urban Economy	Urban ICT policy & governance	Urban forests & ecosystem balance
Transparency & Accountability	Transport Planning and Finance	Smart City and urban Resilience	Housing and Zoning policies	Urban Leadership	Governance of Integrated Systems & Green performance	Metropolitan Finance

The IGLUS-Guadalajara module was organized in collaboration with Tecnológico de Monterrey, Guadalajara campus. This training module had a special focus on “social” challenges in governance of

⁴² As explained in the methodology chapter, in this thesis I will report on only the first four training modules of the IGLUS Executive Master program and their associated AR inquiry cycles. This is why the corresponding columns to the Detroit, Seoul, and Rhine-Ruhr training modules are shaded in dark grey in Tables 4.1.1, 4.2.1, 4.3.1, and 4.4.1.

large urban systems. Within the theme of social challenges, 4 major topics were selected to be addressed during the Guadalajara module, namely:

1. Housing and land use
2. Transportation and mobility
3. Security
4. Accountability and transparency

To cover these broad four topics, more than thirty training sessions were delivered during two weeks of training. The final program of the training sessions in the Guadalajara module is summarized in table 4.1.2.

Table 4.1.2 – final program of the IGLUS-Guadalajara training module

Date	Topic
Monday 16.06.14	Welcome – presentation of the IGLUS project
	Roadmap of IGLUS-Guadalajara (EPFL)
	Theory of governance; new paradigms, new challenges (EPFL)
	Roundtable on challenges of planning in Mexican Cities
Tuesday 17.06.14	Urban community building and governance, the Barrios Amables project (practitioner input)
	Social dimension of urban governance and how it affects urban performance
	Participatory bottom up governance
	The social factors of violence in large urban environments
Wednesday 18.06.14	Crime and violence prevention in the global context and Latin America (WB)
	Group work on crime and violence prevention (WB)
	Field visit to Macrobus and Light rail system (SIETUR)
Thursday 19.06.14	Urban transport (WB)
	Field visit to Santa Margarita cycle path and Zapopan's strategic project planning office
Friday 20.06.14	Roundtable on roots and causes of lack of accountability and transparency
	Impact of blurred accountability on the performance of urban infrastructure systems
	Transparency and performance of the city government; the Telajemulco case (local practitioner input)
	Jalisco institute of transparency main challenges (local practitioner input)
Saturday 21.06.14	UN-Habitat's initiatives on housing and use of land in Latin America
Sunday 22.06.14	Field visit to Via RecreActiva (bike ride)
	Free
Monday 23.06.14	Roundtable on case studies on crime and violence prevention in Mexico
	Theoretical foundations of citizen security and crime prevention

	Workshop on citizen security
	Field visit to IBM; Smart planet project
Tuesday 24.06.14	Roundtable on case studies on urban transport governance
	Theoretical inputs on transport planning
	Case study on development of the non-motorized mobility plan for GMA
	The potential of social entrepreneurs in urban systems
Wednesday 25.06.14	Technology, storytelling and public space recovery global initiatives and best practices
	Visit from the Guadalajara campus party (Hackathon event) and open data workshop
Thursday 26.06.14	Roundtable on comparative institutional frameworks on land use, planning and housing and their social consequences
	Integrated land-use and transport policies
	Social innovation and urban challenges, the case of NGOs in GMA
	Strategic alliances for urban challenges at Jalisco state government
Friday 27.06.14	Field visit to urban periphery neighborhoods
	Wrap up and conclusion sessions (EPFL)

4.1.1.2 Participants

In this module, we had eight participants who were committed to attending the entire Executive Master program and eight participants who were only going to attend in the Guadalajara module. The profile of these participants is summarized in table 4.1.3.

Table 4.1.3 – Profile of participants in IGLUS Istanbul module

Name Code	Affiliated city	Educational/Professional background	Number of modules that she/he had already attended
G.A.P.R	Colombia, Bogotá	PhD in engineering/ITESM School of Engineering and Architecture	0
A.H.O	Mexico, Zacatecas	Industrial desing/TECZAC Guadalajara (App developers)	0
M.A.B	Mexico, Teotihuacán	Urban planning/Municipality of Teotihuacán, State of Mexico	0
C.P.M	Mexico, Tlaquepaque	International relations/Tlaquepaque Municipality. General Direction of Economic Development and Tourism: Historical Center Coordination	0
A.F.A.R	Mexico, Lagos de Moreno	Urban planning/Lagos de Moreno Municipality	0
K.I.R.A	Ecuador, Quito	Civil engineer/Secretary of Mobility from the Municipality of the Metropolitan District of Quito	0
P.K	Mexico, Guadalajara	Graduate student/ITESO Student Society	0

A.V.H	Mexico, Guadalajara	Graduate student/Jalisco Como Vamos	0
A.N	Bahrein, Edamah	Business administration and law/Edamah Real Estate company	0
J.L.C	Brazil, Rio de Janeiro	Economics and MBA/Special assistant for Chief of Staff in City Hall of Rio de Janeiro	0
R.E.G.A	Mexico, Zapopan	Civil engineer/Zapopan Municipality: Development Planning Commission / Private contractor	0
V.G.V	Mexico, Zapopan	International relations/Zapopan Municipality: City Council	0
L.E.G	Mexico, Zapopan	International relations/Zapopan Municipality: COPLADEMUN	0
J.A	Mexico, Guadalajara	Civil engineer – rural development planner	0
B.C	Mexico, Guadalajara	Statistics and computer science /Social activist (NGO for improved children nutrition)	0
M.A.M.C	Colombia, Cali	Civil engineer/director of infrastructure services in city of Cali	0

4.1.1.3 Our initial conceptualization of the module

Based on our initial conceptualization of the governance of large urban infrastructure systems, we knew that in order to improve the performance of cities through better governance of urban infrastructures, social challenges are an important pillar which should be carefully examined (Edwards 2003, Asian Development Bank 2014). Indeed, by conceptualizing cities, and more specifically their infrastructures, as socio-technical systems (see Chapter 2 of this thesis for a more detailed discussion), it was clear that the social dimensions in governance of large urban infrastructures would have to be covered in this training program (the same applies for the technological, economic and political dimensions). For us, the relationship between social challenges and performance of cities had two important dimensions: firstly, improvements in urban infrastructure performance, which can lead to a better city performance, should partly address the social challenges that the city is dealing with (e.g. reducing the social exclusion of less advantaged neighborhoods). Secondly, successful infrastructure improvement initiatives in a city requires that citizen's voices and preferences should be taken into account throughout different phases of the project; such as planning, development and operation (e.g. opposition from the civic society against new initiatives, social acceptance of new technological solutions).

Based on the special characteristics of Mexico, specifically Guadalajara, with regard to relevant social challenges such as concerns about crime, corruption, security, social segregation and gated communities (Haber, et al., 2008, Jiménez-Domínguez 2007, Villarreal and Hamilton 2009), we decided to place a special focus on the social challenges in governance of large urban systems in the IGLUS-Guadalajara module. We did so because we wanted to make sure that, in addition to the theoretical inputs, our participants would also have the chance to learn from real world examples and cases about the social challenges related to the governance of large urban systems. The IGUS-Guadalajara module provided an excellent setting where this could be achieved.

With these objectives in mind, we started to prepare the detailed curriculum of the IGLUS-Guadalajara training module in collaboration with our partner university in Mexico.

4.1.2 Preparation of the module (planning)

The IGLUS-Guadalajara module was the first training module of the IGLUS-Executive Master program, and therefore constituted our first AR inquiry cycle. Planning this training module (and its associated AR cycle) was my first experience of this kind and was mainly based on my reflections on my bibliographical research; previous teaching experience; consultation with experts (including the academic director of the IGLUS program, lead-professors from partner universities, lecturers from our non-university partners, other professors and colleagues with whom I had the opportunity to consult at EPFL); and the limited feedback provided by the prospective participants before the beginning of the program. However, as the project progressed (from the IGLUS-Istanbul module, onwards), I could also make use of my reflections on the learnings from the previous training modules in order to prepare and plan the next training modules of the program (in-line with my methodological choice discussed in detail in Chapter 3 of this thesis)⁴³.

In the coming sections, I try to elaborate on the processes I went through to plan and prepare the first training module of the program.

4.1.2.1 Our approach

The IGLUS-Guadalajara module was the first training module of the program. In this training module, our participants were going to have their first learning experience as part of this learning journey, and we, as the organizers of this project, were trying to deliver a different, world-class learning experience to them. This first step of the project was posing some important challenges to us, especially with respect to the choice of training approach we should adopt. Our participants were coming from a diverse range of educational and professional backgrounds and therefore we could assume that they would not have a uniform background about governance of large urban infrastructure systems⁴⁴. However, we were not fully familiar with their competencies and areas of interests (we had the chance to review their resumes and motivation letters before accepting them into the program, but such background information was far from comprehensive). By considering these factors, and in-line with the generic recommendations taken from the academic literature (see Chapter 2 of this thesis), we decided to focus this training module on covering abstract concepts and generic conceptual frameworks about governance of large urban infrastructure systems that could be understood and discussed by most of the participants.

⁴³ This is why the structure of this case study is slightly different from the upcoming case studies in this report.

⁴⁴ Indeed, this was one of the main underlying assumptions in defining this projects, due to our observations about highly disciplinary nature of existing training programs.

By adopting this approach, we were trying firstly, to develop a shared understanding of the problems that this training program was aimed at addressing them, and secondly, to provide the participants with some generic theoretical inputs and conceptual frameworks (about the broad topic of governance of urban systems) that could be useful to help them better understand the complex problems in their professional occupations.

4.1.2.2 Choice of our theoretical inputs for the module:

Following our adopted approach, and based on my extensive literature review on governance of large urban infrastructure systems in the preparation phase of this project and by benefiting from intellectual inputs of Prof. Finger (Finger, et al., 2005, Finger and Pécoud 2005), we decided to use some theoretical inputs from Institutional Economics, Public Choice Theory, Polycentricity and Urban Governance (V. Ostrom, et al., 1976, Young 1976, Pierre 1999, Kearns and Paddison 2000, Stoker 1998, Swyngedouw 2005) to provide the participants with a basic understanding of the complex, and multi-dimensional nature of governance challenges.

In addition to these theoretical inputs, we also decided to use inputs from several papers on the social dimensions of governance of large urban systems to address the main theme of this training module. Also, we decided to present our initial IGLUS framework as a generic conceptual framework to help the participants to better understand the dynamics of the relationships among the different actors who play a role in the governance of large urban infrastructure systems. I will come back to the details of our theoretical inputs in this module in the next sections (4.1.2.3.2 and 4.1.3.1).

4.1.2.3 Designing the curriculum of the module with the partner university and partner institutions

4.1.2.3.1 Working with Tecnológico de Monterrey as our local partner university

With the overall objective of coverage of the important social dimensions in governance of large urban systems in the IGLUS-Mexico module, we started to jointly develop a detailed curriculum for the two weeks of training in collaboration with Tecnológico de Monterrey, Guadalajara campus (hereafter- Tec). We placed a special emphasis on developing the detailed curriculum of the module in close collaboration with the partner university, and not having it done dominantly by either EPFL or the partner university. Since the topics and the structure of the IGLUS training program was new to our partner universities (adopting a holistic-multidisciplinary approach about governance of urban infrastructures in a modular training program), we wanted to be sure that the training sessions that were going to be delivered by our partner university can really address the main elements of our discourse. Because it was quite possible that the partner university didn't deeply understand the

IGLUS discourse and could possibly have designed the training sessions based on their own preferences and previous knowledge base- not necessarily in accordance with the objectives of this project, it was not possible to simply outsource the training module to the partner university. On the other hand, we did not want to impose our own *hypothetically ideal curriculum* on the partner university because it would have been likely that we missed a lot of valuable knowledge and expertise that could have been brought by the partner university (in this case, Tec), but could not be adequately incorporated into a curriculum pre-designed by the EPFL team.

Achieving to a jointly developed curriculum was a big challenge for the IGLUS-Guadalajara module. At the beginning of the curriculum development process, we decided to provide some general guidelines to our partner university (Tec) in order to clarify what we perceived to be important topics related to governance of urban infrastructures with a focus on the social challenges. Based on these guidelines, Tec should have been able to develop a concrete proposal that covered these important topics on the basis of *their* local knowledge and available resources (i.e. professors, field visits).

To that effect, I personally organized several virtual meetings with our contact person at Tec, to explain the IGLUS discourse and our initial framework and to clarify what should be covered during the Guadalajara training module. However, based on the educational and professional background of the contact person in Tec (a Masters in political science with limited familiarity with urban infrastructures) and our limited experience in joint development of the curriculum, these online meetings faced difficulties impeding their success.

The main intellectual difficulty faced throughout this process was to effectively communicate the differences between urban governance as an abstract political phenomena and the governance of urban infrastructures as a practice-oriented multidisciplinary concept that we were trying to develop and enrich through this project. After a while, our contact person in Tec seemed to become frustrated to understand and work with our conceptualization of governance of large urban systems (which at this point, was not yet finalized) and started to *ask for more direct orders telling him exactly what he should do*.

Another complication arose when we soon realized that the partner university is firstly, and mostly, concerned with making use of their available resources (people, contacts, etc.) to fill the training sessions instead of effectively adhering to the general learning objectives of the module that we had proposed. So, after about four weeks of discussion (April 2014) and an extensive effort to convey the general guidelines to the partner university, having made only limited progress towards reaching to the final curriculum of the module, I realized that we have to change our strategy in order to have the final program of the module ready in time.

To that effect I, at EPFL, took on the responsibility of designing the overall structure of the curriculum for IGLUS-Guadalajara module in order to reflect the broad learning objectives that we were expecting from this module. More precisely, in consultation with the academic director of the IGLUS program, I started to develop a detailed *structure for the curriculum* of the module that outlined how many theoretical sessions we needed and which topics they would address, how many workshops we would like to have, how many field visits should be planned, etc., and also clarified the sequencing of these activities. Table 4.1.4 provides the details of our proposal to Tec.

Table 4.1.4 – draft version of curriculum proposal to Tec

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
Welcome - IGLUS general presentation - Guadalajara presentation	Practitioner input: how including/ignoring social considerations in governance of urban systems can influence the performance	WB Crime	WB-Transport	Theory lecture on the roots and causes of lack of Accountability and Transparency	UN-Housing		Practitioner input: Analyzing a case study on Crime and violence prevention in Mexico	Practitioner input: Analyzing a case study on an urban transport governance reform (or a project) which was due to social concerns	Practitioner input: Analyzing a case study on a transparency improvement initiative in urban government systems in Latin America	Practitioner input: Analyzing a case study on a land use policy - housing project and social consequences in Latin America	Social entrepreneurs as an answer to these challenges
Roadmap of IGLUS - Mexico	Theoretical input: Social dimensions of urban governance and how it affects on urban performance (social capital - social cohesion)	WB Crime	WB-Transport	Practitioner input: impacts of blurred accountability on the performance of urban infrastructure systems governance -	UN-Housing	Field visit	Theory input: introducing a special method (toolkit) for integration of non-socialized groups in the urban society	Theory input: introducing a special method (toolkit) for transport planning	Theory input: introducing a special method for monitoring transparency in municipalities	Theory input: introducing a special method for integrated land use and transport policy	Social entrepreneurs as an answer to these challenges
Theory of Governance - Bottom Up New paradigms, new challenges	Participatory - Bottom Up governance	WB Crime	WB-Transport	Practitioner input: impacts of lack of transparency on performance of the city government -	UN-Housing		Workshop on the tool	Workshop on the tool	Workshop on the tool	Workshop on the tool	Workshop with wrap up exercises
Presentation by local authorities - the challenges they face in their city and what do they expect from such a program	Social issues related to healthcare - Education - water and waste	WB Crime	WB-Transport	30) Workshop - Transparency and Open data initiatives in Mexico for solving social problems	UN-Housing		Field Visit - The Zapopan security building	Field Visit - Urban Transport infrastructure (special project if available)	E-gov transparency	Field Visit from the Slums	Workshop with wrap up exercises

Once this general structure of the curriculum for the module was developed, I asked our partner university (Tec) to reflect on this proposal and suggest knowledgeable persons who could fit into this broad curriculum or new sessions/activities that were missing in our proposal. Using this strategy and after several rounds of revisions, we came to the final program for the module, which is summarized in Table 4.1.1.

Because the structure of the module and respective sessions was mainly developed by our team at EPFL (myself and Professor Finger), and not as a result of internal consultation between Tec and their affiliated lecturers, I was concerned that the local lecturers might not understand the essence of this program and hence wouldn't adequately address our main learning objectives of the module in their sessions. So, I urged our contact person at Tec to communicate with the lecturers in advance and clarify the main learning objectives of the program to them (to cover challenges in governance of large urban systems).

However, as it will be discussed in the coming sections, the content of the lectures was not always necessarily focused on the governance dimensions of large urban systems. In fact, in several cases the main focus of the lectures was explaining the details of local projects or providing theoretical, discipline-specific, information on the subject matter of the session (e.g. basics of urban transportation planning). This occurred despite the fact that in the initial planning of the collaboration with Tec, we had requested to have all the final presentations of the training session two weeks before the start of the program. This was planned to ensure that we would be able to review all the presentation materials of the training module in advance and provide necessary feedbacks to the lecturers so that, if necessary, they could realign their material with the overall learning objectives of the module. This initial review would also have been helpful to prevent any redundancy in the material covered by different presentations throughout the module. However, due to practical difficulties, most of the lecturers could not meet this deadline and even my insistent contact through email to each of the lecturers did not result in the timely delivery of the slides. The same experience also occurred in other training modules and was especially difficult during the development of the Istanbul module, as will be discussed in the next case study.

Losing control over the presentation materials of associated lecturers and ultimately having sessions with lower than expected learning outcomes (with respect to the governance of large urban systems) eventually pushed me to rethink the design and implementation of the project, as well as my own role as the moderator of the training modules. I will come back to this issue in the next cases studies.

In addition to the sessions that were supposed to be delivered by Tec and their associated lecturers/practitioners, we at IGLUS had to design two other types of sessions as well: the IGLUS-EPFL sessions and the IGLUS-Partner sessions.

4.1.2.3.2 Designing the IGLUS-EPFL sessions

4.1.2.3.2.1 Designing the Theoretical Opening sessions

Our ultimate goal in the design and implementation of the IGLUS training modules, as a major element of the broader IGLUS project, was firstly to enhance the participant's understanding of the complexities in governance of urban infrastructures and how (and why) they can be addressed from a holistic/multidisciplinary point of view, and secondly to help the participants to use their obtained knowledge from the program to improve their professional practices in their jobs. To that effect, we decided to reserve several sessions in each of the training module for 'IGLUS-EPFL inputs' in order to make sure that our core messages and thoughts could be directly conveyed to our audience. In the IGLUS-Guadalajara training module, we planned two types of EPFL-input sessions, namely, *Theoretical Opening sessions* and the *Module Wrap up sessions* (later in the project, a third and fourth category of the IGLUS-EPFL session called *Reflection sessions* and *Project sessions* were introduced).

The main aim of the theoretical opening sessions in the IGLUS-Guadalajara module was to provide the participants with a simple, yet practical conceptual foundation about governance of large urban systems. This common conceptual foundation was supposed to enable the participants to better comprehend the information that they were going to encounter during the proceeding training sessions. More precisely, this theoretical foundation was aimed at empowering the participants to critically analyze the governance dynamics of large urban infrastructure systems in the host city from a holistic point of view, to understand the link between governance and city performance and to compare the host city with their home cities.

While designing our theoretical sessions, we were faced with a dilemma of choosing between the prevailing expectation from 'academia' to 'teach' theory to the 'students' (where the lecturer functions as the source of knowledge and the student as the receiver) and our strong belief that we are in an 'adult education' arena where the participants already possess a rich knowledge base about the topic and our role is not to teach, but to facilitate learning dynamics for these adults in the program (here, the lecturer functions as the learning facilitator). In our view, the participants were active learners who could contribute to the discussions by using their existing rich knowledge (obtained from experience); and thus the higher-education/academic approach of teaching theory would not be an effective training approach (Knowles, et al., 2014).

To resolve this dilemma, we decided '*to present*' some generic theoretical inputs as well as our own conceptual framework (Figure 4.1.2) and synthesis of our thoughts about governance of large urban infrastructure systems to the participants to provide an arena for discussion, and not to 'teach' standalone pieces of theory as orthodox intellectual truths. As a result, in the first theoretical session of the Guadalajara module we presented our basic governance framework -which was an outcome of previous bibliographical research- to introduce our multidisciplinary conceptualization of governance of large urban systems to the participants. The framework depicted the main actors that play a significant role in governance of urban infrastructures and how they were related to each other.

Additionally, since the theme of the IGLUS-Guadalajara module was social challenges in the governance of large urban systems, we designed one special theoretical discussion session around the roots and consequences of social challenges that have an effect on, or/and are affected by governance systems. In this session, our main goal was to get deeper into the social dimensions of governance of large urban systems, which was briefly illustrated in our overview of the conceptual foundations of governance.

To enable the participants to engage in a constructive discussion, as it will be explained in the next sections, we designed some preparatory activities for the participants. The preparatory activities were designed in such a way that after doing them, the participant could get a basic understanding of the concept of governance and the social dimensions related to governance of large urban systems, and also gave the participants an opportunity to reflect on their own experiences by using these concepts. As will be explained in section 4.1.3, this strategy (designing the preparatory activities to be in line with the theoretical opening sessions) proved to be beneficial for helping the participants to engage in critical discussions during these sessions.

4.1.2.3.2.2 Designing the wrap up sessions:

The two last sessions of the IGLUS-Guadalajara module were reserved for wrap up activities. The main objectives of the wrap up sessions were to firstly provide an opportunity for the participants (as a group) to share their learnings from the training module with the class and I, and secondly to share their feedback about their learning experience in the training module and openly discuss the strengths and weaknesses of the training module (as a focus group). Since the session was aimed at fostering an open discussion among the participants, I decided not to impose a strict structure on the session and leave it relatively open to adapt to the emerging dynamics of the discussion and only play the role of discussion facilitator.

4.1.2.3.2.3 Designing the joint sessions with partner institutions and companies

UN-Habitat (hereafter UN) and the World Bank (hereafter WB) accepted our invitation to give a lecture at the IGLUS- Guadalajara module. No partner companies were present in this first training module. Due to the recognized expertise of UN-Habitat on the issue of housing, for this module I asked them to cover the topic of housing and land use planning. The World Bank sessions focused on the issues of crime prevention and transportation planning.

After several rounds of email exchange and basic clarification of the general curriculum for the module, I started to talk directly with partner representatives to organize the agenda for these joint sessions. During the preparation phase of these sessions, both we, the IGLUS team, and our partners, the UN and the WB, voiced concerns about the ‘usefulness’ and ‘relevance’ of their respective contributions for the participants. In the case of both the UN and WB sessions, the partners were initially skeptical about the coherence and relevance of the curriculum of the training module as well as that of the IGLUS Executive Master. They were also looking for a persuasive value added to justify

their attendance at this training program. It is important to note that our institutional partners were not receiving any honorarium for their contribution in the training module and therefore the main motivation for them was the usefulness of the program and the potential benefits their participation could bring for the participants as well as for themselves. As an illustration of this point, in the first round of discussion with the contact person at UN-Habitat who is a globally recognized expert on housing and land use planning, he asked me directly:

... Why do you think our contribution about land use planning and housing is of any relevance to your program? We are short of resources, so I need to be confident that our contribution will be pertinent to your program before I assign one of my team members to come and teach at your event for one day. As you know, there are a lot of training programs for city managers with very specific focus on the issue of housing, but in your program a lot of different issues are supposed to be covered and I am afraid our contribution will not be really “meaningful” and “relevant” to your audience... (the text is my own paraphrasing from our Skype meeting)

To ensure our partners that this program has a well-thought-out, well-integrated and innovative curriculum and that the topics proposed for their contribution are relevant and important for this training exercise I often had to present and explain the complete IGLUS Executive Master program as well as the complete curriculum of the Guadalajara module. I additionally presented our conceptualization of the governance of urban infrastructures to each of the partners to justify why their contribution, as experts with a global perspective, is of special importance to this program.

By explaining the curriculum and logic of our conceptualization of governance to the partners (international organizations as well as companies in the next training modules of the program), and being able to answer different questions and respond to criticisms that they raised in the discussions, a common understanding between me and our non-academic partners was developed. It is worth noting that among all of those we considered to be potential partners, none with whom we met over Skype or face-to-face refused to participate in the program. In other words, the partners seemed to clearly see the value of contributing to the IGLUS project, whose overarching goal was to help practitioners to better address complex problems in governance of large urban infrastructure performance, via adopting a more holistic/multidisciplinary point of view.

It is also worth noting that explaining the IGLUS project to the partners, and having had the opportunity to have critical discussions with them prior to the start of Guadalajara module was quite insightful for myself and helped me to better reflect on our underlying assumptions in design of this training program. For example, one of the main points that I learnt from discussing the program with the representatives of the UN and WB was that while it is important to be innovative in designing this training program in order to achieve our learning objectives, the curriculum must also look similar (enough) to the well-established urban governance/management courses in order to attract the attention and trust of the partners and target audience. Indeed, these discussions helped me to introduce some modifications and improvements to the program's curriculum in later stages (such as allocating a full day to the topic of urban resilience), as will be discussed in the next chapters.

4.1.2.4 Local recruitment to enrich the class discussions

One of the main objectives in designing the IGLUS Executive Master in a modular format and moving between seven different locations was to provide the participants with the opportunity to learn by *experiencing different cities* as well as learning from *different lectures*. To enrich the discussions about different cases in each of the host cities, we decided to ask the partner universities to aggressively recruit among the city/regional officials to participate in each of the training modules.

The impacts of ethnic, educational and professional diversity among participants in educational and organizational settings have been extensively studied in the education and management literatures, and the research findings generally highlight the positive impacts of diversity on group performance (e.g. see Hurtado 2001, Gurin, et al., 2002, McLeod, et al., 1996, Kirton and Greene 2015). The core assumption in pursuing this global/local recruitment strategy was that the presence of a diverse group of participants from different cities/countries with different educational and professional backgrounds in the class (as far as they were interested in the topic of this training program) could help us to discuss complex problems in governance of urban infrastructures from a wider range of perspectives. And therefore, it can improve the quality of the training program with regard to its main objectives (training practitioners to address complex problems in governance of large urban infrastructure systems from a holistic/multidisciplinary point of view).

We wanted to make sure that this global group of participants would have the opportunity to discuss the success and failure examples related to governance of large urban systems in the host city with their local peers, and not only lecturers. We also wanted to make sure that we had an insider view on the situation of the host city during the academic/practitioner lectures to ensure that we were hearing the complete story. This was very important because as a foreigner, neither our students nor myself could really evaluate the fairness and completeness of the inputs we were hearing during the sessions, but the local participants could do so (as was the case in the Guadalajara, Istanbul, Dubai training modules and partly so in Hong Kong training modules).

In the IGLUS-Guadalajara module we had the opportunity to include many local participants in the class. Actually, more than half of the class came from the Guadalajara Metropolitan Area and several others came from other Latin American countries (which have similarities to Mexico). This resulted in very dynamic discussions throughout the module, especially in those sessions that were focused on topics related to the GMA. In fact, including local officials as participants in the module resulted in a more balanced flow of information from the lecturer to the class and vice versa and effectively ensured the information transmitted from the lecturers was complete and unbiased. However, having a large proportion of local participants also had negative consequences, which will be described in Section 4.1.3 of this case study.

4.1.2.5 Preparatory assignments

In the IGLUS-Guadalajara training module our recruitment strategy was to attract two types of audience to attend in the module: those who were committed to officially enroll in the complete IGLUS Executive Master program, and those who were only committed to come to the 2-week training module in Guadalajara (and may later decide to join as a formal master student).

The participants who committed to attend the master program were asked to read seven theoretical papers that were discussing urban governance related issues and to provide a summary of the three of the assigned articles (mandatory to read). In addition to reading and summarizing the articles, the participants were also asked to compare the readings to the reality that they experience at their day to day job and explain if, from their point of view, the articles resonate their professional experience in urban management/governance, and if not, what are the differences from their point of view. The participants were also asked to discuss the main challenges of governing large urban systems from their personal point of view and briefly analyze the roots of these challenges and propose possible solutions to address them. Most of the participants submitted their essays before the start of the module. The following text is adopted from the instructions that were shared with the participants:

"Please read the following academic articles on governance:

- a. Governance as a Theory – Gerry Stocker 1998*
- b. New challenges for urban governance – Kearns and Paddison 2000*
- c. Models of Urban Governance; the institutional dimension of urban governance – Jon Pierre 1999*
- d. Consolidation or Diversity; choices in the structure of urban governance – Dennis Young 1976*
- e. The organization of government in metropolitan areas; a theoretical inquiry – Ostrom, Tiebout and Warren 1976*
- f. Governance innovation and the citizen; Janus face of governance beyond the state – Erik Swyngedouw 2005*
- g. Countering Urban Segregation: Theoretical and Policy Innovations from around the globe – Smets and Salman 2008*

1. Briefly summarize the following 3 articles in 1-2 pages each (in total 4-6 pages): what are the main points made in these articles?

- c. Models of Urban Governance; the institutional dimension of urban governance*
- d. Consolidation or Diversity; choices in the structure of urban governance*
- f. Governance innovation and the citizen; Janus face of governance beyond the state*

2. Compare the main points of these 3 articles with your own personal experience in city management and governance: where do these articles confirm your experience; and where does your experience go beyond the points made in these articles? (approx. 3-4 pages)

3. What is your personal point of view about the main challenges of governing large urban systems? Where do the challenges lie? Why? What would be needed in order to tackle these challenges? (approx. 3-4 pages)"

4.1.2.5.1 Selected quotes from the participants' essays

Having different professional and educational backgrounds, the participants' responses to the questions were quite diverse. The participants' essays had many interesting points that well illustrated their understanding of the complexity and elusive nature of studying the governance of large urban systems, as well as importance of governance-related factors that must be considered in order to improve the performance of the urban system.

Question 1)

The participants' answers to the first question of this preparatory assignment were mainly focused on providing a summary of each of the articles (as three independent tasks) by highlighting the main arguments and propositions of each of these conceptual papers. For example, one of the participants from Brazil summarized the paper by Pierre by discussing his underlying arguments in the paper, while some other participants, such as one of the participants working in an NGO in Mexico, mainly focused on explaining the main findings of the paper:

"The article has two objectives:

- 1) Clarify the institutional dimension of urban governance. ...*
- 2) Introduce different models of urban governance bringing together the external and internal dimensions of urban governance. ...*

The author summarized his arguments in four points:

- 1) Urban governance should be understood of as a process of blending and coordinating public and private interests. ...*
- 2) Understand the capabilities of local government organizations are essential for an understanding of urban governance. ...*
- 3) Different institutional models of urban governance describe different systems of values, norms, beliefs and practices. ...*
- 4) Although theories of urban governance offer a new approach in comparative analyses of urban politics, it is also important to acknowledge the significance of the national context...." [J.P.1]*

"New forms of governance (public-private exchanges) must be understood against the purposes of urban governance. These Urban Governance objectives are divided by the author in Managerial, Corporatist, Progrowth and Welfare governance." [B.P.1]

An interesting point in the answers of participants was that almost no participant had synthesized the arguments of different papers together to come up with a general summary of the readings, instead they kept their focus on each of the papers individually and regarded each as an independent

task⁴⁵ (although there were some intellectual links among these papers). Nevertheless, they proved to be quite competent in understanding the arguments of these conceptual papers (this was especially true when the papers' arguments were delivered in a clear and pragmatic structure and language, like Pierre's and Young's papers, and less so when the structure and language of the paper was more sophisticated and philosophical, like that of the Swyngedouw's paper).

Question 2)

The answers to the second question, which was asking the participants to reflect on the papers' arguments based on their professional experience, showed that the participants were able to deeply understand the main points of the papers and relate them to their professional experience. One interesting point among the answers were the participants' *personal illustrations* about important dimensions of governance theories and practices. For example, one of the participants (working in a municipality in Mexico) pointed out to her *pragmatic* understanding of the concept of governance:

"... In fact, the term of governance is different, it depends on which theory is based and also when it's apply [should have meant "its application"] could be different theory and practice. But in general terms what I keep from the paper is that governance is a method or mechanism for dealing with a broad range of conflicts, using different models of actions that involves public, private and civic actor and at the end each has to be part of the decisions and its interest has to be satisfy; it sound very idealistic, but at the end it's obvious that humanity has to find ideal solutions for each problem, and that doesn't mean that the final result would be perfect, but at least could be the best option." [L.P.1]

Another participant, coming from Brazil, expressed his understanding of *context specificity* when studying governance systems by saying:

"I completely agree with the approach from the institutional theorists. If you want to understand the system of governance, you need to understand the values, norms, process that this system is embedded. ... My point here is that all this history shape de values, norms and how the relations have been established in the city. To understand the political power that cause the tensions in the relations of private, public and NGOs these analyses must be done." [J.P.1]

As a last example of the participant's input about their understanding of governance of large urban systems, I should quote a Mexican participant who was working in the state government and conceived governance as an Art:

"In my personal experience, the government [she should have meant governance, but not used to the terminology yet] is an art. Art is not the same in time or space; you can get different meanings depending on the personal history or taste." [A.P.1]

⁴⁵ But as it will be discussed in next chapter, the ability of our participants to come up with synthesize of different arguments was improved significantly with the progress of the project.

In addition to these abstract reflections, the participants could also highlight the differences and similarities between their practical experience and some of the points mentioned in the papers. For example, our Brazilian participant highlights some differences between what he experienced in his job, at Rio de Janeiro City Hall, and the ideal governance types that were explained in the papers:

"At the same time, I also agree that the government is still the protagonist in a system of governance. Rio has historical problems like "favelas" and security problems and this is intrinsic linked to the public government. The diagnosis and the solutions necessarily pass through the local, state and national government. Civil society or even the private sector will contribute but will not substitute the public apparatus.... I believe that in theory the author's proposal is good but in the "real life" of Rio de Janeiro we need to surpass some steps before."

The fact that the participants were able to understand and reflect on the conceptual papers that were assigned to them as preparatory assignment of the first module of the program was quite a positive signal, showing that the participants did indeed have the basic competencies necessary to engage in the reflective exercises that were at the core of our training strategy in the IGLUS-Executive Master program. In addition, the fact that the participants were able to express *their own opinion* about different issues, thanks to their professional experiences (as they illustrate it in their answers) was an important observation which further convinced us that we should aim to organize highly interactive training sessions in this program in order to benefit from valuable inputs of participants in the program.

Question 3)

Regarding the main challenges and factors that need to be considered in governance of large urban systems, participants' answers were quite informative and showed that they have a deep understanding of the practical challenges related to the governance of large urban systems. For example, one of the participants (working for an NGO in Mexico) described the *complexity* that is present in governance of large urban systems and the *evolving nature of these systems*.

"... That is why Governance in these cities represents a multi challenge: The adaptation of a Governance system, improving, creating, customizing and innovating forms of administration, of coordination, participation, etc. is a challenge by itself. Then there is the challenge of actually governing these cities, and finally, the challenge to realize that reaching goals does not represent the final achievement, in fact, it brings a new challenge, replying this model and being alert and expecting any change that could be (and in fact is) in the urban system, also to be prepared to adapt the model again, achieving this requires enough humility to constantly evaluate and analyze results, and be ready for a new drawing and implementation of a new model." [B.P.1]

A participant from Brazil described the main challenges in governance of large urban systems on the basis of his own experience and in doing so he addressed the *multidimensional* nature of governance

systems and highlighted the need to consider technological as well political aspects when devising effective governance structures:

"I believe that the real cutting edge is the use of technology to increase political participation and engagement of citizens to improve the quality of life. For example, the operations center of Rio is connected to Google and Waze. ... Finally, I'd like to emphasize that all these challenges are political matters. We must use the lens of politicians to understand these issues. More than a management problem these are political challenges and must be seen as that." [J.P.1]

Another participant, from Columbia, pointed out to the *financial dimensions* that affect the governance structure by saying:

"The resource dependency of local governments from the central government does not allow a single government program, it is necessary to join the central policy to local politics." [M.P.1]

One of the participants from Mexico, who was a politician working as a council woman, was more concerned with the legal aspects in any governance systems, especially with regard to defining the *boundaries for civic participation*.

"...the big challenges of a large urban system is an accurate law improvement where citizens can understand that they are part of the system and responsibility is a big part of the role, where the participation is a must and will always help to improve the system" [V.P.1]

Another participant from Mexico, who was working with the state government, nicely raised the issue of *conflicting interests* and the challenge of dealing with different, and changing, interests of stakeholders (as moving targets) in any governance systems:

"Interests, values and preferences are unstable and changing; therefore, the actors try to influence the decision making of their perception of reality, their own interests and goals. Governance means dealing with different interests at some point and other complementary but all these interests have to be on a common policy framework." [A.P.1]

Along the same line of thinking, one of the participants, who was working on development plans in one of the municipalities in the GMA, wrote about the *large number of actors* who are involved in the governance process as an important challenge:

"I think that one of the most important points that create debate is that there are many important elements and number of actors that are increasing on the topic, apart from its role that is changing quickly" [L.P.1]

As illustrated in the previous paragraphs, the participants proved to be able to capture and understand many important dimensions of governance of large urban systems (complexity, role of actors, conflicting interests, etc.) in their preparation for the module. In fact, the quality of thought and analysis presented in their preparatory works was quite promising for us.

4.1.3 During the module (Action and Observation)

After all the preparations for the Executive Master program and the IGLUS-Guadalajara module were made, the first training session began Monday June 16, 2014 at the Tecnológico de Monterrey, Guadalajara campus. In the coming pages, I will describe my personal observations made throughout the IGLUS-Guadalajara module.

4.1.3.1 First day of the program – EPFL sessions

The main aim of the first day of the module was to familiarize the participants with the IGLUS Executive Master program, and to provide them with the necessary conceptual foundation and background information about Guadalajara and Mexico. The day started with a formal welcome to the participants, delivered by our key contact from Tec, and a keynote speech given by the director of the Metropolitan Planning Institute of Guadalajara. In the keynote speech, the importance of innovative governance solutions for dealing with today's urban challenges was emphasized by the speaker- which was a very encouraging start to the module.

After the welcoming and introduction, Professor Matthias Finger gave an overview of the structure of the Master program and our pedagogical philosophy. By focusing on his educational and professional background in adult and executive education, Professor Finger's main point in this section of the class was to *emphasize the role of the participants as "Active Adult Learners"*.

We highlighted the fact that in adult education, learning is a result of collaborative/reflective discourse and knowledge sharing among the participants in the class, and not solely based on information presented by a lecturer. We also mentioned that we believed that the participants enrolled in this program because they wanted to improve the situation in their professional occupations and, ultimately, in their home cities. And therefore, we - as the program organizers - would like to help them to realize this goal by closely working with them to write a high quality Master thesis (not only as an official requirement of the program, but as a corner stone of our pedagogy) related to their job and relevant to the IGLUS discourse. We also openly disclosed the fact that the first edition of the IGLUS Executive Master program would also be the subject of a research project (conducted by me). We strongly encouraged the participants to communicate their observations and concerns (with regard to both the content and implementation of the program) with us, and expressed that we were willing to discuss and improve any potential weaknesses in the coming modules of the program based on the participants inputs.

This initial communication and disclosure was very well received by the participants, as I later received enormous inputs from them about almost every detail of the program throughout this Action Research inquiry. To foster such kinds of discussion, I also became personally involved in a close and personalized relation with the participants (e.g. spending time with them after the class, planning social-cultural activities, etc.), which significantly facilitated our communications. In fact, from the very beginning of the program the participants could perceive me as their peer (and not an outsider), who can act as an intermediary between them, the program director and the lecturers. Increasingly with time, holding this position proved to be a beneficial strategy as it facilitated free discussion of all the pros and cons of our intellectual discourse as well as the project implementation.

After explaining the structure of the IGLUS project, we illustrated our perceived shortcoming existing in training practitioners about governance of large urban systems. Our main argument, based on literature review and critical observations, was that cities are currently suffering from a lack of *holistic*, *multidisciplinary*, and *practical* approaches towards addressing complex challenges associated with the governance of large urban infrastructure systems and ultimately improve their performance; because⁴⁶:

“... separate perspectives on the same urban systems without [effective] integration into a coherent conceptual framework to enable the decision makers to:

- 1. Keep the big-picture in their mind*
- 2. Analyze the problems with an acceptable level of precision (and not generic claims)*
- 3. Provide actionable advice that can be implemented and evaluated for approaching complex urban challenges”*

And importantly, we also emphasized the fact that the *technological dimensions* that have significant effects on performance of cities, and are directly affected by governance of large urban infrastructure systems are widely missing from the mainstream urban infrastructure governance discourse (Figure 4.1.1).

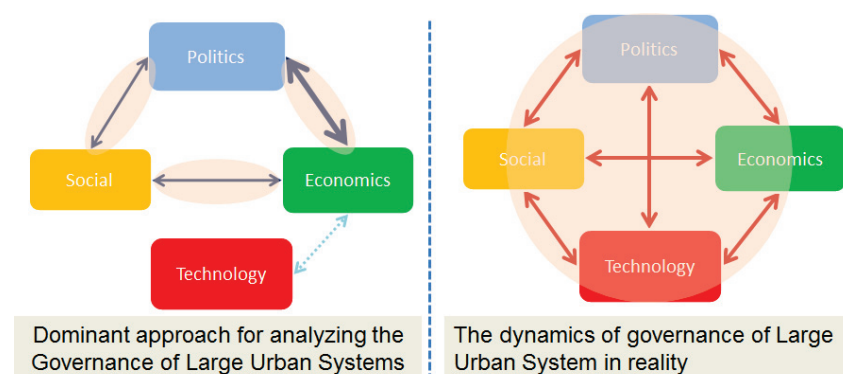


Figure 4.1.1 – four pillars of governance of large urban infrastructure systems

Source: adopted from our presentation material for the first session of IGLUS-Guadalajara training module

⁴⁶ The quoted text is adopted from our presentation in this session

The participants seemed to agree with the general argument about the importance of adopting a holistic/multidisciplinary approach, although they did not appear to completely understand the necessity of including the technological dimension when studying governance of large urban infrastructure systems. For example, one of the participants from Mexico was staring at the slides and writing some notes during the presentation and when I asked her what she thinks about our argument, she said:

“I understand the argument, but I am still trying to ‘digest’ it for myself.”

Having set the basis for why the IGLUS discourse (with a holistic/multidisciplinary approach) is relevant and beneficial for the participants, we moved on to present our preliminary IGLUS framework. The aim of the framework was to illustrate the relationships between the most important actors from each of the four important domains that affect the governance of urban infrastructure systems (technology, economy/finance, politics, social) and to demonstrate how such relationships influence the city performance.

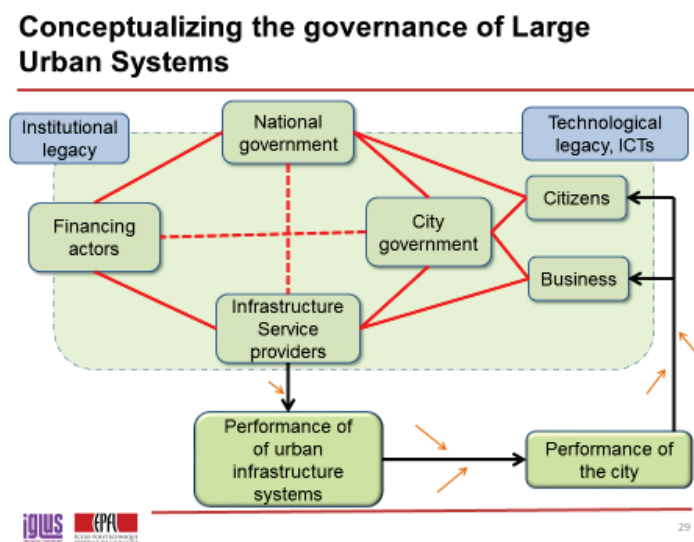


Figure 4.1.2 – preliminary IGLUS Governance framework
Source: adopted from our presentation materials

During the presentation, participants raised several critical questions that led to very dynamic discussions, such as:

- What is ‘Performance’?
- How do we see the role of geography (contextual factors) on performance?
- How do we see the role of other levels of government in this process (e.g. the state government in federalist countries)?

The first two questions were among some of the most important considerations that we were still working on them in our research activities, and hearing these questions from the participants in the first hours of the program was quite interesting and promising for us. Indeed, the early engagement of the participants in such critical discussions showed that even though they did not have a common conceptual background about governance of large urban infrastructure systems, they were still able to contribute to discussions by using the insights from their professional experience and reflecting on them.

After the theoretical sessions on the conceptualization of governance of large urban infrastructure systems, we had a dedicated session about social challenges in urban systems and how they affect, and are affected by, different governance arrangements. In the beginning of the session, Professor Finger gave a summary of three academic papers which were discussing the roots and causes of social exclusion in cities and proposing several policy recommendations to tackle these challenges. In this session, participants shared several examples of social challenges that their own cities were facing with, as well as some initiatives that were underway to address them. For example, the participant from Brazil described the case of urban slums in Rio de Janeiro (favelas) and explained how a coalition between the municipal government and national government was trying to improve the condition in these areas by, firstly, securing the neighborhoods and then by following up with provision of better urban services (recognition of these settlements, development of infrastructures, etc.) and finally empowering the civic society in these less-advantaged areas of the city. Several additional examples from the Guadalajara Metropolitan Area (GMA) were also raised in the class, especially with regard to gated communities and social segregation within the society.

In this session, our presentation was primarily focused on how cities can potentially address their specific social challenges (e.g. security and segregation) thanks to more innovative governance approaches such as enhanced social capital or social participation in decision making. *But, the examples from the participants were addressing both the impact of governance arrangements on social challenges as well as social obstacles for effective governance of large urban infrastructure systems.* For example, the participants presented very interesting examples of the challenges that they, as urban professionals, were experiencing due to strong oppositions from local communities to almost every decision made by the municipalities. Especially, the case of developing a bike lane in a main street of one of the neighborhoods in the GMA was raised by some of the participants during the session. In this case, the community resisted against the project plans, which created many political and operational obstacles to the progress of the project. Referring to this example, the participants raised two very practical questions:

“How much social participation is really beneficial to the decision making process? And under which circumstances?”

Thanks to the participants inputs, we were able to have a dynamic discussion about this topic where most of the questions and answers were indeed exchanged in dialogues among the participants themselves. Due to the controversial nature of the topic and our approach to encourage the participants to freely present their unique perspectives throughout the class discussions to let different perspectives of participants being freely presented in the class discussions, no final/concrete answer to these questions could be agreed upon in these discussions. The fact that

such discussions were leading to the emergence of new questions and further elaboration on the multi-faceted nature of the problems, and not some definitive formulation of ‘the best approach’ or ‘best practice’ to ‘solve’ the problems were leading some of the participants to become frustrated as they were eagerly looking for “what works and what doesn’t work”. In these situations, I became tempted to share my own personal opinion, based on insight I derived from my previous literature review, with the class in order to satiate the participants’ demands. However, thanks to my personal reflections on the dynamics of the first sessions of the program and the advice of the director of the project, I soon realized that providing ‘answers’ to the participants’ intellectual dilemmas would hinder the emergence of critical discussion in the class; instead my role should primarily remain focused on the *moderation* of the discussions.

After the EPFL theoretical opening sessions, we began the sessions given by local lecturers and practitioners. I should note that I will not explain the content of all of these sessions in detail as their nature is different from that of the IGLUS-EPFL opening sessions. Instead, I will only refer to important incidents from these sessions when some valuable information about my research question is present (see Chapter 3 of this report for a detailed discussion of this methodological choice). The main incidents of the IGLUS-Guadalajara training module are explained in more detail in the coming pages; briefly, they are:

1. Difficulties for ‘academic’ lecturers to train ‘practitioners’ - difficulties for practitioners to get the essence of ‘training vs discussion’
2. Heterogeneous academic input and teaching style among the invited lecturers
3. Lecturers being challenged on ‘how’ questions - Importance of contextualization of abstract concepts/arguments
4. Strong focus of local lecturers on their technical ‘disciplines’ - role of the moderator to create opportunities for critical reflection
5. Focus of the participant’s questions on exploring more information about the specificities of cases
6. Fruitful mix of local and international participants and its associated challenges
7. Challenges associated with reaching a balance between locally relevant yet globally applicable learnings
8. Language barriers
9. Importance of toolkits (practical inputs)

4.1.3.2 Main Incidents during the Guadalajara training module

4.1.3.2.1 *Difficulties for 'academic' lecturers to train 'practitioners' - difficulties for practitioners to get the essence of 'training vs discussion'*

One of the main issues that I observed during the IGLUS-Guadalajara training module was some differences between the expectations of the participants and those of the lecturers from the training sessions, as well as partial misalignment between the expectations of both these groups with the learning objectives we defined for this module and the Executive Master program. Such differences resulted in significant difficulties during some of the training sessions of the first module of the program. Over the course of the first days of the Guadalajara module, I realized that some of our training sessions in the IGLUS program were going to be too controversial and very difficult for the lecturers to manage. The causes underlying this challenge were, firstly, the difficulties that some of our academic lecturers had in designing a relevant and understandable lecture for a group of practitioner-participants with diverse educational backgrounds and professional experience, and, secondly, the impatience of some of the participants in expressing their opinions and categorizing theoretical inputs as being strictly *right* or *wrong*. These two factors could sometimes result in very heated discussions that became unmanageable for the lecturers.

For example, in the afternoon of the second day of the IGLUS-Guadalajara training module, we had a presentation by a lecturer who was involved in an outstanding research project about crime and violence in Mexico. He was presenting the results of this comprehensive research project that attempted to explain the main social causes of crime and violence in Mexico. Although the project was a precious research endeavor, the lecturer was *not able to deliver the key messages from the research to our professional participants (not researchers)*, in a format they were able to understand. He was so focused on explaining the details of the research findings that he could not, or was not willing to, provide the big picture of the issue and get into the governance/policy related dimensions that could help addressing the issue in Mexico.

As a result of his strong research-oriented teaching style, and despite the fact that the presentation seemed quite complete from a researcher's point of view, the participants could not make sense of it. In this session, I, surprisingly, did not observe any opposition or disagreement to propositions or theoretical explanations the lecturer made, in contrast to what I observed in some other sessions of the program; instead I could feel a total sense of confusion for both the participants and the lecturer. The participants could not understand the links and relevance of the research findings to their jobs and they seemed to feel lost. As a result, the participants began to ask questions that basically overpassed (ignored) the content of the presentation and directly asked about their professional concerns, such as "what should I do to tackle issue of X (e.g. vandalism) in my city". On the other hand, the lecturer seemed unable to understand the concerns and interests of the participants and avoided answering these direct questions by instead referring the participants to his research findings (without interpreting the results in the light of questions).

After spending almost half of the session in confusion and an exchange of unanswered questions, almost all the participants lost their interest in the presentation and the lecturer also lost his

enthusiasm in explaining his findings (this session got the worse evaluation result among all the sessions in the module). I attempted to mitigate the situation by acting as the *moderator of the session* in order to change the unpleasant atmosphere of the session. I did so by presenting *my own summary* of the main causes of crime in Mexico based on my own understanding of the content *from the lecturer's* presentation and then asking for the lecturer's reflection on my points. Once he generally approved my main (simplified) points from his presentation, I started to ask questions about the main actors who could influence each of the root causes of crime (based on the research findings), how they could do so, etc. In doing so, I tried to become the “translator” (mediator) between our lecturer and the participants. This mediation proved to be useful as the participants became re-interested in the discussion and *the lecturer started to reflect on my questions*, instead of leading the session, which seemed to be hard for him.

The issue of urban crime and violence was one of the most important topics for the majority of our Latin American participants and the poor quality of this session on urban crime was not due to poor choice of the topic. As an illustration, when the issue of crime and violence in Mexico and GMA was raised again during the module by another researcher (day eight of the module), who had a practical approach and had significant experience in field work and research, the session turned to become one of the most interesting sessions of the module for participants. This was in large part due to the high quality of the graphical illustrations of her research findings illustrated in her presentation, like for example the problem network that is shown in Figure 4.1.3 provided a solid basis for discussion around this topic.

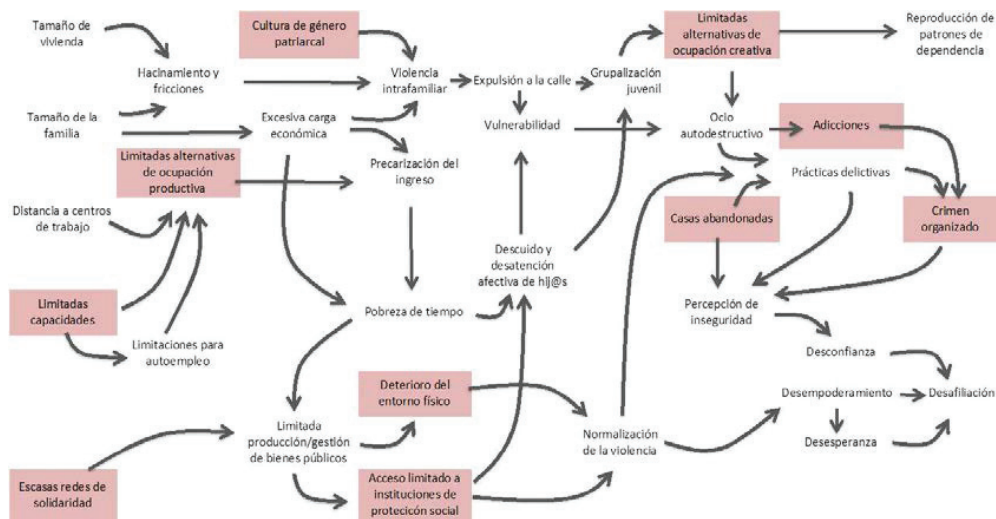


Figure 4.1.3 - Example of models used in the presentations by our local lecturers
Source: Presentation of a local lecturer in IGLUS-GDL module

After observing these difficult communication experiences between the participants and lecturers during the first two days of the Guadalajara module, we decided to talk to the participants about how we could make the most of the training sessions by *asking 'good questions'*. So, at the end of the second day of the program I had a short consultation with Professor Finger to plan a short informal session with the participants and discuss this issue. We started this informal session by reflecting on the overall experience of the first two days of the program. We then raised the point that throughout the course of this training, there might be some sessions that even though the lecturer is quite knowledgeable and has a lot to teach to the class, he/she is not capable of addressing the participants' concerns. *We urged the participants to be aware of such contingencies and to try to get the most from such speakers by asking 'good questions' to create an opportunity for critical reflection on the lecturers' inputs and to also avoid 'argumentation' with the lecturers.* In this session we delved into, in more detail, what made a 'good question' (e.g. aimed at addressing the core assumptions of the lecture, reflecting on participants' experiences, etc.) and how they differ from questions that emerge from curiosity or come up in argumentations. To that effect, we gave some examples of questions that we (Professor Finger and I) were asking during the previous sessions to guide the discussions and asked the participants to try asking more reflective questions.

In addition, after dealing with these incidents I could better feel when I should play a more active moderation role in the training sessions to help the lecturers (when needed) manage the class discussions. I also tried to make use of all possible opportunities (before beginning the sessions and during the breaks) to further explain the underlying philosophy and learning objectives of the program to the lecturers and by doing so, help them to be more prepared for the class discussions.

4.1.3.2.2 Heterogeneous academic inputs and teaching styles of invited lecturers

One of the main challenges associated with delivering an effective learning experience to the participants in the IGLUS Executive Master program was dealing with the heterogeneous teaching styles and academic inputs from the numerous lecturers who presented throughout the program (on average more than 25 lecturers in each of the 11-day training modules). The different teaching styles and academic inputs from the varied guest lecturers could occasionally result in confusion among the participants about the accepted level of participation in critical discussions in different sessions; and the intellectual linkages among the seemingly dispersed pieces of information (that they learned about in each of the training sessions of the program). This was all further complicated as their expectations for the quality of lectures were constantly challenged

For example, on the second day of the Guadalajara training module a junior professor of public administration, whose teaching style was highly academia-oriented, delivered a comprehensive lecture on the causes of disconnect between citizens and their governments. He reviewed several theories of public administration and tried to illustrate why the solutions that are envisioned to close the gap by only relying on these theories mostly typically fail in real world applications. He used his critical review literature of public administration and new public management to explain the emergence of the concept of *governance* based on *networks of actors* and to clarify how it is different

from *traditional government* forms that are based on *hierarchy*. He also tried to adapt his theoretical frameworks to explain the existing situation in Mexico.

During this theoretical part of the lecture, the participants were quite pessimistic about almost all the argument that the lecturer provided for the effectiveness of new forms of governance as well as his explanation of situation in Mexico by referring to his theoretical frameworks. They often argued that these theories are not '*true*' in '*their* practical experience'. And in many instances they proposed different explanations, usually based on their own personal perspectives, as the '*true*' underlying causes of current situation in Mexico.

The fact that the participants were quite engaged in a theoretical discussion about governance on just the second day of the program was quite interesting and we were surprised by the level of participation. However, I soon recognized that due to the *diverse educational and professional backgrounds* of the participants, a significant portion of the discussions was devoted to *developing a shared understanding of the terminologies, concepts and basic assumptions of the theories* that were the subject of discussion. In this case, I could observe that using 'off the shelf theories' to explain complex cases might could become very controversial among such a diverse group of participants; especially if the lecturer does not seem highly credible to the participants (a young professor coming from Mexico, neither senior, nor brining the name of big international organizations...).

In addition to the intellectual disagreement, between the lecturer and participants, on the applicability of theories and concepts, I also observed that managing the discussions in the class could be a difficult task for some lecturer. In many instances, the participants started to respond to each other's claims and arguments (more or less like what usually happens in meetings at the workplace) and the lecturers simply lost control over the direction and content of the discussion. This was especially the case for the more academia-oriented lecturers (junior professors who had a strong focus on their ongoing research and publications) who more typically lacked the skills necessary to manage discussions among professional practitioners. In contrast, lecturers with previous experience in training the professionals (e.g. the lectures from UN and WB) were able to manage the discussions more effectively.

In the specific case of our junior public administration professor, the discussion became so intense that the lecturer could hardly continue with his presentation. So, I tried to moderate the session and asked the participants to let the lecturer finish his session and continue with the more fundamental questions during the break. During this break, I personally talked with the lecturer and asked him to consider the professional background of the participants in his session and avoid discussing the theoretical propositions, but focus more on the practical implications of those theories that can be relevant for practitioners.

After this intense theoretical discussion and the break, the lecturer discussed a case study that investigated the forces underlying the cooperation among municipalities in a metropolitan area in Mexico; this portion of the presentation was very well received by the participants. Actually, when the lecturer started from a case study and then tried to discuss some conclusions on the basis of the case (theorizing/generalizing from the case), the controversy from the participants were much more manageable and constructive compared to the previous session, which began with the theory and then moved on to case analysis.

This was an observation that I repeatedly had during the IGLUS-Guadalajara module (e.g. in a session about the contributions of social factors to violence, several sessions about accountability and transparency, etc.) as well as in the next training modules of the program. One of the main reasons behind this challenge was that we did not have the chance to see the lecturers *present* in a real class before they presented in our program. Therefore, we could not judge the *presentation style* of the lecturers and provide them with feedback in advance.

Although in our planning phase, we asked the partner universities to collect all the presentation *materials* from the lecturers and share it with us in advance, this strategy was rarely successful due to difficulties associated with working with local lecturers through the channel of the partner university. Such limitations as being unable to check the presentation materials of the local lecturers and our pure inability to see their *presentation style* forced us to rely heavily on the judgment of our partner universities' contact professors for the selection of local lecturers, which as it will be discussed in the proceeding case studies and chapters, was indeed not a very effective strategy for ensuring the delivery of a relatively standard teaching protocol throughout our training sessions. This pushed me to try to find more innovative ways to use my own role as the program moderator to bring coherence and meaningful linkages between the different topics that were covered by the lecturers and to also create opportunities for critical reflection with the participants, which will be discussed in greater detail throughout this report.

4.1.3.2.3 Lecturers being challenged on 'how' questions - Importance of contextualization of abstract concepts/arguments

The participants in the IGLUS training program, and in this AR inquiry, all had significant professional work experience (the average age of participants was 37 years old). Therefore, in many instances (especially over the course of the first modules of the Executive Master program; namely the IGLUS Guadalajara and IGLUS Istanbul training modules) the participants showed a keen interest in those learnings that could help solve the immediate problems they were facing in their professional occupations. Due to this tendency of the participants (to learn how to solve their immediate problems at work), they were often raising many questions that challenged the lecturer to explain "how" the initiatives or advice that he/she was proposing to the class can be practically implemented in daily practice. And in some cases, the lecturers (especially those with a stronger academic focus and limited real-world experience) were barely able to answer these "how" questions.

A great illustration of this challenge was embodied by the class dynamics exhibited on the fifth day of the program, which was specifically dedicated to the issues of accountability and transparency. The day began with a presentation to give an overview of the new transparency and accountability challenges that governments are facing due to the growing trend of increased involvement of private sector in the provision of public services. One of the lecturers focused specifically on the transparency and accountability challenges that are associated with PPPs. After this short theoretical illustration, several examples of web-based initiatives that were aimed at improving transparency measures in Mexico and their achievements were discussed. Later in the afternoon a lecturer from the

government office in charge of implementing the new Mexican legislation on freedom of information provided the class with more examples and arguments for the importance of transparency and accountability in the public sector.

Although it was clear to everyone that transparency and accountability are necessary elements of any governance system, and especially so in the public sector, there was still some controversy on *how* these measures should be realized in practice. Especially, discussions about the responsibilities of citizens and observatories to keep the system transparent and accountable became highly controversial. Our Mexican participants were quite skeptical about the *real* need for transparency and accountability, and about how much was necessary, as well as what *suitable mechanisms* could be utilized to achieve them, especially in light of their experience with a new freedom of information legislation. According to the lecturers, based on this new legislation every Mexican citizen now has the right to ask for documentation about public spending, statistics, etc. from public organizations as a basic civil right. Since the government offices are required to answer to these requests within a few working days, the legislation had a huge impact on the workload of municipalities and other local government offices, and not all the public officials (including some of our participants) were happy about it.

Many of the participants were asking questions about “*how*” the important notions of transparency and accountability should be materialized in the context of Mexico and in reference to this new legislation. Their main argument was that with citizen inquiries from public officials being used as the main driver to maintain the system transparent and accountable to the society, the efficiency of the administrations decreases, as they have to spend a lot of time, and their limited resources responding to these inquiries instead of doing their *main* jobs. They proceeded to further their argument by claiming that in many cases the inquiries have political intentions and used as sticks against the ruling party. *For every argument for the importance of moving toward more transparent and accountable governance systems, participants had examples from ‘their own experience’ with all the ‘practical challenges in implementation’.* The dilemma seemed to be unresolvable by just relying on abstract arguments against ‘real experiences’ and without any concrete answer to the question of “how” to implement these ideas.

The turning point for these arguments came with a case study presentation about the efficiency gains made in Tlajomulco (one of the municipalities of GMA) as a result of the focus on transparency measures as a KPI of the municipality’s administration. The presentation, delivered by a Tlajomulco public official, of concretely demonstrated how the Tlajomulco municipal government improved their operational performance by launching transparency initiatives to fight the corruption embedded in the municipality. This illustration from a detailed/real-world case, which had already achieved tangible results (not only promises), was quite useful to make sense of all the abstract arguments that were presented in the previous sessions. This session also seemed to have a large influence on the thinking of the participants, as it received one of the highest evaluation results in terms of the *usefulness of the session*.

Another illustration of such incidents occurred on the sixth day of the program, which was dedicated to the UN-Habitat’s sessions on housing and land use policies. The most engaging part of the first session of the UN’s presentation was a discussion about the necessity of integrated land use and

transportation planning. As in several other instances throughout the module, *the participants were agreeable with the importance of the 'idea', but raised many practical questions on how this idea of integrated land use and transportation planning could be implemented.* The lecturer's answer to this question was not straightforward (indeed, because of the highly contextual and variable nature of different cases, there was no straightforward answer to this question). The lecturer basically responded by saying that it is a very difficult process that requires a lot of coordination among the different stakeholders, who traditionally do not communicate with each other. The key point he made during his session was that it is the role of the city leaders to bring these changes forward to the city administration, as the current practices are not sustainable and, thus, should be abandoned as soon as possible.

To provide more concrete insight to the discussion, I decided to explain a case study that I worked on with one of the Master students from EPFL (where I was the mentor for his semester project) about new initiatives in Switzerland to promote integrated land use and transportation planning in Metropolitan areas. As an illustration, I explained how the Swiss federal government was redefining the funding criteria for projects in order to push the local municipalities and infrastructure service providers to propose collaborative initiatives instead of individually competing for the budget and how it could change the planning practices in the metropolitan region of Lausanne-Morges as a real world example.

After this example from Switzerland our lecturer from UN-Habitat (who had a diverse international professional background, having worked in Europe, Asia, Latin America and the Middle East) started to ask about the processes and consecutive challenges of urban planning in the participants' home city/country. The exercise of asking *each* of the participants to reflect on the subject matter of the session with reference to their own personal and professional experience from their city/country was a successful strategy to answer to the participants' reflective questions by using their own inputs. Indeed, this experience-sharing and discussion exercise was so inspiring for me that it led me to repeatedly employ a similar strategy to create opportunities for critical reflections throughout the entire Executive Master program.

4.1.3.2.4 Strong focus of local lecturers on their technical 'disciplines' - role of the moderator to create opportunities for critical reflections

Another important incident in the IGLUS-Guadalajara training module, which also prevailed in the next training modules of the IGLUS project, was related to the strong emphasis some of the lecturers placed on detailed technicalities related to their professional and discipline-specific experience with urban infrastructures, and their limited capabilities to elaborate on the challenges related to the governance of those infrastructure from a holistic and multidisciplinary perspective. For example, on the ninth day of the program, we had several sessions about urban transportation. On this day one of our presenters, a transportation planning professor from Tec, began his session with a very technical,

yet basic, approach to ‘introduce’ the fundamental concepts of transportation planning (e.g. service level, intermodality, etc.) (Figure 4.1.4).

Shortly after he started his lecture I had to interrupt him and explain that almost all of the participants are already working in cities and are familiar with the basic concepts and that many introductory level concepts were discussed on the first days with the World Bank. After this comment, the lecturer tried to change his approach. Fortunately, he had an alternative presentation that was more advanced; which enabled us to discuss three potential solutions for improving transportation systems in cities (comprehensive solutions, high cost partial solutions, low cost partial solutions). Although the alternative presentation was helpful, the lecturer was not fully capable of answering governance/management oriented questions related to urban transport due to his strong background in the technical dimensions of transportation infrastructure.

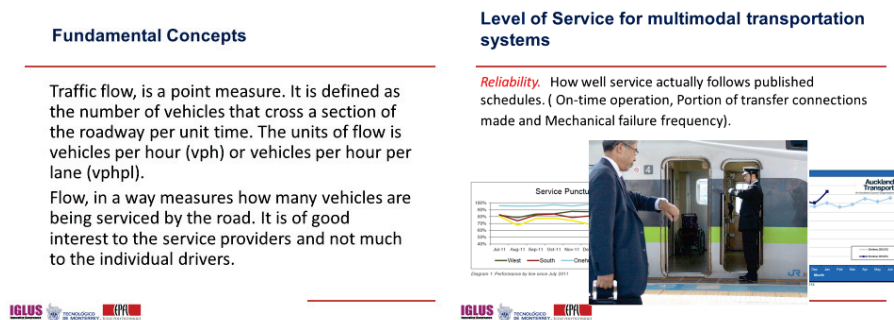


Figure 4.1.4 – sample presentation slide from one of the local lectures’ presentation in IGLUS-Guadalajara training module

Unfortunately, the experience of having ‘*professors with purely technical backgrounds*’ who could hardly address the participants’ practical questions about the governance/management of large urban infrastructure systems reoccurred in some other sessions of the Guadalajara training module (e.g. the sessions on land use planning) as well as in the proceeding training modules of the program (the IGLUS-Istanbul, IGLUS-Hong Kong and IGLUS-Dubai case studies).

The problem with this type of sessions was that such ‘technical lecturers’ could neither talk about their main area of expertise with the participants, because it became too technical and the participants could not understand or make sense of the lecture, nor could they talk about the very basic concepts in their field because the participants already knew about them. For example, on the tenth day of the program we had several lectures given on urban planning and in some of these sessions, the lectures became so focused on their area of expertise and research interests that the link with the participants was almost lost.

My main strategy to deal with these situations was to play a more active role in moderating the session. I was trying to ask questions that were more related to governance dimension and to *develop reflective discussions around questions that were broadly related to the topic of the presentation, but*

not necessarily the specificities of the presentation material. More precisely, I was trying to ask a series of questions from the lecturer, and the participants, that were aimed at highlighting the potential areas for emergence of conflict of interests among the different actors in that specific infrastructure and ask the lecturers and participants to share their opinions (or practical experiences) about potential governance solutions that could be used to resolve such conflicts among the actors (e.g. how to resolve the challenges associated with cross-subsidizing different modes of transport when trying to improve inter-modality in public transportation networks).

As will be discussed in the next case studies, the strong technical/discipline-specific focus of some of the lecturers (mostly those associated with our partner universities) presented a persistent challenge throughout the training modules of the IGLUS-Executive Master program (partly due to capabilities of the lecturers, and partly due to difficulties in controlling the quality of the content of training materials developed by local lecturers through the channel of the partner universities). Despite the misalignment between some of the training sessions and the overarching learning objectives and focus of the project was not an inherently positive incident, the opportunities that were raised around such misalignments pushed myself, and eventually the participants, to adopt a more active role in the program in order to create opportunities to critically reflect on the inputs from different lecturers by 'questioning' them.

4.1.3.2.5 Focus of the participant's questions on exploring more information about the specificities of cases

In the IGLUS-Guadalajara training module, one of the main challenges for us, as the organizers of the program, was to help the participants to ask more critical/reflective questions, instead of focusing too much on finding very specific details (often technical or focused on specific contexts) of the cases that were discussed in the training sessions. A good illustration of this challenge presented itself on the third and fourth days of this training module, which were dedicated to the World Bank presentations on the topics of crime and violence prevention as well as urban transportation. The World Bank team that presented in the IGLUS-Guadalajara module consisted of two lecturers, an urban transportation planning expert based in Mexico and a lead urban specialist from the World Bank Washington office. The lecturers provided a wide range of leading practices in transportation planning from across the globe and then introduced some of the joint projects between the WB and GMA authorities that were underway to improve mobility in the region.

During these sessions, many of the questions from the participants were about technical/context specific details of the projects. For example, some of the participants were asking detailed questions about the 'width of bike lanes', or 'the optimal proportions for sharing the road-surface' between cars, bikes, buses and pedestrians, etc. In some instances during these sessions, I was trying to raise more reflective questions in order to better address governance-related challenges and to also ask for more illustration about the roles international organizations, like the WB, play in financing and planning urban infrastructure projects in developing countries. I had the same observation recurring in some other sessions of the program, especially so in sessions that were developed around local case studies

(e.g. development of a bike-lane in Zapopan municipality, field visit from BRT and light rail systems, field visit from IBM).

The keen interest the participants had in the practical details of the case studies could be well justified according to their professional backgrounds as well as the general characteristics of adult learners. More precisely, the expression of such detailed questions that focused on the detailed *information* about specific cases could be understood in light of practitioners' interest to find solutions for their own practical problems. Indeed, these questions were helpful to get the participants engaged in the class discussions. However, since the main objective of this training program was to help practitioners to address complex problems from a more holistic/multidisciplinary point of view, I was trying to help the participants to also raise more critical questions (and not only asking for detailed technical information) that could help them to better understand the complexities underlying the cases presented in the class. My main goal in doing so was to improve the participants' critical thinking skills. In other words, I wanted to help the participants to move away from looking for merely technical information about different cases and instead to try to look at the cases from a broader perspective. In order to accomplish this, I made use of my role as moderator to ask critical questions from the lecturers and participants and create opportunities to reflect on their answers from a more holistic-multidisciplinary point of view.

4.1.3.2.6 Fruitful mix between local and international participants and its associated challenges

As explained in the preceding sections, in most of the training sessions, the participants in the IGLUS-Guadalajara training module were sharing insightful inputs from their daily work experience. These personal inputs proved to be quite helpful for elaborating on governance challenges and reflecting on the roles of different actors in addressing them, especially with regard to the social challenges. Having a combination of both local and international participants in the class enabled us to hear a variety of perspectives in our class discussions. In addition, the inputs from the local participants proved to be especially beneficial for gaining a more comprehensive understanding of the local cases, because in many instances, the local participants could raise complementary (or even contradictory) points about local cases that were presented and discussed by our local lecturers (this was especially the case in the discussions about transparency and accountability).

However, during this module I could observe that in some instances, the focus of participant inputs was dramatically shifting from sharing their personal examples for elaborating on the issues/concepts that were discussed in the session to explaining the very *details* of the situation and expressing *their personal positions* against the examples. Especially, due to the large proportion of Mexican participants in the IGLUS-Guadalajara module, in some instances the class discussions evolved into inter-personal arguments among the Mexican participants about whose interpretation or description of the local 'realities' was more valid. This experience, where the local participants dominated the discussions by discussing the very detailed contextual specificities of cases instead of

engaging in more class-relevant discussions was repeated in several sessions, especially in the plenary sessions of the Guadalajara module.

For example, due to the relevance and importance of transparency and accountability topics to the Mexican context, many of the discussions about this topic evolved to become an inter-group discussion among the Mexican participants; where the non-Mexican participants could have limited contributions to the discussion. However, when this occurred, the whole group still seemed to benefit from the learning experience, as I could observe that almost all the participants were following the class discussions. This was so because although the discussions were specific to the case in Mexico they did not become so detailed that they became uninteresting or non-understandable for the foreign participants. *In other words, the arguments about the transparency and accountability cases in Mexico had the potential to be generalized to other cases as well.* But, as it will be discussed in the next sub-section, this was not always the case.

It is also worth noting that due to the limited time available for the sessions, at some points, I had to ask the most active participants to let the other members express their opinions so that the class could benefit from a more balanced overview of the discussion topic. Although the time limitation left me with no other choice except occasional intervention to conclude the discussions, in some cases some of the participants were not recognizing the time limitations and were feeling oppressed to freely 'express their point of view'.

4.1.3.2.7 Challenges for reaching a balance between locally relevant yet generally applicable learnings

Despite all the benefits of having a strong group of local participants in the IGLUS-Guadalajara training module, having a small international to local participant ratio (1 participant from the Middle-East, 4 from Latin American countries, and 11 from Mexico) also posed some challenges to the learning dynamics in this module. Indeed, since most of the lectures were developed with reference to examples of urban challenges in the Mexican context and as the majority of the lecturers and participants were coming from Mexican cities, some of the training sessions in this module were strongly aligned with developing insights that were primarily relevant to the Mexican context. Unfortunately, in some cases these sessions had limited applicability for our international participants⁴⁷. In other words, the IGLUS-Guadalajara training module became so intertwined with its local context (due to over-presence of local inputs and discussions) that in some instances it lost relevance for our global audience.

⁴⁷ This was especially true in the sessions that were focused on the issue of urban crimes in Mexican cities. Because urban crimes and violence in Mexican cities was tightly related to the activities of international drug traffickers and organized criminal bands, but international drug traffickers are seldom present in most other cities of the world, the discussions around this topic were hardly relevant for our non-Mexican participants.

Although extracting globally applicable learnings from local cases often proved to be a difficult exercise for our local lecturers⁴⁸, we had one exemplary session in which the lecturer could nicely present a local case study and then extract some more general lessons from that case. This session was focused on the process of creating an 'urban observatory' (or what is often called a watchdog) for improving urban security and provided a showcase from real implementation of the process in Morelia, Mexico.

The class dynamics of this session were rather different from the previous sessions in this module. *The lecturer seemed to have a close professional relationship with some of the other lecturers who had presented on the same topic in the Guadalajara module. As a result, she was able to fine-tune her presentation on the basis of previously presented inputs about crime and security and this helped her to allocate less time to provide background information about the topic*⁴⁹. She firstly presented a roadmap for establishing an urban observatory and then outlined the steps for implementation of the roadmap in precise detail. She did so by using several examples from her *personal experience* during the process of developing an observatory in Morelia. After presenting the example from Morelia, she separated the participants into groups of 3 members. She asked each group to work on a technical worksheet to define indicators and design measurement methodologies for these indicators as an illustration of one of the steps for implementation of the roadmap. The participants were quite engaged in the exercise and after the group work we had a very good discussion about the challenges in fulfilling this step of the process. *An important observation I made in this session was that the lecturer could use a local case study to explain a more general process and did not emphasize the specific details of the case that would not be useful to our global participants.* This approach was very much appreciated by both our global and local participants.

Achieving a healthy balance between covering important context-specific details of local cases and extracting more generalizable learnings from those cases proved to be a delicate task in the upcoming training modules of the program as well. As it will be discussed in the next case studies, adopting a comparative analysis approach proved to be a helpful strategy toward achieving this balance.

4.1.3.2.8 Language barriers

Another important observation I made in the IGLUS-Guadalajara training module was the difficulties associated with language barriers for both the lecturers and participants. The official language of the IGLUS training program was English and the partner university (Tec) was strictly asked to recruit local lecturers who could easily teach and communicate in English. However, due to Tec's inability to

⁴⁸ I also had a difficult time extracting more generalizable learnings from some of the lectures for our participants in this first training module. This experience pushed me to further reflect on my personal role in moderating the training sessions. These critical self-reflections helped me to improve my capacity to help the participants to extract meaningful learnings for themselves in the upcoming modules of the program.

⁴⁹ It is important to note that achieving such coordination among several lecturers covering similar topics was our aspiration when collaborating with a partner university, but in this case, our partner universities were unable to effectively help us achieve this goal.

find English-speaking lecturers for all the training sessions, we had to accept that, for the IGLUS-Guadalajara training module, some sessions would be given by Spanish-speaking lecturers. A professional interpreter then simultaneously translated these sessions for those participants who could not understand Spanish.

Despite the high quality of the interpretation, our international participants could not effectively benefit from these sessions. Firstly, the experience of actively listening to the interpreted lectures for a complete training session (around 105 minutes) proved to be a difficult task. Indeed, our two non-Spanish speaking participants could barely stay focused in these sessions. Secondly, it was difficult for the non-Spanish speaking participants to become engaged in the class discussions due to challenges associated with communicating with the lecturers through an interpreter. And thirdly, the presentation by the lecturers who could not teach in English were often heavily focused on locally-specific cases that were accompanied by heated discussions about their specific details among our Mexican participants further discouraging our international participants to engage in the class discussions.

In addition to the language barriers in the interpreted sessions, as English was the second language of all participants, communication, in general, was hindered; this proved to be especially difficult for participants to ask their questions and/or transmit the essence of their thoughts to the class, and also for some of the lecturers to effectively communicate their messages to the class. However, as we progressed in the program, the communication competencies of the participants improved significantly. Also, based on our learnings from the experience with simultaneous interpretation, for the upcoming modules of the program, I tried to strictly avoid accepting any training sessions that would be given in languages other than English⁵⁰.

4.1.3.2.9 Importance of toolkits (practical inputs)

Dedicating some of the training sessions to providing analytical toolkits (that could help practitioners to address concrete problems in their own work) was one component of the general curriculum we proposed to Tec. Despite presence of this 'title' in the final curriculum of the module by Tec, very few contributions from the lecturers were practically addressed this issue (the only exception was indeed the sessions about using observatories as monitoring mechanisms in governance structures). However, some parts of the contribution from the UN-representative triggered the attention of our participants to the importance of using toolkits.

The second part of the lecture given by the UN-representative (which was partly discussed in section 4.1.3.2.3) was a more technical presentation about the housing market dynamics and an explanation of a special toolkit for 'housing market profiling', which was developed by UN-Habitat. *This was one of the first times that we a relatively sophisticated tool, as opposed to theory, concepts or case studies as in the previous session, were introduced in the program.* The lecturer introduced the tool and

⁵⁰ After this module, only in one session during the IGLUS-Istanbul training module did a local lecturer (whom for institutional reasons had to be present in the training program) gave a presentation in his local language.

showed several examples of its use and implications and the participants seemed to be very engaged. However, I was surprised that the participants asked only a small number of questions during this session. In fact, the tool was so comprehensive, sophisticated and detailed that it soon became clear to the participants that they could not learn and master it on their own in this short training session. According to the presenter, UN-Habitat was usually using this tool in consultancy projects for countries and cities because city administrations often did not have the necessary expertise to use it effectively. Figure 4.1.5 gives an overview of this relatively sophisticated toolkit.

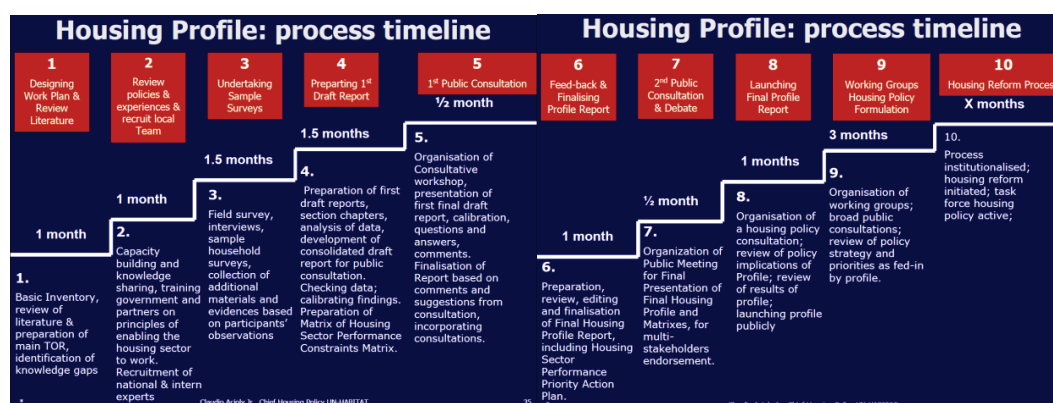


Figure 4.1.5 – Sample presentation slide adopted from UN-Habitat presentation during the IGLUS-Guadalajara training module

This was an important observation as I understood that although it is very appealing to provide toolkits to empower the participants so they can better analyze the challenges in their job, the complexity of these toolkit is an important factor that affects the participants' perception the usefulness of the toolkits for them⁵¹. *Simply put, I could observe that providing toolkits in our training modules is a must, but it is equally important to maintain a delicate balance between the comprehensiveness of the tools and their applicability for our participants.* This observation encouraged me to organize a workshop about change management during the second week of the program to test this working hypothesis in practice.

On the eighth day of the program, I was informed that one of our lecturers had canceled his presentation that he was due to present on the afternoon of the ninth day. Based on the observations I made during the first week of the program about the participants' willingness motivation to learn more tools, I decided to prepare a more practical session on my own to fill this empty slot. My aim in this session was *to introduce a tool that could empower the participant for implementing some of their learning during the module in their professional lives.* To that effect, I prepared a workshop on 'organizational change management'. In this session, I asked the class to share about their

⁵¹ This working hypothesis was again reconfirmed when I presented our updated version of the IGLUS framework during the IGLUS Dubai training module.

professional experience about ‘change’ in organizational setting. *I used the participants’ responses to illustrate the prevalence of change initiatives in organizations and the difficulties underway of successful implementation of organizational changes.* I then introduced two famous organizational change management models and their corresponding implementation roadmaps to the class. After this short introduction, I defined a group exercise. Each of the groups were asked to adopt one of the organizational change models and prepare a change plan for realizing the idea of integrated land use and transportation planning in one of their home municipalities (see Figure 4.1.6).

Group Exercise

- In this module, we talked frequently about the importance of integrated transport and land use planning.
- You have 25 minutes to deliver a road map for implementing the integrated transport and land use planning in a municipality.
- Assume you want to promote the integrated transport and land-use planning in your own organization (municipality), or in a hypothetical municipality. Propose a process to:
 - Establish the sense of urgency for change (what will you do?)
 - Build a Change Team (who will be in? how do you select?)
 - To develop a new vision (then propose your own vision for such a change)
 - explain how you want to communicate it (What do you do?)
 - Find the requirements for empowering people (how you understand?)
 - What will be the possible short term wins?
 - How do you ensure continuity?
 - What are your tools to make it institutionalized in the organization?



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Figure 4.1.6 – presentation slide from my own presentation during the IGLUS-GDL training module

The presented change models were relatively easy to learn and the roadmaps for implementing them could be effectively understood by the participants. Because of this, the group exercise became a very dynamic learning process and serious discussions evolved in each of the two groups. At the end of the session, I asked each of the groups to present their roadmap to the class for open discussion and reflection about the usefulness of their change roadmaps in real practice, by referring to their personal insights based on their professional experience.

An interesting observation from this session (which I actually learned about during several informal chats with the participants after the session) was that working on practical tools that are simple enough to learnt during the module was highly appreciated by the participants. Based on this experience and the positive feedback from the participants, I decided to place a stronger focus on providing ‘practical tools’ in the coming training modules of the program- which will be discussed in the coming case studies.

4.1.3.3 Field visits of the IGLUS-Guadalajara module

During the IGLUS-Guadalajara module, we had several field visits to the light rail system (Siteur), the BRT line, new bike lanes in Zapopan, Via Recreativa (Sunday for bikes) IBM facility in Guadalajara, an open data event in Guadalajara ("Campus Party Hackathon") as well as visits to some of the marginalized neighborhoods in Guadalajara to see the activities being undertaken by an NGO in these neighborhoods.

We had two different goals from organizing the field visits for the IGLUS-Guadalajara module, and we designed two types of visits to reach them. In the first type of field visit, we wanted to visit some innovative initiatives that were unique to the GMA and to understand the processes that were employed for their implementation. For example, the visit to Via Recreativa and the Campus Party events were aimed at learning from these successful practices. In the second type of field visit, we wanted to provide the participants with an opportunity to directly observe a case (transport, housing, etc.) and discuss the related governance challenges with the stakeholders involved (not lecturers in a class, but the people who deal with the challenges on the site). For example, the purpose of visit to Siteur, the BRT line, the bike lane in Zapopan and the marginalized neighborhoods was to personally, and directly, get a 'feeling' of the case and to discuss the governance challenges directly with the stakeholders.

An essential component to all of the field visits of the IGLUS-Guadalajara module was the presence of highly knowledgeable visit leaders (from the visited institution) leading the visit. For example, during the visit to the light rail system and the BRT lanes, the director of Siteur (operator of the light rail system) accompanied the group as the visit leader and after visiting the infrastructures, he hosted the group for a discussion session (more than 2 hours) in his office. Similarly, during the visit to Via Recreativa a knowledgeable person who had been working on the project from its initiation, 10 years ago, accompanied the group during the bike trip and answered questions about different aspects of the project.

Due to the high profile and in-depth knowledge of the visit leaders about the practical details of their job, we had *very interesting questions and answers* during the field visits in IGLUS-Guadalajara module. However, in some instances these Q&As did not attract the attention of all of the participants and the *discussions continued in very small groups* (3-4 people around the visit leader). Indeed, because the participants could easily get distracted in the open environment, they often lost track of the questions raised by their peers and could not follow the discussions.

Despite all these limitation, the field visits were very well received by the participants. In addition to the learnings from the discussions and explanations by the visit leaders, the *experience of visiting the sites* proved to be quite insightful for most of the participants. For example, after visiting the marginalized neighborhoods of the GAM almost all of the participants were strongly affected by the poor quality of services in these neighborhoods and seemed very motivated to think more realistically and do something for the poor in their cities once they are back in office. Closing the gap between the way participants perceive what needs to be ideally done in cities and the reality of life in poor neighborhoods could only be achieved by being present in such a site visits- no in-class activity could effectively replace such an experience.

4.1.3.4 Wrap up sessions of the IGLUS-Guadalajara module

At the end of the eleventh day of the program, we had a wrap up session to conclude the training module. In this session, I gave a brief overview of the topics that were discussed during the two weeks of the program and highlighted the links between some of the discussed topics in the module and the conceptualization of governance of large urban systems we presented on the first day of the program.

After my short summary, I opened the session to the participants to express their opinions about their learning experience during the module. In this open discussion session, most of the participant expressed a lot of emotion when discussing their learning experience and how it *helped them to think out of their predefined boxes* and to understand the *multidimensional and complex nature of governance challenges in urban systems*. However, they also raised the following criticisms:

1. The high intensity of the program with only half a day of break (Sunday afternoon) which resulted in mental and physical exhaustion of the participants during the second week of the program.
2. Over presence of 'theoretical' sessions in the curriculum compared to the limited number of sessions that were dedicated to learning tools for problem solving.
3. A missing session on the basics of public administration (role of governments, councils, multi-level governance structures, etc.) which could be beneficial to the program.
4. Poor quality of a few sessions (mainly the session on crime) as well as problems with Spanish to English interpretation in some sessions

Overall, the main conclusion of this open session was that the participants were generally satisfied with the IGLUS-Guadalajara module as a '*first step*'.

I should also mention that on the last days of the Guadalajara module, and while preparing the content of the wrap up session, I could see that the learning dynamics in play throughout the Guadalajara module did not fully fit into our initial plans. At the beginning of the module (during the introductory session) we were trying to project what the participants would learn during the module (by explaining the curriculum and the logic behind it). However, in reality of the module, each new session was understood by being reflected upon the learnings from previous sessions and the initial conceptualization of governance that we proposed on the first session. This reflective process was quite strong and significantly affected my understanding of the project in its first phase. In other words, our initial approach towards designing the IGLUS-Guadalajara module was to *sketch a map (plan)* of the module, but in reality the learning dynamics during the module were more like *building a puzzle* by finding new pieces that fit what had been already developed in previous sessions of the module.



Figure 4.1.7 - Our Initial thinking in designing the training module

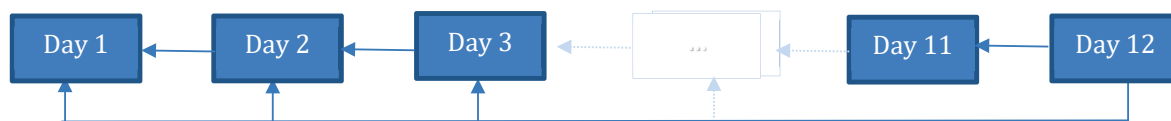


Figure 4.1.8 - Reality of the program based on my observations

My observations and learnings about the main interests of the participants, the learning dynamics in each of the sessions and some of the strengths and weaknesses of the IGLUS-Guadalajara module become one of the main inputs for designing the IGLUS-Istanbul module. In the next case study (IGLUS-Istanbul), I will explain how the learnings from the IGLUS-Guadalajara training module influenced the design of the IGLUS-Istanbul module.

4.1.4 After the module

4.1.4.1 The wrap up exercise

After the IGLUS-Guadalajara module, we asked the participants to write a wrap up essay. We had three main objectives in designing the wrap up assignment of the IGLUS-Guadalajara module. Our first objective was to understand how the participants perceived their learning experience from their personal point of view (to have their own reflection on their experience, not our own assumptions). Our second objective was to understand how the participants' learnings from the module could impact their day-to-day work experience. We wanted to find out how the learnings of participants might change their approach and actions after the training module. Finally, our third objective was to investigate what they perceived to be the shortcomings in the curriculum of the module.

To that effect, we asked the participants to address the following three general questions in their wrap up essays (text adapted from the instructions that were shared with the participants):

1. *"What did you take back to your office after this two weeks of training? Please write a short summary (2-3 pages) of what you have achieved in this module."*
2. *"Based on the discussions and lectures in the IGLUS-Guadalajara module, what are the 3 most important challenges which you think you should tackle in your city? How do you want to start approaching these problems from a practical point of view?"*

"What was missing in the discussions – lectures in the Guadalajara module that you feel was important and could be useful for improving the social quality of life in your cities?"

4.1.4.1.1 Selected quotes from the participants' essays

Question 1)

The range of participants' responses to the first question about the takeaways of the module were quite diverse; ranging from talking about purely abstract ideas that developed in their minds during the module, to their learnings from experiencing in a new city and its unique contextual situation, or answers that simply summarized the 'information' presented in the training sessions.

For example, one of the participants (from Brazil) considered *the information* he got from each of the sessions to be his main takeaway of the module, and did not attempt to translate these pieces of information to more personalized/abstract learnings unique to his experience:

" ... [in the session by Matthias and Mohamad], we learnt that a holistic approach is essential. In fact, to understand Governance we need to identify the main actors of the system with a holistic approach considering the Politics, Economics, Technology and Social dimensions... In terms of Transparency and Accountability, [name of a lecturer] from ITESO and [name of a lecturer] talked about the right to access information. They explained the foundations of laws that have been spread recently around the world...." [J.W.1]

Contrastingly, some other participants seemed to conceive their main learning as a *synthesis of their experience* over the two weeks of training. For example, a participant from Columbia explained:

"..After the IGLUS module I consider that the problems I mention could have other solutions different to traditional solutions: an ecosystem solution." [M.W.1]

Similarly, a participant from the GMA mentioned how the program could help him to see the problems from *new perspectives*:

"...We learned to see problems from sides we were not conscious before, to see the social issue in every problem, and ultimately create comprehensive policy proposals that attend society's needs." [C.W.1]

Most of the participants described the learning as a mixed learning experience; referring to both abstract and practical learnings. For example, another participant from Mexico described her learning experience during the IGLUS-Guadalajara module as a feed into *theories of her work and life*:

"... more than an experience, it's part of the theory of what I live every day. Most of the information given is a tool that helps me to take better decisions, since the little ones to big ones.... (the course) reminds me some important values in order to bring to my office a better and more compromise attitude, more ideas to solve problems, a better quality of my job and of course that push me to be a better public servant and a better citizen..." [L.W.1]

She then continued to delineate more practical steps she could take to change her work practice based on the lessons she adopted during the module, and as illustrated below, she seemed to be quite ambitious and hopeful for how these changes might influence the 'reality' in her job:

"... After first module, we start to reorganize how to distribute the budget, in order to really modify poverty indicators; even we already have the final list of projects from 2014. As I said before, the final list of projects are selected after 40 meetings, which means a huge effort, work and responsibility, but we can't continue working in the same way. " [L.W.1]

In a different line of thinking, a participant from Mexico, who came from an NGO and had some entrepreneurial experience, adopted a more critical/analytical perspective when explaining her learnings. She did not only talk about the covered topics or their meaning for her, but she instead *described what she learned about how other people in the group were thinking* and also critically analyzed what hidden lessons she could get from the discussions of the module:

"In the Guadalajara Module, I also identified a kind of "excuse" about ... "Things do not happen because people do not want them to happen and we as politicians want to have the approbation of the society (political interests)"...Because: how many individuals of this "society that don't want to...." Are in this position because of conviction? How many are there because of ignorance, or resentment of not being listened for a long time?" [B.W.1]

As an illustration of hidden lessons, she mentioned:

"In all of these theories and practical experiences it is evident that citizens want to become even more and more active participants. However, in many of the lectures that I have participated in the Guadalajara module, I could see that citizen participation needs some guidelines or "how to be listened" structures or facilities, especially for poor or disadvantaged people that don't have access to new technology tools for communication..." [B.W.1]

Not surprisingly, our only non-Latino participant in the module referred to his learnings from *experiencing* the Latin American urban context and the corresponding governance peculiarities that he was realizing for the first time. Our participant from Bahrain mentioned:

"The fact that I was not very familiar with Latin America and the issues that concern the region made the round table sessions very educational as they gave us the chance to learn and participate in an inclusive discussion when they were in English" [N.W.1]

Not all the participants were in agreement with the ideas and lectures shared with them during the training module. For example, a participant who worked in the city council of a municipality in the GMA was pointing:

"...After the first module, concepts remain in my thoughts and I still do not determine its performance in the application, or even the veracity, I do not if is both rational thinking which sometimes prevents us from taking new paths... For example, future metropolitan cities where mayors and town disappears becoming a metropolitan council, in a strict sense as proposed by a lecture, in the foreground makes sense.

However, in reality the functioning of cities, the identity that is rooted and municipalities, but especially the maximum closeness as government, keeps any area municipality, and as mentioned by other lecture during the course, the competition between cities generates efficiency..." [V.W.1]

The fact that the participants highlighted a variety of different learnings from the Guadalajara-module could be seen as an important sign that the training could cater to the interests of our diverse group of participants. The participant's ability to synthesize the different pieces of information pulled from the different sessions of the program and achieve to a more holistic learning experience for themselves was another interesting observation in analysis of the participants' essays. Last but not least, the fact that some participants already mentioned the changes that they considered in their way of thinking (their perspective) about complex urban issues was a promising sign that the first module of the program was a positive step towards realizing the learning objectives envisioned for this professional training program.

Question 2)

When answering the second question, about the three main challenges that the participants would try to address once they are back in office, they have pointed out to different types of initiatives ranging from governance/institutions related proposals, proposals for new projects for their city, changes to their own working practices, and ideas to initiate fundamental changes in working procedures.

Some of the participants thought about *changes that should be adopted by their cities without necessarily thinking about their own roles in such changes*. For example, our Brazilian participant had some *practical proposals*, mostly to introduce the use ICTs to enhance transparency in city administration:

"I have some ideas to improve the performance of the City government:

- 1. Improve the DataRio (<http://data.rio.rj.gov.br>).*
- 2. Create a program for servants to stimulate them to be the agents of change.*
- 3. Create small projects of Transparency like: website with the list of public works,... , develop a big central of "public bidding".*
- 4. Create a tool to facilitate the interaction and collaboration between citizens and government. "*
[J.W.1]

Another participant from Mexico placed an even stronger emphasis on the *changes that his city needed to adopt, but not what he personally could change*. He was not thinking about what he could do, but instead trying to describe the big picture changes that he thought should be undertaken in his city.

"Based on the discussions and readings of the first stage of IGLUS program, there are three major challenges that could set its sights on the environment of my city: Segregation and urban expansion,

territorial order and land use and urban mobility considered from my point of view as the most important.” [R.W.1]

In contrast to proposing change proposals for cities, some other participants outlined more ‘*concrete change initiatives*’ they had undertaken to improve their daily work experience as urban practitioner. A very interesting example of change projects came from one of the participants from Mexico who discussed *major changes in her attitude* as a social servant and citizen and mentioned a real change initiative she was trying to implement in her team’s working processes as a result of her learnings from the module:

“ ... (she is working in team called Coplademun) ... Coplademun is not going to change the reality of Zapopan, but I think is a good place to start.... I am planning to integrate social participation as part of the process for selecting public works in the municipality, in a different way that has been doing before. For example, instead of citizens decide the project, we could have big project according a master plan linked with a long term plans for the development of the Metropolitan Area of Guadalajara and we could involve citizens in the process, that means that they could decide some details, some dates, to choose some designs, etcetera.” [L.W.1]

Similarly, another participant from Mexico (working for the Jalisco State government) described the process of implementing a change in her department by using the general learnings she had from the module and a technique that we explored during the change management session:

“...we review the structure at the Rural Infrastructure Direction and made some changes in the organization chart. Unfortunately, we have staff that has many years working in government and they’re encounter vices from past and unwilling to change, but we cannot dismiss them because they are unionized. Despite this, and based on the reading How to Implement new Initiatives? from Razaghi Mohamad, first step was to sensitize coordinators the urgent need for a change in the Direction, then conducted workshops with area directors and those coordinators in order to review processes in which we have found greatest deficiency and the reason why this happened, As a result of these workshops, we had a restructuring of the direction (unit)... Another result that the workshops revel was the development of a document called “Contractor Guide” in which we detail the procedures to be followed during the execution of the works...” [A.W.1]

It was quite interesting to find that by providing the participants with some accessible techniques and tools, they were able to implement practical changes in their organizations. However, besides the very hands-on changes this participant mentioned, she also raised some more abstract points related to governance, which she found them as a perquisite for the improvement of conditions in her city:

“The problem starts in Mexican laws, because it does not provide the background of a metropolitan government, and all the attempts have been made have failed, so that municipalities continue to rule independently, based on their political parties and without a metropolis global vision” [J.W.1]

Our Mexican participant from the NGO sector described a mix of abstract as well as practical/hands-on change initiatives she was going to follow after the module. For example, in regards to the abstract learnings, I would like to quote her remarks about her enhanced awareness about the issue of accountability in voluntarily works:

"...Future effort needs to address also the accountability issues associated to this informal collaboration. I found this part interesting from my volunteer point of view...." [B.W.1]

Then, she becomes much more pragmatic by defining some concrete projects and steps she has already taken to realize them in Guadalajara:

"...I particularly open a communication with Children International Staff, to possibly use their model to work with our youths, or for a chance to integrate the youths from our communities to Children International programs.... (For increasing awareness about importance of public transportation) I am preparing a presentation about these options and it is my desire to disseminate this information in schools, first with the directors and later with groups of students and more importantly, with parents. I am planning to begin with this in my son's school: a very conscious and very committed institution with environment and sustainability. Right now I don't feel enough confidence to implement this project, but I will be in touch with some of the lecturers we had here in the Guadalajara's Module in order to prepare a high quality presentation." [B.W.1]

Another participant, who was a councilwoman in one of the municipalities of GMA, was not quite optimistic about the applicability of her learnings from the module to her job. So, instead of proposing changes for her city, she thought about how she could *change her working procedures* by developing her own algorithm for decision making in metropolitan systems in the future. Her learning experience seemed to have supplied her more so with *some food for thought rather than ready to use solutions*:

"Of all the subjects that we could analyze up to this first module, I could find the theme of my thesis, I am sure it will be very useful, it is about to generate some sort of algorithm that includes many aspects that go developing throughout all modules. The theme is: "Methodology for decision making in a Metropolitan System" and has to do with governance VS long-term projects." [V.W.1]

The fact that the participants primarily thought about change initiatives with very practical outcomes (I would call it operational changes) was very much expected as our training catered to a group of professionals, whom are often believed to have a strong interest in problem solving (Knowles, et al.,2014). However, the most interesting promising points for me from the participants' answers to this question was the initial signs of the emergence of *different ways of thinking* among some of the participants, as well as the ability of participants to reflect on their own practices and come up with some *personal* change initiatives based on their learnings from the training module.

Question 3)

The answers to the last question, about sessions and topics that the participants believed were missing, yet relevant to such a training module (governance of large urban systems with a focus on social challenges), were also quite diverse. The range of responses included recommendations for

missing topics (which were not part of the curriculum of the program), to overall curriculum-related recommendations, or practical suggestions to improve the implementation of the module.

For example, our Brazilian participant had a range of recommendations from important topics that should be covered to the need for more tool-oriented sessions:

"...I could say that there are at least 3 subjects that are essential form Urban Governance of Large Urban systems:

- *Health*
- *Education*
- *Poverty and economic development*

...Besides this three topics, I believe that we missed some discussions related to Public Administration. We should also look inside the government and learn some concepts like strategic planning, people management, change management, process management, etc." [J.W.1]

Several participants pointed to potential areas of improvements in selection of cases for discussion. For example, one of the participants from Mexico mentioned:

"...Another issue is that we must take as examples projects that are already finished, so we can see results; projects that have had a big impact in the quality of life, projects where we could measure result with different indicators." [L.W.1]

Along the same line, the participant from an NGO in Mexico raised some concerns about the shallow depth of some of the discussions due to short allocated time for class discussions:

"More than subjects or lectures that I feel that were missing, I think that time for discussion is what was more necessary. Particularly time to make conclusions in some important conferences or round tables.... But perhaps some topics could be possibly focused in a more practical way in order to exchange ideas and make future teams between participants and lecturers." [B.W.1]

As a concrete example of the remarks about the shallow depth of a case discussion, I should use a quote from the essay of one of the participants from the GMA:

"One session we had someone talking about the Palmas Bank in Brasil and the Sugar Clinics in Monterrey. These two examples, I think, would have given us much more insight as to how problems were tackled specifically in each city, by learning how they constructed the different models to solve their problems. We learned only the superficial, but not enough to replicate innovative thinking...." [C.W.1]

As we could expect and has been previously discussed, the language barrier proved to be serious obstacle - this point is emphasized in the essay of one of our non-Spanish speaking participants:

"... the workshops were in Spanish and translated in English, which made participation in the class difficult" [N.W.1]

In addition to the language barrier, the context specificity of the some of the sessions and the inability of most of the lecturers to extrapolate lessons learned from the local case to a global context was mentioned by our Bahraini participant as another important drawback:

“...the topics were too concentrated locally and no link was made to the challenges of urban governance in the global scale, as this would have encouraged sharing examples from the participants.... I would say that the workshop on citizen and security that was given by Doreen was very beneficial in relation to governance. It was very informative and included examples from all around the world which gave us the chance to discuss the challenges in a comparative way. In my view this method is very beneficial as we can see how each country faces the same issue in different ways and comparing the advantages and disadvantages of each module of governance and not just focus on one system.” [N.W.1]

In addition to the comments about the *choice of cases*, allocated *time* for discussion and the need for *generalization* of the learnings from the case, another important point that was raised by the participants was the need for the elaboration of more *subject specific theories* in the training module:

“...Maybe I miss my days at University too much, but I felt that we lacked the corresponding theory or information on a particular subject, or sometimes the explanations were too focused on something that we got lost in the big picture.” [C.W.1]

The participants' essays raised interesting points that became a valuable source for me when designing the second module of the IGLUS trainings in Istanbul. In the upcoming case study, I will describe the main changes that we introduced in the design and delivery of the IGLUS-Istanbul training module as a result of my reflections on the experience of the IGLUS-Guadalajara module.

4.1.5 Brief reflections on the IGLUS-Guadalajara training module

The IGLUS-Guadalajara training module was the first AR inquiry cycle in this project. This training module was indeed the first practical step of the project where I could observe the tangible results of our planned actions.

The personal experience of planning and delivering this first training module of the program (being the coordinator of the program and simultaneously a researcher) was a truly insightful experience that sensitized me to the very delicate details, and challenges, associated with organizing a coherent and well-structured training program in partnership with a relatively large number of stakeholders. Although the feedback from the participants about their learning experience in this module was highly positive after the IGLUS-Guadalajara module, I was not personally fully satisfied with the quality of the learning experience that we delivered to our practitioner-participants in this module.

I observed that the training sessions, and especially the critical *discussions* in the class, could help the participants to understand the multidimensional and complex nature of problems associated with governance of large urban infrastructure systems. However, I could also realize that in this training module we could not progress further than *sensitizing* the participants to the inherent complexities of the problems that they face, and the importance of adopting a holistic approach to deal with them. In other words, we could show them that there is a problem with the conventional, disciplinary, approaches in dealing with complex urban problems, but we could not help them to find a solution (nor to develop a plan towards finding a solution) to address this problem! *More precisely, we created many questions but only provided little insight to answer them.*

I was aware of the fact that our objectives in the project could not be achieved in only one training module (or more technically speaking; in one Action Research inquiry cycle). However, when I was reflecting on the experience of the IGLUS-Guadalajara module I could see that if we simply follow the same strategies and practices in the next training modules of the program, we would hardly move on from sensitizing the participants about their problematic practices and would be unsuccessful in helping them to find their own ways to address these problems; which they could clearly perceive now.

My personal feeling that this training program might just result in raising the awareness of participants about potential problems without helping them to *find their own ways* out of their problematic situations became a strong driver pushing me to think about necessary changes that we must introduce in the preceding training module of the program in Istanbul. In the next case study, I describe the details of the IGLUS-Istanbul training module and its associated AR inquiry cycle.

4.1.5.1 Results of evaluation surveys for the IGLUS-Guadalajara training module

As explained in chapter 3 of this report (Methodology Chapter), we decided to run a short questionnaire to ask the participants to evaluate each of the training sessions of the program. Each session was evaluated against three simple criteria:

1. Presentation skills and quality of the slides of the lecturer
2. Usefulness of the content of the presentation
3. Overall evaluation of the session

The participants were asked to rate each of these criteria according to a five point Likert scale (from very bad = 1 to very good = 5). They could also add written feedback about each of the sessions on the evaluation forms. The participants were asked to fill in the survey at the end of each day. The surveys were anonymous as to encourage the participants to express their opinions about the

program truthfully. Of the sixteen participants in the IGLUS-Guadalajara module, on average thirteen respondents returned the survey⁵².

The summary of evaluation result of the IGLUS-Guadalajara module is presented in Chart 4.1.1.

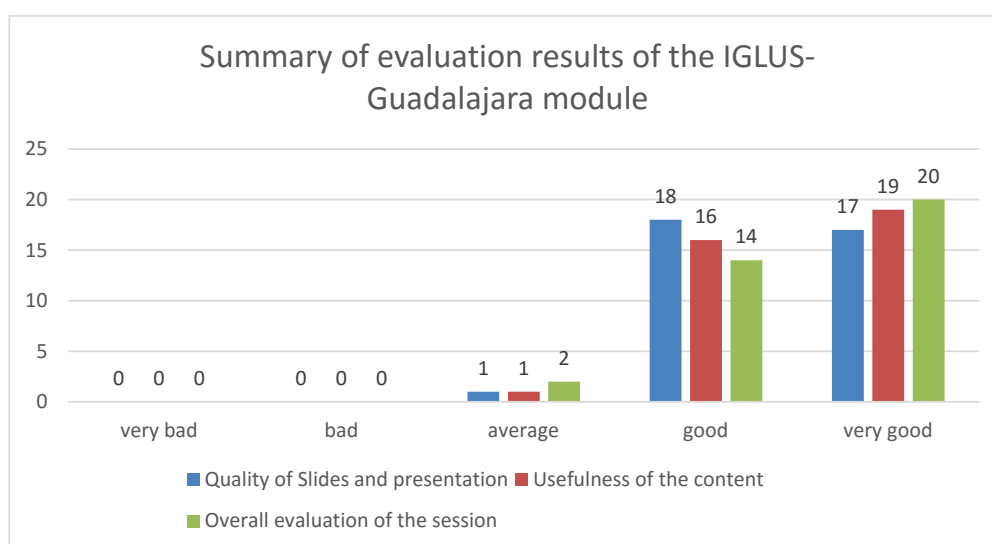


Chart 4.1.1 – Summary of IGLUS-GDL evaluations

Although the evaluation survey was not my principal data collection tool and had only a limited number of questions, the results of the survey are somewhat insightful. The fact that the *overall evaluation* of only 2 out of 36 evaluated sessions were rated as *average* and the rest of the sessions were rated as either *good* (14 sessions) or *very good* (20 session) shows that the participants were highly satisfied with this learning experience. The results for the *usefulness of content* criteria were equally promising, as only 1 session was ranked as average and the content of the rest of the sessions were ranked as either good (16 sessions) or very good (19 sessions), showing that the material covered in the training sessions was highly relevant and useful to the participants. The quality of *presentations and presentation skills* of the lecturers were also generally perceived to be either good or very good.

Even though the results of this small evaluation survey were quite impressive, based on my detailed observations and discussions with the participants, I was reassured that the next training module of the IGLUS Executive Master program could be improved, in terms of both rigorous of our intellectual inputs as well as the planning and delivery of the training sessions.

⁵² The number of evaluated sessions is slightly different from the total number of sessions during this module because I did not include the evaluation results for those sessions that had been rated by too few participants (less than 4 participants)

Chapter 4 (Case studies)

4.2 - Section 2 - IGLUS Istanbul case study

4.2.1 Introduction

4.2.1.1 Overview of the training module

The IGLUS-Istanbul module was the second training module of the IGLUS Executive Master program and took place September 2014 in Istanbul. Table 4.2.1 outlines the position of the IGLUS-Istanbul module in the overall program of the IGLUS-Executive Master. Similar to the IGLUS-Guadalajara module, the training sessions of the IGLUS-Istanbul module were held during 11 working days over a 2-week period.

Table 4.2.1 – IGLUS Istanbul module position in the overall IGLUS Executive Master program

Guadalajara Social Challenge (June 2014)	Istanbul Cultural Challenge (Sept. 2014)	Hong Kong Optimization Challenge (Nov. 2014)	Ras Al-Khaimah Dubai Sustainability Challenge (Feb. 2015)	Detroit Chicago Economic Challenge (April 2015)	Seoul Technological Challenge (June 2015)	Rhine-Ruhr Metropolitan Challenge (Sept. 2015)
Housing and Use of Land	Disaster Management	Sustainable Transport & Housing	Innovative Finance of Urban Mobility	Utilities Regulation and pillars of Sustainability	Smart Transport	Regional governance
Transport and Mobility	Green infrastructur es	Metropolitan Finance	Governance of sustainable Water & Waste systems	Industrial ecology	Smart Energy and Water	Metropolitan mobility
Human and Citizen Security	City Governance	Energy, Water and Wastewater	Urban resilience & Environmental sustainability	Sustainable Urban Economy	Urban ICT policy & governance	Urban forests & ecosystem balance
Transparency & Accountability	Transport Planning and Finance	Smart City and urban Resilience	Housing and Zoning policies	Urban Leadership	Governance of Integrated Systems & Green performance	Metropolitan Finance

The IGLUS-Istanbul module was organized in collaboration with Bahçeşehir University (hereafter BAU). Based on the overall curriculum of the IGLUS Executive Master, this training module had a special focus on the “cultural” challenges in governance of large urban systems (see Section 4.2.1.3 for more details about this choice of focus).

With the main theme of cultural challenges, 4 major topics were selected to be addressed in the module, namely:

1. Transportation planning and finance
2. Disaster management
3. Green infrastructures
4. City governance (with a focus on Metropolitan governance structures)

The final curriculum of the training sessions in the Istanbul module is summarized in Table 4.2.2.

Table 4.2.2 – final program of the IGLUS-Istanbul training module

Date	Topic
Monday 1.9.14	Governance theory sessions (EPFL)
	Introduction to the city of Istanbul
	Infrastructure management in Turkey (focus on transportation)
Tuesday 2.9.14	Transportation planning in Mega Cities
	Governance of transportation systems
	Challenges in governance of integrated mass transit systems (focus on operations)
	Istanbul urban rail network
Wednesday 3.9.14	Finance of public transportation projects (UITP)
	Parking regulation and management in Istanbul
	Applications of ITS in Istanbul
Thursday 4.9.14	Managing private transport in Megacities
	Congestion mitigation
	Guided field visit from the Istanbul public transport network (BRT system)
Friday 5.9.14	Green infrastructures governance and planning in Istanbul
	Public participation and heritage value (in the context of green infrastructure planning)
	Guided field visit from the Belgrade forest
Saturday 6.9.14	Ecosystem services
	Visit from the Emirgan park
	Visit from the Kuzgunchuk Bostan and meeting with community gardeners
Sunday 7.9.14	Free day
Monday 8.9.14	Public Private Partnerships contracts for infrastructure development (theories and cases)
	Visit from ISBAK (technology developer for monitoring of transportation systems)
Tuesday 9.9.14	City identity and cultural heritages
	Metropolitan planning in Istanbul
	Urban regeneration in Istanbul
Wednesday 10.9.14	Disaster management (UN-Habitat)
	Visit from the crisis management facility in Istanbul
Thursday 11.9.14	Smart Energy and Smart Infrastructures (Schneider Electric)
	Urban Governance in Turkey
	Metropolitan Governance in Istanbul
	Round table about governance of Istanbul
Friday 12.9.14	Operation and Maintenance of transportation systems (BCG)
	Comparative Urban Planning (Urban Age – LSE cities)
	Wrap up (EPFL)

4.2.1.2 Participants

In the IGLUIS-Istanbul module, we had nine participants who were committed to attend in the complete Master program and eight local participants who only participated in this module. Seven out of the nine participants, from the pool of participants in the Master program, were present in the IGLUS-Guadalajara module and were familiar with our approach. Almost all of the local participants in this module were Master students from the host university; most of them having a few years of professional experience. The profile of participants in this module is summarized in Table 4.2.3. One of the local participants in the Istanbul module later decided to continue with the Executive Master program and officially enrolled in the program as of November 2014.

Table 4.2.3 – Profile of participants in IGLUS Istanbul module

Names	Affiliated city	Educational/Professional background	Number of modules that she/he had already attended
D.H	Istanbul	Master student in urban systems and transportation management	0
T.N	Istanbul	Master student in urban systems and transportation management	0
Y.H.T	Istanbul	PhD / Professor of urban forestry in Istanbul University	0
D.I.E	Istanbul	Master student in urban systems and transportation management	0
T.A.Z	Istanbul	Master student in urban systems and transportation management/Istanbul municipality transportation department	0
A.M.A	Istanbul	Master student in urban systems and transportation management/ Istanbul municipality transportation department	0
O.E	Istanbul	Master student in environmental science/Environmental activist	0
T.U.A	Istanbul	Master student in urban systems and transportation management/IETT international relations office	0
A.N	Bahrein, Edamah	Business administration and law/Edamah Real Estate company	1
J.L.C	Brazil, Rio de Janeiro	Economics and MBA/Special assistant for Chief of Staff in City Hall of Rio de Janeiro	1
R.E.G.A	Mexico, Zapopan	Civil engineer/Zapopan Municipality: Development Planning Commission / Private contractor	1
V.G.V	Mexico, Zapopan	International relations/Zapopan Municipality: City Council	1
L.E.G	Mexico, Zapopan	International relations/Zapopan Municipality: COPLADEMUN	1
J.A	Mexico, Guadalajara	Civil engineer – rural development planner	1
B.C	Mexico, Guadalajara	Statistics and computer science /Social activist (NGO for improved children nutrition)	1

H.E.L	Mexico, Guadalajara	Architect and urban planner	0
M.L.P	Venezuela, Maracay	Civil engineer/Urban planner	0

4.2.1.3 Our initial conceptualization of the module and its evolution

In our initial conceptualizations, we had considered the performance of urban systems to be closely affected by the technological legacy system. Any initiative to improve the performance of urban infrastructures will affect, and is affected by, the technological legacy systems, or simply put the existing urban infrastructures. Thus, the process of improving the quality of urban services is often accompanied by introducing some “changes” in the urban infrastructure systems (Herman and Ausubel 1988). And, these changes often result in governance dilemmas due to the, often, conflicting interests of actors (stakeholders).

Istanbul has a huge legacy of infrastructures (e.g. housing, transport, water) that have been developed and have evolved alongside the long history of the city. Due to the city’s increasing population and its aspirations to become a Global City, the city is currently undertaking massive infrastructure projects in order to satisfy the growing demands for urban services and to improve the quality of services to the world-class standards (Gül 2009). These massive infrastructure initiatives in a city with such a huge legacy of infrastructures can easily result in tensions among the stakeholders (e.g. citizens, private companies, city government, national government). The controversial case of the transformation of Gezi Park and the construction of the third bridge and the third airport are only some of the numerous examples of such tensions (Gül, et al.,2014, Göle 2013, Uysal 2012). Beside those tensions among the stakeholder which rise from physical infrastructure initiatives in the city, the transition of Istanbul from a traditional city (society) to a global city which is highly integrated with the ‘so called modern world’ has also resulted in many societal tensions (e.g. change in values and social segregation, widening gap among different economic classes, etc.) (Keyder 2005). Based on these characteristics, we decided to focus on the challenges associated with *governance of large urban systems during transition periods* in the IGLUS-Istanbul module.

Although the focus of this module was on the case of Istanbul, the lessons from the module could potentially be useful for other cities around the world as well. Due to rapid urbanization, and other external pressures such as the emerging consensus around the importance of environmental sustainability, climate change as well as the introduction of new technological innovations (especially thanks to ICTs), most cities around the world have to launch new urban infrastructure initiatives to be able to accommodate the new demands of their citizens and address the changes in their broader sociotechnical environment (Weber and Puissant 2003, Cohen 2004). This implies that cities have to undergo some transition phases (the scope and depth of the transitions might vary, but they are inevitable). Therefore, cities need to understand the challenges and opportunities in governance of large urban systems during such transition phases (Moss and Marvin 2016).

Istanbul is a great example of a mega-city in the middle of a significant transition phase which faces with a wide range of governance dilemmas. So, the city was a perfect choice for this training module as it allowed us to provide the participants with the opportunity to learn from real-world examples of such challenges in the context of Istanbul. With this theme in mind, and based on our learnings from IGLUS-Guadalajara module, we started to prepare for the IGLUS-Istanbul training module from July 2014.

4.2.2 Preparation of the module (planning)

4.2.2.1 Learnings from the previous modules and modifications in our approach

As a result of our reflections on the experience of the IGLUS-Guadalajara training module, we realized that we have to introduce a number of changes to the program both in terms of our theoretical inputs as well as to the practical procedures that concern the organization of the module and training sessions. More precisely, we decided to adopt a more practice-focused approach in designing the theoretical inputs for our future training modules, including the IGLUS-Istanbul module.

In fact, after introducing the main elements of the IGLUS discourse and presenting our initial IGLUS-framework to the participant in IGLUS-Guadalajara training module, we wanted to take one step further in the IGLUS-Istanbul module and provide the participants with more elaborated analytical tools (i.e. toolkits) that the participants could *practically* use in their professional practices. Indeed, we set the goal of this module to be to provide the participants with a more *technical* understanding of the governance of large urban systems. This decision was based on our assumption that by learning some important theories about governance, our participants would be able to make more informed decisions and adopt better courses of actions in their professional lives. In other words, we wanted to empower the participants to be able to make a distinction between a variety of potentially useful governance mechanisms for governing the interactions among important actors in the context of large urban infrastructure systems and to choose the 'best option' based on a *technical* analysis. Simply put, we wanted to enable them to distinguish between governance as a purely political concept and governance as a technical concept (political view vs. technocratic view).

4.2.2.2 Choice of our theoretical inputs for the module

To that effect, we (the organizing team at EPFL) tried to select some well-established theoretical frameworks about governance from the literature that had strong, yet easy to understand, practical implications for the analysis of real-world governance challenges. More precisely, for the IGLUS-Istanbul module we were trying to *choose* some theories about governance that we believed would

be useful for urban practitioners and we were assuming that if we teach these theories to our participants, they would be able to contextualize and figure out the practical implications of these theories for their own practices.

After several rounds of critical discussion of theories between I and Prof. Finger, we agreed that Transaction Cost Theory and Principal Agent Theory could be two useful theoretical frameworks to help us fulfill our objectives. Also, based on the participants feedback from the IGLUS-Guadalajara module, we decided to deliver a short session on the basics of public administration so as to provide the participants with an overview of some of the basic concepts that were frequently used in our discussions; such as government, policy making process, etc.

In the coming sections of this case study, I will further explain how we used these theoretical frameworks to design the 'theoretical opening sessions' of IGLUS-Istanbul module.

4.2.2.3 Designing the curriculum of the module with the Partner University and partner institutions

4.2.2.3.1 Starting with KHAS and switching to BAU

As explained in the IGLUS-Guadalajara case study, in all of the IGLUS modules we had a special emphasis to develop the detailed curriculum of the module in *close collaboration* with the partner university, instead of having it developed solely by either EPFL or the partner university in isolation.

In the beginning of the preparation for the IGLUS-Istanbul module, we started to jointly develop a detailed curriculum in collaboration with Kadir Has University in Istanbul. We began the first practical steps of preparation for the IGLUS-Istanbul training module in April 2013 (the module was planned to take place September 2014). After about one month of collaboration with Kadir Has University to design the detailed curriculum of the module, we recognized that the partner university had very strong academic preferences towards the process of co-designing the curriculum of the program. In fact, the partner university was not willing to get in touch with local practitioners and city officials and ask them to lecture in the IGLUS-Istanbul module to share their experience with our participants. Also, they had a hard time to get in touch with local organizations to organize field visits.

Based on these limitations, the partner university was intending to fill most of the training sessions of the module with 'academic' lectures from the faculty members of the engineering school at the Kadir Has University, which was not in-line with the philosophy of the program and our learning objectives for the IGLUS-Istanbul module. So, in May 2014 and after one month of collaboration and intensive communication with Kadir Has University with very limited progress towards developing the joint curriculum of the module, we decided to change our partner university in Istanbul. The main

reason behind this risky decision was to ensure that we would be able to bring the local knowledge and experience of practitioners from the city of Istanbul into this training event⁵³.

4.2.2.3.2 Working with BAU

In May 2014, we established the first contact with Bahçeşehir University (BAU) to enquire about their interest in becoming our new partner for the program in Istanbul. Due to previous connections between EPFL and BAU, the general agreements for collaboration was quickly finalized and we started our practical steps towards preparing the IGLUS-Istanbul training module early May 2014.

Based on the learnings from the *preparation phase* of the IGLUS-Guadalajara module, we decided to adopt the same strategy for the joint design of the IGLUS-Istanbul curriculum with BAU. To that effect, in May 2014 I began to prepare a first draft of the curriculum outlining the broad objectives and structure of the training module (Table 4.2.4) and ask the partner university to provide concrete proposals for each session of the module. BAU was asked to find knowledgeable *lecturers* to teach in the module; but more importantly to also propose training sessions (topics) as well as activities (visits, etc.) that we did not initially consider in the draft curriculum of the module, due to our limited knowledge of available potentials in Istanbul.

It is important to mention that the process of designing the curriculum for the IGLUS-Istanbul training module was overlapping with the final preparation phase of the IGLUS-Guadalajara module. So after taking the initial steps towards the joint design of the IGLUS-Istanbul curriculum with BAU, we decided to postpone the final steps of curriculum development until after we finished the IGLUS-Guadalajara module. We decided to do so to make sure that we could incorporate our main learnings from the IGLUS-Guadalajara training module in the final curriculum of the IGLUS-Istanbul module.

After we closed the IGLUS-Guadalajara training module, in the end of June 2014, we focused heavily on designing the IGLUS-Istanbul curriculum with BAU. By the end of July - early August 2014, we had finished more than 5 rounds of revision of the curriculum with BAU and the detailed curriculum (topics, proposed lecturers, visits, etc.) was almost completely ready.

The process of joint-design of the curriculum was significantly smoother and more efficient for the IGLUS-Istanbul module compared to the experience of IGLUS-Guadalajara module. This was partly due to the fact that BAU and our contacts at the university had a strong competency (both in research and training) in the domain of urban transportation planning and management and had a series of ongoing collaborations with the Istanbul municipality and its affiliated companies. The existence of these competencies provided a common understanding between the two parties; making the dialogue between BAU and us more effective. This argument gains more support when I reflect on my personal collaboration experience with Tec where our contact had very limited academic and professional experience in fields related to the focus of the IGLUS project.

⁵³ In addition, at the end of this one-month of communication, KHAS informed us of some limitations to host the program on the planned dates- which could make the logistics of organizing the module more complicated, and further pushed us to look for a new partner.

Table 4.2.4 – draft version of curriculum proposal to BAU

Mo	Tue	Wed	Thu	Fri	Sat	Mo	Tue	Wed	Thu	Fri
IGLUS welcome – General Intro of the module (EPFL)	Mobility in emerging megacities – the challenge for balancing the use of public and private modes (this day will be more about integrated public transportation operation and governance)	Private transport in megacities, lessons from the experience of Istanbul	Financing mechanism for public transportation projects in megacities	Green infrastructures (organization by IGLUS lead professor on Green infrastructures)		PPP contracts for public transport; important theoretical considerations	Identity of city, how to protect the city's cultural identity while modernizing (theoretical input)	Resilient cities (contribution from UN-Habitat)	Istanbul governance	Urban Age contribution (comparative urban planning)
Theory session (EPFL)	Governance of public transportation systems	New technologies for urban transportation management	Financing mechanism for public transportation projects in megacities			Workshop session: analysis of a sample PPP contract	Practitioner input on case of cultural identity protection in modern Istanbul		Istanbul governance	Urban Age contribution (comparative urban planning)
Introduction of Istanbul and its current challenges	Istanbul public transport system	UITP contribution	Field visit (transport infrastructure)			Field visit (transport infrastructure)	Contributions from BAU		Roundtable about metropolitan governance reform in Istanbul	EPFL wrap up
Introduction of Istanbul and its current challenges	Istanbul public transport system	UITP contribution	Field visit (transport infrastructure)			Field visit (transport infrastructure)	Contributions from BAU		Roundtable about metropolitan governance reform in Istanbul	EPFL wrap up
Reception									Dinner	

A comparison between our initial proposal for the broad-curriculum of the IGLUS-Istanbul training module (Table 4.2.4) and the final curriculum of the module (Table 4.2.2) illustrates some significant changes that were one of the results of the smooth collaboration process between the two parties.

However, this smooth process of curriculum development could not prevent the complexities for controlling the quality and ensuring the compatibility of the lectures with the objectives of the module. Similar to the IGLUS-Guadalajara module, the lecturers in the IGLUS-Istanbul module did not deliver their presentations to us before the start of the program (even though they were given a deadline of 2 weeks before the start of the module). This was a major concern for us because the IGLUS-Istanbul training module was the second module of the program and we wanted to ensure that there wouldn't be any overlaps between the topics that were covered in the first module and the lectures in the second module.

In addition, based on my observations in the IGLUS-Guadalajara training module about the lectures that addressed primarily discipline-specific/technical dimensions of urban infrastructures instead of the multidimensional complexities associated with governance of these infrastructures, I wanted to ensure that the lecturers in the IGLUS-Istanbul module would fully adhere to the driving philosophy behind the training program (to recall: empowering practitioners to adopt a more holistic-multidisciplinary perspective in addressing complex problems associated with governance of large urban infrastructure systems). More precisely, I wanted to make sure that our expectations from the training module are fully communicated to, and clarified for, the local lecturers prior to the start of the training module.

To resolve these concerns, I repeatedly asked our contact professor at BAU to effectively communicate the main objectives of this training program with local lecturers and to push them to respect the deadline for the delivery of their presentation. However, persuading our contact to do so proved to be a challenge in itself. Throughout our continuous communication, before the start of this training module, BAU was arguing that the Turkish working context differs from our expectations and the lecturers are not used to such strict requirements in terms of advanced-delivery of their teaching materials, so we would have to work with the contextual realities of Turkey. In response to my explanations about the importance of reviewing the presentations before the start of the module, so as to prevent potential redundancies between the two modules and to ensure their relevance to our learning objectives, BAU argued that their affiliated lecturers will focus strongly on the Istanbul case so there won't be any duplication of training materials with the IGLUS-Guadalajara module. And, that due to their significant collaborations with the city government and its affiliated organizations, the invited lecturers have a strong professional/practical background, so there are no rooms for worries about their capabilities in delivering high caliber lectures in the program.

As it will be explained in the coming sections of this case study, the presented content during the Istanbul module did have very few overlaps with the Guadalajara module. However, there were significant overlaps among the sessions of the Istanbul module themselves. Also, similar to the IGLUS-Guadalajara module, we had several sessions with strong focus on the details of local projects (which

was hardly useful for our international as well as the local participants) or were highly discipline-specific (with very limited implications for governance of large urban systems).

In the IGLUS-Istanbul module, like the IGLUS-Guadalajara module, in addition to the sessions that were supposed to be delivered by partner university (BAU), we had to design three other types of sessions: the IGLUS-EPFL sessions, the IGLUS-Partner session and the Green Urban Infrastructures session (which was planned in collaboration with our lead professor on green infrastructures). In the coming pages I will explain the process of designing these sessions in more detail.

4.2.2.3.3 Designing the EPFL sessions

4.2.2.3.3.1 Designing the theoretical opening sessions

As explained in the previous case study (IGLUS-Guadalajara), we had a policy to keep some sessions of the IGLUS training modules dedicated to 'EPFL inputs' to ensure that our core messages and input would be directly conveyed to our audience in each module of the program. In the IGLUS-Istanbul module, as with IGLUS-Guadalajara, we originally planned for two types of EPFL sessions namely *theoretical opening sessions* and the *module wrap-up sessions*. However, in the middle of this module, as it is explained in the coming sections of this case study, I decided to design a new type of session, which we later called *reflection sessions*. The reflection sessions became part of our curriculum design from IGLUS-Hong Kong module afterwards.

As explained in the previous sections (preparation of module), after the IGLUS-Guadalajara module we recognized that we needed to adopt a more practice-relevant approach in our training modules, but at the same time provide *enough* theory to make sure that our participants had a solid theoretical understanding of the concepts being discussed in the training sessions. To that effect, on one hand we decided to reduce the theoretical load of the participants' preparatory readings and instead provide them with more real-world case studies about the host city, and on the other hand to present more established, yet practical, theoretical frameworks during our theoretical opening sessions. The main objective of the theoretical opening sessions of the IGLUS-Istanbul module was to provide the participants with *clearer definitions of some of the main concepts presented in the public administration literature* as well as with an *overview of the Transaction Cost and Principal-Agent theories*. Furthermore, since the selected theme for the IGLUS-Istanbul module was socio/cultural dilemmas in governance of large urban systems in times of transition, we decided to also introduce the discourse of Global Cities at the beginning of this module.

In designing the theoretical sessions of the IGLUS-Istanbul module we were facing with a major dilemma: how can we introduce new dimensions and progresses into our intellectual discourse while maintaining the link and coherence between the theoretical inputs of this module and the presentations and discussions that we had in the previous training module. This was an important consideration in order to avoid any potential confusion among the participants. Moreover, since we

had four different topics to be covered during the theoretical opening sessions of this module, namely, Transaction Cost theory, Principal Agent theory, Global Cities and the basics of Public Administration, we had to pay a close attention to ensure the coherence and relevance of these covered topics to the rest of the training sessions in the IGLUS-Istanbul training module.

In fact, as we proceeded with the project, I realized that designing the new theoretical sessions in this program was more like completing a puzzle with “*developing new pieces*” and not simply “*choosing from pre-existing pieces*”. In this puzzle building process, it was crucial to keep these new pieces (new training sessions and modules) completely coherent with the old pieces (past modules). The process of preparing new intellectual pieces instead of choosing them from the pre-existing materials became increasingly complex as the project progressed and new concepts had to be introduced to the program (especially from Hong Kong module onwards). However, in IGLUS-Istanbul module this presented a big challenge to us since it was our first time to practically encounter with this dilemma.

To resolve this concern in the IGLUS-Istanbul module, I started to think of some *bridging concepts* that could help myself to establish the link between the previous and new theoretical sessions in the program. In this self-reflective process, I was trying to conceptualize the relationship between all the new theoretical inputs and the initial IGLUS framework (which was very broad and generic, see Figure 4.1.2). This intellectual exercise could significantly help me to establish the links among the different theoretical inputs to the program (see figure 4.2.1).

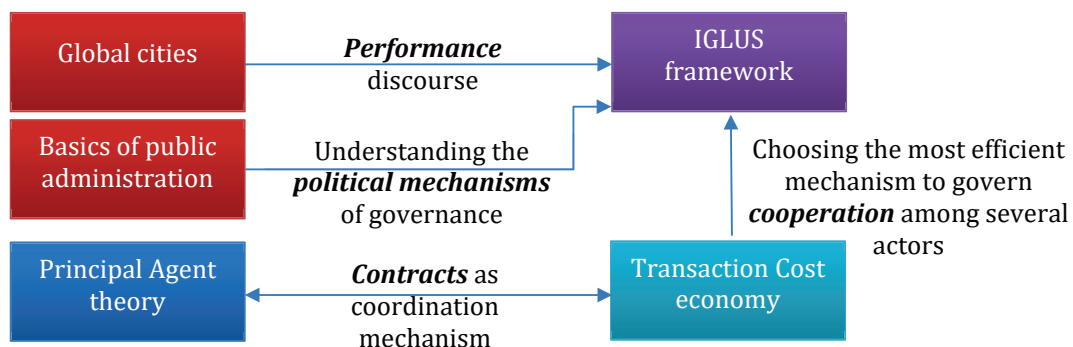


Figure 4.2.1 – intellectual linkages between covered topics during IGLUS-Istanbul module

This conceptualization of the links among the different theoretical inputs was not designed to be part of our presentation in the IGLUS-Istanbul module; however, the self-reflective process that led to this conceptualization was very beneficial because it helped us to clearly position each new intellectual input which was going to be introduced in this training module in the broader context of the learning objectives of the IGLUS program. More precisely, this reflective thinking exercise could significantly improve my competencies in *making-sense and extracting meaning of* the inputs that were to be presented in the upcoming training modules.

Once the links among the different theoretical inputs were clear to us, we started to prepare relevant presentations about Transaction Cost economics, Principal Agent theory, the basics of Public Administration, and Global Cities. In preparation of our presentations, we intentionally tried to keep them at an introductory/abstract level. The reason behind this decision was to make sure that all of the participants (with different educational and professional background) would be able to understand the core arguments of the presentations. We were hoping that through personal reflection on these theoretical inputs, the participants would be able to find the practical applications of these theories for their professional contexts. However, at the end of the IGLUS-Istanbul training module (the 2nd AR inquiry cycle), we realized that this assumption is not totally realistic and we would have to change our approach in the next training modules of the program.

4.2.2.3.2 Designing the wrap up sessions

Based on our successful experience with the wrap-up sessions in the IGLUS-Guadalajara module, the last two sessions of the IGLUS-Istanbul module were initially reserved for wrap up activities. However, due to some contingencies in planning the contributions of external lecturers, we later reduced the allocated time for wrap-up activities in this module to only one session.

Similar to the wrap-up sessions of the previous training module, we had two main objectives in the IGLUS-Istanbul's wrap up sessions. First, we wanted to provide an opportunity for the participants to share their learnings from the training module with the class and secondly to encourage the participants to openly discuss their feedback on their learning experience in this module with us (strengths and weaknesses of the Istanbul module from their personal point of view). Similar to the wrap-up sessions of the IGLUS-Guadalajara module, I decided to keep the structure of this session very flexible and just loosely moderate the discussions to ensure that the participants felt completely free to share their opinions during this session.

4.2.2.3.4 *Designing the joint sessions with external partners (UN-Habitat, UITP, BCG, Schneider Electric and LSE-Urban Age)*

In the IGLUS-Istanbul training module, the number of external partners who lectured in the module increased significantly in comparison to the IGLUS-Guadalajara module. Among our partners from the international organizations, UN-Habitat accepted to cover the topic of Urban Disaster Management. To that effect, UN-Habitat assigned one of their experts on the topic of post-disaster management to collaborate with us in this module. For this session, I decided to directly get in touch with the lecturer in order to prepare the agenda of the session together. The lecturer was in charge of managing the post-disaster recovery mission of UN after the Haiti earthquake. To benefit from his firsthand experience about this case, I proposed to devote most of the session's time to the elaboration of the case. We also agreed to use his inputs about this case as a basis for developing a governance-oriented discussion around the topic with the participants. Since this topic was going to

be covered for the first time in the program and the lecture was based on the personal experience of the lecturer, I was not concerned about any potential duplication of material with previous training sessions of the program. Furthermore, as we had decided to devote almost half of the total time of the sessions for case description and reserve the remaining time to develop a group discussion, I was not concerned about any potential mismatch between the presentation and the learning objectives of the module because we had the opportunity to spontaneously manage the discussions, thanks to the lecturer's openness to develop a jointly-led discussion in this session.

In the initial curriculum of the IGLUS-Executive Master program the topic of Urban Resilience was not considered as a major topic. However, the experience of developing this joint session became the starting point for a more structured and formal collaboration between UN-Habitat and the IGLUS program on the topic of Urban Resilience. As it will be explained in the coming chapter, we later decided to dedicate a complete day in each of the training modules to this topic.

In addition, we managed to organize a joint session with UITP (International Association of Public Transport⁵⁴) on '*financing of public transportation*' and '*integrated policies to achieve sustainable urban mobility*'. The topic of financing public transportation was new in the curriculum. However, the topic of integrated policies for sustainable urban mobility was 'discussed' in several sessions of the IGLUS-Guadalajara module. In order to ensure minimum overlap between these sessions and previous transportation-focused sessions of the program, and to avoid potentially 'technical presentations' on the topic instead of governance-oriented lectures, I decided to share all of the previous transportation-related lectures from the IGLUS-Guadalajara module with the designated representative from UITP and asked him to make sure that his lecture does not overlap with the IGLUS-Guadalajara transportation sessions. Despite all of these preventive measures, when I received the presentation for the session on 'integrated policies to achieve sustainable urban mobility' (a week before the start of the module), I found that it did not meet our learning objectives and did overlap with some previous presentations. So, despite my initial strategy to provide a high degree of freedom to allow the partner lecturers to freely design their own lectures, I decided to provide more structured and detailed feedback on *each of the slides* of the presentation and ask the partner lecturer to address them accordingly. Although a very time consuming process and somewhat contradictory to my intention to have the very original perspective of the external lecturer in his/her presentation, the fact that I was able to provide detailed feedback on this presentation before the session was quite helpful to improve the quality of the session.

Among the partner companies in the project, Boston Consulting Group and Schneider Electric agreed to lecture in the IGLUS-Istanbul module. This was the first time we had presentations from the partner companies in the program (not international organizations). To ensure that these sessions would not turn into corporate marketing presentations, we (the organizing team at EFPL) decided to *pre-set* three main learning objectives for the joint sessions and ask the companies to develop their presentations around these objectives:

⁵⁴ <http://www.uitp.org> (accessed 4 July 2016)

1. Understanding how the private sector conceives the challenges cities face in the domain of urban infrastructures (the private actors' point of view about challenges in the urban energy, transportation, water sectors, etc.)
2. Providing a general understanding of the solutions/innovations that the company offers to improve performance of cities in its respective infrastructure sector
3. Understanding the governance challenges for realizing such innovations/solutions in the context of large urban systems (infrastructure) from the private actors' point of view

This proposal for learning outcomes was put to the test during the preparation of the companies' sessions in the IGLUS-Istanbul module. We had to see if the partner firms firstly agree on these objectives and secondly are able to deliver the expected outcomes.

To that effect, I started to work with Schneider Electric and BCG on the structure of their sessions. In a meeting with the representative of Schneider Electric we could quickly come to a mutual agreement on the agenda of the session, alongside the three main learning objectives that we had in mind. The opportunity to have a face-to-face discussion helped us realize that the scope of this session could even be extended from focusing only on Smart Energy to the broader concept of Smart Cities and the inter-linkages among different urban infrastructure; thanks to the knowledgeability and personal interests of the lecturer about this topic.

The discussion with the BCG consultancy firm (not an infrastructure solution provider) mainly revolved around our first and third learning objectives. After explaining the broad learning objectives of the session and the training program, the representative from BCG and myself were able to easily agree on the outline of the presentation, which focused on the importance of operations and maintenance management for reducing the operating costs and for also improving the efficiency of urban public transportation systems.

An interesting point about preparing these joint sessions, with partner companies, pertains to the ease of communication toward developing the outline of the joint sessions. The representatives from these firm, in this case both BCG and Schneider electric, had a very clear idea of important urban infrastructure challenges, had concrete proposals for approaching some of them, and were fully familiar with the governance challenges they were facing in their infrastructure-related businesses. Also, they could look at the challenges from a holistic point of view (not only the technology or business aspects). So, despite the fact that most of our contact persons in firms did not have any formal education in governance-related topics, they could easily understand the core problems that this training program was trying to address, and were able to easily engage in governance-related discussion with us.

This was an interesting observation because it showed that in addition to the theories and concepts behind the governance discourse, understanding governance challenges also pertains to *practical* knowledge. In other words, in comparison with the academic-lecturers, the practitioner-lecturers could convey the governance challenges to the participants of the program more effectively due to

their rich understanding of the ‘real-world challenges’ in working with other actors who have a stake in large urban infrastructure systems⁵⁵.

It is also worth noting that the opportunity to be in direct contact with these lecturers (and not through the channel of partner universities) helped us to easily and effectively communicate the learning objectives and philosophy of the program to them. This might be one of the reasons that the participants were often highly satisfied with the quality of lectures and discussions in these external-partner sessions.

4.2.2.3.5 Designing the Green infrastructure sessions

Organizing the Green Infrastructure sessions were different from all previous types of sessions. For the Green infrastructure sessions, we were working with only one Swiss professor from the University of Applied Sciences-Western Switzerland who took the lead on this topic; not a local partner or an organization as with the other sessions. This lead professor was directly, and often independently, in touch with some local professors and practitioners and had almost full autonomy over designing the green infrastructure governance sessions. Since she was an expert on the topic of green infrastructures and also had a good understanding of the green infrastructures in the context Istanbul (thanks to her personal collaborations with Istanbul University on this topic), I decided not to propose any structure for the green infrastructure sessions; letting her to develop the green infrastructure sessions based on her own preferences and expertise.

Although she had full autonomy to plan the green infrastructure sessions, prior to the module we went through several rounds of internal consultation to make sure that the green infrastructure sessions would not become too technical for the participants. In these discussions, my main focus was on clarifying the broader learning objectives and underlying philosophy of the IGLUS training program so that she would be able to design the green infrastructure sessions in-line with these objectives.

In fact, as will be explained in the coming sections, the exercise of collaborating with this lead professor to incorporate the urban green infrastructure sessions into the overall IGLUS discourse and curriculum of the program became a significant driver for my personal critical reflection about our understanding of the concepts of urban infrastructures and governance. More precisely, my encounter with a totally *new* ‘infrastructure’ which was not fitting into my initial understanding of urban infrastructures as socio-technical systems became an important feed for my thoughts in the project. These critical reflections, in later stages, opened doors for us to improve our conceptualization of governance of large urban infrastructure systems.

⁵⁵ In fact, this was one of the motivations that after the IGLUS-Istanbul module we decided to take-over almost half of the training sessions in each module and dedicate them to the inputs from practitioner-lecturers.

4.2.2.4 Local recruitment to ensure presence of context specific experiences and inputs in the class

In the same line as the IGLUS-Guadalajara module, we asked the partner university to recruit some local participants for the IGLUS-Istanbul module. Our intention from pursuing this local-recruitment strategy was to bring local and international participants into the same classroom and, by doing so, create an opportunity to discuss the issues from different perspectives. Our underlying assumption in making this decision was that creating such a setting (presence of multi-national perspectives) could enrich the quality of discussions and ultimately improve the learning outcomes of the module.

In the IGLUS-Istanbul module, eight local participants were recruited to attend the module. Most of these local participants were Master students at BAU who were also working in the city of Istanbul. Presence of these local participants significantly contributed to the interactive sessions throughout the course of this module. Indeed, in addition to the valuable contributions from the local participants to the class discussions, in an interesting case one of the local participants even led our field visits from some of the transportation facilities in Istanbul, thanks to his well-developed professional network.

Despite all the positive outcomes of this local recruitment strategy, during this module we also faced with some challenges rooted in ‘cultural differences’ among the Latin American participants, local participants and local lecturers. The problem arose primarily because some of our Latin American participants were occasionally feeling as if they weren’t being respected when they questioned, or criticized, management/governance practice that were different from their home cities. In IGLUS-Guadalajara module, almost all of the participants were coming from Latin American countries and dominantly from the Guadalajara Metropolitan Area. So asking critical questions or even criticizing the situation in the city/region could often be perceived as a legitimate discussion amongst a group of local experts. However, when the group of international participants came to the Istanbul module and brought their same style of heated discussions to this new context, in some cases, one of the local participants and especially some of the lecturers became partially defensive in response to these ‘external’ criticisms and ‘misunderstandings’ of the complex situation in ‘their home city’. This resulted in some difficulties during the two weeks of training, which I will discuss in section 4.2.3 of this case study.

4.2.2.5 Preparatory assignments

Based on the feedback of participants and our learnings from the IGLUS-Guadalajara training module, we decided to reduce the theoretical load of the preparatory assignments for IGLUS-Istanbul module, but enhance the practicality of the preparatory assignments for the participants.

To that effect, I provided the participants with strategic plan of Istanbul⁵⁶ and a descriptive paper about governance of Istanbul (Uzun 2007). I decided to use the Strategic plan of Istanbul as a mandatory reading in order to provide the participants with a concert example of practical steps (which will be ultimately influenced by governance systems) that cities have to take in order to improve the quality of services and performance of the city. The paper by Uzun was describing the changes in governance structure of Istanbul and how it was affected by broader socio-economic changes in Turkey; and especially influenced by globalization. Also, since we were going to start the green infrastructures sessions in this module, we asked the participants to read a general article about green infrastructures in EU⁵⁷ and one case study about urban forests in Istanbul (Atmiş, et al., 2007).

The participants were asked to firstly analyze the strategic plan of Istanbul from their own perspective as an expert and provide three recommendations for improvement of the plan. Secondly, they were asked to use *the structure of the paper* on Governance of Istanbul to describe the changes in governance of their home cities and its consecutive effects; and then compare their home city and Istanbul with regard to evolution of governance structures. This was one of our first attempts to push the participants to compare their home cities with the host city of the module (In IGLUS-Guadalajara, we were asking them to reflect on the theories by using the examples of their home city, but in IGLUS-Istanbul they were asked to compare the two cases with each other). And thirdly, the participants were asked to provide three suggestions for developing a strategic plan for their home city by using the lessons that they found in the Istanbul strategic plan. For the green infrastructure papers, the participants were asked to outline the main services that their cities receive from green infrastructures and discuss the main governance challenges to maintain and improve the green infrastructures in their cities. This was our first attempt to push the participants to think of practical governance challenges in a specific infrastructure instead of thinking about abstract level challenges. The following text is adopted from the instructions which were sent to the participants:

"A) Please read these three articles which are mandatory readings for this module:

- *Strategic Plan of Istanbul 2010-2014*
- *Istanbul Urban Governance (Nil Uzun 2007)*
- *ELCA document (Green City Europe)*
- *Urbanization pressures on the natural forests in Turkey, an overview*

B) Using the two articles about governance (Strategic plan + Governance of Istanbul), please answer the following questions:

- 1) If the metropolitan municipality of Istanbul asks for your advice on their strategic plan, what are your 3 most important advices to them? Why? (Maximum 2 pages)*
- 2) Please explain the changes in the governance system of your city and its consequences by using the general structure which you see in the "Governance of Istanbul" article. Then, please compare your personal experience about changes in the governance structure in YOUR city with the article of Governance of ISTANBUL. Do you see any similarity/differences between the case of Istanbul and your city? (Maximum 5 pages)*

⁵⁶ Available at: https://reclaimistanbul.files.wordpress.com/2011/04/stratejikplan10_14_eng.pdf (accessed 5 July 2016)

⁵⁷ Available at: http://ec.europa.eu/environment/nature/ecosystems/docs/green_infrastructure_broc.pdf (accessed 4 July 2016)

- 3) *If your city decides to develop and implement a strategic plan, what are your 3 main suggestions to your city authorities based on your analysis of the Istanbul plan? Why? (Maximum 2 pages)*
- C) *Using the two papers about green infrastructure, please answer the following questions:*
- 4) *What are the services green urban infrastructures provide in your city? (3 pages max)*
- 5) *What are the governance challenges to maintaining and improving these green infrastructures, including urban forests ? (Maximum 3 pages)”*

In the coming pages, I try to highlight the main points from the participants’ answers to these questions.

4.2.2.5.1 Selected quotes from the participants’ essays

Question 1)

The participants’ analysis of the strategic plan of Istanbul and recommendations to improve it covered a wide range of points; from generic recommendations that were applicable to any plan to very detailed recommendations about the specificities of Istanbul strategic plan. Among the generic recommendations, the main focus of answers was on ensuring implementation, flexibility and evaluation. For example, one of our participants who was a senior architect and urban planner in one of the municipalities of GMA mentioned:

“... They [the plans] become lists of good intentions, goals and objectives to reach in practice not be reached” [H.P.2]

Or another participant from Venezuela mentioned:

“A Strategic Plan must be flexible, revised and updated constantly, according to the dynamics of the city...” [L.P.2]

However, most of the participants have adopted more elaborated perspectives in analyzing the strategic plan and addressed issues of implementation, flexibility, evaluation, uniqueness, institutionalization of the plans and social participation and stakeholders’ engagement. For example, with regard to implementation of the plans, a participant from Mexico who was both working in the private sector as a civil engineer and in the same time was in charge of planning for infrastructure in his respective municipality mentioned:

“...How are they going to achieve? From my point of view the Plan contains too many justifications but few strategies for generating growth and development in the city” [R.P.2]

A Brazilian participant who was closely involved in the process of strategic planning for Rio de Janeiro depicted several issues that he could perceive as *improvement opportunities* in the Istanbul

plan such as institutionalization of the processes, time horizon, etc. Based on his experience, he had adopted a very detailed approach in analyzing the Istanbul strategic plan. For example, he pointed out to the lack of uniqueness in the plan and raised his disagreement with the chosen approach for ensuring the implementation of the plan by using Balanced Scorecard methodology:

"The mission of the City of Istanbul stated in the Strategic Plan is too opened and could be used for any city around the world... if you change the word "Istanbul" in the "mission" to Brazil, France or United States it works. My advice is to find the unique aspects of Istanbul and explore than in the Strategic Plan.... All the structure of the Municipality could be seen in the Strategic Plan. There are objectives, activities and indicators for the main services areas and for the general management areas. I believe that the Balanced Scorecard methodology induced the city to cover all the organization. I don't agree with this approach. In my opinion the Strategic Plan should have just Strategic themes, especially for the communication purpose of the plan. ...And in order to expedite the evaluation of results, drastically reduce the number of indicators, leaving only those that focus on social, environmental and economic issues to ensure sustainability in which strategic plan is based on." [J.P.2]

One of the interesting points in the answers of the participants to this questions was the ability of some of them to see the links between the different preparatory readings and use the synthesis of their insights from them in answering this questions. For example, one of the Mexican participants pointed to a link between the Strategic plan of Istanbul and the other mandatory reading about governance of Istanbul and nicely argued for the importance of more elaborated consideration of external factor in Istanbul's strategic plan:

"... On External environmental analysis section, mention the use of documents such as Turkey Ninth Development Plan 2007-2013 and the European Urban Charter, so we can have an idea of the national and regional environment analysis of the metropolis, however (due to) the geographical position of the city and as I mentioned earlier globalization (referring to the arguments of article by Uzun), I'll recommend detailed international trends in specific subjects such as economics and finance analysis." [A.P.2]

Among all the points that were raised by different participants about the plan, the importance of social participation and stakeholders' engagement was prevalent in almost all of the participants' answers. For example, a participant from a Mexican NGO mentioned several innovative ideas to enhance the process of social participation:

"I would advise the development of an interactive website where people could read, understand, research and give follow-up to the objectives of the Metropolitan Municipality Plan, and they could reach the level of detail that anyone required in a specific subject... Qualitatively I would advise to include or mention in the plan the information about programs specific focused to women, children and family." [B.P.2]

Or another participant from Mexico critically examined the role of different actors in decision making about this strategic plan:

"Who approves the plan? ... it is clear that at the end of the day the decisión-making is in the hands of the 3 main actors in this movie: the Mayor, the Istanbul Metropolitan Municipality Council and the Metropolitan Municipality committee. I believe that at the end of the day the approval or disapproval of the Strategic Plan of the city should be reviewed and if necessary approved by a council or committee in which they were directly involved at least representatives of each of the sectors that in their time were responsible for making comments or nurture their participation brainstorming when developing the plan" [R.P.2]

The fact that the importance of engaging different important stakeholders in the process of developing, implementing and monitoring the strategic plan was raised by almost all of the participants was interesting for us because it showed that the participants could use some of their learnings from the IGLUS-Guadalajara module in the preparatory essays of the IGLUS-Istanbul module. In fact, the importance of considering the role of different actors in the process of governance of large urban infrastructure systems was among our key message in the IGLUS-Guadalajara module and finding the traces of our previous discussions in participants' analysis of the strategic plan of Istanbul was a promising sign for us.

Question 2)

The answers of the participants to the second question of this preparatory assignment, which was aimed at comparing the evolution of governance structures between Istanbul and participants' home cities, were less elaborated. The participants were supposed to use the structure of paper by Uzun (2007) as a benchmark for describing the changes in the governance structure of their home cities. In that paper, the author described the impacts of changes in national politics of Turkey and Globalization on subsequent changes in the governance structure of Istanbul. However, most of the participants, with the exception of our Brazilian participant, could not get the complete structure of Uzun's analysis about Istanbul.

For example, two participants from Mexico only focused on one major difference between their home city and Istanbul with regard to creation of Metropolitan Governments, but could not provide a comprehensive analysis in their essay:

"Governance in Istanbul has undergone several changes over time in the same way it happens in my country and my city. However a point that I consider important that could not be achieved in Mexico and that apparently yielded positive results in Turkey is the creation of metropolitan areas as a basis for the organization of each of the cities" [R.P.2]

"I was particularly struck by what is called, "Istanbul Metropolitan Municipality" debido a que Mientras en Turquía la tendencia es a fortalecer la Municipalidad Metropolitana, in Mexico there is no interim or intermediate entity Between Municipalities and State Governments." [H.P.2]

Another participant from Mexico could adopt the historical structure of analysis in Uzun's paper and explain the impact of economic changes during 80's on governance structures in Mexico, but could not extend her analysis to explain the implications of these contextual changes for her city:

"Other changes that took place from the early 80's was the application of radical financial structural adjustment policies because the insolvency of the government to pay the foreign debt, with social costs, we are still paying..." [A.P.2]

In the rest of her answer to this question, she described some of the challenges that her city/country is currently facing and explained the role of different actors who are involved in the governance structure of her city, but could not put here analysis in an evolutionary structure which was presented in the paper:

"In the specific case of Mexico, the development of local democracy and claims is highlighted by civil society... citizen participation has become so detailed that even limits or slows the government actions." [A.P.2]

And then she continued to explain the role of each of these actors in the system, namely *"The Metropolitan Planning Institute, The City Council and The Advisory Council"*.

In the same manner, another participant from GMA could not provide an evolutionary analysis of the changes in her city's governance structure, but instead tried to provide a detailed and comprehensive snapshot of governance challenges in the Mexican context as well as a list of some potential solutions to address the challenges:

"Municipalities still suffer from highly centralized political and financial control... The three-year nonrenewable term of mayors that has been in force for many years has resulted in short term administrations... Most administrative decisions must be submitted and approved by state legislatures, including contracting with the private sector for public works Continuity in policy design and implementation by municipalities would be enhanced. There are in fact new approved laws in 2013 that will be applied in next periods, when mayors, senators and other politicians could be immediately reelected after serving one term... The role of the private sector should be defined clearly... Intergovernmental relations should be separated from political party links... Institutional arrangements for better governance focus on consolidating the tax base" [B.P.2]

Although this participant could not conduct her analysis in the same structure as the paper by Uzun, her ability to look at the issues from a holistic point of view and consider the multi-dimensional nature of the problems was an important point in her answer.

Despite all the above mentioned difficulties for some of the participants to conduct this comparative analysis, one of the participants from Brazil could fully understand the logic of the question and how he should use the structure of the paper:

"I believe that the best way to explain the governance system of Rio de Janeiro and compare the changes in the governance structure between Rio and Istanbul are describing the both histories. As we will see, there are more similarities than differences between the cities." [J.P.2]

And then he gave a well-structured and comprehensive answer to the question:

"I could say that Brazil and Rio de Janeiro passed through the same challenges of Turkey and Istanbul just 10 years later. In 1983, a general election generated a huge transformation in Turkey and especially in Istanbul with the empowerment of the cities. In 1988, after the military dictatorship, Brazil made a new federal constitution that also empowered the municipalities, giving money and responsibilities for them... Another similarity between Istanbul and Rio was the privatization trend... The election's impact that occurred in Istanbul in 2004 happened in a quite similar way in Rio de Janeiro. In 2009, Rio had an election and the new mayor established an alignment with the state government and the federal government. This alignment made possible for the government to set up old and important projects for the city... Finally, the article mentions another trend in Istanbul which is the government working like a direct partner in projects sharing the revenues. This is also a similarity with Rio. The municipality has a company that invests in the audio-visual industry like films and shares the revenues of the investment with the private sector... In conclusion, the article says that in this transition from the managerial city to the entrepreneurial city, caused by globalization, the functions of formal government structures and contemporary agencies have shifted. There are new responsibilities of public, private, voluntary and household groups but the transition is still incomplete. I completely agree with this argument. Rio de Janeiro is in the same timing of Istanbul. We need to reinforce the regulation process in order to achieve a better governance of our city. We could not depend on the characteristics of the elected mayor to make the transformation of the government organization towards governance." [J.P.2]

The fact that only one of the participants, from Brazil, could sufficiently answer to this question showed that neither the question was irrelevant nor the structure of analysis in the paper was impossible to be understood by the participants. However, it also showed that we could not yet expect the participants to perform relatively complicated analysis of governance systems. In fact, we understood that despite the participants' rich practical knowledge about governance challenges in their home cities, they have limited capabilities to structure their knowledge and use it for comparative analysis. In the case of our Brazilian participant, the situation could be different because of similarities between Turkey and Brazil (both in emerging economies club) which made the comparative analysis easier to be performed, and also the personal competencies of this participant thanks to his strong educational and professional background. This working-hypothesis was later confirmed again when we started the module and observed the difficulties for some of the participants to compare the differences and similarities between Istanbul and Guadalajara (more broadly Latin America cities) in a structured and clear way.

Question 3)

The answers of the participants to the third question of this preparatory activity - which was asking them to propose some recommendations to develop a strategic plan for their home cities, based on their analysis of the Istanbul strategic plan – were very much in-line with the answers of the

participants to the first question⁵⁸ (which was about recommendations for improvement in Istanbul strategic plan). In fact, most of the participants reflected on the importance of stakeholder engagement in the process of development and implementation of the strategic plan which was one of the core learning objectives of previous module (IGLUS-Guadalajara). For example, a Venezuelan participant (who was not present in IGLUS-Guadalajara, but had access to the learning materials and presentations of the Guadalajara module before she started her studies in Istanbul) mentioned:

"... Construct a Strategic Plan with a large citizen participation and with different groups, social associations, institutions, organizations and others who are active in local society,..."[P.P.2]

Also, some of the participants had pointed to issues related to transparency and accountability that were covered during the last module of the program. For example, our Brazilian participant focused on the importance of clear regulations (which can result in better accountability and transparency measures) for the projects:

"Analyzing the Istanbul Plan, I could make at least three main suggestions: 1) Explore the long term plan; 2) Invest in the dialogue with all the stakeholders; 3) Structure the regulation of the projects." [J.P.2]

In the same line, one of the Mexican delegates pointed out to the importance of clarity of responsibilities and duties that are going to be put in the strategic plan of her own city:

"... I'm sure that by this separation of duties [assigning goals and objectives to different departments] is easier to determine what responsibilities correspond to everyone." [R.P.2]

Like the participants' answers to the first question, the fact that the participants could use some of their learnings from the IGLUS-Guadalajara module in the preparatory work of the IGLUS-Istanbul was an important observation for us.

Questions 4 and 5)

When analyzing the responses of participants to the fourth question of the preparatory assignment, it becomes clear that most of the participants could understand the new concept of green infrastructures by reading the papers and describe the main functions and services these infrastructures provide in their city. The participants could identify the ecological services, social services (recreation, public space, culture, etc.) and educational service associated with urban green infrastructures. For example, one of the participants from GMA categorized different green infrastructures of the city according to their functions.

⁵⁸ Due to significant overlaps between the participants' answers to questions 1 and 3, I will not use many quotes from the participants' answers to questions 3 to avoid redundancy.

Table 4.2.5 – examples of participants inputs about types of service in GMA green infrastructures

I Recreation
<i>Morelos, Rehilete Alcalde, Ávila Camacho, Divertido Guadalajara, Cerro de la Reina.</i>
II Recreation y Sports
<i>Jesús González Gallo, San Rafael, Mirador, Independencia, Liberación, Montenegro, Solidaridad.</i>
III Recreation, Sports and Culture
<i>Agua Azul.</i>
IV Recreation, Sports y Education
<i>Barranca Oblatos-Huentitán, Bosque El Centinela.</i>
V Recreation, Sports, Education and Culture
<i>Bosque Los Colomos, Metropolitano.</i>
Source: adopted from one of the participants' preparatory assignment [B.P.2]

Or another participant addressed some social and educational functions of urban green infrastructures in her city which also have modest ecological services:

“Even If Zapopan hasn’t a green infrastructure that really could impact the ecological environment there are three big efforts that I want to talk about, the Agroecological Park, the Bosque Pedagógico del Agua (Teaching Forest of Water) and Box Parks, even if those projects have social purposes, they have ecological impact to the environment and in education for this and next generations.” [L.P.2]

The fact that the participants’ could highlight different dimensions of performance of green infrastructures (social, ecological, etc.) could be perceived as an early signal that they can understand the concept of ‘infrastructure’ from a multi-disciplinary point of view. This observation is further reinforced when analyzing the participants’ answers to the fifth questions of this preparatory essay.

In response to the fifth question, which was about governance challenges to develop and maintain the green infrastructures, the participants addressed several important issues such as the competition for land between housing and green infrastructures, the conflict of interest between private actors (investors and developers) and public, financing the green infrastructures, balancing the social benefits and potential damages to green infrastructures as well as jurisdictional challenges for governance of green infrastructures.

For example, a participant from GMA addressed the competition over land use between green infrastructures and other commercial uses, and the role of private actors in this process:

“As in Istanbul and in many cities and countries, the problem of forests in Zapopan and Guadalajara Metropolitan Area is the pressure from investors for the land on which they are situated, including sometimes the government to allocate these properties to real estate development, production activities incompatible with forest use...” [H.P.2]

Another participant from GAM raised the roles of different actors in the process of maintenance of green infrastructures:

“... if we talk about the maintenance cost of green areas, we cannot leave the full responsibility to government, without ceasing to be public spaces, there should be a balance in the management taken by the government and support from companies and citizen participation.” [A.P.2]

One of the participants from GMA (who was working in an NGO) presented the main actors who are in charge of managing different green infrastructures in the city (table 4.2.6) and also raised the importance of balance between responsibilities and resources as an important challenge for governance of green infrastructure. The interesting point about the answer of this participant was that her analysis was quite structured, but also very detailed; describing the role of each of the main actors in governance of green infrastructures in Mexico:

Table 4.2.6 – Example of participants’ input about the main actors in the administration of parks in GMA	
<i>Parques y jardines/Municipality</i>	<i>Independencia, Liberación, Barranca Oblatos-Huentitán, Cerro de la Reina, Montenegro, Bosque El Centinela.</i>
<i>Comission of sport promotion (Comisión de Fomento Deportivo) /Municipality</i>	<i>San Rafael, Liberación</i>
<i>Private Concession</i>	<i>Rehilete Alcalde, Ávila Camacho (hoy Divertido Guadalajara)</i>
<i>Board</i>	<i>Bosque Los Colomos</i>
<i>Descentralized Public Unit (Órgano público descentralizado)</i>	<i>Metropolitano</i>
<i>State of Jalisco</i>	<i>Solidaridad</i>
Source: adopted from one of the participants’ preparatory assignment [B.P.2]	

- *“Parks and Greens Department (Dirección de Parques y jardines) : Its objective is to maintain, to conserve and to reforest the municipal green areas...,*
- *General Department of Ecology (Dirección General de Ecología)*
- *Department of Protection to the Environment (Dirección de la Protección al Medio Ambiente*
...the main challenges faced to achieve an affordable solution that will result in a social welfare with all benefits that this implies for the city. ... It has to be clearly established the unit or person in charge of each green area and provide resources to give the proper maintenance. In some cases of green areas in the metropolitan area of Guadalajara, the responsible organization does not have enough resources to face with expenses...” [B.P.2]

Although most of the participants had a very positive perspective about the necessity of green infrastructures in cities, our Brazilian participant raised some dilemmas about security and illegal settlements (slums) that should be addressed in governance of green infrastructures:

“...Growing slums. How manage a forest inside the city?... Security issues, how improve the tourism?”[J.P.2]

The fact that the participants could elaborate the challenges in governance of urban green infrastructures from different perspectives (looking at financing, planning, conflicts among actors, etc.) and also use some elements from their learnings from the IGLUS-Guadalajara module in their answers was a promising sign before starting the second training module of the program in Istanbul. Indeed, it gave us more confidence that our first steps in this training program could result in some tangible learnings outcomes for the participants, both in terms of instrumental learnings (focusing on actors, accountability measures, etc.) as well as adopting a more holistic-multidisciplinary

perspective in critically analyzing the complex problems associated with governance of large urban infrastructure systems.

Overall, the participants' preparatory essays in IGLUS-Istanbul module showed that most of our practitioners in the class have limited ability to analyze governance systems from an academic point of view (question 2). However, they could use their learnings from the program to analyze governance challenges (questions 1, 3, 5).

4.2.3 During the module (Action and Observation)

After all the preparations for the IGLUS-Istanbul module, the IGLUS-Istanbul training module began on Monday September 2, 2014 at Bahçeşehir University with 17 participants. In this section, I will elaborate on the most important observations I made over the course of two weeks of this training module.

4.2.3.1 First day of the program – EPFL sessions

The main objectives for the first day of the IGLUS-Istanbul module were to provide the participants with: 1) some established theoretical inputs that could help them to practically analyze different governance arrangements in urban infrastructure systems, 2) a clearer definition of some of the main concepts from the public administration literature and Global Cities discourse; and 3) an introduction to the city of Istanbul and its current challenges in the governance of infrastructures.

The IGLUS-Istanbul module officially began with a welcome speech by our contact professor from BAU. After this short welcome and a brief introduction to the main activities of BAU's Center for Transportation Research and Implementation, I updated the participants about the latest state of the broader IGLUS project. As part of these updates, I also shared the results of the evaluation survey of IGLUS-Guadalajara module with the participants. Our decision to share the evaluation results with the participant was aimed at echoing our core message to the participants about their important role in the project and the special attention we pay to the participants' feedback in designing each of the upcoming training modules of the program. After this, and a brief self-introduction by each participant, Professor Finger presented the latest edition of the overall curriculum of the Executive Master program and explained where the IGLUS-Istanbul training module fits into this broad curriculum.

After this short opening session, we started our first *theoretical opening session* of the module which was prof. Finger's lecture about Global Cities. In this session, he presented the evolution of the concept of Global Cities from the 1980s to the present day (Friedman 1986, Sassen 2001). This concept was relatively new to the participants. Therefore, we had very few reflective discussions

about the intellectual dimensions of this concept. However, thanks to presence of several local participants in the class, we could have a very interactive discussion about the current situation and future aspirations of Istanbul in light of the concept of global city.

We then referred to the concept of ‘city performance’ in our basic IGLUS framework in order to establish a link between the Global Cities discourse and city governance. We also had a critical discussion about the shortcomings in the Global Cities discourse due to its strong emphasis on the economic dimensions of urban performance (Figure 4.2.2). This discussion later proved to be useful to serve as a basis for comparative analysis of governance systems between Latin American cities and Istanbul.

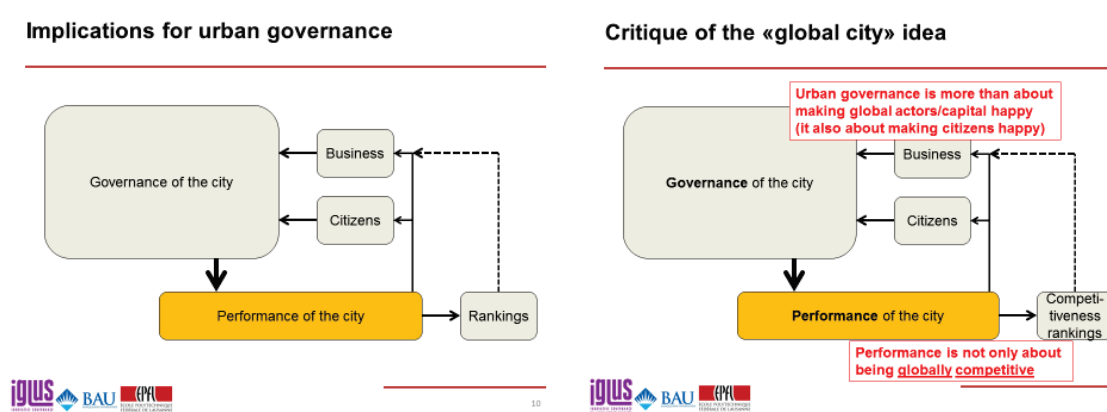


Figure 4.2.2 – implications of Global cities discourse for urban governance
Source: slides adopted from Prof. Finger’s presentation in IGLUS-Istanbul training module

As explained in the previous sections of this case study, after the IGLUS-Guadalajara module we decided to provide more ‘practice-relevant’ theoretical inputs to the participants. With this in mind, after the Global Cities session, we started another session, titled as ‘metrics for designing effective governance structures’. In this session, Prof. Finger first provided the participants with some basic information about some of the main functions of political actors in governance systems; namely political parties, the parliament, agencies, private actors, and citizens. He then presented an overview of the policy formulation and implementation processes.

After reviewing these basic processes, we started our main theoretical discussion, which was based on Transaction Cost Economics and Principal Agent theory. In this section of the class, I opened a discussion about the ‘necessity of *cooperation* among several actors’ to tackle urban challenges and the complications that arise in *coordinating* such collaborative arrangements due to the, potentially, conflicting interests of stakeholders. To engage the participants in my presentation, I asked the participants to share some examples of collaboration between the public and private sectors in their home cities and to briefly explain the challenges associated with management of these collaborative arrangements in practice. After this interactive discussion, I posed another question to the class about: “What is the best way for organizing cooperation among actors, under different

circumstances?”, which is indeed one of the main questions in the governance literature (Williamson 1979). I then provided a brief overview of the ‘Transaction Cost Theory’ by R.H.Coase (1937) and his brilliant argumentation to explain when to *internalize* or *externalize* different activities in a firm. I also presented the ‘Contracting Scheme’ by O. Williamson (1998), which is the corner stone of his research in the field of ‘Transaction Cost Economics’ (Figure 4.2.3).

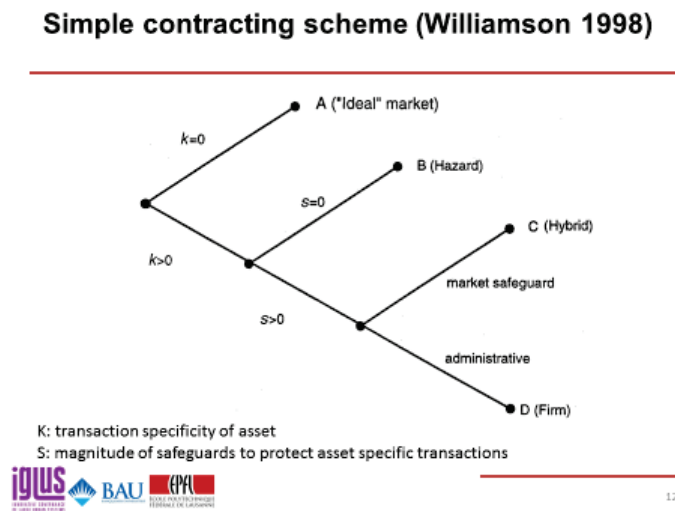


Figure 4.2.3 – slide adopted from presentation of the author in IGLUS-Istanbul training module

While presenting this theoretical framework to the class, I recognized that the participants were barely reflecting on the concepts I was introducing. We had almost no questions by participants about the presented materials. They seemed to be lost while listening to this abstract-theoretical presentation, and failed to see its relevance for them as urban practitioners. Considering this situation, and in order to engage the participants in discussion, I worked in a hypothetical example from Public Transportation system to illustrate the implications of these theoretical inputs for analysis of practical cases. To that effect, I introduce an example about ownership and operations of public busses and light rail system in cities. By referring to this example, I elaborated on the concepts of ‘*asset specificity*’ and ‘*transaction safe guards*’ and discussed how by using insights from Williamson’s contracting scheme, one can provide practical recommendations about the ‘best’ fitting governance structure for these two systems. Using this *example* proved to be a helpful tool to *contextualize* the theoretical concepts and make them more understandable for our practitioner-participants. We could readily see the positive impacts of introducing examples in theoretical discussions from the increasing number and quality of the participants’ questions.

After I illustrated the potential implications of Transaction Cost Theory for studying the governance of large urban systems and the importance of considering different contractual arrangements in designing governance systems, Professor Finger delivered a follow-up lecture about Principal-Agent

Theory. In this presentation, he provided an overview of the complexities in managing a principal-agent relationship through contracts; while spontaneously introducing several examples from his professional experience in regulation of infrastructure systems.

In comparison with the theoretical opening session of the IGLUS-Guadalajara training module, in this session we experienced a lower level of *participation in the discussions*, but at the same time received *more questions*, from the participants. This was not highly surprising to us as our approach in the theoretical opening session of the Istanbul module has been changed from presenting our conceptual frameworks for a discussion with practitioners (IGLUS-Guadalajara) to presenting well-established theoretical frameworks (IGLUS-Istanbul). This change in our approach could have resulted in fewer opportunities for our practitioner-participants to critically discuss the theoretical arguments of famous scholars (some being Nobel prize winners). However, we tried to keep the participants engaged in the discussions by asking them to provide examples of contractual complexities they experienced in their jobs.

By using this strategy, we were trying to satisfy the participants' demands for more 'theory' but at the same time, to make our materials practically useful and understandable for this group of practitioners. However, after this session and by reflecting on its limited success to result in more reflective discussions during this training module, I realized that our assumption about the ability of our participants to contextualize these highly theoretical inputs and use them to better understand complex problems in their professional context on their own was not totally realistic. Indeed, our learnings from the IGLUS-Istanbul training module (the second AR inquiry cycle in this project) resulted in some fundamental changes in our approach toward the next training modules of the program- this will be covered in the coming pages of this thesis.

After these theoretical opening sessions, we began with the lectures from the local and international lecturers. As explained in previous chapters, the details of these sessions will not be covered in the same manner as was the case for the theoretical opening session; instead I will only cover the main incidents from our 2-week training module in Istanbul, namely:

1. Problems associated with quality of lectures from local lecturers and their relevance to the learning objectives of the program
2. Heterogeneous teaching styles of lectures - Discouragement of critical discussions / birth of reflection sessions
3. Cultural conflicts
4. Introducing the green infrastructures and conceptualization challenges associated with it
5. Comprehensive sessions / success of non-academic partners' sessions
6. Talking about each participant's 'Big questions' and its important in this learning experience (Master projects)
7. Difficulties in organizing hands-on sessions

4.2.3.2 Main Incidents during the Istanbul training module

4.2.3.2.1 Problems associated with quality of lectures from local lecturers and their relevance to the learning objectives of the program

In the IGLUS-Istanbul training module, we were facing with a serious challenge with regard to the quality of lectures from the local lectures as well as relevance of presentations to the learning objectives of the program. Similar to the IGLUS-Guadalajara module, the issue of strong focus of some of the lecturers on their very disciplinary expertise in the presentation was present in some of the sessions of IGLUS-Istanbul module as well. However, in this module we had some lectures which were shallowly covering very basic topics. In addition, overlaps and repetition of similar topics among several training sessions of the module was a significant issue in this training module.

For example, in the afternoon sessions of the first day of the program we had a presentation by a local lecturer to give an overview of the host city's infrastructure challenges and its corresponding governance systems. The lecturer of this session was one of the professors of BAU who was also consultant to the Istanbul Municipality. In the first part of this lecturer, the lecturer presented some 'promotional materials' about prominent status of Istanbul. After this place marketing-presentation, he started to provide an overview of the management structure in the city of Istanbul (Figure 4.2.4).

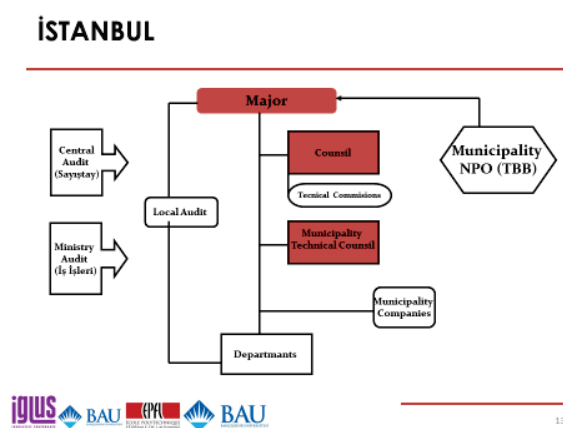


Figure 4.2.4 – slide adopted from the presentation of one of our local lecturers in the IGLUS-Istanbul training module

Despite the interesting and relevant topic of this presentation, the lecturer could not fully elaborate on the management structure of the Istanbul metropolitan government and only partly described the role of the Mayor and the city council. Despite the many questions that the participants raised about this management structure, the lecturer's responses were far from comprehensive or sufficient. The lecturer then presented some of the challenges that the city was facing with, namely domestic and

international migration, earthquakes, traffic congestion and environmental degradation as well as the ongoing initiatives of the city to tackle them, especially in the transportation sector (urban rail network, BRT).

The participants who were present in the IGLUS-Guadalajara module raised several questions regarding the governance challenges underway of implementing these initiative. Especially our international participants were surprised by the large number of 'Mega-Project' initiatives in the city and were wondering how these project are going be implemented despite potential governance challenges that they could observe in similar infrastructure projects in their home cities/countries. As a result of this 'inconstancy' between personal experiences of the participants with regard to implementation of infrastructure initiative and their hearings about the case of Istanbul, they were raising several questions from the lecturer about such governance challenges. Despite these relevant and critical questions from the participants, the lecturer could not provide satisfactory answers to these questions. In fact, he could barely elaborate on all the complex relationships between different stakeholders who were involved in these 'Mega projects' and his answers remained shallow and unsatisfactory for the participants who had started to become more critical in analysis of governance complexities in large urban infrastructure systems⁵⁹.

The problem with this lecturer, and some other lecturers (e.g. the lecturers who covered Istanbul rail system, cultural identity of the city, etc.) was that they could not really answer the participants' questions about the governance challenges due to their limited knowledgeability about the complex and multi-dimensional nature of governance challenges. As explained in the previous case study, we faced with a similar challenge in the IGLUS-Guadalajara module as well; where some of the lecturers had a strong focus on their disciplinary domains and could not answer the governance related questions. In IGLUS-Guadalajara module, my main strategy to deal with '*disciplinary-technical focus of the lecturers*' was to play a stronger moderation role to develop a reflective discussion about governance challenges which were related to the broad topic of the presentation. However, the situation in some of the training sessions of the IGLUS-Istanbul module was different in comparison to IGLUS-Guajajara. Indeed, in this module some of the presenters were not even recognizing the underlying complexities in governance of urban infrastructure initiatives and were persistently reluctant to change the agenda of their presentation (which was not highly relevant to the learning objectives of the program) to open more room for discussions about governance issues. This was happening despite all the previous communications between I and the responsible professor at BAU about the main learning objectives and underlying philosophy of this program; which were supposed to be conveyed to all the local lecturers through the channel of BAU.

In some other cases, the knowledgeability of the presenters about the practical challenges underway of planning and implementation of projects were very limited because, in reality these presented projects were mostly in conceptualization/initiation phase and hence the governance complexities were not yet present to be discussed (e.g. a new tunnel under the Bosphorus, regional rail network,

⁵⁹ One of the potential reasons behind the inability of the lecturer to answer questions in this session was the limited competencies of the lecture to communicate in English and his obligation to use a translator during the session. The language burden resulted in frustration during the discussions and as a result the questions of the participants were not fully answered.

etc.). In some other cases, which I will elaborate in the coming sections, the lecturer's reaction to governance-related questions from the participants became very suppressive and therefore hindered the continuation of discussions. For example, many of the so called Mega Projects in Istanbul were presented by the lectures as they have been planned, approved, financed and executed by the direct control of national government (the dominant party which also ruled the Istanbul Metropolitan government). This hierarchical understanding of governance structure in Istanbul by local lecturers did not leave a lot of room for discussion about the complexities in governance of infrastructure projects.

As explained in the previous paragraphs, in contrast to IGLUS-Guadalajara where moderating the session to develop a governance oriented discussion about the general topic of the presentation proved to be a helpful strategy to close the intellectual gap between some the presentation, and objectives of the program, In IGLUS-Istanbul this solution was not very effective. Firstly, I could not replicate the same style of discussions that we had in IGLUS-Guadalajara (which were more generic discussions about different governance dimensions that are important in the context of urban infrastructure systems), because it would have become redundant. And secondly, the general atmosphere of the IGLUS-Istanbul module was not very much welcoming to critical discussions about governance challenges in local cases.

Repetition was another challenge during the IGLUS-Istanbul training module. For example, in one of the sessions about urban rail network in Istanbul and the high speed train project to connect Istanbul with other cities in Turkey, the lecturer was using some presentation materials that was significantly redundant with some of the previously presented materials about Istanbul's Transportation infrastructure. In fact, many of the lecturers who discussed the issue of transport in the IGLUS-Istanbul module (during days 2, 3 and 4) were presenting similar maps and explained the same 'Mega-Projects' in part of their lectures. The strong emphasis of local lecturers on presenting the Mega infrastructure projects in the city, namely the Istanbul Marmaray tunnel, Eurasia Tunnel, the third Bridge, the third Airport, Istanbul canal, and the Metrobus (BRT) system resulted in several cases of redundancy during the training sessions of the first week of the module.

This was not the first time we were facing with the issue of redundancy in the presentations during the program (some incidents were explained in IGLUS-Guadalajara case) due to our inability to receive the presentation materials of the lecturers before the start of the module. However, the problem with repetition of similar content was more intensified in the IGLUS-Istanbul module on one hand; and on the other hand could not be acceptable due to its reoccurrence after the experience of IGLUS-Guadalajara module. Although this was a frustrating experience both for myself and the participants, the only available option that I had in response to this challenge in the first days of the IGLUS-Istanbul module was to intervene in some part of lectures and explain what have been discussed by previous lecturers about the topic, and ask the lecturer to pass over the redundant materials. In addition, at the end of the first week of the program I decided to conduct a formal apology from the participants in the program due to poor quality of some the presentations as well as suppressive reactions of some of the local lecturers to participants' critical questions about governance challenges in Istanbul, alongside explaining some of the practical complexities which had resulted in this situation. This direct communication strategy was very well received by the

participants and could indeed help us to minimize the negative impacts of these challenges on the overall satisfaction of our participants from their learning experience.

The quality of training sessions in the first 4 days of the program was getting so unfavorable, compared to our aspiration of providing excellent training to the participants, that at the end of the 4th day of the program, I decided to sit with our main contact person in BAU and describe the situation and ask for her corrective measures to improve the situation in the second week of the program. More concretely, I provided her with examples of problematic sessions in the first week of the program. After elaborating the problem and my understanding of its underlying cause, we agreed on a contingency plan to improve the quality of local-lectures in the second week of the program. More precisely, she agreed to re-communicate the learning objectives of the program with all the lecturers of the second week of the module and make sure that they are clearly briefed about our expectations from the lecturers in the program.

This communication with the partner university seemed to be helpful as the overall quality of sessions that were organized by BAU was significantly better in the second week (both in terms of evaluation survey results and my personal observations). Besides the criticism that we raised against the partner university, this experience became a starting point for us to think deeper about our conceptualization of governance of large urban systems and to further clarify our approach in order to help the partner universities to brief their affiliated lectures more effectively.

4.2.3.2.2 Heterogeneous teaching styles of lectures - Discouragement of critical discussions / birth of reflection sessions

As explained in the previous case study, one of our main action-points during the IGLUS-Guadalajara training module was to encourage, and empower, the participants to ask 'good' reflective questions⁶⁰ from the lecturers and to develop critical discussions around these reflective questions. Interestingly, in IGLUS-Istanbul we could see that the participants were actively trying to ask good reflective questions from the lecturers to understand the complexities in governance of infrastructure initiatives in Istanbul. However, this appreciated practice from our participants was not always welcomed by some of the lectures.

Besides the limited knowledgeability of some of the lecturers to answer the governance related questions, I could also observe a significant 'reluctance' to open critical discussions about the challenges in governance of large urban infrastructure systems in Istanbul in some of the sessions of this training module. Indeed, in some instances the responses of lectures to the participants' critical questions became even suppressive by implying that the questions are not applicable to the case of

⁶⁰ In IGLUS-Guadalajara, we defined a good question as a question that is not only asking for more technical/disciplinary information or details about the presentations, but in addition tries to elaborate the underlying governance dynamics and assumptions that have resulted in emergence of certain projects or actions.

Istanbul because of its 'unique characteristics' due to its prominent economic and political importance in Turkey; often by referring to the similar phrase that: "*you know, Istanbul is unique...*".

The heterogeneous teaching styles and attitudes toward critical discussions among different lectures in this training module (and more generally in the overall training program) was putting the participants, and even ourselves, in a puzzling situation. The fact that the participants were receiving different reactions (encouragement, ignorance or irrelevant answers, frustrations, condemnation) from the lectures in the program, while they were just trying to ask reflective questions in the best way they could, was leading to confusion among the participants with regard to acceptable level of participation and reflection in the program. They were facing with strong encouragement from myself and the director of the Executive Master program to critically reflect on the inputs from the lecturers, but when they wanted to do so, they were receiving distorting feedback from the local lectures.

In the first days of the IGLUS-Istanbul training module, not only the lecturers, but also some of our local participants were having difficulties to discuss the governance challenges associated with these 'Mega projects' in Istanbul and Turkey. In some cases, the questions from our international participants put the respondents (the lecturer and/or some of the local participants) in a defensive position to protect the achievements and developments of Istanbul. In fact, critical discussions about governance challenges (e.g. social inclusivity, consideration of environmental issues in designing mega-projects, etc.) might have been perceived as raising negative criticism about the projects by some of our local contributors. As a result of this emerging atmosphere, some of the participants informed me about their feeling of discomfort in asking questions (due to the suppressive responses) in several occasions during the first days of the module.

To manage this situation before the participants lose their interest in the training module, and to keep the spirit of our training modules which was critical analysis of governance challenges in large urban infrastructure systems of the host cities from a holistic/multidisciplinary point of view, I decided to adapt three strategies. I will explain the first two strategies in this section and the third strategy is covered in the next section under the topic of cultural differences.

Firstly, I decided to adopt a more interventionist approach in moderating the sessions to ensure that the participants will get their answers when they raise a question in the class. I did so by personally re-briefing each of the lecturers before the start of their session and reminding them that our participants are not only interested in learning about success stories of Istanbul, but are mainly interested to understand infrastructure governance challenges in Istanbul from a comprehensive point of view and therefor might raise critical questions about governance challenges in Istanbul. Also, during the sessions if I was spotting that the lecturers were focusing too much to elaborate and 'defend' the success stories of Istanbul instead of answering the critical questions of the participants, I was intervening to moderate the discussions from a more neutral point of view. I mainly did so by recalling similar examples from our reflective discussions during the IGLUS-Guadalajara module to illustrate that the critical discussions about challenges are not about (or against) any special city, but are at the core of pedagogy of this program. Providing these critical example from other cities and then asking for lecturer's elaboration on the specific case of Istanbul could reduce the defensiveness of the discussants in most cases. However, we could still hardly touch sensitive issues in the class that

were of the main interest for the participants in the module; namely the conflictual situation that the city government was experiencing in dealing with social oppositions against the rapid pace of changes in the city (replacements, environmental concerns, etc.) which sometimes resulted in conflicts between citizens and the public authorities (e.g. the Gezi park protests).

Secondly, I decided to organize an internal discussion session (which we later named as reflection sessions) where I could moderate discussions about governance challenges in Istanbul by synthesizing the inputs we got from our local lecturers, but in a more neutral context in the class and only among our participants (without presence of any local lecturer). On the third day of the program, one of the presenters just informed us that he will arrive with almost 1 hour of delay. So, I seized this opportunity and immediately organized the first internal discussion session of the IGLUS Executive Training program. In this session, I initially provided a review of the main inputs that different lecturers provided to the class as well as the main questions that the participants had about different governance challenges (role of social participation in planning and implementation of the projects, financing of Mega projects, relationship of the city government with the national government, etc.). In this review process, I tried to categorize all these information and questions about Istanbul to develop a bigger picture about governance practices in the city, in order to help the participants to make sense out of these seemingly un-related information and questions. Also, by recalling some of the main learnings from the IGLUS-Guadalajara, I tried to provide a *comparative analysis* of the differences we observed between Guadalajara and Istanbul and help the participants to develop a basic understanding of how different contexts results in difference approaches to governance of large urban infrastructure systems in these two cases. In this session, the participants were free to ask their questions and, in a group learning exercise, reflect on the underlying causes which could have led to emergence of differences between the case of Istanbul and Guadalajara.

My main motivation in organizing this spontaneous session was to reduce the feeling of confusion among the participants by *showing* them how categorizing different inputs from lectures and reflecting on them can help to make sense of these seemingly dispersed pieces of information. The result of this reflective exercise was not crystal clear answers to all of the participants' questions, but it could provide them with a better understanding of the links among seemingly dispersed pieces of information about Istanbul, partial answers to some of their questions and clarification of the roots of seemingly huge differences between Istanbul and Guadalajara. This reflective exercise with the participants proved to be highly useful for the participants to '*put different information in their right place*', according to feedback of the participants at the end of the first week of the program. Consecutively, in the wrap session of the IGLUS-Istanbul module, the participants raised the importance of this kind of exercises and asked for incorporation similar type of sessions in the curriculum of all of the coming training modules.

4.2.3.2.3 Cultural conflicts

Using my first two strategies could improve the atmosphere of class discussions as we approached the end the first week of the program. However, at the end of the first week, I recognized that the perception of the participants about to the communications by the local lecturers and some of the local participants is still relatively negative. As discussed in the previous sections of this case study, the cultural difference between our Latin American participants and their Turkish fellows resulted in some complications in some of their communications. For example, our Latin American participants were quite comfortable to have a heated discussion about an issue without necessarily persuading the other party in the discussion, while some of their Turkish fellows were very much passionate to 'win' the discussions. Such cultural differences in debate styles resulted in some difficult moments in the class discussions when our Mexican participants were feeling that ideas are being imposed to them in the discussions.

These different attitudes even resulted in a small argument among some of our Mexican participants and one of the lecturers. So, *our third strategy* to improve the discussion atmosphere of the IGLUS-Istanbul training sessions was to raise the awareness of the participants about such cultural differences as a given constraint that will be present in all of the different training modules of such a global program and ask the participants to pay special attention to these differences and capture it as part of their global learning experience.

The ability of the participants to engage in critical discussion with other people who have different cultural/professional/educational value systems was instrumental to the learning objectives of this program. Without such an attitude and competencies, one can hardly engage in the process of addressing complex problems from a holistic/multidisciplinary point of view. Therefore, we decided to have a discussion with all of our participants about this issues. To that effect, in an extension session in the first day of the second week of the program (after the normal class hours) Prof. Finger and I had an informal session with all the international participants and explained the complications which might happen during inter-cultural interactions. In this session, our main focus was to increase the awareness of participants about such challenges and use this incident as an opportunity to sensitize them about the issue. Although some the participants were complaining that the behavior of some of the lecturers is neither supportive for a fruitful learning experience nor in-line with our communicated philosophy of the program; most of the participants accepted the explanations. Interestingly, in later stages of the project most of our participant recalled their experience in the IGLUS-Istanbul module as an important learning which helped them to better communicate with other people who hold contrasting points of view in their professional jobs (this claim is based on my validity check interviews with four participants who were all present in the IGLUS-Istanbul module).

By using these three strategies, the atmosphere of discussions during the training sessions was significantly improved. This improved atmosphere resulted in more constructive discussions about governance challenges without compromising on the importance of critical questions of the participants.

4.2.3.2.4 Introducing the green infrastructures and conceptualization challenges associated with it

Although we had a brief introduction to the concept of green infrastructures in IGLUS-Guadalajara, our first sessions on the governance of green infrastructures started on the 5th and 6th days of the IGLUS-Istanbul module. As explained in the previous sections of this case study about preparation and planning the module, the sessions about green infrastructures in the program (and not only IGLUS-Istanbul module) was led by a partner professor from Switzerland. Before the green infrastructure sessions, I had the chance to talk about the presentations and activities of these two days with our partner professor. During this discussion with our partner professor on green infrastructure, I recognized that our conceptualization of Large Urban Systems in the IGLUS project is not sufficiently elaborated to enable us to easily communicate our discourse with other researchers who are collaborating with us in the program. In the context of traditional infrastructures (e.g. transportation, energy, water, etc.), this weakness of conceptualization was not very explicit because the background knowledge of the partners about the topics and our understanding of the concepts has a lot of commonalities due to the very established conceptualization of these infrastructures in the literature. However, in the discussions about the green infrastructures this weakness become more explicit to me due to the newness of conceptualization of urban greens as an infrastructure for me.

This resulted in several rounds of internal discussions between me and our partner professors during the two days of green infrastructure session which had an important impact on my further thoughts about the main concepts in our discourse about governance of large urban infrastructure systems as well as our governance-performance framework. In other words, these discussions with a researcher/professor who had ‘a week tie’ (Granovetter 1973) with the IGLUS team and our mainstream discourse about urban infrastructures was instrumental for me to think out of my original box and try to come up with a more generalizable, yet practically applicable conceptualization of large urban systems. This became a starting point for us to reflect more fundamentally on the conceptualization of Large Urban Systems and their governance after the IGLUS-Istanbul module and in preparation for IGLUS-HK module.

In the first session of the two days of the green infrastructure sessions in Istanbul, our partner professor provided the participants with some basic definitions about green infrastructures and urban forests. She then elaborated some of the ‘issues’ regarding the urban forests and green infrastructures (figure 4.2.5). After this introduction to the concept of green infrastructures, we had several other presentations about public participation in the process of governance. Also, the local lectures from Istanbul University provided an overview of urban forests and their functions in Istanbul with some real case illustrations. We also had several field visits which I will come back to them in the next sections of this case study.

Urban forests and green infrastructures issues

- Value urban ecosystems' services
- Integrate urban greens in urban planning
- Mitigate diverse pressures on urban greens
- Meet various public demands
- Facilitate participatory governance and management
- Manage conflicting uses
- Favor urban landscapes shaped by bio-cultural diversity
- Promote UF and UGI to enhance a city's identity and attractiveness
- Address utilitarian, as well as ecological, aesthetic, emotional and ethical values



Figure 4.2.5 – presentation slide from teaching materials of our partner professor about urban green infrastructures

The first session which gave a short introduction to the concept of green infrastructures was relatively clear and complete. However, the session could not effectively elaborate the position of this newly introduced infrastructure (to the class) in the overall IGLUS discourse. In other words, the presentation was introducing the 'green infrastructures' to the participants, but not in the context of the broader IGLUS discourse. As I briefly explained in the previous paragraphs, from my perspective, due to the limitations in our conceptualization of governance of large urban systems, our partner professor could hardly find a guiding framework which could guide her how to put her explanations of green infrastructures into the IGLUS discourse. Based on this observation, I decided to hold another internal discussion session (which we later named as reflection sessions) during the green infrastructure days to both elaborate the place and relevance of 'green infrastructures' to our previous conceptualizations and also to conclude the first week of the program⁶¹.

I did so by categorizing the inputs we received from the lecturers about green infrastructures to highlight some of the main characteristics of green infrastructures (parks, forests, community gardens, trees, etc.). For example, I highlighted some of the important services that 'green infrastructures' provide for the city and citizens, the costs associated with development and maintenance of green infrastructures to provide these services and the importance for financing, the technical/ecological complexity of planning and maintaining the green infrastructures and conflicts of interests between the main actors who are involved in the governance of these systems. I then used this categorization (labeling) to compare the 'green infrastructures' with well-known urban infrastructures such as transport to elaborate some fundamental similarities between our newly introduced infrastructure (green) and what is already familiar as urban infrastructures to the participants. Based on this comparison, I tried to use these similarities to help the participants

⁶¹ The experience of organizing these sessions later-on became the seed of co-generation of concepts and framework with participants in the project, particularly in the IGLUS-Hong Kong module.

understand why ‘green infrastructure’ is also a topic of interest in the IGLUS program, as the other main infrastructures like energy and transport are.

The internal discussion sessions (which became the reflection sessions from IGLUS-Hong Kong module onwards) about green infrastructures could significantly help us to deal with this conceptualization weakness in IGLUS-Istanbul module. However, I found that we have to spend more time to come up with a clearer conceptualization of large urban systems in order to guarantee the long term success of the project. Indeed, this experience was one of the main learnings from the IGLUS-Istanbul module and had profound effects on the preparation for the IGLUS-Hong Kong module.

Besides using this internal discussion session to clarify the relevance of green infrastructures to the overall curriculum of the program, I also used the opportunity to reflect on the main topics that were covered during the first week of the program in Istanbul. Also, I spent some of the time to recall our underlying philosophy in organizing the IGLUS project, namely the important role of the participants’ opinions about the program in shaping it throughout our AR inquiries. Since we had a few poor quality sessions during the first week of the Istanbul module, it was important for me to let the participants communicate their criticism about the program in this occasion. I wanted to reinforce our message to the participants that they are part of formation of the program and not only subject to what we decide for them. This communication, like what we had experienced in IGLUS-Guadalajara, was quite useful to let the participants express themselves and feel more attached to the program. Just as an illustration of the feeling of attachment and ownership about the program in this session. I shall note that several of the participants who were trying to explain their own positive point of view while some of their peers were raising criticism about some of the poor quality sessions of the first week of the program. This practice of considering the participants as co-creators of the program and providing them with real opportunities to take this role was continued in the next modules of the program as well, especially in IGLUS-Dubai which will be covered in section 4.4.

4.2.3.2.5 Comprehensive sessions / non-academic partners’ sessions

For the first time from the start of the IGLUS training module, In IGLUS-Istanbul we had sessions by our partner firms. Also, we had several sessions by local practitioners who were managing private firms; active in urban infrastructure domains. Most of these sessions took place in the second week of the program. In the most of these sessions, the lecturers could fully cover their assigned topics and we could have comprehensive discussions about the topics with the lecturers.

For example, on the seventh day of the program a local practitioner who was running a law firm in Turkey and was active in consolation for PPP contracts presented an overview of the PPP contracts and the challenges underway of utilizing them in infrastructure sectors. Or on the 10th day of the program, we had a session about smart energy systems by a representative of Schneider Electric where the lecturer provided a solid overview of the current landscape of smart energy systems and then explained the process through which they try to implement their technological innovation in

the energy infrastructure in different cities (Figure 4.2.6). In this specific example, the lecturer mapped all the different actors that they found important for this process and based on this illustration, we could have a very dynamic discussion about the relationships among these actors and how private actors try to overcome the obstacles they were facing in such a complex context of relations.

Smart cities demand long-term collaboration between all stakeholders



Figure 4.2.6 - Slide from the smart city-smart energy presentation by Schneider electric
Source: presentation of Schneider Electric representative in IGLUS-IST module

As another example, the presentation by the representative of UN-Habitat was also very well received by the participants. This presentation was mostly focused on describing the case study of Haiti earthquake in 2010 and the failure of post-disaster management practice in this disaster to *use the disaster as an opportunity for building a resilience city after the earthquake*. The presentation material mostly consists of photos taken by the lecturer, who was the chief UN-representative in Haiti at that time, which could illustrate the evolution of the city after the disaster, and explaining the wrong decision that led to losing most of the post-disaster opportunities to address issue of mobility, drainage and social integration in the city. Although this presentation was not covering any theoretical topic, the message of the lecturer was very strong and effective (due to his close attachment to what he was presenting and his different presentation style). The participants were fully engaged in the class during this long presentation which was another sign, in addition to excellent evaluation results, that the session was an exemplary successful session in IGLUS-Istanbul module.

Besides my personal observation about the very dynamic discussions in the sessions led by practitioner-lecturers and the ability of these lecturers to give concrete answers to the governance related questions that the participants were raising, the results of evaluations also show a high rate of satisfaction from these sessions. Although the high satisfaction of the participants and quality of discussions in these sessions cannot simplistically, and only, attributed to the professional (non-

academic) background of the lecturers and their knowledgeability about real world challenges, the fact that overall quality of sessions by practitioners was higher than the sessions that were delivered by lecturers with stronger academic background cannot be overlooked. This observation was not only limited to the IGLUS-Istanbul module, but as explained in the previous case study, it happened in the IGLUS-Guadalajara module as well.

As a result of this observation, I decided to propose to the academic director of the program (Prof. Finger) that we shall include more practitioner --lecturers in our training modules. This suggestion was well received by him as well and as a result, we tried to allocate more training sessions to those lectures who have real world experiences. As an illustration of this change, in our communications with the partner universities to organize the next modules (HK, Dubai and US), one of my main focuses in the choice of lectures was that they should have some practical experience in their resume in addition to their university teaching/research experiences. Also, this led us to take direct control of more days of the program from the partner university and organize them directly by using our network of practitioner-lecturers from the international organizations and partner companies.

4.2.3.2.6 Talking about each participant's 'Big questions' and its important in this learning experience (Master projects)

During the IGULS-Guadalajara training module, we highlighted the important role of Master projects in shaping the participants' learning experiences. In IGLUS-Istanbul, we decided to have a special discussion session with the participants about the important role of their '*master projects*' as the *thread to connect their learnings from different sessions and modules to their professional jobs*. We decided to have this discussion in the IGLUS-Istanbul module because the participants had already achieved a good level of understanding about the overall structure of the program and could better understand the spirit of this learning experience for themselves.

Most of the participants have never wrote a master thesis in their previous academic studies. Considering this background, in order to make our message clearer and understandable for the participants, we decided not to focus too much on the details of the process of doing a master project, but instead elaborate the philosophy of doing master projects in the overall structure of the master program and the importance of having a 'question' as a starting point of this process. We explained that each and every participant in the program should seek to answer his/her main job-related concerns at the end of the training program and answering these personally important questions should drive him/her to do his/her master project. In this discussion, we asked the participants to start thinking about their 'big questions' (instead of calling it 'research question') as a broad-enough question which is picked by each participant - among the various professional concerns which he/she might have in her mind - and can be investigated during the participant's engagement in the IGLUS Executive Master and ideally help him/her to improve the situation in his/her city. Although the term 'big question' was a bit obscure for the participants, they could perfectly grab the message of the term as they frequently used it to communicate about their main research interests in the coming modules as well.

In this discussion (during the wrap up session), I proposed that ideally each of the participants should break his/her big question to a series of smaller questions that he/she would like to find their answers during each of the modules of the program. I had two main reasons in mind; firstly, to sensitize and enable the participants to use the opportunity of visiting the host cities of the training modules to gather relevant information/data to answer their 'big questions'. And secondly to help the participants to customize their learnings from each of our training modules based on their individual interests by using these questions as a guideline to reflect on the training inputs in each of the modules. As it will be discussed in the next case studies, not all of our participants could really use their visits from host-cities of the program as data collection opportunities. However, being sensitized about their main areas interests via thinking about their own 'big questions' was a helpful tool to create reflection opportunities for the participants.

This experience in IGLUS-Istanbul training module was our first attempt to open the discussion about the process of doing the master thesis with the participants and to provide them with more insight about what roles we would like them to fulfill in the overall structure of the master program. Our focus on the participants' projects became more structured in the wrap-up essay of the IGLUS-Istanbul module and the upcoming training modules of the program which will be covered in the next sections of this report.

4.2.3.2.7 Difficulties in organizing hands-on sessions

In IGLUS-Guadalajara, one of my main observations was that participants are interested to have hands-on sessions to learn *toolkits* that help them to solve concrete problem in their jobs (similar to the change management workshop which was discussed in the previous case study). Although this type of sessions was originally considered in the curriculum of the program (e.g. a planned workshop for analysis of a sample PPP contract), due to the issues with quality of delivery of the sessions by lecturers, we could not have any hands-on session in the IGLUS-Istanbul module (the session was planned, but was not *delivered* by the corresponding lecturers). *Delivery of hands-on sessions by lecturers from the partner universities proved to be one of our main challenges*, not only in IGLUS-Istanbul module, but more generally in the first edition of the master program as well (with the exception of IGLUS-Dubai module which is covered in section 4.4).

Our inability to have any hands-on session in IGLUS-Istanbul pushed me forward to take the responsibility of design and delivery of hands-on session from the partner universities and *organize it myself with the help of our lecturers from non-academic partners*. Especially, when we reached an agreement with UN-Habitat to cover the topic of urban resilience in our program, I tried to use the UN sessions to design workshop sessions and fill this gap. These workshop happened in all of our next training module and will be discussed in the coming case studies.

4.2.3.3 Field visits of the IGLUS-Istanbul module

During the IGLUS-Istanbul module, we had several field visits from public transportation infrastructures in the city such as the BRT system (Metrobus), traffic control center, bus control system, two of the main green infrastructures in the city (Emirgan park and Belgrade forest) and Kuzguncuk local park which had been become the topic of several social disputes in a neighborhood in Asian side of Istanbul as well as the crisis management facility of Istanbul.

In the same line as IGLUS-Guadalajara module, we had two main objectives from organizing two different types of field visits during the IGLUS-Istanbul module; namely 1) learning about innovative initiatives of the host city and 2) discussing governance challenges directly with the stakeholders of a project.

The visit from the BRT system and its control system as well as the traffic control center and the crisis management facility were aimed at providing an opportunity for the participants to learn from innovative initiatives of Istanbul.

The visits from the green infrastructures of Istanbul were aimed at ‘experiencing’ the concept of green infrastructures and discussing the governance challenges directly with the stakeholders.

In contrast to the field visits in IGLUS-Guadalajara module where most of the field visits were led by visit leaders who were highly knowledgeable about the topic (usually someone from the top management team), in several field visits of the IGLUS-Istanbul module we couldn’t benefit from the companion of competent visit leaders. For example in the visit from the BRT system, due to the lack of a highly competent visit leader who could answer to the questions of the participants, the learnings from the visit remained limited to familiarizing the participants with innovative initiatives in the host city; but we could not have substantial discussions about the complex governance challenges underway of implementation of these projects⁶².

Our visits from the green infrastructures of Istanbul were led by our lead partner professor on green infrastructures, accompanied by two professors and several researchers from Istanbul University. In some occasions, local practitioners were also accompanying us during the visit. Also, the visit from the crisis management facility was led by a professor from Istanbul Technical University. In these visit, presence of academic professors as visit leaders, instead of the main stakeholders of the infrastructure, resulted in more academic discussions during the visits instead of getting to know the concrete actions of stakeholders to deal with governance challenges that they were facing. In other words, although the visit leaders were quite knowledgeable about the visited infrastructures and the broad governance challenges associated with them, they could not illustrate the practical information that we were expecting to get from practitioners during the field visits. The exception of these visits was indeed the visit from the Kuzguncuk local park where the participants had the opportunity to directly talk to community gardeners and get a deeper understanding of perspectives of these stakeholder who were opposing to construction of a new complex in this piece of open land.

⁶² Indeed, our local participants who had help in organizing the visit were also answering some of the questions which were raised during this visit on behalf of the visit leaders.

4.2.3.4 Wrap up session of the IGLUS-Istanbul module

At the end of the eleventh day of the program, we had a wrap up session to conclude the IGLUS-Istanbul training module and get more insights about this AR inquiry cycle. Our main objectives in this wrap up session was firstly to reflect on the learnings of the Istanbul module in the context of the master program and secondly to understand the view points of the participants about their learning experience in the module.

To that effect, we decided to start the session by giving a short summary of the main topics which were covered during the module and recalled the main learning outcomes of each of the sessions. When preparing this short summary for the last session of the program, we (I and professor Finger) concluded that we could not fully cover our initially planned learning theme (governance of large urban infrastructure systems in during transitions) for this module. We could touch upon the differences between Istanbul and Guadalajara in terms of their governance practices in our internal discussion sessions. *Experiencing the city* and our informal discussions, especially thanks to the inputs from the local participants, could help the participants to understand the broad challenges that the city of Istanbul was facing with. However, we could not fully link the outcomes of the *training sessions (classes)* to the pre-defined theme of the module.

Besides this problem with the labeling of the module, we recognized that we are lacking a clear conceptualization of the performance of cities in our discussions and conceptual framework. In fact, in this module we could successfully analyze the global city's discourse and its consecutive performance dimension (attractiveness and competitiveness) and show that it is not a comprehensive conceptualization of city performance, but we could not provide any alternative conceptualization of the city performance. And we realized that as far as we cannot clarify our conceptualization of performance, we can hardly achieve our goal in the program: to empower city managers to improve performance of cities via addressing complex governance challenges from a holistic/multidisciplinary point of view.

After we provided the overview of the topics which were covered during the module in the first section of the wrap up session, we opened the discussion for the participants to reflect on what they have learnt and what the main strength/shortcomings of this learning experience from their perspective were. Several of the participants raised the issue of incoherence between the label of the module and what they have learnt during the two weeks of the training. Also, participants had several complaints about the quality of the lecturers as well as recalling their dissatisfaction with the discouragement of questions and discussions in several sessions of the program. However, the richness of case of Istanbul as a mega-city which was simultaneously experiencing several challenges (risk of an earthquake, traffic congestion, environmental degradation, cultural and economic transformation, etc.) and trying bold strategies to tackle them (huge infrastructure projects such as redevelopment of complete neighborhoods, bridges, tunnels, etc.) was raised by most of the participants as a unique learning experience which helped them to see many different dilemmas all at once in one case.

Once we closed the module in Istanbul, we knew we have to work significantly on our conceptualization of main concepts (especially performance) and also find a solution to have better

control over content delivery during the module, despite our loose control mechanisms on the partner universities. This resulted in some major changes in our approach in the IGLUS-Hong Kong module which will be covered in the next case study.

4.2.4 After the module:

4.2.4.1 The wrap up exercise

In the same line as the IGLUS-Guadalajara training module, after the IGLUS-Istanbul module we asked the participants to write a wrap-up essay. The wrap up essay was specifically aimed at linking the participants' concerns and duties at job to their learning experience in the program. In other words, we decided to use the Istanbul wrap up essay as a means to push the participants to think about what they would like to get from this learning experience at the end of the program (in form of their Master thesis work), and how the past two training modules could have helped them in this process. This exercise was designed to also help the participants, and us, to position the first two training modules of the program into their overall learning roadmap and raise the importance of master thesis (relevant to their jobs) in this learning journey. We also, wanted to resonate our emphasis on the fact that the participants should look for 'their own solutions to their own problems' in the program and not to become simply satisfied with what they hear as a potential solution to the problems. More precisely, we wanted to encourage the participants to reflect on their learnings and by doing so, frame their own learning experiences based on their own expectations, and rely on our own assumptions about their preferences (treating the participants as active learners and not sole recipients of inputs).

To that effect, we asked the participant to answer the three following questions (the text is adopted from the instructions which have been shared with the participants):

- "1. Please explain what is "your big question" which you want to answer at the end your master and why do you think it is important? (1-2 page)*
- 2. Please briefly elaborate what have you learned in the Guadalajara and Istanbul module that could help you develop some part of 'your' answer to your big question? (3-5 page)*
- 3. Please explain what are the missing part for you to develop your answer to the big question? In other words, what will be important for you to see in the following modules? (2-3 pages)"*

In the coming pages, I try to highlight the main points from the participants' answers to these questions.

4.2.4.1.1 Selected quotes from the participants' essays

Question 1)

The participants' answers to the first question, regarding their 'big questions' which they would like to answer by the end of their learning experience were covering a wide range of topics, from quite broad and abstract ideas to very concrete and well defined 'problems'.

The main topics, which are extracted from the wrap up essays of the participants, are: how to improve quality of life for human beings, finding best management practices that lead to good urban governance, how to form metropolitan governance structures, finding the best practices for citizen participation in large urban systems, how to deal with globalization challenges and how to find the right balance of power between the national and local/urban governments.

In some cases, the participants' formulation of questions were very generic and abstract. For example, one of the participants who was working on development of neighborhoods in a municipality in Mexico had a very broad question about improving quality of life for people:

"... I have many questions and no clear answers of how can we have a better world and a better future for next generations, but one of the most important and biggest questions that enclose the most is: how humanity can have a better quality of life and how can they interact in a better and peacefully way... . I know that the answer could be very relatively and I may not have a concrete one..." [L.I.2]

Or another participant from Venezuela was interested in management practices necessary for good governance.

"What are the key essential management elements in order to achieve good governance?" [P.I.2]

Finding these broadly formulated questions in some of the wrap up essays was an important observation for us because we wanted to empower the participants to actively look for answers of their own questions while engaging in this training program, but such abstract and generic formulation of questions could be an obstacle in this process. In other words, having participants with very broad questions, like improving quality of life for people in the world, was alarming for me because these questions were *not individuated* enough and therefore could hardly become a driver to help the participants to critically reflect on their learnings from their very personal point of view. To resolve this problem, we provided the participants with several rounds of feedback about their questions and also dedicated special sessions to work on the projects of the participants in the next modules of the program (project sessions).

Although some of the participants had raised very broad and abstract questions in their essays, the majority of the participants had more *personalized* questions (yet broad); related to different aspects of governance of large urban systems. For example, our participant from Brazil was interested in the topic of 'metropolitan governance' and could elaborate his personal question about suitable metropolitan governance structures for his home city:

“...what are the main cases [meaning typologies] of Metropolitan Governance around the world and which or which aspects are more suitable for a Metropolitan Unit of Rio de Janeiro? ... I believe that the interdisciplinary approach of IGLUS and the possibility to see in loco the metropolitan experiences around different cities of the world will enable me to understand the different approaches of Metropolitan Governance and to define a proposal for the Metropolitan Unit of Rio de Janeiro.” [J.I.2]

Or another participant who was working for a Mexican NGO, was concerned about successful social participation practices:

“WHICH ARE THE MECHANISMS THAT HAVE BEEN SUCCESSFUL IN CITIZEN PARTICIPATION IN SOME LARGE URBAN SYSTEMS? ... First of all, it will be necessary to clearly define the concepts that will be used in this work paper for example... How to define if a program or initiative is successful?...” [B.I.2]

As the last example of participants’ responses to the first question, I should quote a participant who was working for one of the companies under control of the municipality of Istanbul who was interested in the power balance between the national government and local government in the process of governance with a focus on Istanbul:

“...it is evident that the Mayor of Istanbul holds much more power in his hand than most of the ministers of central government. Hence, my biggest questions that I would like to study more about are:

- How much power a central government can transfer to a local government? What is the extent?*
- What are the effects of this kind of decentralization (transfer of power from central governments to local governments) on administrative structures in a country?*
- How the general population will be affected from a central government’s decision to make more investment to a city than other cities?” [U.I.2]*

Realizing the diversified research interests of the participants’ in the class, with almost none of them focusing on the infrastructure related challenges in the cities was a very important input for us after the IGLUS-Istanbul module. Indeed, the main focus of the training program was on the governance of urban infrastructures, but we had *no* questions from the participants related to the infrastructures.

To resolve this mismatch between the expectations of the participants and the focus of the program, we decided to further clarify our conceptualization of the program for the participants in our communications (with a clearer focus on infrastructures as socio-technical systems). Indeed, I soon realized that one of the challenges underway of promoting a holistic/multidisciplinary approach in such a training program might be the emergent perishing of our focus in the program. This could happen due to potential tendency of the participants, and ourselves as the organizers of the program, to discuss a wide range of seemingly interrelated topics; without spending enough time and intellectual efforts to clarify the links among these topics. This became a starting point for me to further reflect on our conceptualization and frameworks as a necessary guiding tool to avoid the potential threats of becoming too shallow and un-focused in the program.

Question 2)

The participants' responses to the second question about their main learnings from the past two training modules - that can help them to answer their big questions - were also very informative for us with regard to the existing mismatch between participants' learning expectations and the focus of the program. Following their formulation of questions (which were barely related to large urban infrastructure systems), many of the participants have mentioned their more generic learnings from the previous two training modules as their main learnings from the program. Especially, the topic of Metropolitan governance and the 'unique' case of Istanbul Metropolitan municipality was among the most noted learnings that the participants mentioned in their essays. For example, our participant from Brazil mentioned:

"The Mexican module was very insightful to understand the Metropolitan Governance approach of Guadalajara. We had at least four lectures about the theme and I believe I have a good material to write the "Guadalajara case". ... The Istanbul module was also interesting to understand the Metropolitan Governance approach of the cities. We had texts and many lectures about the theme and I believe I have a good material to write the "Istanbul case".... [one of] the presentation mentioned the history of local government and their responsibilities in Turkey. Here we could see all the laws and decrees associated. [J.I.2]"

Or another participant who was serving as a council member in one of the municipalities of Mexico described her understanding of legal frameworks as the bottleneck in formation of "metropolitan governments":

I learned in Guadalajara that the metropolitan concept is in its infancy.... Istanbul allowed me to learn a different model of metropolitan coordination, where the municipality itself, yield its main attributions and delegate them to the Metropolitan Institute... Both the module of Guadalajara as in Istanbul take me to the reality from which I shall start my thesis, and this is that in the actuality the Mexican legal regulations don't provide the creation of metropolitan governments, since the legal foundation only permits the conformation of metropolitan commissions. [V.I.2]

Another participant, working in both private sector and one of the municipalities of Mexico focused on the economic competition in cities as a major factor underway of formation of Metropolitan governments:

"In Mexico there are many big cities so the competition to attract investment goes beyond the level of municipalities. The city of Guadalajara is always competing against other big cities such as Mexico City, Monterrey, Tijuana, Leon, and many more. It is therefore important that the municipalities in the metropolitan area of Guadalajara cooperate with each other to offer the best option for both investors and tourists who are deciding on a place to visit and invest. ... On the other hand in Turkey, Istanbul city competes against itself." [R.I.2]

Although most of the participants were focusing on their general learnings from the modules, one of the participants from Mexico nicely elaborated the differences that the program could make for her in analyzing the problems from a multidisciplinary point of view in her job:

“As a multidisciplinary master program, the discussion of all those topics makes rich the analysis of how a city is from different perspectives, and is easy to find solutions that can help to tackle different challenges.... My professional experience and background gave me a humanist, social, political, and cultural perspective for the understanding of urban areas, governance and the relation between citizens that has become very complex. After the first and the second module, despite how difficult is the situation, the law, technology and infrastructure of a city, I see them with a more technical perspective; now is possible for me to see opportunities and challenges with different possible solutions.” [L.I.2]

Another important point in participants' answers to this question was their ability to synthesize the links between their seemingly independent pieces of learnings from the past two training modules. For example, with specific focus on the Istanbul module, our participant from the Mexican NGO could nicely highlight the link between performances of the city in one sector (environment) with active citizen participation.

“It is very interesting for me that one of the causes that trigger local active citizen participation in Istanbul is sustainability and environmental topics” [B.I.2]

Or another participant from Turkey, could establish a link between prevalence of BOT projects (financial factors) and the shift in power balance in the governance structure in favor of local governments (related to his question)

“...BOT projects actually help local governments be more autonomous and they help countries which do not have the financial means to carry out that kind of projects otherwise. As for Istanbul, Eurasian Tunnel and third airport projects are financed by BOT models.” [U.I.2]

On the other hand, some of the participants could hardly synthesize their learnings during the module and link it to their questions. In fact, some participants were simply describing the information they got in the module and not their reflections on those inputs. For example, one of the participants mentioned:

“During the lessons we took in the Istanbul module, I learned 4 important elements to be taken into consideration for local government management:

- ***To define the Municipal Strategic Plan policies, the participation of the citizens is key.***
- *Ecological principles must be included when planning a city.*
- *The importance and need for Public Private Partnership (PPP) as public private contract models.*
- *Innovation and technology: the motor for development and better quality of life for the citizens.” [P.I.2]*

The strong focus of the participants on depicting 'information' or 'general lessons' - which were discussed in the training sessions of the first two modules of the program - as their main learnings from the modules which can help them answering their 'big questions' was an important observation from in the answers of participants to this question. However, as the participants were progressing in this training program, I could clearly see that their focus was switching from seeing 'information' to a 'new perspective' as their main learnings from the program. This issue will be covered in more details in the analysis chapter.

Question 3)

The third question of this wrap-up activity was designed to understand the view point of the participants about their expectations from the coming modules. Not surprisingly, the participants' answers to the third question were covering a wide range of topics which could be attributed to different professional interests of our heterogeneous group of participants. The highlighted points from the participants were mainly suggestions about missing contents, structure of the sessions and types of debates. For example, our participant from Brazil raised the importance of including 'case studies' from cities that are not among the IGLUS-host cities in the content of the program:

"... I believe that there are also some good examples of Metropolitan Units in other cities. We had some lectures that explore some cases like Great London, Tokyo Metropolitan Government (TMG), Paris, and Lyon among others..." [J.I.2]

Some of the participants had a special focus on providing more 'methodological contents'. Although this point was one of our priorities after the IGLUS-Guadalajara module, the comments from the participants showed that we have to work more to realize this goal in the training modules. For example, a participant from Turkey mentioned the importance of learning methodologies to compare different cases with each other:

"...It would be beneficial to have presentations which include information on how to compare cities. Also, as each country may have different central and local administrative structures I think there should be a government official who will give brief information about administrative structures of the country where the module takes place." [U.I.2]

Or a participant from Venezuela mentioned:

"...In order to consolidate an efficient and effective model of public management, it is necessary to analyze "good practices" as well as a methodology to evaluate "good practices". [P.I.2]

Besides such general inputs about the missing contents, several of the participants were sharing their suggestions about more detailed topics with more direct implications for practice as necessary inputs

in the curriculum of the pogrom from their point of view. For example, our Venezuelan participant mentioned:

"How and in what maximum time should it be presented to the public and debate opened on the plans and projects which would conform the Municipal Strategic Plan?... Necessary changes to the internal structure of municipal administration and management in order to materialize a development model.... Faced with the different realities which may arise due to external circumstances: how does one re-evaluate and/or re-state a strategic plan and in this manner be able to adapt it to the city's reality, where the only constant is change? How does one develop leadership and planning functions to be able to respond to future economic and social challenges?" [P.I.2]

In addition to proposing list of topics, some of the participants also raised their expectations about the structure and focus of the training sessions. For example, one of our Mexican participants raised an important point about choice of cases which were going to be discussed in the class:

"More than projects that are being on execution, it would be very good to have projects already executed so we can see how successful or how was the experience, what they learn and how they could improve the project, not projects that are on execution or in plans." [L.I.2]

And two of our other participants from Mexico had suggestions about presence of more than one point of view (having panels) in some of the training sessions:

"I would like to see a debate of ideas in a working table, working specifically on how to generate governance in a metropolis among different government levels ..." [V.I.2]

"I would look into each of the modules of different viewpoints. That is, some speakers might be representative of the government, others from the private sector, including leaders citizens and non-governmental organizations, academia of course must be included...." [R.I.2]

Also, some of the participant were raising new topics to be covered in the program which were not in our initial definition of the scope of the project. For example, one of our Mexican participants mentioned her interest to learn more about services such as healthcare and education in cities:

"... It also would be interesting to know about how some basic services function, as healthcare, education and some public services because more than politics those services are the ones that really daily face the needs of citizens." [L.I.2]

The inputs from the participants showed us that there are some differences between participants' expectations from the program and our training practices. However, these differences were mainly raised around practical issues (specific contents, structure of the sessions, etc.) and not the underlying learning objectives of the program (helping practitioners to adopt a more

holistic/multidisciplinary perspective in addressing complex problems). The fact that we had to close the gap between participants' expectations and our training modules was a significant challenge which we tried to overcome in the next training modules of the program. However, the fact that participants' expectations and the main approach and philosophy of the program were relatively inline was a promising foundation for continuation of the project.

4.2.5 Brief reflection on the IGLUS-Istanbul training module

When I was reflecting on the overall experience of the IGLUS-Istanbul training module, and recalling the experiences from the IGLUS-Guadalajara module, I could see that in order to introduce significant improvements in quality of this training program, we cannot only focus on improving the arrangement and preparation of training sessions which were going to be delivered by partner lectures; as well as providing some moments of reflection to critically discuss the lecturers' inputs with the participants. In other words, I could see that using a 'collage' strategy is not fully in-line with the purpose of this training initiative and my underlying philosophy to work on this Action Research project. More precisely, I realized that given the existing working conditions and structure of the program, if we only focus on improving the quality of organization of the training sessions (closer scrutiny of operations of partner universities, etc.), we cannot improve the quality of the overall learning experience of our participants after a certain level (which we had already achieved it, by having more than 97% satisfaction from the training sessions according to our short evaluation surveys).

As a result of my reflections on these two initial AR cycles (IGLUS-Guadalajara and IGLUS-Istanbul training modules), and after a series of internal discussions, we realized that we have to have a stronger intellectual core in the program that helps us to critically reflect on different inputs from the lecturers in light of that intellectual core, and also enables us to communicate our thoughts and ideas more effectively with our participants and other partners of the project (to deal with the expectations' gaps).

I realized that as the coordinator of the master program and an Action Researcher I have to further enhance my role (and capabilities) in helping the participants to critically reflect on the inputs which they receive in each of the training sessions. And I realized that for doing so, I need more than facilitation and observation skills, and that *I have to live the same experience which I would like the participants to have* in this training program. In addition, I could see that we, as the organizers of the program, shall play a stronger role in conceptualization and framework development to fulfill the intellectual gaps which we were facing during the training modules (lack of an easy to understand, yet solid conceptualization of governance and performance of large urban infrastructures from a holistic/multidisciplinary point of view). These critical self-reflections and continuous dialogues with the academic director of the program became the seeding points for emergence of more fundamental changes in our approach in this project, especially from the IGLUS-Hong Kong training module.

4.2.5.1 Results of evaluation surveys for the IGLUS-Istanbul training module

In IGLUS-Istanbul training module, like the IGLUS-Guadalajara module, each of the training sessions was evaluated by the participants in the program. The evaluation was done by means of a short survey, asking the participant to rate the quality of each session with regard to three criteria:

- Presentation skills and quality of the slides of the presenter
- Usefulness of the content of the presentation
- Overall evaluation of the session

The structure of the evaluation survey was intentionally kept similar to the one from the previous module. From seventeen participants in the IGLUS-Istanbul module, on average ten respondents filled the survey⁶³. The summary of evaluation result of the IGLUS-Istanbul training module is presented in chart 4.2.1.

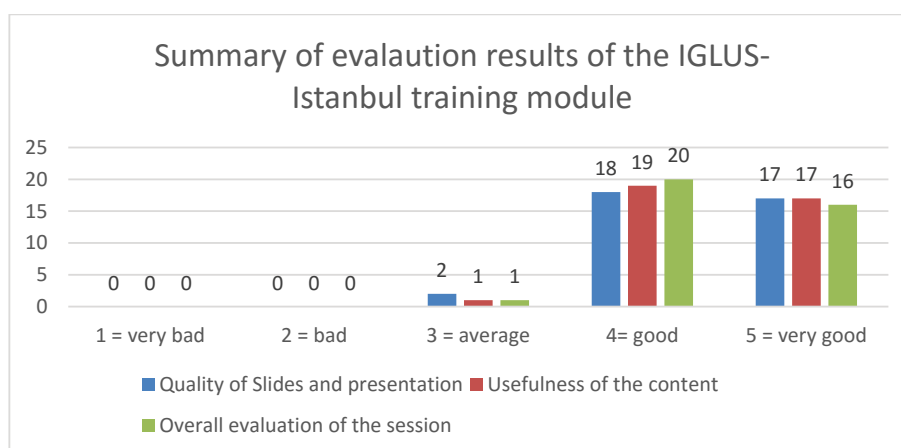


Chart 4.2.1 – Summary of IGLUS-IST evaluations

As explained before, the evaluation survey was not our principal data collection tool in the project. However, the results of the survey can be somehow illustrative. The fact that the ‘overall evaluation’ of only 1 session among the 37 evaluated sessions was rated as average while 20 sessions were rated as good and 16 sessions were rated as very good shows that the participant very generally satisfied with their learning experience in the IGLUS-Istanbul training module.

The number of Average sessions has dropped from 2 in IGLUS-Guadalajara module to only 1 in IGLUS-Istanbul module. This might be seen as a general improvement in the quality of the training sessions. However, when the distribution of good and very good sessions (considering the overall evaluation

⁶³ The number of evaluated sessions is slightly different from the total number of sessions during this module because I did not include the evaluation results for those sessions which had been rated by too few participants (less than 4 participants)

criteria) are compared between the two modules (chart 4.2.1 and chart 4.2.2), it becomes clear that in IGLUS-Istanbul we have less sessions with very good evaluation results (43% of total sessions) compared to the IGLUS-Guadalajara module (56% of total sessions). This analysis is also valid for the ‘usefulness’ of the sessions.

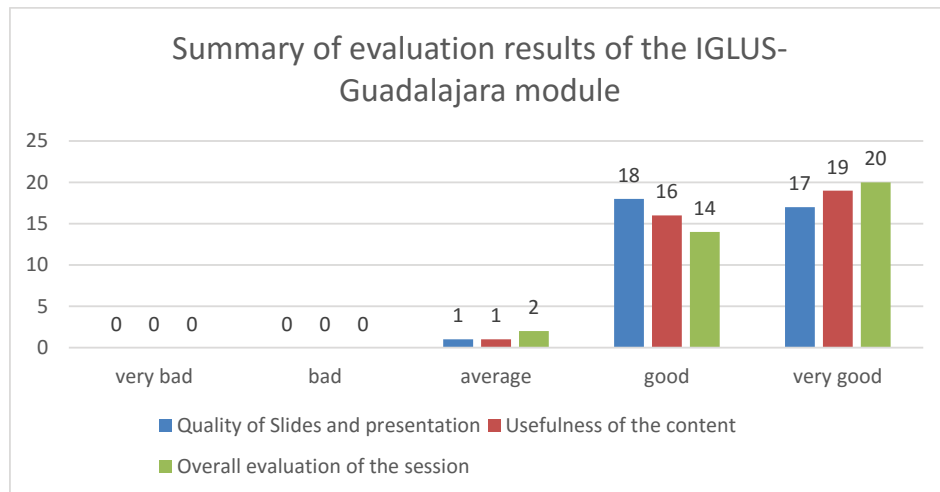


Chart 4.2.2 – Summary of IGLUS-GDL evaluations

The result of the evaluation of IGLUS-Istanbul was generally in line with my observation about the lower than expected quality of some of the training sessions during the module which were discussed in detailed the previous pages.

Although the results of the evaluations were overall promising and satisfactory, based on my reflection on the rich information I could collect from my qualitative data sources, it was apparent that we had a lot of opportunities for improving the quality of this training program. This resulted in significant changes to our conceptualizations, organization and planning of the training module and design of the training sessions in the IGLUS-Hong Kong module. In the next case study, I will further elaborate on these changes.

Chapter 4 (Case studies)

4.3 - Section 3 - IGLUS Hong Kong case study

4.3.1 Introduction

4.3.1.1 Overview of the training module

The IGLUS-Hong Kong module was the third training module of the IGLUS Executive Master program and took place in November 2014 in Hong Kong. Table 4.3.1 shows the position of the IGLUS-Hong Kong module in the overall program of the IGLUS-Executive Master program. The training sessions of the module were held during 11 working days over a 2-week period.

Table 4.3.1 – Position of the IGLUS-HK module in the overall IGLUS executive master program

Guadalajara Social Challenge (June 2014)	Istanbul Cultural Challenge (Sept. 2014)	Hong Kong Optimization Challenge (Nov. 2014)	Ras Al-Khaimah Dubai Sustainability Challenge (Feb. 2015)	Detroit Chicago Economic Challenge (April 2015)	Seoul Technological Challenge (June 2015)	Rhine-Ruhr Metropolitan Challenge (Sept. 2015)
Housing and Use of Land	Disaster Management	Sustainable Transport & Housing	Innovative Finance of Urban Mobility	Utilities Regulation and pillars of Sustainability	Smart Transport	Regional governance
Transport and Mobility	Green infrastructures	Metropolitan Finance	Governance of sustainable Water & Waste systems	Industrial ecology	Smart Energy and Water	Metropolitan mobility
Human and Citizen Security	City Governance	Energy, Water and Wastewater	Urban resilience & Environmental sustainability	Sustainable Urban Economy	Urban ICT policy & governance	Urban forests & ecosystem balance
Transparency & Accountability	Transport Planning and Finance	Smart City and urban Resilience	Housing and Zoning policies	Urban Leadership	Governance of Integrated Systems & Green performance	Metropolitan Finance

This module was organized in collaboration with the Hong Kong University of Science of Technology (hereafter HKUST) in Hong Kong. Based on the overall curriculum of the IGLUS Executive Master that had been developed during the preparation phase of the project, the IGLUS-Hong Kong module was supposed to have a special focus on the jurisdictional challenges in governance of large urban systems; initially labeled as ‘one city; two national systems’. However, the planning and implementation phases of this module coincided with the onset of ‘Umbrella Movement’. This social movement, which lasted from September to December 2014, resulted in a series of protests and demonstrations against proposed reforms to the electoral system in Hong Kong⁶⁴. As a result of these tensions, our partner university (HKUST) became very concerned about our initially proposed theme for the IGLUS-Hong Kong module due to political considerations.

So, in September 2014, after a series of re-negotiations and reconceptualization of the overall curriculum of the Master program, we decided to change the focus of the IGLUS-Hong Kong module to investigate the challenges associated with improving the ‘efficiency’ of urban service provision through integration of infrastructures. With the newly defined theme of ‘efficiency and optimization’, four broad topics were selected to be covered during the IGLUS Hong Kong module, namely:

1. Sustainable transport and housing
2. Metropolitan finance
3. Energy, water and wastewater management
4. Smart cities and urban resilience

The final curriculum for the training sessions in the IGLUS Hong Kong module is summarized in Table 4.3.2.

Table 4.3.2 – Program of the IGLUS – Hong Kong module

Date	Topic	Details
Monday 17/11/2014	Theory input on governance and performance	EPFL
	introduction of HK	HKUST
Tuesday 18/11	Public-Private partnership in city governance	Managerial state, social inclusion and community involvement: cases of Shanghai and Taipei
		New creative economy, new users and creative class involvement
Wednesday 19/11	Wastewater	Assistant Director of Drainage Services Department <i>Waste water Engineering in Hong Kong</i>
	Research Methodology for Practitioners + interactive session	EPFL
Thursday 20/11	Field visit	<i>Zero carbon building visit</i>
	Partnering with firms and government, city and central government	<i>Former Director, Building Department, and Chief Project Manager of Territory Development Department Hong Kong New Town Development and Infrastructure</i>
Friday 21/11	Smart city	<i>Big data and smart city</i>
	Hong Kong Airport	<i>Sustainability in Hong Kong Airport HK Airport visit</i>
Saturday 22/11	Housing market dynamics	UN-Habitat
Sunday		Free day

⁶⁴ https://en.wikipedia.org/wiki/2014_Hong_Kong_protests (Accessed 27 April 2016)

23/11		
Monday 24/11	Metropolitan Finance	World Bank
	Energy and climate governance (session 1)	Energy Policy and governance in Hong Kong and Mainland cities
	Field visit	<i>Shatin Sewage Treatment Works visit</i>
Tuesday 25/11	Field visit	<i>Tai O Stilt Houses</i>
Wednesday 26/11	Urban Resilience	UN-Habitat Community development after crisis – New urban Agenda
	Energy and climate governance (session 2)	Energy Policy and governance in Hong Kong and Mainland cities
	Reflection session on Governance	EPFL
Thursday 27/11	Transportation visit	<i>HK MTR visit</i>
	Innovation and Technology Policy	<i>Technology Policy and Innovation at mainland and Hong Kong</i>
Friday 28/11	HK transportation	<i>Presentation by Transdev team in HK</i>
	Reflections on the HK learnings	EPFL
	Wrap up (EPFL)	

4.3.1.2 Participants

In this module, we had eight participants who were committed to attend in the Executive Master program and eleven local participants who were just attending in the Hong Kong module. The eight participants who were officially enrolled in the Master program had all been present in at least one of the previous training modules and were familiar with our approach. Almost all of the local participants in the Hong Kong module were Master or PhD students from the host university. The profiles of participants in this module are summarized in Table 4.3.3. Like what happened in the Istanbul module, one of the local participants in the Hong Kong module later decided to continue with the Master program and officially enrolled in December 2014.

An important change in the pool of the participants from the IGLUS-Istanbul module to IGLUS-Hong Kong module was that one of our participant had to quit the program after attending the first two modules. We had been having some difficulties with this participant, especially during the IGLUS-Istanbul module due to his lack of commitment to actively participate in the training sessions and instead, adopting a touristic approach to the IGLUS-Istanbul module. After discussing this issue with him directly, we mutually agreed that he should leave the program. This change was well managed and had almost no negative impact on the friendly, yet professional atmosphere among the group of our participants in the Hong Kong module, nor in any of the modules after that.

Table 4.3.3 – List of participants in IGLUS Hong Kong module

Names	Affiliated city	Educational/Professional background	Number of modules that she/he had already attended
T.G	Hong Kong	PhD student in social science	0
J.S.C	Hong Kong	Master student in Information technology	0
A.B	Hong Kong – Toronto - Tehran	PhD in environmental science	0

C.D	Hong Kong – Bordeaux	Master student in transportation	0
S.Z	Hong Kong	Master student in social science	0
D.D	Hong Kong	PhD student in social science	0
R.M	Hong Kong	Master student in social science	0
L.U	Hong Kong	Master student in social science	0
J	Hong Kong	Master student in social science	0
Y.U	Hong Kong	Master student in social science	0
J.Y	Hong Kong	Master student in social science	0
T.U.A	Istanbul	IETT (Istanbul public transportation authority)	1
J.L.C	Brasil, Rio de Janeiro	Special assistant for Chief of Staff in City Hall of Rio de Janeiro	2
R.E.G.A	Mexico, Zapopan	Zapopan Municipality: Development Planning Commission / Private contractor	2
V.G.V	Mexico, Zapopan	Zapopan Municipality: City Council	2
L.E.G	Mexico, Zapopan	Zapopan Municipality: COPLADEMUN	2
H.E.L	Mexico, Guadalajara	Architect and urban planner	1
M.M	Colombia, Cali	Municipality of Cali	1
M.L.P	Venezuela – Maracay	Urban planner / Civil engineer	1

4.3.1.3 Our initial conceptualization of the module and its evolution

Based on our initial conceptualization of the governance of large urban systems, we were interested in covering the technological, economic, social and political dimensions that are important when tackling complex urban problems, especially with regard to urban infrastructures. Due to the unique political system in Hong Kong, where mainland China provides the Hong Kong administrative system with a large degree of autonomy on a series of issues, but at the same time can also exert a substantial influence on the political dynamics in Hong Kong (due to various economic and political factors), we had initially planned to focus on the political/jurisdictional challenges in governance of large urban systems during the IGLUS-Hong Kong module.

However, as briefly explained in the introduction of this case study, due to coincidence of the political tensions in Hong Kong with the timing of our training module, our partner university became very reluctant to accept this theme for co-organization of the module. In fact, during the IGLUS-Istanbul module (September 2014), HKUST informed us that, because of the complications brought on by the Umbrella Movement, the collaborative agreement between the two institutions might be cancelled if we insisted on keeping the pre-determined theme for the module. So, we decided to rethink the overall curriculum of the Master program and find a new theme for the IGLUS Hong Kong module

that would be satisfactory for our partner university⁶⁵. To that effect, we tried to consider other interesting characteristics of Hong Kong, in light of our broad conceptualization of the curriculum of the program, which could become the new theme of our training module in Hong Kong.

Hong Kong is one of the exemplary cases of high-density urban development in the world (Zhang 2000). The city is also very well known for its highly integrated infrastructure networks. Taken together, Hong Kong's public transportation system and its high level of integration with land use development create an exemplary case of public transport system. In fact, the system serves more than 90% of the population and is often touted the most effective public transportation systems in the world (Mahtab-uz-Zamand et al., 2000, Cervero and Murakami 2009).

Based on these characteristics of Hong Kong, we decided to re-focus the IGLUS-Hong Kong module to investigate the governance challenges associated with developing 'integrated' infrastructure systems in order to enhance the 'efficiency' in provision of urban services. As discussed in Chapter 2 (literature review) of this thesis, urban practitioners are often poorly trained to address complex problems associated with urban infrastructures from an integrated, holistic and multidisciplinary perspective. Since Hong Kong is known globally for its integrated urban infrastructures, it stands as a perfect location for us to cover the governance challenges associated with integration of urban infrastructure systems. By exploring this topic in Hong Kong, the participants could get a firsthand understanding of the potential impacts of infrastructure integration on service provision quality by experiencing a world-class city in this regard. In addition, the Hong Kong module could become a great learning arena for the participants to learn about the complexities in governance of urban infrastructures to achieve high levels of integration among these sociotechnical systems from a real-world case.

With these objectives in mind and based on our learnings and observations from the IGLUS-Guadalajara and IGLUS-Istanbul training modules, we started to prepare the curriculum of the IGLUS-Hong Kong module in September 2014.

The interrelated nature of urban infrastructures is one of the main pillars of the conceptualization of cities as sociotechnical systems. So, even though refocusing the IGLUS-Hong Kong module from jurisdictional challenges to integration challenges was definitely problematic for planning the module and organizing the operational processes (due to the short time between reaching a final agreement on the theme of the module and the start-date of the module), our decision to make this change could be successfully accommodated in the overall curriculum of the program⁶⁶.

⁶⁵ It is important to note that due to the short notice of this decision by HKUST, it would have been almost impossible to cancel the Hong Kong module and find an alternative location. Thus, the only viable solution was to find a compromise that would protect the conceptual coherence of the Master program while still addressing the concerns of the partner university.

⁶⁶ Instead of covering the jurisdictional challenges in the IGLUS-Hong Kong module as intended, we were able to partly cover the issue in the IGLUS-Dortmund module where we adopted a special focus on metropolitan coordination challenges, which was closely related to the theme of jurisdictional challenges. On the other hand, based on the strong federalism in both Germany and the US, many of the governance dilemmas that arise between the national and local governments could be covered in these two modules and the overall learning objectives of the program were not significantly affected.

4.3.2 Preparation of the module (planning)

4.3.2.1 Learnings from the previous modules and modification in our approach

Based on our reflections on the learnings and experiences we had from the IGLUS-Guadalajara and IGLUS-Istanbul modules, we recognized that there were several issues that needed to be addressed in the IGLUS-Hong Kong module; namely, improving our conceptualization of performance, improving our analytical frameworks for analyzing complex governance challenges from a holistic-multidisciplinary approach (especially in the context of urban infrastructures), improving our hands-on sessions where our learners can become familiar with methodologies and toolkits, dedicating some sessions for reflection on the learnings of the participants and increasing our control over the quality of the training sessions organized by our partner university.

Indeed, after the IGLUS-Istanbul module we realized that our conceptualization and elaboration of relevant theories needed to become more detailed and elaborated compared to what we offered in the IGLUS-Guadalajara module, but less theoretical and academic-oriented than the IGLUS-Istanbul module. In other words, we realized that we should further customize the theoretical concepts and frameworks, that we were borrowing from the academic literature, to our learners' backgrounds, because they could not easily translate highly abstract theoretical concepts into useful practical lessons that could be useful in their professional occupations. So, in the IGLUS-Hong Kong module we aimed at improving the balance between the practical and analytical dimensions of our approach. Our goal was to provide the participants with solid and well-established theoretical frameworks that are practically useful for the analysis of complex urban challenges from a holistic-multidisciplinary perspective, with a special focus on the challenges in governance of urban infrastructure systems.

Our *goals* in the IGLUS-Hong Kong module was not fundamentally different from that of the IGLUS-Istanbul module because in both modules, we were trying to improve the balance between the practical and analytical dimensions of the training. That being said, our *approach* in the IGLUS-Hong Kong module was relatively different from that of the IGLUS-Istanbul module. I claim so, because in IGLUS-Istanbul we presented primarily some pre-existing theoretical frameworks that we *believed could be* useful for our practitioner-participants and easily applicable to practice (Transaction Cost theory, Principal-Agent theory and Global City' thesis). But, in IGLUS-Hong Kong module we decided to further *customize* the relevant theoretical insights for the practical needs of our learners. More precisely, in the IGLUS-Istanbul module we presented some theoretical frameworks that we believed would be useful for the participants and left it to themselves to contextualize these theory and extract relevant insights for their practices; while, in the IGLUS-Hong Kong module we wanted to further customize our theoretical inputs to make them more relevant and applicable to the practical needs of our learners. In short, instead of "off the shelf theories", we wanted to provide our participants with more contextualized and synthesized versions of theories.

Here, it is insightful to briefly review the evolution of our approach from the Guadalajara module to the Hong Kong module. In IGLUS-Guadalajara we tried to introduce some *generic governance theories* and *conceptual frameworks* that could be useful to urban practitioners, but left it to the participants to establish the links between these theories and their professional practices. And in addition, we provided the participants with some managerial toolkits that were not directly linked to our

theoretical inputs, but could be useful for people in managerial roles (e.g. change management). In IGLUS-Istanbul, we introduced some *domain-specific abstract theories* (Transaction Cost Economy) as well as some more *practical theories* (Principal-Agent theory), but still left it to our participants to develop their own toolkits and analytical frameworks to address their own practical needs. In IGLUS-Istanbul module, we could not achieve our objective to provide more hands-on and toolkit-based sessions to our participants. In the IGLUS-Hong Kong module, we decided to take a step toward *customizing and contextualizing the theoretical frameworks*, that we introduce, to the practical needs of practitioners to addressing complex problems associated with governance of large urban infrastructure systems and provide the participants with more toolkit-like conceptual inputs that can be more practically incorporated into their professional practices.

It is important to consider that the continuous evolution of our approach should be seen in the evolving context of the program. If not, they might seem to be disconnected steps and jumps from one approach to another one, which is not the case for this AR inquiry process.

4.3.2.2 Choice of our theoretical inputs for the module

In order to realize the approach we envisioned for the IGLUS-Hong Kong module, I tried to select well-established theoretical frameworks that have direct implications for the analysis of complex urban problems. After some bibliographic research, I found the Systems approach as a rigorous, yet practical, approach for analyzing complex urban problems. After some internal consultations with Prof. Finger; I decided to present the ‘wicked problem’ concept (Rittle and Webber 1973). In addition to the concept of ‘wicked problems’, I used some notions from Systems Theory (Ackoff 1997) to further explain how systematic approaches, as opposed to traditional reductionist approaches, can be used to address complex urban problems from a holistic-multidisciplinary perspective.

To further address our concerns from the previous modules, and mainly based on the inputs we got from the IGLUS-Istanbul module, we also worked to improve our conceptualization of the performance of urban systems, as it was one of our least elaborated concepts in the broader IGLUS framework. To that effect, we decided to mainly benefit from the existing conceptualizations of performance of cities in the academic literature to synthesize a comprehensive list of performance measures that is illustrative of the performance of large urban systems in our conceptualizations. In the coming pages of this case study, when discussing the design of the EPFL theoretical sessions, I will further elaborate on these theoretical inputs.

With the above-mentioned approach and theoretical choices, we began to prepare the curriculum of the IGLUS-Hong Kong module.

4.3.2.3 Designing the curriculum of the module with the Partner University and changes from the original plan

4.3.2.3.1 Working with the School of Humanities and Social Science in HKUST - Challenges in collaboration

As explained in the previous case studies, we had a special emphasis on genuinely collaborative development of the detailed curriculum of the training modules with the partner universities. To recall, the reasoning behind this strategy was to ensure we get the most important local inputs into the curriculum of the module, thanks to the competencies and networks of the local universities; while keeping the coherence and connectivity among the modules in the overall Executive Master program, by overseeing the module-curriculum development process.

For organizing the IGLUS-Hong Kong module, we engaged in establishing highly formal relationship between EPFL and HKUST in order to prepare the administrative groundings for our intellectual collaboration. Our partner department in HKUST was the School of Humanities and Social Science (hereafter SHSS). We began our negotiations with the SHSS in beginning of the summer, 2014. As briefly noted in the previous paragraphs of this case study, our original proposal for the IGLUS-Hong Kong module focused on the jurisdictional challenges in governance of large urban systems. However, due to the aforementioned complications, SHSS-HKUST was very reluctant to adopt this theme for the IGLUS-Hong Kong module. Eventually, we reached a consensus and adjusted the curriculum to focus the IGLUS-Hong Kong module on the challenges associated with integrating urban infrastructures to improve the efficiency of urban systems.

Just after closing the IGLUS-Istanbul module, we began an intensive round of planning and coordination with SHSS-HKUST to develop the final version of curriculum for the IGLUS-Hong Kong module, according to the newly defined focus of the module.

Based on the learnings from the preparation phase of the IGLUS-Guadalajara and IGLUS-Istanbul modules, I decided to use the same strategy to jointly design the IGLUS-Hong Kong curriculum in collaboration with SHSS-HKUST by proposing a first draft of the curriculum with very broad objectives and structure and asking the SHSS to propose more concrete outlines for each training session. However, it soon became apparent that the working relationship between us and SHSS-HKUST was rather different from the previous experiences we had in Guadalajara and Istanbul and that our established curriculum development process would not be suitable for the IGLUS-Hong Kong module. In the previous modules of the program, our working relationships with the contacts at the partner universities were very flexible; allowing us to engage in several rounds of back and forth while developing the curriculum. In contrast, our contacts at SHSS were highly restricted by the administrative/bureaucratic procedures of HKUST. Accordingly, the decision-making processes for both the curriculum related issues as well as the operational issues proved to become very slow.

Our contacts at SHSS were reluctant to accept any broadly defined curriculum from our side as a basis of discussion about the curriculum of the module. So, contrary to our previous practices, in this module, SHSS-HKUST agreed to took the lead to prepare a list of topics and training sessions for the

IGLUS-Hong Kong module. The list of sessions they compiled was based almost entirely on the confirmed commitments from interested professors at HKUST. In the process of preparing this course list, when we insisted that we would prefer to have a first draft of their proposed sessions so that we could provide early feedback on the topics, we faced with SHSS refusal. They referred us to HKUST working procedures, saying that they are only allowed to share the program with us once all the lecturers have officially committed to attending their corresponding sessions.

So, the curriculum development process for the IGLUS-Hong Kong module became very different from our previous experiences and we lost almost all control over more than half of the training sessions⁶⁷. Although these differences could be understood in light of the significant differences between the working and organizational cultures in western and eastern institutions, we had to find a solution to minimize the potential negative impacts of this disconnect between SHSS and IGLUS in the curriculum development process. With this in mind, I decided to correspond with our contacts at SHSS over email more frequently in order to convey our broadly defined 'learning objectives' that we were expecting from the IGLUS-Hong Kong module through these informal communications. I was hoping that these communications would, firstly, help to narrow down the work-cultural gaps between our two teams. Secondly, I hoped that, through my communications with SHSS, our objectives and concerns would be disseminated down to the lecturers from HKUST, even if through informal or indirect channels. After these email exchanges which partially improved our communication asthenosphere, I decided to propose three broad *guiding questions* to our colleagues at SHSS, that could be communicated with local lecturers:

1. *"How are urban infrastructures (energy, water and waste, transport, etc.) in **HK** (and other cities in China) **planned, governed** and **operated** to achieve a high efficiency level (as it is usually claimed about HK)?*
2. *Also, we want to understand the impact of such planning, governance and operation on the performance of the city as a whole (i.e. how do they influence social cohesion/segregation in the city, quality of life, competitiveness of the city, environmental sustainability, etc.)*
3. *And how does the inter-relatedness of these infrastructure systems (energy, transport, land use, etc.) affects on how they are governed"*

These guiding questions did not form a broadly defined curriculum for the module nor were they directly communicated to the local lecturers. However, they seemed to have made an impact on the communications between our colleagues at SHSS-HKUST and the local lecturers (based on the relatively acceptable relevance of the final presentations to our objectives).

Another important dimension about our collaboration experience with SHSS-HKUST was the difficulties in managing the operational details of the program, which could also be understood under the light of different working cultures embodied by our two institutions. In some cases, decisions about relatively simple organizational tasks, such as budget allocation for different activities, room reservations, etc., needed confirmation from higher level authorities in the HKUST administration, which effectively slowed our progress during the organization of the module.

⁶⁷ The SHSS proposal was covering almost six days of the program, and five days of the program was supposed to fill by EPFL and our non-academic partners.

These kinds of difficulties, which arose on several occasions, also affected the process of content preparation. They were introducing more uncertainty into the collaboration process, which, in turn, had a negative influence on the curriculum development process by diverting both teams' energy and focus from curriculum development to resolving organizational obstacles.

Despite all the obstacles in the process of module preparation, we could finalize the detailed curriculum of the IGLUS-Hong Kong module in last days of October (almost 2 weeks before the start of the module). The topics that were proposed by SHSS-HKUST were generally in-line with our expectations from the IGLUS-Hong Kong module. However, since we could not have any contribution in planning the sessions, and due to other coordination difficulties with SHSS, the curriculum of the program could not fully satisfy our learning objectives from the module. For example, SHSS did not organize any lectures about transportation infrastructure in Hong Kong, which was one of our top priorities for discussion, given its global reputation. Despite our last minute discussions, we were unable to persuade SHSS-HKUST to find a lecturer to discuss the transportation infrastructure of Hong Kong. In the end, we had only one field visit to the Hong Kong Metro system operator (MTR) and one lecture, given by one of our industry partners, about the transportation system of the city, which was far from our expectations for this module.

In planning the SHSS-HKUST sessions, each topic was dedicated to only one lecturer. This single-lecturer-per-topic policy by HKUST has the positive outcome of preventing any potential overlap between the lectures in the Hong Kong modules; as there was no room for potential overlaps. Also, since the lecturers were asked to focus their lectures on Hong Kong and the mainland Chinese cities, there was almost no overlap between the training sessions of this module and those of the IGLUS-Guadalajara and IGLUS-Istanbul modules.

However, despite these positive outcomes of the HKUST policy to cover each topic by only one lecturer⁶⁸ it also had one major negative repercussion. In the previous IGLUS modules, we were encouraging the partner universities to use a diverse group of lecturers and practitioners to cover each of the selected topics so as to ensure that our participants became familiar with different points of view about the covered topics. But, in IGLUS-Hong Kong, our participants could not encounter with different points of view about any of the covered topics, which proved to be a major hindrance for understanding the real challenges in the system and developing a holistic picture of the problems in Hong Kong.

In the IGLUS-Hong Kong module, as in the IGLUS-Guadalajara and IGLUS-Istanbul modules, in addition to the sessions that were delivered by local lecturers (SHSS-HKUST), we had to design two other types of sessions; namely the IGLUS-EPFL sessions and the IGLUS-Partners' session. In the coming pages, I will explain the process of designing these sessions.

⁶⁸ This was an important outcome because as discussed in the IGLUS-Istanbul module, overlapping lectures presented a significant challenge throughout the IGLUS-Istanbul module.

4.3.2.3.2 Designing the EPFL sessions

As was also the case in the IGLUS-Guadalajara and IGLUS-Istanbul modules, we reserved some sessions of this module for ‘EPFL inputs’ to ensure that our core messages would be conveyed directly to our audience.

Based on the experiences from the IGLUS-Guadalajara and IGLUS-Istanbul modules, we had originally planned four types of EPFL sessions in the IGLUS-Hong Kong module: *theoretical opening sessions*, *reflection sessions*, *project sessions* and the *module wrap-up sessions*. The reflection sessions were inspired by my personal successful experience to plan several spontaneous sessions to reflect on the inputs of the lectures and insights from field visits during the IGLUS-Istanbul module. The project sessions were developed as a succession to our discussions in the Istanbul module where we highlighted the importance of participants’ “big questions”, as well as the input we received from the participants’ wrap up essay after the Istanbul module.

4.3.2.3.2.1 Designing the theoretical opening sessions

As explained in the previous paragraphs, based on our reflections of the IGLUS-Guadalajara and IGLUS-Istanbul modules, we recognized that we need to improve the balance between practical and analytical dimensions of our approach in the training modules. More precisely, we learned that we have to better focus our approach towards delivering theoretical inputs that are practically useful for the participants.

In the Guadalajara training module, we provided the participants with a set of different theoretical perspectives that were related to governance/management of urban infrastructure as sociotechnical systems. Those inputs were useful to help familiarize the participants with the multidimensional nature of complex problems associated with governance/management of urban infrastructures. In the Istanbul module, we provided an introduction to Transaction Cost Economy and Principle Agent theory which we believed to be useful for our participants when analyzing governance/management dilemmas and could help them propose general recommendations about suitable governance structures and support their opinions with economic arguments. In addition, we also reminded the participants about other important dimensions in governance/management of complex urban systems by reviewing arguments and concepts introduced in the IGLUS-Guadalajara module.

However, the main aspiration behind the IGLUS training program was to provide urban practitioners with theoretical inputs that can help them *truly understand* the importance of analyzing their practically complex problems from a holistic and multidisciplinary point of view and to enable them to do so in the context of governance of urban infrastructures. After the first two modules of the program, it was still clear to us that in order to achieve this goal, we needed to improve our theoretical and conceptual inputs for the program. Our general IGLUS framework proved to be too broad and too abstract, and our attempts to introduce more detailed theoretical inputs (Transaction Cost Economy and Principal Agent theories) did not alone satisfy the holistic-multidisciplinary perspective that we were aiming to achieve. Figure 4.3.1 provides a graphical representation of the

evolution of our theoretical inputs in the IGLUS-Guadalajara and IGLUS-Istanbul modules and also illustrates our aspirations for the IGLUS-Hong Kong module.

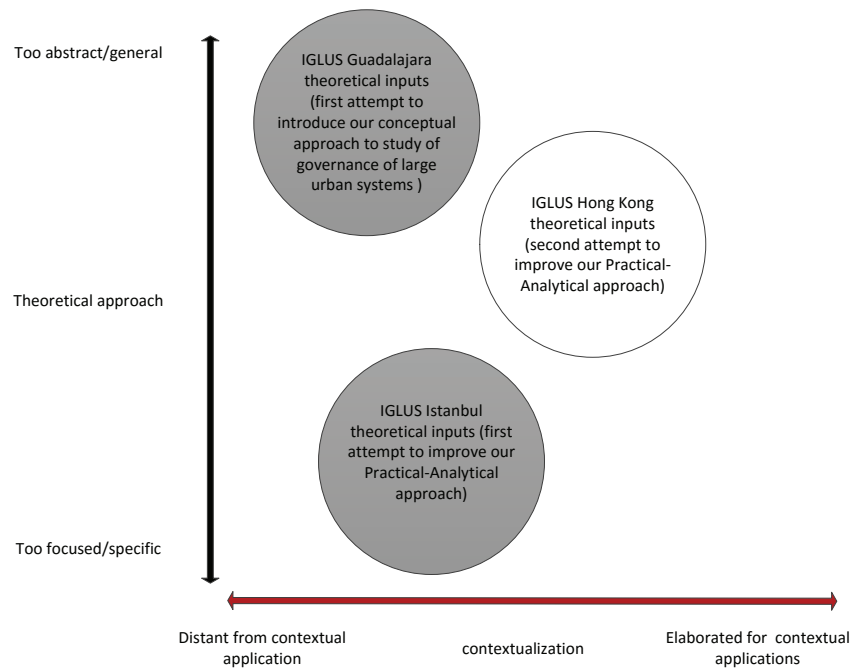


Figure 4.3.1 – Evolution of our theoretical approach

In a new round of bibliographic research for preparing our theoretical opening sessions for IGLUS-Hong Kong module, I found the concept of ‘wicked problems’ (Rittel and Weber 1973) as highly illustrative for analyzing the complexities that underlie urban problems. The concept also had strong roots in urban contexts, as it was originally introduced by urban planners to describe the complex nature of planning problems. The notion of ‘wicked problems’ is closely related to systems theory. So, I decided to also cover some important concepts from the systems theory (definition of system, etc.) to familiarize the participants with the theoretical foundations of the systemic approach to complex problems. Especially, since the focus of the IGLUS-Hong Kong module was on governance/management challenges in *integrated* urban infrastructures systems, this combination of concepts from the ‘systems theory’ and the notion of ‘wicked problems’ could be a useful analytical lens to discuss the *interrelated nature of problems in large urban systems*, and the importance of holistic-multidisciplinary approaches to address them.

The other theoretical session of the IGLUS-Hong Kong module was dedicated to the conceptualization of performance. In this session, which was led by Prof. Finger, we decided to provide an overview of academic contributions that discuss the performance of cities and propose how these performance

dimensions might fit into the general IGLUS framework. Based on this review, we decided to discuss *efficiency, resilience, sustainability* and *quality of life* as four important performance dimensions for cities. In addition, a discussion about the ‘performance of network industries’ (Crettenand, et al.,2010) was incorporated as part of this session.

As discussed in the previous case studies, by our progress in the project, designing the new theoretical sessions proved to be more like building a puzzle by “developing new pieces” as opposed to simply “choosing from pre-existing pieces”. The crucial point in this “puzzle-building” process was to maintain the coherence and connectivity among the training modules, while still introducing necessary changes to effectively incorporate what we learned from previous training modules (Action Inquiry cycles) into the program.

Working with the general IGLUS framework (Figure 4.1.2) proved to be very useful tool in this process. Even though the framework was generic and abstract, it was providing a loose structure to guidance our thoughts and discussions, while at the same time remaining enough flexible to let us incorporate new theoretical approaches and concepts into our discourse. However, in order to integrate new theoretical inputs into our existing discourse, we had to take more intellectual steps to ensure that our theoretical and conceptual inputs in the program will convey a clear and coherent message to our practitioner-participants; not forming a collage of loosely connected theoretical arguments. Figure 4.3.2 illustrates the intellectual linkages between the general IGLUS framework and our new theoretical inputs in IGLUS-Hong Kong module.

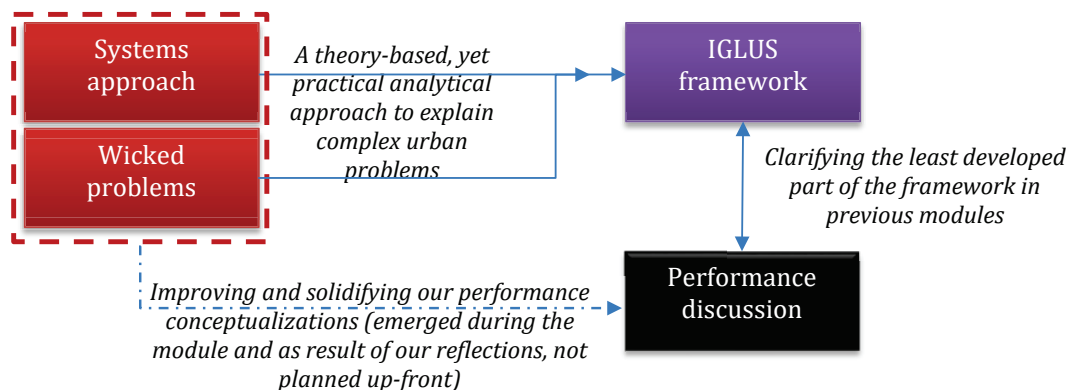


Figure 4.3.2 – intellectual linkages between covered topics during IGLUS-Istanbul module

Using more direct references to the *systems approach* during the IGLUS-Hong Kong module indeed resulted in some important advances in our conceptualization of the link between governance and performance in urban infrastructure systems. This new conceptualization, based on the systemic

perspective, created a more solid foundation upon which we could more aptly analyze complex urban problems from a coherent holistic-multidisciplinary point of view.

4.3.2.3.2.2 Designing the Projects/methodology sessions:

As discussed previously, the participants' projects were an essential part of this training program because of the important role they could play for contextualizing the learnings of each participant according to his/her personal and professional experiences and interests. Based on the inputs we received, thanks to the participant's wrap-up essays after the IGLUS-Istanbul module, we recognized that we needed to provide the participants with more support to help them effectively translate their broadly defined problems and concerns into more concretely defined 'projects'.

With this in mind, in the IGLUS-Hong Kong module we designed two special sessions on 'research methodology for practitioners' with two main objectives: 1) to provide our practitioner-participants with a general introduction to different research methodologies for systematic investigation of the research problems they were interested in 2) to help each of the participants to better formulate his/her research problems through a group discussion exercise. The main incidents from these sessions will be discussed in the coming pages of this case study.

4.3.2.3.2.3 Designing the Reflection and wrap up sessions:

Based on my experience in the IGLUS-Istanbul module, where I held several spontaneous reflection sessions and the very positive feedback of the participants about these sessions, we decided to incorporate some dedicated sessions as 'reflection sessions' into the program of the module. In the IGLUS-Hong Kong module, I could arrange only one dedicated reflection session in the curriculum of the module.

The main goal of this dedicated reflection session was to engage all of the participants in a critical and reflective discussion about their learnings from the training sessions of the program. So, I decided to keep the structure of the session quite open and flexible and just facilitate the group discussions.

In addition to the reflection session and the projects/methodology sessions, I also reserved the two last sessions of the module for wrap up activities and intended to maintain a similar structure to those in the IGLUS-Guadalajara and IGLUS-Istanbul modules. However, part of the last section of the wrap up session in IGLU-Hong Kong module was later assigned to discuss about the participants' projects.

4.3.2.3.3 Designing the joint sessions with external partners - Birth of performance-specific sessions

In the IGLUS-Hong Kong module, four external lecturers agreed to participate and share their practical knowledge with our participants. A representative from the UN-Habitat housing team agreed to discuss the housing market dynamics. Another representative from the UN-Habitat resilience team agreed to discuss the concept of urban resilience. The third contribution was from a lead urban specialist from the World Bank, who agreed to present one of the Bank's recent publications about financing municipal governments in a videoconference. In addition to these lectures from the international organizations with whom we had at least one previous experience of collaboration, a representative from Transdev also agreed to present the companies' operations in the public transport system of Hong Kong and to discuss the governance related challenges that their organization was facing, as a private operator, when dealing with public organizations and in the broader urban transportation industry.

Based on the great experience of introducing an urban resilience session in the IGLUS-Istanbul module, we decided to discuss the possibility of including more contributions from the UN-Habitat Urban-Resilience team, whom at the same time were launching a large initiative on City Resilience Profiling⁶⁹, into the IGLUS training program. Since the issue of urban resilience is highly complex and calls for a holistic and multidisciplinary approach, it was very much compatible with the philosophy of this program. After several rounds of negotiations, the UN-Habitat team kindly agreed to take on a more active role in the IGLUS program and hold more frequent sessions dedicated to Urban Resilience in future training modules of the program. However, we were wondering how we should incorporate this topic as one of the new pillars of the program; because we had originally designed the program around five main urban infrastructures: transport, housing, energy, water and waste, and greens. So, we decided to position the resilience sessions as cross-cutting issues in the curriculum of the program⁷⁰.

Since we previously had a session about 'housing' by a UN-Habitat housing expert (IGLUS-Guadalajara) as well as a session about 'resilience' by a UN-Habitat resilience expert (IGLUS-Istanbul), we had to ensure a close coordination with the UN affiliated lecturers in the IGLUS-HK module to prevent any potential repetition. To that effect, I personally got in touch with the lecturers and briefed them on the content of the previous sessions on these topics. After a series of correspondences, I agreed with the housing expert to discuss housing market dynamics and elaborate some cases from East Asia on the issue of housing; which was different from what was covered in IGLUS-Guadalajara. In the same manner, I agreed with the UN resilience expert to present a specific resilience framework (that was being development by the UN-Habitat resilience profiling group) and to design a role-play session around a Tsunami disaster case from Japan. Since the

⁶⁹ <http://cityresilience.org/CRPP>

⁷⁰ After the IGLUS-Hong Kong module we recognized that if we truly wanted to capture the holistic-multidisciplinary perspective which is necessary for addressing complex urban problems, we needed to revise our conceptualization of the entire master program alongside our identified urban performance dimensions (resilience being one of them) instead of specific infrastructures or challenges (pre-defined labels of the modules). This change became effective in the second edition of the Master program.

lecturer had been actually present in the post-disaster operations in this case, she could perfectly reflect on the results of this role-play session.

Although the IGLUS-Hong Kong module was not our first experience with lecturers sourced from private firms, it was our first collaboration experience with Transdev. To organize this session, I decided to follow the successful process that I used to organize the partner companies' sessions in the IGLUS-Istanbul module. So, I communicated a customized version of the following key points with our contact at Transdev as the learning objective of his presentation in this training module:

1. Understand how the private sector perceives the challenges in cities with regard to urban infrastructures (the private actors' point of view about urban infrastructure challenges)
2. General understanding of the solutions/innovations that the company offers to improve performance of cities in its respective infrastructure sector
3. Understanding the governance challenges associated with realizing such solutions/innovations in large urban systems (infrastructure) from the private actors' perspective

The experience of organizing the session with Transdev in Hong Kong was very similar to what I had in collaboration with representatives of BCG and Schneider Electric in the Istanbul module. As was the case in the previous modules, in IGLUS-Hong Kong, the practitioner-lecturers again proved to be highly competent, delivering clear, relevant and comprehensive lectures to the audience and were also quite open to critical discussions about the complex challenges in management/governance of urban infrastructures and potential solutions to address them.

4.3.2.4 Local recruitment to ensure context specific experiences and inputs in the class

In the same line as of the IGLUS-Guadalajara and IGLUS-Istanbul modules, we asked the partner university to recruit local participants to attend the IGLUS-Hong Kong module. In the IGLUS-Hong Kong module, the partner university rejected our request to reach out to local organizations in order to recruit local *practitioners*. As a compromise, and in order to cover the lack of local practitioners' expertise in the class, we asked them to at least recruit some participants from among the HKUST Master and PhD students who had relevant backgrounds to attend the training module. As a result, 3 PhD students and 8 Master students from HKUST were selected to attend the IGLUS-Hong Kong module.

Although we had the highest number of local participants in the IGLUS-Hong Kong module, among all of the IGLUS training modules, as it will be discussed in the next sections we experienced one of the lowest levels of 'local inputs' in the discussions of the IGLUS-Hong Kong; considering the entire training modules of the first edition of the program. This situation partially impeded our attempts to have dynamic and interactive sessions in this module. To mitigate the negative consequences associated with the limited contributions of local participants to the discussions of HK training module, I had to play an even stronger role in facilitating class discussions. This experience, indeed,

had some positive consequences on our conceptualization attempts during and after the Hong Kong module which will be discussed in the coming sections.

4.3.2.5 Preparatory assignments

As discussed in the previous paragraphs of this case study, based on our learnings from the IGLUS-Guadalajara and IGLUS-Istanbul, we realized that we should enhance the balance of practical-analytical approaches in the IGLUS-Hong Kong module. To that effect, I decided to ask the participants to critically read and analyze the famous article by Rittel and Webber about 'Wicked Problems' by reflecting on their own real-world experiences in dealing with urban problems. By doing so, I was expecting that the participants will be ready to actively engage in the discussions of the first day of the program, which were mainly based on the arguments by Rittel and Webber and systemic approach perspective.

In addition to this theoretical, yet easy to understand paper, I provided the participants with two papers about transportation and land use in Hong Kong. The first paper was a critical analysis of Hong Kong's policy for regulation of land use and real estate development and how it could contribute to sustainable urban development (Chan and Yung 2004). The second paper was addressing the transportation preferences of citizens in Hong Kong (Cullinane and Cullinane 2003). The participants were asked to compare the sustainability initiatives in their own cities with the policies in Hong Kong and as experts, provide some recommendations to help Hong Kong improve its policies. Also, they were asked to provide three main priorities to improve the public transportation ridership in their home cities by using the insights from the papers. The structure of these articles were less complicated in comparison to the article about governance of Istanbul. I had a special attention in making this choice because as discussed in the Istanbul case, our learners had some difficulties to extract the analytical framework which was underlying the arguments of the paper about governance of Istanbul and use it for analyzing the governance structure of their own city. So, by choosing two papers which were more straight forward to understand, I hoped that our practitioner-participants would be able to conduct a simple comparison between Hong Kong and their home city along the main lines of argument in the proposed papers. As it will be discussed in the coming paragraphs, this strategy proved to be beneficial to improve the structure of the participants' essays.

An interesting observation in designing the preparatory assignment of the Hong Kong module was an initiative by one of the participants who proposed to use some 'videos' to become more familiar with the context of urban life in Hong Kong, besides the perspective of academic papers and published policy documents. Just a few days before the date I was supposed to send the preparatory assignments to the group of participants, one of the participants, working in an NGO, sent me an email and proposed to have some 'informal material' in the package of preparatory activities for the Hong Kong module. She indeed had searched for several videos about the living conditions in Hong Kong and proposed to share her video list with other participants as well. I found her initiative to be very important to provide a stronger sense of ownership about this learning program to our participants.

So, after some consultation with her, I prepared another question as part of our 'formal preparatory' activities for the participants. In this preparatory activity, which the role of this participant who suggested it was explicitly acknowledged, the participants were asked to watch a short video (around 25 minutes) about Hong Kong's housing challenges. They were asked to reflect on the widely appraised idea of high density, highly integrated and efficiency oriented urban development policies by using the insights from this video.

More precisely, the participants were asked to answer the following questions (text adopted from the instructions which have been shared with the participants):

"a) Read the following 3 articles as the mandatory readings of the HK module:

- Planning problems are Wicked Problems (Rittel and Webber)*
- Is the development control legal framework conducive to a sustainable dense urban development in HK? (Chan and Yung)*
- Car dependence in a public transport dominated city, evidence from HK (Cullinane)*

b) Watch the following short video which was found and kindly sent to us by [name of one of the participants]:

http://www.youtube.com/watch?v=TwFv_RDtmb0

1) In 2-3 pages, please explain what is your evaluation of the Rittel article (Wicked problems)? By which points in the article you agree? Which points are not convincing for you? Why? What is your reflection on the concept of Wicked Problems on the basis of your own working experience?

2) In 2-3 pages, please explain how your own city has tried to address the issue of Sustainability (planning initiatives, civic society initiatives, governmental policies, etc.) and briefly compare it with the HK case in the article of Chan and Yung. What can you improve in the initiatives of your own city by looking at HK? And what is your suggestion to HK based on your own experience?

3) In 1 page, please explain what will be the first 3 challenges that should be addressed in your own city if your city decides to reduce the percentage of personal car usage, based on the insights from HK car ownership survey?

4) After reading the articles and watching the video, what do you think is the missing part of the puzzle of optimized, planned cubic cities such as HK? What is your alternative? Please reflect in 1-2 pages."

In the coming pages, I try to highlight the main points from the participants' answers to these questions.

4.3.2.5.1 Selected quotes from the participants' essays

Question 1)

The participants' responses to the first question of the preparatory assignment, which was aimed at reflecting on the Wicked Problem article by Rittel and Weber, include a wide variety of points. In general, almost all of the participants could understand the article and reflect on its main arguments to some degrees. However, their approach and depth of reflections varied very much.

For example, one of the participants who had an engineering background and was mostly active in the private sector as well as another participant who was a politician in a local government in Mexico could understand the paper and appreciate its arguments, but could barely reflect on it from a critical point of view:

"... I think the topic of this article in particular is one of the most important and significant that we cover in this course. ...In the planning process of a city when you think you fixed a problem and immediately new one appears. It may take many years and will always continue to appear." [R.P.3]

"I totally agree with the article, the planning issues are more complicated than theory, they are unique and unrepeatable. Definitely, the kind of problems that planners has to deal with, are totally different from the scientific ones, because they are not verifiable and hardly measurable." [V.P.3]

However, this was not the case among most of the other participants. Some of the participants could reflect on the paper's argumentation by looking at it from a very broad perspective, while others have reflected on the paper's arguments by referencing to their practical experiences and some others were even criticizing the logic behind Rittel and Webber's arguments.

For example, our Brazilian participant provided a summary of main points of the argument and only reflected on the arguments of the paper in a very broad manner by referencing to his experience in the real world practice of dealing with urban challenges:

"...In conclusion, my work experience endorses most of the concept of wicked problems. Public policy issues are definitely wicked and must be analyzed with different lens. However, we could never forget that real life is usually different from theory. In other words, the best solutions would be found with a more interdisciplinary approach, considering basic sciences, social science and so on." [J.P.3]

Or another participant from Mexico had a relatively abstract attitude in discussing the article with special focus on the definitions which had been used in the arguments:

"... Rittel and Webber pose a point that doesn't convince me at all. Social problems are never solved, they just re solve over and over again. I think that if we get to our objective, the problem is solved. It's true that poverty and insecurity never will be solved, but if we really want to solve those problems, that doesn't has to be our objective..." [L.P.3]

Some other participants were using a mixture of abstract and practical arguments in analyzing the paper. For example, our participant from Venezuela, who was trained as a civil engineer and had worked as an urban planner for several years, criticized the argument of the paper, proposed her own arguments on how urban problems should be addressed and supported her claims by discussing a case from her job experiences:

*"After reading the article I'm not convinced with the statement **"There is no definitive formulation of a wicked problem"**. It's totally true that most of the planning problems are wicked problems, but they are not wicked problems because they cannot be determined or formulated... in my opinion the Local Government could face the challenges presented, by means of a management oriented towards the*

*obtaining of concrete results; that is to say, management centered on making things happen, with follow ups and keeping a step by step alignment with the structured activities, giving priority to planning, coordinating, obtaining and constructing a consensus... . It is about optimizing the strategic urban management of Local Governments... . In my work experience, with regard to this action of urban management we have tried to materialize through a Municipal Plan, which includes a Policy of Integral Ordinance and Municipal Urban Development to be inclusive for all, two Programs: **The Urban Agenda and the Communal Agenda.**" [P.P.3]*

Another participant from Mexico with background in statistics and several years of working experience in NGOs, had a more philosophical approach in analysis of the paper:

"I think that the focus is a little bit superficial about the social problems, but in a very particular way it says a true that not always we want to hear... the difficult -or impossible- task in finding solutions for essential, key problems in society. ... I am absolutely agree with the article and its effort in making a clear difference between wicked problems and objective, scientific, measurable, problems. But, and this is a big BUT, I do not think that every part of a wicked problem is a "wicked part". I think that even if we are talking about different topics, spaces, even different stages of history, it will be very useful to describe every part of a situation in the most detailed way..." [B.P.3]

The fact that the participants could capture the main arguments of the paper and reflect on it by using examples from their personal experiences or simply expressing their point of view about the arguments of the paper was an important observation for us that highlighted the competency of most of our practitioner-participants to analyze complex new ideas by reflecting on their own experiences, and if not by using abstract argumentations. Analyzing the content of the participants' answers and argumentations had some other important learnings for us, as well. Indeed, almost all of the participants have analyzed the arguments of the paper against the criteria of 'practicality'. In other words, their main focus in analyzing the arguments seemed to be whether or not this idea can help improving the practice and 'solve problems'. So, even if the arguments of the paper could completely make sense from an abstract point of view, the practitioners' reflections on them was mainly based on its usefulness in practice which was an interesting observation.

Question 2)

In the second preparatory assignment, participants were asked to discuss and compare their cities' sustainable urban development initiatives with the case of Hong, by using the Chan and Yung (2003) paper. As briefly discussed in the previous paragraphs, based on the learnings from the preparatory assignments of the IGLUS-Istanbul module, I decided to choose a more clearly structured article with a clear framework for comparison for this assignment to help the participants capture the framework of comparison more easily from the paper. The results of this strategy were mixed. Some of the participants could elaborate the sustainability initiatives of their home city and compare it with the

Hong Kong case by using the framework of the paper while some others could not establish any references to the paper and developed their arguments solely on the basis of their personal point of view.

For example, our participant from Brazil prepared a very comprehensive answer to this question. He firstly provided some interesting facts about sustainable development initiatives in Rio de Janeiro and then summarized the main findings of the paper by Chun and Yung as well as their main recommendations to improve the situation in Hong Kong. Then, he critically analyzed if the findings of the paper and the recommendations of the authors are applicable for Rio de Janeiro or not, and finally proposed his own recommendations for improving the situation in Hong Kong, based on his personal experiences:

"The public policies of mitigation and adaptability have been developed in many areas.... To give a specific example, the implementation of 150 km of BRTs and the construction of 300 km of bike lanes will have a great impact in carbon emissions. Finally, the government has public campaigns to engage citizens like: the "zero trash" which stimulates people to do not throw garbage in the street. [He then summarizes five key findings and continues that] Comparing to Rio de Janeiro, I would say that number 1 do not apply because we have only one department that deals with land lease, urban planning and building regulatory. I believe that number 2, 3 and 4 have some similarity with Rio but we have to be careful with the business bias. We need to somehow find a middle ground between business and public interest. Finally, number 5 is definitely an issue in our city. The urban design has limitations and we still don't know how to deal with it.... [He then summarizes five key recommendations of the paper and continues that] I believe that the first recommendation could be dangerous. Mixed zoning should be stimulated but with well-defined criteria's. Transfers development potential from restricted sites to adjoining site and reduction in pollution control could be good for the business but bad for the citizens. Regarding the administrative recommendations (2, 4 and 5) I think its fine. Finally, the recommendation of the design projects, as I mentioned, is the main idea that I got. ... In conclusion, if I could give any suggestion to Hong Kong according to our experience I would talk about inequality and citizen engagement."

However, not all of the participants followed such a comprehensive and organized structure in developing their response, as their Brazilian peer did. For example, a participant from Mexico, working as a civil engineer, was providing concrete examples of sustainability initiatives in his home city in at least three important areas, but could barely reflect on the findings of the paper about Hong Kong:

"The sustainability of cities from my point of view should include solutions to three main issues: the proper use of natural resources, planning for land use and encouraging the use of more efficient transport systems. ... Currently in the Metropolitan Zone of Guadalajara are working very aggressively on the issue of sustainability... Not long ago the partial plans and the land use plan was amended which has fostered the densification of urban areas. It is currently promoting mixed land use to exploit physical space, on the other hand the issue of regulation, local governments in the metropolitan area of Guadalajara have created incentives for developers looking to somehow benefit the environment and sustainability of the city. Another strategy that has been generated to benefit sustainability in the metropolitan area is to implement the usage coefficient maximum soil, so any developer looking to build on this maximum must cover an extra tax that will be used for the benefit of the area affected." [R.P.3]

Another participant from Mexico discussed the same topics, but in a more critical way and raised the importance of 'holistic' perspective in addressing sustainability challenges:

"Generally, I could conclude that in my municipality the current programs are deficient from the perspective of public policy, because they are not holistic, that is where the division among different jurisdictions in government; federal, state and local, the housing policies, credit, etc. are under federal jurisdiction; the infrastructure and human settlements are under municipal jurisdiction, and both actions are not transverse nor decoupled from each other" [V.P.3]

An interesting point among the answers of the participants to this question was some critical reflections on the presented experience of Hong Kong. For example, one of our Mexican participants firstly criticized the governance obstacles underway of sustainable development in her home city, but then continues to also question the validity of the Hong Kong approach for other contexts:

"Government land use, environmental design control, land use zoning, planning control, building control and urban renewal are topics that Zapopan's Municipality is working on. ... The fact is that each 3 years the municipal president change, each new leader has its own ideas with its own plans even if both are from the same party. Hong Kong is a compact city and it claims for having two attributes, the physical compactness and how functional it is in terms of the mix of daily activities, maybe they get in to at some point but what about other issues of quality of life; that reflects that they are missing something. A doubt for me is about the standards of a compact city, what about degrees of compactness and how much is related with sustainability, which is a big question because that will depends on cultural issues, needs and resources, so it's difficult to put concrete standards or standards with numbers." [L.P.3]

And in the same line of thinking, another Mexican participant raised a more fundamental doubt about the idea of compact and efficient spatial structures as a main pathway toward sustainable urban development and highlighted the importance of stakeholders' involvement and values:

"Maybe if the city could have more space for the citizen participation, new forms of technology in design, engineering, ecology and sustainability could be planned and implemented not just from the point of view of an emblematic and productive metropolis, but as a city more inclusive and human." [B.P.3]

Some other participants were mainly focusing on the planning processes and governance practices that affect sustainable development plans in their own cities, but could not critically reflect on the paper or provide practical examples from their personal experiences.

"Planning is a core component of sustainability and Istanbul Metropolitan Municipality prepares a master plan every five years as many developed cities do. A separate transport master plan is also in place; however the first one was prepared only two years ago. These plans are a good sign in terms of general city sustainability however how much authorities abide by these plans is open to debate." [U.P.3]

The fact that the participants could complete this exercise and provide a relatively structured analysis of sustainability initiatives in their home cities and critically reflect on the case of Hong Kong was a promising progress, especially when compared against the weaknesses in the preparatory assignments of the previous module (IGLUS-Istanbul). However, the answers to this part of the assignment also showed that our participants have different levels of competencies in conducting such comparative-reflective exercise and there is a lot of room for improvement in this area. In addition, in most cases the participants showed to be reluctant to use explicit frameworks or structures to compare cases and/or reflect on their own practices and mainly rely on their personal argumentation abilities.

Question 3)

The third question of the IGLUS-Hong Kong's preparatory assignment was a rather simple question that was asking the participants to use the insights from the article by Cullinane and Cullinane (2004) and highlight three main priorities that they think should be addressed in their own cities to reduce the private car ridership in favor of increased utilization of public transport network. Almost all of the participants could highlight important points from the perspective of transportation discipline such as improving the quality of public transport services, reducing the incentives to own a private car, as well as cross-disciplinary points such as reducing the required travel distance by means of spatial planning, etc. For example, the participant from Venezuela, who was a civil engineer and experienced as an urban planner, highlighted the importance of physical as well as institutional initiatives, from a transportation system management perspective, to achieve this policy goal:

- "1. Improve infrastructure, offer security and comfort.*
- 2. Improve the formulation and management of urban transport management (investment, production and social control).*
- 3. Establish and promote policies that motivate the use of public transport." [P. P. 3]*

As examples of cross-disciplinary thinking about this policy goal, most of our Mexican participants pointed to the cultural issues as well densification policies, in addition to improved public transportation services and reducing subsidies in favor of car ownership:

"... And finally the third challenge I think is important is the cultural challenge. Not only in the city of Guadalajara, but throughout the country having their own vehicle is synonymous with wealth, tell me what car drives and I will tell you who you are. The greatest wish is for a citizen to own a home and own car. So if we want to avoid using the car would be equally important to attract people awareness campaigns to inform the importance of reducing car use." [R.P.3]

- "The 3 main challenges that specifically face Guadalajara Metropolitan Area would be:*
- 1. To reduce the daily distances traveled between the place of living and work areas and recreation.*
 - 2. Having an efficient alternative to public transport, an Integrated System*
 - 3. Increase the safety and quality of public space." [H.P.3]*

In addition to raising priority points, an interesting observation in some of the participants' responses was their strong focus on practical challenges in realizing these generic ideas:

"... However this is not simple at all, is enough to be realized of the points listed above to understand it, however, taking advantage of the improvements that are taking place, and living the deficiencies of the public transportation is the best way to get involved in this problem and possible solution."

Another interesting observation in responses of the participants to this question was their frequent use of examples from their experience to support their positions. For example, our Turkish participant who was working for the transportation authority of Istanbul was developing his arguments around the real example that he had from his job experience and not purely abstract points that he could find in the article:

"A good example from İstanbul in diverting residents to public transport and reducing private car usage is the Metrobüs system. It is a 52 km long dedicated lane and now it carries as much as 800.000 passengers in a day. When the passenger count of Metrobüs over years is examined it is clear that people are ready to leave their cars and use public transport. Metrobüs is now at its peak in terms of passenger capacity.... So, the first thing that local authorities should do may not be to compete with private cars and start public transport projects but try to prevent car acquisition at the first place."

The fact that the participants were showing stronger signs of thinking about complex urban challenges, in this case transportation issues, in a more holistic and multidisciplinary way was a promising progress that we could observe in this third module of the program. In addition, the participants attachment to their practical approach in thinking about urban challenges was very meaningful for us and pushed us even more to materialize our aspirations to have a well-balanced analytical-practical approach in the program.

Question 4)

The fourth question of this preparatory assignment was an open question which asked the participants to reflect about the 'missing part of the puzzle of optimized, planned, cubic cities such as Hong Kong', based on the preparatory materials which they had studied and watched (readings and videos). Some of the participants were answering the question by looking at the larger socio-economic context while some others used their learnings from the previous modules of the program and preparatory materials to answer the question. For example, our participant from Venezuela raised an interesting point about the importance of considering the larger socio-economic context in combination with citizens' perception and values for analyzing policies in the urban level:

"Finally, I think that the missing part of the puzzle of optimized, planned cubic cities as HK, is the consideration of how people understand the model of sustainable city from a capitalist vision (where the weight of development is in the private sector) or from a socialist vision (where the weight is in the state). Hong Kong is a city that evolves as an enclave of capitalism in a communist country. Its high

density is the result of the maximum exploitation of the territory that was controlled, consequently, a highly segregated city divided was generated, a situation that has now kept its control has returned to China. This issue would be important to deepen during a variable bit mentioned in the essay: each city is a reflection / product of their social reality as well as the political model of government and the country where it is located.” [P.P.3]

Our participant from Brazil used his learnings from the previous modules of the program to answer this question, with a special focus on the concept of governance.

“...the strong hand of government probably produces an optimized city. In terms of the performance of the city, I believe that Hong Kong is in the top of the rankings... Saying that, what is the missing part? As I mention in the exercise 4 [he is referring to the second question], I believe that inequality and governance are the answer. ... As we have learned in IGLUS, governance of urban systems involves many actors: government, business, civil society, NGOs, etc. The protests of last months have shown that citizens want to participate in the decisions. They want to be listening. In addition, I am not sure if other actors like NGOs have freedom to express their opinion. I believe that an optimized city is not enough to generate an integrated society where well-being is the main asset. When I think about alternatives, I could mention that the use of technology offers a great opportunity for governments to engage different actors to improve the quality of life in cities.” [J.P.3]

One of the participants from Mexico used the concept of ‘wicked problems’ to answer this question:

“... It seems that you have solved the problem. But back to the first part of this paper, we think we have everything figured out but in the end there is always something we cannot take for granted. Ultimately the planning of the city is and will remain a “wicked problem”.” [R.P.3]

Another important observation among the participants’ answers to this question was the focus of our Turkish participant (who was the newest participant in the program among the group) on one specific sector (housing) in analyzing the underlying causes of problems in Hong Kong, while most of the other participants were already showing some signs of analyzing the problems from a more holistic and multidisciplinary perspective.

“As the people of Hong Kong say it, they need a more social system in which they are provided good housing opportunities and have a say in local policies. As long as the housing sector is one of the main income items for the administration and Hong Kong is managed like a company, such problems can emerge every now and then.” [U.P.3]

Based on the participants’ answers to different questions of this preparatory assignment, and having in mind my observations from the IGLUS-Guadalajara and IGLUS-Istanbul modules, it seemed that the participants could effectively use the preparatory reading materials of the IGLUS-Hong Kong module. This was a positive sign that our attempts to keep the balance of practicality versus

theoretical depth in our training approach was relatively successful in this module; at least in choosing the right balance of analytical-practical concepts and frameworks in the preparatory phase of the module. In addition, the ability of the participants to reflect on their learnings from the previous modules of the program when facing with new cases and using their learnings in their analysis of complex problems was a promising sign that our training approach and strategies could result in an acceptable level of coherence among the different training modules of this modular Executive Master program, which was a major concern when we started the program. The fact that most of the advanced participants could use their learnings from the previous training modules as well as the preparatory articles to analyze an open question (last question of this preparatory exercise) from a holistic point of view was a very important observation for us, because it showed that the participants are making some progress in each module and can benefit from this learning experience. This argument is more rigorously supported when one compares the answers of the more advanced participants with the answers of those participants who had joined the program at a later stage.

After all these preparations, it was time to start the training module in Hong Kong. In the next section, I will go into details of my observations during the two weeks of IGLUS-Hong Kong training module.

4.3.3 During the module (Action and Observation)

The IGLUS-Hong Kong module started on Monday 17 November 2014 at the campus of Hong Kong University of Science and Technology with a class consisting of 19 participants. In this section, I will elaborate on my most important observations from the two weeks of training module.

4.3.3.1 First day of the program – EPFL sessions

The main objectives of the first day of the IGLUS-Hong Kong module were to further clarify our conceptualization of city performance within the IGLUS framework and to provide the participants with the foundations of systemic perspective for understanding complex urban problems. In addition, the first day of the program also was aimed at outlining the curriculum of the module to the participants and providing some contextual information about the city and its governance structure.

We started the day with a short welcome and introduction, which were conducted by Prof. Finger and our main contact at SHSS-HKUST. After this formal start to the module, we provided the participants with the latest updates about the IGLUS project and discussed the evaluations results of the IGLUS-Istanbul module with the class. As discussed previously, we decided to do so in order to reinforce our core message that our participants play a key role in this project and their opinions are highly important for determining the direction of the project.

After this opening session, Prof. Finger presented an overview of academic literature about urban performance. The main aim of the session was to provide a rigorous and theoretically coherent conceptualization of city performance to our participants.

Proposing city performance indicators and correspondingly ‘city rankings’ have become trendy from 1980’s (Rogerson 1999) and have been of special importance among consulting firms, cities and international organizations since the 2000’s. With this growing importance, a large number of indicators, indexes and rankings have emerged during the 2000’s, all claiming to measure some important aspects of performance in cities (e.g. ‘City Resilience Index’ by Arup and Rockefeller foundation, ‘Quality of Living Ranking’ by Mercer, and ‘Global City Indicators Facility’ by the Global Cities Institute). However, we realized that relying on these indicators and measures could not satisfy our needs for a *clear conceptualization of city performance from a holistic and multidisciplinary point of view* in the IGLUS framework. So, in this first session of the IGLUS-Hong Kong module, Prof. Finger presented a summary of several papers that conceptually discuss the notions of *efficiency, resilience, quality of life* and *sustainability* in cities (Prud’homme 1999, Felce and Perry 1995, Jepson and Edwards 2010, Ernstson, et al., 2010, Van Kamp, et al., 2003) and proposed his own synthesis of these performance dimensions (Figure 4.3.1).

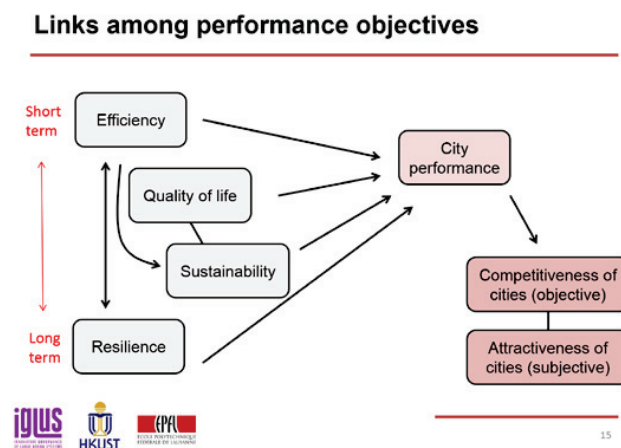


Figure 4.3.1 – Links among performance objectives

Source: Adopted from Prof. Finger presentation, IGLUS-HK training module

He then discussed the linkages between governance and performance in cities by referring to our general IGLUS framework and by also elaborating on the role ICTs can play in achieving different performance dimensions.

After these conceptual illustrations, he opened the discussion to the participants and asked for their critical reflection on this synthesis of performance dimensions; as professionals in the field (whether they find it useful, if they see overlaps and redundancy, if his arguments are reasonable to them, etc.). The result was a dynamic discussion with the participants. Especially, some participants were

pointing to partial redundancy of these performance dimensions and ambiguity of the arguments for classifying them in separate categories. Overall, the participants seemed to understand the argumentations, but were not fully convinced, nor impressed, about the practicality and usefulness of conceptualizing city performance in this way. This feedback triggered a series of further discussions between Prof. Finger and I over the next few days of the program, which eventually resulted in our new conceptualization of urban performance based on the conceptualization of cities as socio-technical systems. In the next sections, I will come back to these changes, which made the Hong Kong module to be ‘turning point’ in the evolution of our conceptualizations throughout the program.

The next session was led by myself, where I led a discussion on the concept of ‘wicked problems’ and its implications for management and governance of large urban systems. As briefly discussed in previous sections, I found a discussion about the concept of Wicked Problems to be a useful input for the IGLUS-Hong Kong module; because it could help translating the relatively abstract ideas from the ‘systems approach’ into more practice-relevant arguments to illustrate the complexities in addressing urban challenges and also help explaining why holistic-multidisciplinary approaches are necessary in this context.

I started the session with asking the participants to share their personal experiences with development ‘and’ implementation of long-term plans for tackling urban problems in their jobs. By asking some follow up questions, I could highlight some of the main issues that were raised in the ‘wicked problems’ article that had been also present among the experiences that were shared by participants. These preliminary discussions with the participants helped me to highlight the contiguity of the arguments presented in the paper and real-world problems (examples from participants’ professional experiences). Once I could draw the participants’ attentions to this important link between our analytical discussions and their practical challenges, I started to give my prepared presentation about the concept of wicked problems. The session became very dynamic and the participants, especially the practitioner-participants, actively contributed to the discussions by sharing their personal examples to support or criticize the arguments made in the article. The fact that the participants were able to understand this concept, and the argumentations behind it, and relate it to their professional experience was a great sign for me that my intention to have a balanced analytical-practical approach was being achieved in this session.

After covering the main points of the article, which highlighted the complex nature of addressing urban challenges, I opened a new line of discussion about the implications our discussion about Wicked Problems can have in the practice of dealing with complex urban problems. In this section, I benefited from some supplementary arguments from Russle Ackoff’s contributions about *interactive planning processes in systems and messes* (Ackoff 1997), which elaborates the difference between ‘problems’ and ‘problematic situations’⁷¹ and the importance of *synthesis*, instead of *analysis* when addressing complex problems (Figure 4.3.2).

⁷¹ In short, Ackoff points to the fact that decision-makers always have to extract problems from the situation in which they find themselves; because NO problem is out there as a purely objective state of affairs. Thus, practitioners should always be aware that the problems that they perceive in their practices are not stand-alone issues, but are always part of a larger system of problems.

This methodological discussion about addressing complex urban problems based on the arguments of systems perspective was also very well received by the participants. In fact, referring to these concepts and arguments from the systems perspective proved to be helpful for clarifying why we have chosen to strongly focus on the importance of holistic-multidisciplinary approaches in dealing with complex urban problems, and for distinguishing our arguments from the common (mis-)use of phrases about adopting a holistic and multidisciplinary approaches to deal with urban problems.

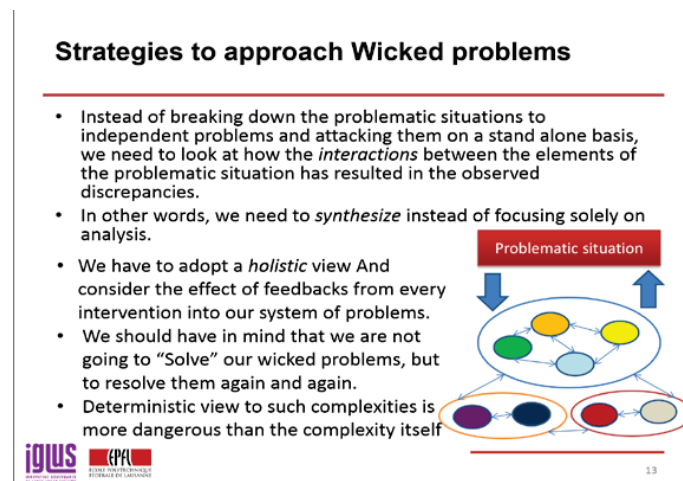


Figure 4.3.2 – presentation slide from theoretical opening session (strategies to overcome Wicked Problems)
Source: Author’s presentation in IGLU-HK module

In addition to this methodological discussion, I also prepared a list of some practical strategies to deal with ‘Wicked Problems’ in the urban context and exposed it to the participants’ critical reflections (Figure 4.3.3)⁷². This open discussion also became very engaging for the participants as they were actively expressing their opinions and asking critical questions about the highlighted strategies (*social process* and *importance of actions*) and their applicability in practice.

⁷² In addition to reading the urban literature, I made use of knowledge I had previously gained from my educational background in business and management for formulating these broad strategies.

Strategies to approach Wicked problems

- Approaching wicked problems (= network of problems = social mess) is a *social process*!
 - Many stakeholders and their Values should be taken into account
 - The many stakeholders should not only be asked for their opinions, but should committedly get involved in addressing the wicked problem
 - *Communication and management of information* is seen as the key to implement such a social process (Issue Based Information System example)
- Action is an indispensable part of dealing with wicked problems, *analysis paralysis* is a common trap.
 - But action should not turn into crisis management, we need to make mistakes than we can learn from them (riding a bike)



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Figure 4.3.3 – presentation slide from theoretical opening session of IGLUS-Hong Kong
Source: Author's presentation in IGLU-HK module

For the final part of the theoretical opening sessions, Professor Finger and I led a short discussion about the importance of 'governance' to deal with complex urban challenges and the implications of the day's discussions to the general IGLUS framework.

In comparison to the theoretical opening sessions of the IGLUS-Guadalajara and IGLUS-Istanbul modules, in the theoretical opening sessions of the IGLUS-Hong Kong module the participants had more 'reflective' contributions about the content of the sessions. Indeed, the participant seemed to become more capable to bring insights from their professional backgrounds to the class discussions. And in return, improve their competencies to critically reflect on the main points of discussion by referring to their practical experiences. This resulted in high quality discussions in the class and ultimately higher satisfaction of participants from their learning experiences. This claim is also supported by the result of evaluations of these sessions (getting the highest evaluation scores among all the previous theoretical opening sessions).

After covering our main theoretical concepts during the first day of IGLUS-Hong Kong module, we started to host contributions from the partner university, industrial partners and international organizations. As with the other case studies reported in this thesis, I will not explain the detailed contents of all these training sessions. Instead, I will only focus on the main incidents that have valuable information about the learning dynamics of the participants, and ourselves. The main incidents of the IGLUS-Hong Kong module, which are explained in more detail in the coming pages, are:

1. One-lecturer-per-topic policy of HKUST / Strong disciplinary approach
2. Lack of critical discussions from the lecturers (cultural differences, political sensitivity)
3. Limited input from the local participants to the discussions
4. Success of the methodology/project sessions to help the participants to better formulate their research projects, by using group learning strategies

5. Successful role-play sessions with UN-Habitat
6. Accumulation of examples from the IGLUS-Guadalajara and IGLUS Istanbul modules and covering another new infrastructure (Water and waste water)

4.3.3.2 Main Incidents during the Hong Kong training module

4.3.3.2.1 *One-lecturer per topic policy of HKUST*

As discussed in the previous pages of this case study, our collaboration with our partner university for organizing the IGLUS-Hong Kong module was not as smooth as our previous experiences with partner universities. In this module, despite all the persistence from my side, and support of Prof. Finger as the academic director of the program, to urge the partner university to involve more lecturers in the training module, the partner university proved to be reluctant to allocate more than one lecturer to any of the covered topics during the module. The main argument of the SHSS-HKUST for allocating a limited number of lecturers to the training sessions was lack of enough competencies among HKUST faculty members to discuss issues related to governance-management of urban infrastructures due to their strong focus on technical disciplines.⁷³ In addition, the partner university was highly reluctant to approach other knowledgeable lecturers from the local institutions, which was a common practice in organization of the IGLUS-Guadalajara and IGLUS-Istanbul modules⁷⁴.

Due to the difficult collaboration progress with this partner university, and the significant possibility that they simply withdraw from the collaboration agreement that was agreed upon beforehand, I decided not to adopt a very strict position in dealing with this one-lecturer per topic policy adopted by our host university. Although this was a significant shortcoming in organizing the training module from my perspective, the logistical complications that could happen in case of cancelation of the module, with a short notice for our international participants was a significant consideration that urged us to compromise on this issue.

As a result of this arrangement, every topic was covered only once in the program and only by one lecturer. This resulted in two main challenges during the IGLUS-Hong Kong module. Firstly, the participants could not have a second opinion about any of the covered-topics during the program and had to rely on only one person as their main source of information. Presence of a single perspective on issues was somehow contradictory to our training philosophy which was about the importance of

⁷³ E.g. the university did not plan any dedicated session on the transportation system in Hong Kong, even though we had a strong emphasis on covering this topic in the module because the transportation system (and the Octopus payment system) in Hong Kong is one of the world's benchmark examples of success in this sector and was even used as example in several sessions of the IGLUS-Guadalajara and IGLUS-Istanbul modules.

⁷⁴ After a long negotiation process, SHSS-HKUST finally agreed to invite an external professor from National Taipei University and another external professor from University of Hong Kong.

holistic and multi-disciplinary perspective in addressing complex urban challenges⁷⁵. Secondly, this arrangement made it difficult to answer the consecutive questions that were raised for the participants after the training sessions and during the field visits, informal visits from the city's infrastructure or other training sessions (inter-related topics).

4.3.3.2.2 Lack of critical discussions and reflections from the lecturers (cultural differences, political sensitivity)

Another important observation during the IGLUS-Hong Kong training sessions was the disciplinary and non-interactive teaching style of the lecturers. The disciplinary-technical approach of lecturers, especially when the lecturers were coming from academic institutions, was not unique to the IGLUS-Hong Kong module. However, what was relatively new compared to the previous modules was that the local lecturers in the Hong Kong module were very much inclined to 'lecture-based teaching' and not 'interactive discussions'. For example, some of the local lecturers have prepared a large number of presentation slides and were inclined to give 'their' lectures to the participants and in some cases, felt frustrated when interrupted by the participants' questions (especially during the sessions on low carbon energy systems, waste water treatment and infrastructure and new town planning). In addition, the lecturers were seldom raising negative points or shortcoming when discussing the Hong Kong or main land China cases.

My main and first strategy to deal with these two challenges in IGLUS-Hong Kong was to play a more active role in moderation of the session (like what I did in the previous modules) and direct the class discussions by asking non-disciplinary questions about management-governance challenges or providing examples from previous sessions/modules of the program and ask for reflection of the lecturer on differences between the situation in Hong Kong and examples from previous modules. However, and similar to the situation in IGLUS-Istanbul module, I soon realized that our local lecturers are often reluctant to provide critical feedback or engage in controversial discussions about the governance-management practices in city. This could be due to the cultural differences among the western and eastern cultures in academic debate styles and/or the political sensitivities in Hong Kong during the time of the IGLUS-Hong Kong module⁷⁶. To make sure that the lecturers are feeling comfortable to openly discuss the critical issues with the class, without being concerned about the session's video records, in some cases I offered to the lecturer if he/she prefers to shut down the camcorder. Despite all these efforts, we had limited progress in achieving the ideal class atmosphere

⁷⁵ In addition, this was also contradictory with our positive evaluation about 'panel sessions' which were a common practice during the IGLUS-Guadalajara module and our attempt to have more panel sessions in the program. By observing the shortcomings associated with this single lecturer practice in the class, we decided to organize more panel sessions in the IGLUS-Dubai module,

⁷⁶ Indeed, the Umbrella movement which was briefly mentioned in introduction of this case was a student led initiative and thus the professors could have been concerned about providing any comment which might provoke further criticism about the politics related issues during our IGLUS-Hong Kong module.

with regard to comprehensive and reflective discussions in the sessions of the IGLUS-Hong Kong module which were organized by the host university.

In the IGLUS-Guadalajara and IGLUS-Istanbul modules, the local participants' input to the class discussions was adding a second perspective to the class discussions which could open a path toward more critical discussions about the existing practices at the host city. In addition, our local participants' input could provide a secondary point of view about the discussion topics and helped us to attain a more holistic understanding of the local challenges. Based on these successful experiences, I decided to try a second strategy to get more critical inputs to our class discussion by asking our local participants in the module to bring a more critical local point of view to our IGLUS-Hong Kong discussions. The result of this initiative are discussed in the next section.

4.3.3.2.3 Limited input from the local participants to discussions

As explained before, one of our main objectives from recruiting local participants in the training modules was to enrich the training modules by bringing the local knowledge of the participant to the class discussions. When facing with difficulties to get critical feedback and reflection about the case of Hong Kong from our local lecturers, I decided to rely more heavily on the inputs from the participants to overcome this challenge. However, I soon realized that the local participants in the IGLUS-Hong Kong module are not getting actively involved in class discussions. Unlike the IGLUS-Istanbul module where the local participants were highly active in class discussions and provide their personal inputs to the class discussions, our local participants from Hong Kong were seldom providing inputs about the discussed issues in the class.

To deal with this situation, in the first step, I decided to ask our local participants, who were all Master or PhD students at HKUST, to play a more active role in class discussion by sharing their personal experience as citizens (and not necessarily experts) who know the living situation in Hong Kong and/or in cities in mainland China. To that effect, at the end of one of our training sessions in the first days of the program I asked the participants to further stay in the class and explained to them that asking questions and sharing their points of view is an important learning strategy in our training sessions. However, even after this informal session the inputs from our local participants remained very limited. So, I had to take another step and actively ask the participants to share their experiences about specific issues when I found an opportunity for such contributions during the sessions (e.g. process of citizens' participation in preparation of urban development plan, etc.). By doing so and creating more social pressure via asking direct questions from the class, some of the participants started to provide limited input to the class discussions about local challenges. However, these inputs were still far from sufficient when compared to the IGLUS-Guadalajara and IGLUS-Istanbul modules. Indeed, our non-Asian participants from HKUST (an Indian and a French Master students and one Iranian PhD graduate) were more active in class discussions compared to the local participants from Hong Kong and mainland China. But, these participants had limited background information about Hong Kong and their contribution were mainly limited to cities in their home countries. Based on this

observation, it was reasonable to assume that passive style of participation from our local participants might be due to cultural tendencies of Asian students and thus, further persistence to get these students to participate more actively in class discussions might not be an effective strategy.

Facing with the persistence difficulties to promote more critical discussions and reflections to our sessions from local lecturers and getting insufficient input from our local participants had some negative impacts on the quality of our training module in Hong Kong; especially with regard to our limited progress to understand the governance/management of infrastructures, and the city of Hong Kong, from a holistic and multidisciplinary point of view. However, it also resulted in a series of positive outcomes; namely a stronger focus on the importance of reflection sessions and further development of a more well-balanced practical-analytical framework to facilitate and systematize our discussions about governance challenges in dealing with complex urban infrastructure systems. I will come back to these point in the coming sections.

4.3.3.2.4 Success of the methodology sessions and helping the participants to better formulate their research projects, by using group discussions

Based on our learnings from the IGLUS-Istanbul wrap up essays as well as the positive feedback from the discussions about participants 'big questions' during the IGLUS-Istanbul module, we decided to allocate two specific sessions of the IGLUS-Hong Kong module to discuss research methodologies for practitioners and also to provide feedback to participants about their 'big questions' and how they should define concrete and actionable research projects to address their questions.

The session was splinted to two sections. In the first section of the session, Prof. Finger gave a lecture on the process of conducting research projects (developing a research question, research design, literature review, data collection, data analysis, etc.) and introduce some of the most common research methodologies that could be useful for our practitioner-participants (with a special focus on case studies). After this introduction, we asked the participants to spend some individual time to write their 'big questions' (a concern that motivates them to learn and to improve their practices in their job) and a 'research question' which they would like to study in their master project (a step toward addressing this 'big question').

After this individual time, we asked the participants to share their 'big questions' and 'research questions' with us and their peers. In addition to providing feedback about each participants' questions in the class by Prof. Finger and myself, we also asked the participants to provide feedback to each other by critically reflecting on their peers' research questions. Alongside providing feedback, we asked the participants to provide beneficial resources (data, previous studies, etc.) that they think might help their peers in answering their questions. Both I and Prof. Finger were actively involved in facilitating the discussions among the participants.

This session was very well received by the participants (according to my follow up discussions with the participants and results of evaluation survey). The session provided the participants with an

opportunity to think about their practice-originated questions in a structured and clear way and learn about well-defined versus ill-defined research projects (scope, availability of data, significance, etc.); not only by receiving feedback from their tutors, but also by thinking as a tutor when providing feedback to their peers. Indeed, most of the participants continued to work on their research questions after this session as well and referred back to me in the next days of the program with modified versions of their research questions and asked for feedback. The participants' feedback about this group discussion exercise was so positive that I decided to plan another session about the projects as part of the wrap-up sessions of the module, and more sessions dedicated to projects in the next IGLUS training modules (Dubai, Detroit-Chicago, Seoul and Dortmund).

4.3.3.2.5 Role-play (hands on) sessions with UN-Habitat

As discussed in the IGLUS-Istanbul case study and previous paragraphs of this case study, the promising results of our collaborations with non-academic partners of the project pushed us to think about more active role for these partners in the program. Especially after a series of discussions with the UN-Habitat City Resilience Profiling team and reaching an agreement to have a dedicated day about urban resilience in our training modules, the idea of closer collaboration with non-academic partners became one step closer to implementation. In the IGLUS-Hong Kong training module, we had the first dedicate 'resilience' day in the curriculum of our module. As briefly explained in the previous paragraphs of this case study (designing the joint sessions), I personally got in touch with one of the UN representatives in Thailand who was supposed to lead the resilience sessions of the Hong Kong module. Based on our learnings from the IGLUS-Guadalajara module about importance of hands-on sessions for the participants, and by considering our failure to effectively organize hands-on sessions in the IGLUS-Istanbul module, I proposed to design the resilience sessions as a combination of theoretical inputs, experience sharing and role-play sections. The UN-representative also had a very positive attitude toward organizing interactive sessions.

In these sessions, our lecturer from UN-Habitat firstly presented some theoretical inputs about UN-Urban Agenda and a conceptual framework about urban resilience (Figure 4.3.4). In addition to theoretical and conceptual inputs, she also provided several practical examples by using her personal experience from Afghanistan and other countries which was highly interesting to the participants and could bring their attention to the relatively long class discussions.

After this lecture-based section of the presentation, we had a role-play activity. In this part of the session, the lecturer firstly illustrated a real case study from the Tsunami disaster in 2011 in one of the coastal cities of Japan. After providing the details of the case study, she splinted the participants in 4 groups (Civic society representatives, Businesses, Humanitarian aid agents and city government officials). Each group was asked to prepare a list of priorities and strategies to achieve them to deal with this shock. After spending some time for preparation of these lists and strategies, she started a facilitated dialogue among the participants who were representing different roles. In this discussion

process, she skillfully extracted some important points from participants' inputs and reflected on them by using her real experience in this city after the Tsunami hit.

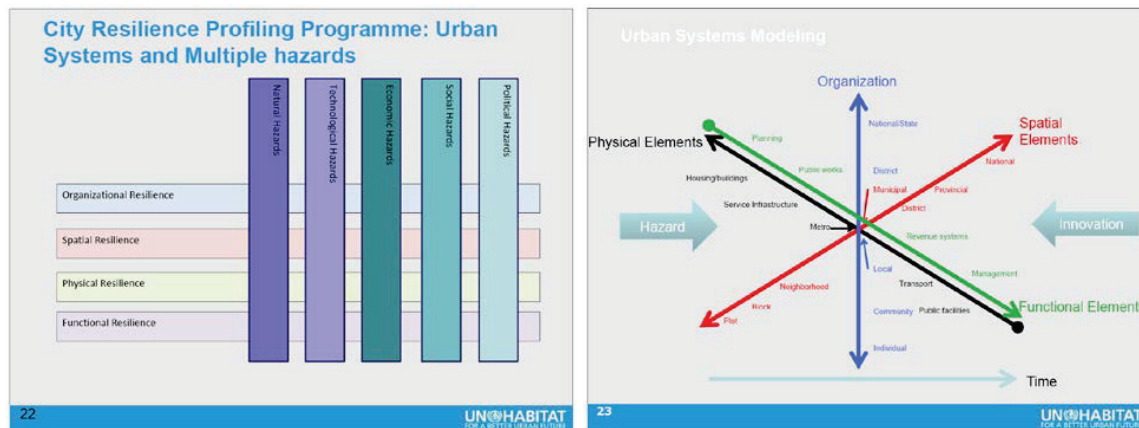


Figure 4.3.4 – Slides from UN-Habitat presentation about urban resilience
Source: presentation of representative of UN-Habitat' resilience team in IGLU-HK module

The content of the session and its hands-on and interactive structure was highly appreciated by the participants. Based on this positive experience with role-play sessions, we tried to conduct more sessions with this structure in the IGLUS-Dubai module which will be discussed in the next case study.

4.3.3.2.6 Accumulation of examples from the IGLUS-Guadalajara and IGLUS Istanbul modules and covering a new infrastructure (Water and waste water)

As explained in the IGLUS-Istanbul case study, introduction of 'green infrastructures' during the IGLUS-Istanbul training module, in addition to accumulation of example about different infrastructures which were discussed during the IGLUS-Guadalajara and IGLUS-Istanbul modules raised some intellectual challenges to our conceptualization of cities and governance of urban infrastructures. To address these intellectual challenges, I started to develop a more detailed conceptual framework and plan more regular reflection sessions that could enable us to compare different cases that were illustrated in each module, as well as the cases across different modules with each other.

In IGLUS-Hong Kong, our conceptualization challenges became more elaborated due to introduction of the water and waste water infrastructure to the program for the first time as well as further accumulation of examples from the IGLUS-Hong Kong module to our existing stock of examples from the IGLUS-Istanbul and IGLUS-Guadalajara modules. Indeed, we had recognized that by providing a series of lectures on different topics (e.g. different infrastructures) and from different perspectives (e.g. different localities, different disciplines), our main objective in the program - to help urban

practitioners to address complex urban issues from a holistic-multidisciplinary point of view - cannot be fully materialized. This problematic situation was one of the main motivations to run this research project alongside the IGLUS-training program to understand the challenge underway of realizing this goal and to develop strategies to overcome them.

During the IGLUS-Hong Kong module and while moderating the discussions about different cases that were presented by our local lecturers about Hong Kong and Mainland China, by reflecting on my personal experience and observations in the past two modules of the program, I better realized that a more detailed conceptualization of governance and performance of large urban systems is a key requirement for bringing coherence to seemingly dispersed pieces of information that were presented in our training sessions by different lectures about a wide variety of topics. And despite all the merits of our general IGLUS framework for facilitating discussions in the past two modules, it appeared to be short of enough details to provide enough structure in analyzing the continuously increasing number and diversity of cases that were being presented in the training modules.

For example, on the third day of the IGLUS-Hong Kong module, we had two sessions about water and waste water infrastructures in Hong Kong. Like many of the other sessions during the previous training modules of the program, the lecturer had a strong focus on presenting the technical and engineering details of this infrastructure. In line with my previous experience in such situations, I decided to raise more managerial and governance related questions about the financing mechanism for development and operation of these infrastructures, allocation of subsidies, impact of internal R&D activities of the organization in charge of Hong Kong's water and waste infrastructures on long term cost reductions, efficiency gains and system integration, etc. After this session, I had similar experiences in several other class discussions about smart city initiatives, housing development and low carbon energy transition plans in mainland China.

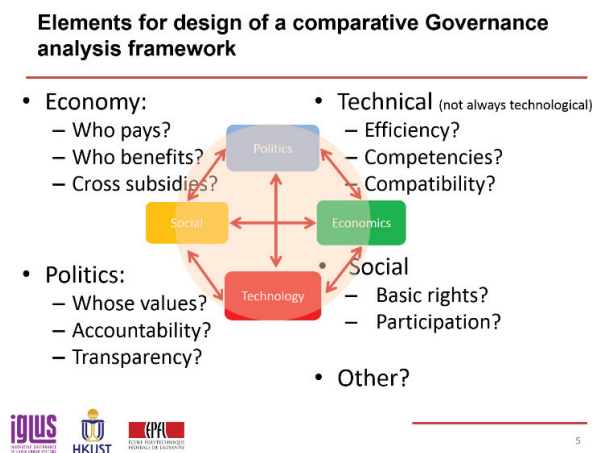
During my self-reflections on my daily practices in the Hong Kong module, I realized that I can further elaborate our general IGLUS framework alongside a series of *questions* which I often asked from our lecturers to guide their discussions to more governance-management related directions. This was the starting point for my systematic and practical attempts to develop a more sophisticated conceptual framework (compared to our general IGLUS framework), with a clearer link to our analytical arguments, in order to develop a toolkit that can help our participants to compare different cases with each other in a structured manner.

The initial result of this reflective practice was a simple list of questions and a workbook-table which I developed during the remaining days of the modules. I used the list of questions and the table in the reflection session (Figure 4.3.5) as a basis for launching a discussion with the participants and asking for their input and feedback to see whether they find it useful and relevant or not, and to do a simple exercise to compare governance structures in transportation infrastructures of Guadalajara, Istanbul and Hong Kong.

In this initial step for development of a more detailed framework, I was only recalling the interrelated nature of the four main pillars of our governance framework to each other (very similar to our arguments in IGLUS-Guadalajara module) and proposed some practical questions to understand each of these four dimensions. In later stages (after the Hong Kong module and during the Dubai module),

I tried to further clarify the interrelations among the four pillars of the framework and provide more details on each of them, so that it become more helpful for our participants to analyze complex governance challenges in different urban infrastructures, and in different contexts, from a holistic and multidisciplinary perspective.

In addition to the challenges for conceptualization of governance and my efforts to overcome them during the IGLUS-Hong Kong module, conceptualization of city performance was another intellectual challenge that had to be answered in IGLUS-Hong Kong module. As briefly explained in the previous paragraphs of this case study, after our initial presentation about different city performance dimensions in the academic literature and participants' feedback, we realized that we need to rethink about a proper conceptualization of city performance that can address our intellectual needs in the program. In other words, we once again realized that to provide meaningful theoretical inputs to the participants in the program we have to use the existing bodies of knowledge to *develop tailor made theoretical inputs* that can nurture our specific intellectual demands in the programs. More precisely, we were reassured that we *cannot* only provide a mixture of 'off the shelf' theoretical inputs to the participants and hope that such an exposure to a wide variety of topics and theories would enable them to transform their perspectives and address complex urban challenges from a more holistic-multidisciplinary point of view.



Case	Economy Who pays ? Who benefits ? Cross subsidies ?	Politics Whose values ? Accountability ? Transparency ?	Social Basic rights ? Participation ?	Technical Efficiency Competencies Compatibility

Figure 4.3.5 – Our first attempts to improve the general IGLUS governance framework in class discussions
Source: IGLUS-Hong Kong training material developed by the author

To that effect, after the first day of the program, both I and Prof. Finger started to rethink about the shortcomings of the first day presentation about performance dimensions and how we can overcome them. In this process, I found the systemic perspective to be a useful analytical lens to approach the challenge of conceptualizing city performance from a coherent perspective, and in line with our holistic-multidisciplinary approach. By reflecting on my own presentation about 'wicked problems

and systemic approach to urban challenges', I realized that if we argue that cities are systems of systems, then we should be able to conceptualize the performance of these systems according to system's perspective arguments. In my self-reflective thinking process, Russel Ackoff's definition of a system became a corner stone for thinking about the city performance. According to Ackoff (1997):

"A system is a set of two or more interrelated elements of any kind; for example, concepts (as in the number system), objects (as in a telephone system or a human body) or people (as in a social system). Therefore, it is not an ultimate indivisible element but a whole that can be divided into parts. The elements of the set and the set of elements that form a system have the following three properties:

- The properties, or behavior, of each element of the set have an effect on the properties or behavior of the set taken as a whole. For example, every organ in an animal's body affects its overall performance.*
- The properties and behavior of each element, and the way they affect the whole, depend on the properties and behavior of at least one other element in the set. Therefore, no part has an independent effect on the whole, and each is affected by at least one other part. For example, the behavior of the heart and the effect it has on the body depend on the behavior of the lungs.*
- Every possible subgroup of elements in the set has the first two proper ties; each has a nonindependent effect on the whole. Therefore, the whole cannot be decomposed into independent subsets. A system cannot be subdivided into independent subsystems. For example, all the subsystems in an animal's body- such as the nervous, respiratory, digestive and motor subsystems-interact and each affects the performance of the whole."* (Ackoff 1997, pp.421-422)

By reflecting on this definition of systems, I realized that thinking about performance of cities as performance in systems can result in an interesting conceptualization of city performance in three layers:

- Understanding performance of the subsystems of the city (as a big system) can be closely linked to *efficiency* measures. For example, studying the performance of public transportation network in terms of reliability, punctuality, average speed, etc. is very much linked to understanding the efficiency of the transportation system as sub-system in the broader urban infrastructures system.
- Understanding performance of the system as a functional whole can be closely linked to *resilience* measures; because resilience is about the ability of the system to retain its essential functions, structures and feedbacks while experiencing shocks (Walker et al.,2006). For example, studying the performance of the urban infrastructures in times of shocks is very much linked to understanding the inter-related nature of different urban infrastructures on each other (transport, energy, water, and waste water) and how their inter-relations might affect the resilience of the system.
- Understanding performance of the system in its larger environment can be closely linked to *sustainability* measures; because sustainability is about the ability of the system to meet its needs without compromising the ability of future generations to meet their own needs (Drexhage and Murphy 2010, Brundtland et al.,1987). For example, studying the performance of city in terms of resource consumptions and its environmental footprint is very much linked to understanding the long-term impact of the city as a big system on its broader environmental system.

And of course, all these three performance measures are interdependent on each other because if we accept that city can be conceptualized as a system, from an analytical point of view, each of these performance measures are affected by the others and should not be understood in isolation from each other (Ackoff's argument in previous quotation).

I shared the idea for conceptualization of city performance with Prof. Finger and some of our participants, and based on their positive feedback, I decided to present this conceptualization of performance to the class and its link to governance in our final reflection session (figure 4.3.6).

Since the conceptualization of two main elements of our discourse (governance and performance) underwent some intellectual revisions during the IGLUS-Hong Kong module, I decided to share these newly developed ideas to our participants in the last reflection session of the program and ask for their feedback on them. Although these conceptualizations were still a work in progress, most of the participants could understand the main argumentation behind the performance conceptualization. In addition, they could use the proposed list of questions about governance structures to compare the governance structure in the transportation infrastructures of Istanbul and Hong Kong by using the broadly defined categories and questions and partly explain the impact of these different arrangements on the performance of transportation systems in the two cities.

Link to performance

- City as a system:
 - Environment
 - The system as a whole
 - Parts and subsystems
- Performance of the city as a systems:
 - Sustainability: Environment (ecological, economic, political)
 - Resilience: Structure (technical, social, economic)
 - Service delivery: Operation (citizens, businesses)
- Governance is our tool to ensure desirable performance in all the 3 levels (open to discussion)
- Discussion about MX, TR, HK



9

Figure 4.3.6 – Presentation slide from the teaching materials of IGLUS-Hong Kong module
Source: Author's own work

However, it was clear that we have to further improve our conceptual frameworks as an important tool to bring better coherence to this learning exercise. In fact, we realized that by further development of our conceptual frameworks, we can better achieve our main objectives in this training program; because the frameworks could enable us to reflect on the diverse cases that were presented in different sessions of the program by following a more coherent line of thinking.

Using highly customized analytical frameworks throughout the program to reflect on the diverse inputs from the local and international lectures, and training the participants to do so via facilitated class discussions, seemed to be the formula which we were looking for to train urban practitioners to address complex urban challenges from a holistic-multidisciplinary point of view. However, there were still several steps remaining to make sure that this training strategy can be fruitful in our upcoming training modules as well. So, I decided to put this strategy to a more serious test in IGLUS-Dubai module.

4.3.3.3 Field visits of the IGLUS-Hong Kong module

For the IGLUS-Hong Kong module, our partner university had organized five official field visits, namely the 'zero carbon building', 'Hong Kong's MTR control center', 'Tai o Stilt houses' and 'Hong Kong Airport' visit and the 'Shatin waste treatment facilities'.

In the same line with the IGLUS-Guadalajara and IGLUS-Istanbul modules, we had two different goals in organizing two different types of field visits during the IGLUS-Hong Kong module; namely 1) learning about innovative initiatives of the host city and 2) discussing governance challenges directly with the stakeholders of projects.

The visit from the Zero Carbon building was mainly aimed at learning about innovative initiatives of the host city. The Zero Carbon Building (ZCB)⁷⁷ was a showcase project to illustrate the potentials of passive design principles and renewable energy resources to reduce the carbon footprint of buildings in urban environments. The visit was led by a tour leader from the ZCB initiative. Unfortunately, the tour leader could barely answer the participants' practical questions about feasibility of large scale deployment of demonstrated technologies in this showcase building. However, availability of information on the physical site of the building as well as internal discussions among the group could help us to fulfill the main objectives of the visit, which was to introduce this innovative initiative to our global participants.

In addition to this formal visit, our frequent travels in the city as a group by using public transportation network provided a great opportunity for the participants to directly experience and learn about the highly sophisticated and integrated public transportation network in the city. In the Hong Kong module, the importance of selection the host cities for our training modules was significantly highlighted; because by simply traveling in the city, the participants could learn, via direct experience, about the unique features of this highly compact urban development example. Indeed, the land scape, development pattern and public transportation network in the city was so different from conventional cities that the experience of living in the city for two weeks was an important learning in itself that was also highlighted by many of the participants in the wrap up session of the program.

⁷⁷ <http://zcb.hkcic.org/Eng/index.aspx> (accessed 16 May 2016)

The visits from the Hong Kong MTR control center, the Hong Kong Airport and the Shatin waste water treatment facilities were mainly aimed at discussing governance/management challenges in dealing with complex problems in these infrastructures. In these visits, we had the chance to meet with a top manager from MTR, the senior manager of environmental sustainability initiatives in the Airport of Hong Kong and a senior engineer in charge of operation of the Shatin facilities. The presentations from these high level officials were accompanied by Q&A sessions. Knowledgeability of these presenters about practical complexities in their respective organization for dealing with real world problems was very important to enrich the discussions. For example, the MTR manager could elaborate the multidimensional complexities underway of the Octopus Card initiative (technical, financial, etc.) and how they could overcome them by introducing innovative technical and institutional solutions (using RFID chips, establishing a special purpose company to deal with financial transaction of Octopus card, etc.). As another example, the environmental manager of the Hong Kong Airport who was a former activist in a local NGO, could highlight the practical difficulties for implementation of idealistic environmental visions of NGO activists in the practice of running large infrastructures, which was highly illustrative to the participants due to extensive experience of this person in both of these positions.

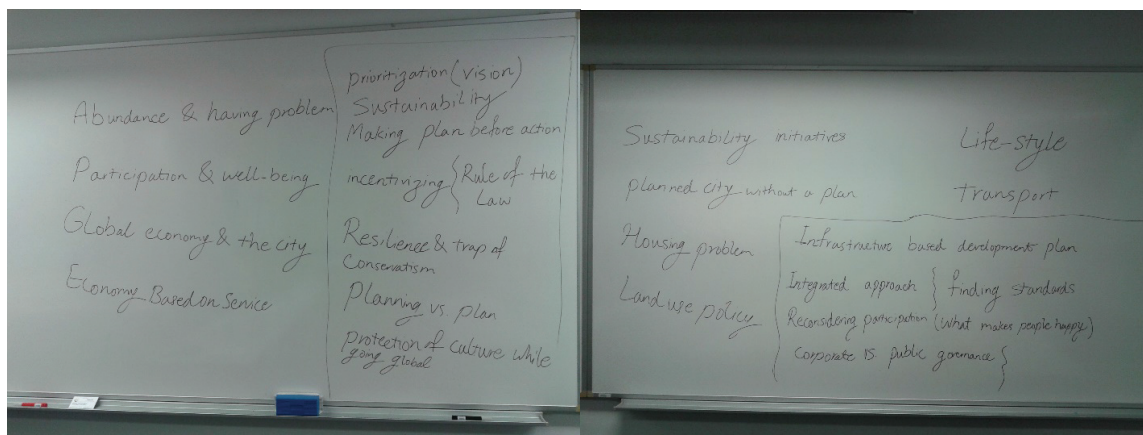
The visit from the 'Tai O Stilt houses' which was a fishing village that had undergone serious economic shrinkage was not in-line with our two broad objectives form organizing field visits, but since it could illustrate some contrasts in the process of urban development, we agreed to put this proposed field visit by SHSS-HKUST in the program of the module. The visit was led by a local professor from SHSS-HKUST who was active in launching a new economic development initiative in the village by exploiting the cultural heritage assets of the village for tourism. The experience of visiting an extensively poor settlement very close to glamorous urban developments in Hong Kong resulted in a series of more fundamental discussions among the participants about the impact of urbanization on social equity and inclusive growth.

Overall, the field visits of the IGLUS-Hong Kong module proved to be a useful tool to deepen our participants' learnings about the city, complexities in managing its highly sophisticated infrastructures and real world examples of how, and to what degrees, these complexities could be managed in the real world practice of Hong Kong.

4.3.3.4 Wrap up sessions of the IGLUS-Hong Kong module

At the end of the eleventh day of the program, I hold a wrap up session to conclude the IGLUS-Hong Kong module. Like the previous modules, the main goal of this wrap up session was firstly to illustrate the learnings of the Hong Kong module in the broader context of the master program and secondly to understand the view points of the participants about their learning experience in the module.

In IGLUS-Hong Kong module, two sessions were reserved for the wrap up activities. In the first part of the wrap up session, I decided to open up the discussion to the participants and firstly ask them to list their main learnings from the Hong Kong module. The inputs from the participants were covering many of the issues that were discussed during the Hong Kong module (housing problems, highly efficient transportation network, unique governance structure and economic priorities in city, etc.). In some instances, I had to facilitate the discussions to help the participants to extract some more 'abstract' learnings from the experiences they were sharing in the class and to cultivate reflective discussions around these points by asking the other participants to share their perspective on these issues.



Inputs of participants during the Hong Kong wrap up session

Like the previous modules of the program, I also asked the participants to share their critical feedback about the shortcomings, weaknesses or improvements which they had observed in the IGLUS-Hong Kong module. The main issues that were raised by the participants were the limited number of local lecturers in the program and consecutively the inability of the participants to understand the system from multi-perspectives, and missing sessions to explain the broader governance structure of Hong Kong⁷⁸. In addition, the intensive schedule of the module with limited break times was among the main criticisms that were raised by the participants. However, they also pointed to valuable learnings that they could achieve from visiting the city and its highly developed infrastructure systems.

As explained in previous paragraphs, based on the positive feedback of the participants about the research methodology and project sessions, I decided to allocate another session to this topic. To that effect, in the last days of the program I asked the participants to further work on their research questions and bring their revised research questions and a first draft of their research designs to the final wrap up session of the program. In the second part of the wrap up session, I organized another group discussion with the participants about their research questions and research designs in order

⁷⁸ Although an important remark, but as explained before due to political sensitivities HKUST was not willing to have a session on this topic during the module.

to help them progress with their master thesis and become ready to collect necessary data for their thesis during the next modules of the program. The structure of the session was very much similar to the methodology session which I explained in previous paragraphs of this case study. An interesting observation in this session was that many of the participants had decided to change their research questions after receiving feedback from their peers, and us, in the previous group session about the projects. Indeed, such changes in the research questions of the participants happened several more times in the next modules of the program and pushed us to allocate 1-2 complete sessions for discussing the participants projects in all the next training modules of the program.

When closing the IGLUS-Hong Kong training sessions, I knew that we have made some important progress in terms of finding important elements for effective training of practitioners in the IGLUS training program. However, I could see a long way ahead for implementing our learnings in practice to further improve the quality of the IGLUS Executive Master program.

4.3.4 After the module

4.3.4.1.1 The wrap up exercise

In the same line as the IGLUS-Guadalajara and IGLUS-Istanbul training modules, after the IGLUS-Hong Kong module we asked the participants in the program to write a wrap-up essay. The IGLUS-Hong Kong wrap up essay was developed around two main themes; 1) helping the participants to develop their research proposal and 2) reflecting on their professional practices after attending the IGLUS-Hong Kong module. The below text is adopted from the instructions that were sent to the participants for this wrap-up activity:

“A) Based on the inputs you got during the HK module, please write a proposal for your master project. This proposal will be the basis of your master projects and is a critical step in your master program. The proposal should cover the following topics:

- 1) Your research question and the sub-questions you need to answer for finding the answer of your main research question. The question should be clear and precise. Once you wrote your questions (and sub-questions; if any), please explain about the scope of your research, why it is important and what are the intended outcomes from your master project. (2-3 page max)*
- 2) Your research design and the steps (literature review, learning your methodology, data gathering, etc.) you need to finish the project and achieve your intended goals in a 1 page diagram (like a flowchart: what do you do first, what next, links, etc.)*
- 3) Please explain your research design (elaborate on the steps you have put in your diagram) by elaborating why do you need each of the steps and how do you want to implement each of the steps (i.e. how do you want to gather information for your case, what will be the main selection criteria for your case/interviewee selection, etc.) and how these steps are linked with each other (4-5 page max)*

B) Please elaborate what will be different for you once you are back to your job after your participation in the HK module. In other words, what are the main issues you will take into account in your job after the HK module and how do you want to make them happen? (2-3 pages max)”

The first part of the wrap up assignment was in fact further development of the Istanbul wrap-up essay where the participants had been asked to think about their ‘big questions’ and what they would like to learn in their learning experience by the end of the program to address their concerns. But in contrast to the Istanbul wrap up assignment, the Hong Kong wrap up assignment was more focused on the concrete steps that the participants should take in order to achieve their envisioned goals.

The second part to the wrap up essay was directly aimed at helping the participants to critically reflect on their professional practices in job, by using their learnings from the IGLUS-Hong Kong module. In addition, the participants were asked to think *practically* on how they can change some elements of their practices based on their critical reflections. In the coming pages, I try to highlight the main points from the participants’ answers to these questions.

4.3.4.1.2 Selected quotes from the participants’ essays

4.3.4.1.2.1 Part A of the assignment

Question 1)

An important, but not surprising, observation in participants’ answer to the first question of ‘part A’ of the assignment, which was asking the participants to propose their research questions, was the strong link between participants’ questions and their professional practices. This was not surprising because we had always asked the participants to think of practical problems that they face in their job to formulate their master projects. The tendency to use practical knowledge and experiences in learning is also a typical characteristic of adult learners (Kerner and Weinerman 2011). However, this observation was important for us because it could reaffirm our assumption that our participants are able to shape their learning experiences around their practical experiences from their job. For example, one of the participants from Columbia had chosen a very practical question as his research question and could also use parts of his learnings from the program to formulate his research question in line with our proposed holistic and multidisciplinary approach. He did so by proposing several complementary dimensions that should be addressed for answering his question:

“[does] a new housing built with low area helps solve the housing deficit but increases social and coexistence problems? A wicked problem?... the sub question [are]

a) Should be analyzed only from the economic point of view or take into account the social environment of the family?

b) Are we creating new slums?...”[M.W.3]

Another example of formulation of participants’ research question in line with covered topics in the program and by using the analytical frameworks that were discussed during the training modules is

our Brazilian participant's research question about governance of transportation systems in metropolitan areas.

*"...cities are structuring themselves in a "Metropolitan Unit" to provide the big picture in terms of urban planning and to implement common public policies. ... My big question that I want to answer at the end of my master is: **what are the main elements of a Metropolitan Governance of Transport Systems?**... My objective is focus in one urban system – Transport - and addresses/analyze the main governance challenges. I will use comparative case analysis... [for] answering the following questions:*

- *What are the relevant actors of the governance systems?*
- *How do they interact and influence each other?*
- *What are the impacts of the transport governance in the performance of the city?*
- *Which aspects are more applicable for a Metropolitan Case of Rio de Janeiro?" [J.W.3]*

Another example comes from the essay of one of the participants from Mexico who was interested in studying the impact of poverty reduction programs on sustainable social development in GMA.

"Poverty as a multifactorial phenomenon affects in different ways... I want to research about livelihood of three different programs than can benefit the same person that lives and moves around the metropolitan area, the actors or institutions involved and the interconnection within them.... My professional experience let me know the reality directly from the people, and as manager in Planning Committee for Development in Zapopan's Municipality the way government and others act with the rules we have. From this point comes the main motivation, because I live the problem everyday, I don't see that efforts of many public servants are been reflected because of inefficient design and implementation of different projects." [L.W.3]

The participant is obviously concerned with a practical problem in her job and would like to use the analytical frameworks that she learnt in the program in her research (looking at governance structures by identifying actors and analyzing institutions and considering the multi-faceted nature of the complex issue of poverty).

The prevalence of practice-oriented questions accompanied with holistic-multidisciplinary analytical perspective in the participants' wrap up essay was an important factor for us that could show our progress in achieving the intended objectives of the project. However, it had some negative dimensions as well. Indeed, some of the participants seemed to face with difficulties to translate their practice originated concerns into actionable research projects. As an example, I should use an illustrative quote from the wrap up essay of one of our participant from Mexico who was interested to study the importance of children friendly transportation systems for cities.

"... Why is important that a child can go alone or with other children walking to school every day, or use the public transport system of the city? [And then she proposes a series of sub-questions to answer her main questions]... What are the consequences for a city to exclude large segments of the population of the governance process, the definition of public policies and decision-making for city planning? Why is it important for Cities in Mexico? What does impact it have on the economy? How people organize time in a city where are traveled large distances every day? How can children and adolescents participate in the governance of the city? Why the issues of the city are only at postgraduate level? What changes should

be made in the location of the school facilities for children to have access to school alone and have security to do?"[H.W.3]

Apparently, the participant is interested in studying a practice-originated problem and would like to study the problem from a holistic perspective by proposing a series of sub questions that each of them address a different aspect of the problem (economy, participation, education, spatial distribution of facilities, etc.). However, she can hardly put her diverse set of questions in a logically coherent structure and define an actionable research project to address her concerns.

Facing with difficulties to frame actionable projects from broadly defined practice-originated concerns was an important challenge for some of the other participants as well. Defining projects which were too ambitious to be done as an Executive Master project or inability to define a clear focus for the project were common obstacles for some of the participants. Although the participants' research questions were significantly improved when compared with the IGLUS-Istanbul wrap up essays and were interestingly in-line with the holistic-multidisciplinary approach in our training, it was clear that we still have to work with the participants to help them define clear and actionable master projects, by building upon their practical experiences.

Questions 2 and 3)

The second and third questions of the first part of preparatory assignment of the IGLUS-Hong Kong module were asking the participants to develop a research design for realizing their research ideas which were elaborated in the first question, and explain their research design in some details. Most of the participants could effectively use the ideas and step which were discussed during the methodology sessions of the Hong Kong module to prepare their research design/plan. In most cases, the participants could discuss the necessary order of steps that they have to take for completing their projects and provide some details about their sources of data, methodology, and timeframe of their project. However, those participants who could not formulate a clear research question in the prior section of the assignment could not develop a sound research design/plan, accordingly.

An important point in the participants' research designs was that not all of the participants could translate their holistic-multidisciplinary approaches (in defining their research questions) into practical steps that really help them to materialize such a perspective in their research project. Indeed, except one of the participants from Columbia who was proposing interviews with a diverse range of stakeholder (sociologists, economists, politicians, developers, etc.) to answer his question about social housing projects in Columbia (see picture 4.3.7), the rest of the class could not provide any significant indication that they would study their phenomenon of interest from a holistic and multidisciplinary point of view.

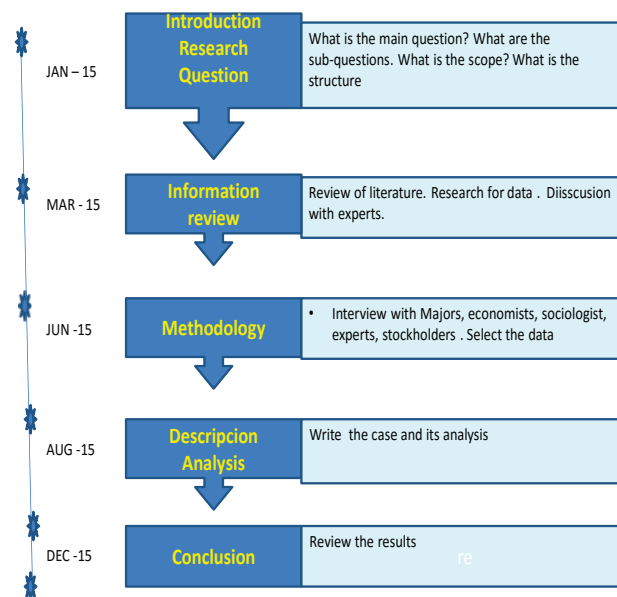


Figure 4.3.7 – Research design of our Colombian participant in IGLUS-HK wrap up assignment [M.W.3]

Another important point from the participants' wrap up essays was that most of the participants could hardly illustrate how they might benefit from attending the future training modules of the program to advance their research projects. Indeed, only one of the participants had pointed to her plans for using the next modules of the program to gather data for her master project⁷⁹.

"I would interview the following modules to one of the teachers to know how is the mobility of children in each of the next IGLUS cities: Dubai, UAE, Chicago, USA and Dortmund, Germany." [H.W.3]

Another interesting point in analyzing the participants' answer to these questions was that some of them were considering the ways in which they could use their jobs' contexts for testing the results of their findings. For example, one of our Mexican participants who was planning an ambitious research project to *"to create a new model for citizen participation that facilitates socialization processes, programs, actions and strategy, where citizens could be more than a part of a speech and become an important part of decision making"* in Mexican cities [V.W.3] clearly elaborated how she intended to use her working context to test her 'model' during the research process.

"The intention is to generate a proposed methodology that helps practice governance in some examples that I will put into practice during the process of thesis, so we can have clarity about the legal framework that would need to be modify, so we can have certainty of progress in the theme of citizen participation, and that it is not vulnerable to the will of those who wish to practice it, in order to finish with clear

⁷⁹ BTW, it is important to note that as we progressed in the program, more participants could clearly find the link between the next modules of the program and their projects.

conclusions that can be useful for the daily activity of the municipality and the practices of communication between government and society.” [V.W.3]

The fact that most of our participants could understand the process of conducting a research project and develop their research plans accordingly, but needed more support to define the scope and focus of their projects showed us that the main obstacle in helping the practitioners to conduct research on their own practices is not teaching them how to use tools and methodologies, but probably it is about helping them to critically reflect on their own practices and frame actionable projects from a holistic and multidisciplinary point of view, without losing the focus and control over the project. This observation become an important input for organization of future project session in the coming training modules of the program.

4.3.4.1.2.2 Part B of the assignment

The second part of the wrap-up assignment of the IGLUS-Hong Kong module was a reflective exercise that asked the participants to think about what will be different for them once they are back in their jobs from the Hong Kong module. In response to this question, most of the participants provided a list of topics which they learnt during the lectures and visits from the city during the two weeks of the program. For example, one of the participants from Mexico (politician and member of a city council) seemed to be inspired by observing some of her visions of a well-functioning city in practice in Hong Kong, as well as her learnings from the presence of different points of view (cultures) in the Hong Kong training sessions.

“Hong Kong taught me that we can achieve a city with practically all claims that citizens have in my country, a city that only could exist in theory; where there is no corruption, planning is the main step, no graffiti, no insecurity, quality of life despite the size of the dwelling there, unemployment is not a major problem. A city that impacts you for its cleanliness, and the countless modes of public transportation. Education certainly is felt in every activity.... The main themes that I take with me are: the order, the respect of the people for public areas, the efficiency in public transportation, and of course, the cultural mix in the classroom that day by day forms more criterion in the long term decisions that we should have to make on my job performance.” [V.W.3]

Although sharing her inspirations from the Hong Kong module, the participant could not provide any concrete actions or initiatives that she would consider to introduce in her practices when she goes back to office. However, most of the other participants could provide concrete actions that they would put on their agenda after returning to their jobs. For example, our Brazilian participant mentioned his initiative for smart transport card in Rio de Janeiro while our Venezuelan participant mentioned the importance of adopting a more holistic approach in planning practices in her home municipality.

“... They have the OCTUPUS card, which you can use in all the system. In addition, you can use the card in most of the shops of the city like a credit card machine. This card works very well and is an important part

of the revenues of the system. We must implement this technology in Rio de Janeiro. As I said in the last wrap-up paper, if Istanbul could implement we also could do it. I am pushing the mayor and the transport department to accelerate this implementation.” [J.W.3]

“...Currently in the municipality we are developing urban plans taking into consideration structural nodes and axes. But without including the topic of the planning and reorganization of public transport, for this reason I will keep in mind and make sure that in them the planning and the construction of road systems and massive public transport as well as close access is included.” [P.W.3]

Another participant in the program from Columbia had a special focus on the *negative* lessons from Hong Kong which he would avoid to replicate in his city; due to important cultural differences between his society and Hong Kong while acknowledging the high level of infrastructure development in Hong Kong.

“Hong Kong seemed to me a big city. Describe it as efficient... Investing in real estate in the stations and the functionality of the Octopus smart card is enviable. Really, the infrastructure, charm me... My city Cali and Hong Kong are not comparable. Neither size nor in population or income per capita or GDP... [Lessons that I] would not copy from Hong Kong: the lack of public spaces and green areas close to homes, the size of the housing for the poor and [increasing] housing deficit. ... Homes for rent with little possibility of buying causes great inequity. The social problems that this creates, accepted with submission, can only be explained by the cultural tradition of these peoples.” [M.W.3]

The fact that some of the participants could show a balanced understanding from the IGLUS-Hong Kong module and were not completely fascinated by the positive impacts of the dense development pattern in Hong Kong was an important point for us because it could show that the program could help the participants to understand the case of Hong Kong from a relatively holistic point of view.

In addition to practice-relevant learnings that were highlighted by our participants, some participants also mentioned how their learnings in the module could help them in their master project:

“...We had a great lecturer with [the World Bank representative]. He presented some cases of finance of metropolitan units. I believe that these lectures could give many insights for the case of the Metropolitan Region of Rio.” [J.W.3]

“After the Hong Kong module I decided to learn more about public transport governance models around the world and write my master’s theses on this subject.” [U.W.3]

Last but not least, I shall quote one of our participants’ remarks about *bringing back some questions* to her work after her learning experience in the Hong Kong module. In her essay, she presented some photos (see the below picture) which she had taken during her time in the city and posed a question to herself.

“The first day that I saw a little boy, maybe 7 years old, using an application on his cell phone for searching information and travel by metro alone to the school, wearing his school uniform and carrying a backpack. The scene was repeated with different children every day on the subway.”



picture adopted from the participant's wrap up essay [H.W.3]

Why it happens in Hong Kong and not in Guadalajara, Mexico or in many other cities worldwide?” [H.W.3]

Although the participants in the Hong Kong module could generally relate their learnings from the module (both theoretical and direct experiences) to their practice and research projects, there were only one of the participants who was using her experience in the Hong Kong module to critically reflect on the situation in her home city. This was an important observation for us because we were especially interested to help the participants to use their learnings from the training modules to critically reflect on their own practices. Indeed, we were trying to help the participants to use these reflective exercises to enter the ‘second loop’ of learning (Argyris and Schon 1974). However, based on my analysis of the participants' wrap up essays in IGLUS-Hong Kong module, we were not very successful to achieve this goal in this module. Achieving this objective was important for us because our program was aimed at helping the practitioners to really change their approach in thinking about complex urban problems to a holistic and multidisciplinary perspective and not only training them about a large number of concepts and some local examples on a shallow-surface level.

4.3.5 Brief reflection on the IGLUS-Hong Kong training module

By reflecting on our overall experience during the Hong Kong module, I become more determined that we should provide the participants with better analytical tools and show them how to use these analytical tools to critically analyze the examples that they encounter in the training modules of the program, and reflect on their own experiences. This was what I had been trying to do during the Guadalajara, Istanbul and Hong Kong module through ‘asking questions’ about the underlying complexities of the presented cases by guest lecturers and experts.

Indeed, I personally learnt to do so by facing with the large number of seemingly irrelevant examples, which I had to explain and compare with each other for our participants in the reflection sessions, and learning from, and sharing ideas with the participants and our lecturers. However, in order to facilitate the explanation of this thought-process which I could go through in analyzing the cases, I

realized that we need to prepare better conceptual frameworks which can be easily understood and used by the participants to reflect on different cases and compare them with each other. So, after the IGLUS-Hong Kong module, I started to put a stronger focus on documenting my thinking process and translate it to a useable conceptual framework which can be easily used by our practitioner-participants.

4.3.5.1 Results of evaluation surveys for the IGLUS-Hong Kong module

In IGLUS-Hong Kong training module, like the IGLUS-Guadalajara and IGLUS-Istanbul modules, each of the training sessions was evaluated by the participants in the training module. The evaluation was done by means of a short survey, exactly similar to the surveys used in the previous modules, which asked the participant to evaluate the session alongside three dimensions:

- Presentation skills and quality of the slides of the presenter
- Usefulness of the content of the presentation
- Overall evaluation of the session

As discussed in previous case studies, the participants were asked rate each of these criteria according to a 5 point Likert scale (from very bad = 1 to very good = 5). Also, participants were encouraged to share their written feedback at the end of the evaluation forms. Participants were asked to fill the survey at the end of each day. The survey was anonymous to encourage the participants to express their real opinion about the program. From 19 participants in the IGLUS-Istanbul module, on average 10 people filled the survey⁸⁰.

The summary of evaluation result of the IGLUS-Hong Kong module is presented in Chart 4.3.1.

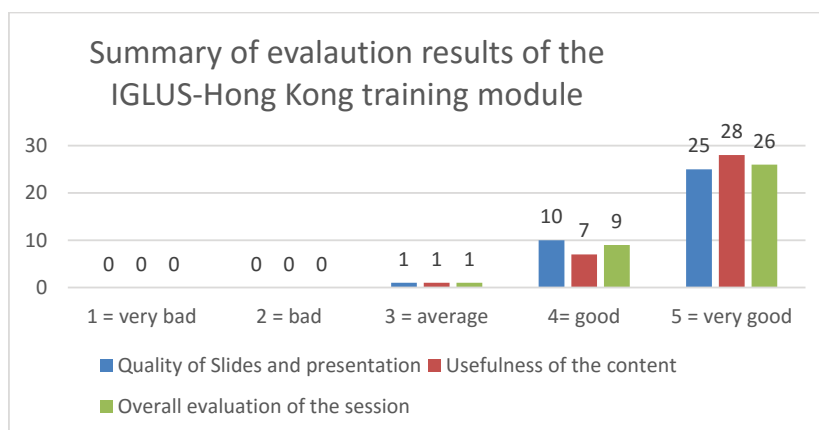


Chart 4.3.1 – summary of IGLU-HK evaluation

⁸⁰ The number of evaluated sessions is slightly different from the total number of sessions during this module because I did not include the evaluation results for those sessions which had been rated by too few participants (less than 4 participants)

As explained before, the evaluation survey was not our principal data collection tool in the project. However, the results of the survey can be somehow indicative. The fact that the 'overall evaluation' of only 1 session among the 37 evaluated sessions was rated as average while 26 sessions were rated as very good and 9 sessions were rated as good showed that the participants were generally satisfied with their learning experience in the IGLUS-Hong Kong module.

The number of sessions with average evaluation was limited to one session which was similar to the IGLUS-Istanbul module. However, the number of sessions with 'very good' *overall* evaluations in IGLUS-Hong Kong (26) has significantly increased in comparison to the evaluation results of the IGLUS-Istanbul (16 very good sessions) and IGLUS-Guadalajara module (20 very good sessions). This analysis is also valid about the 'quality of slides and presentation' criteria and is even more strongly significant for the 'usefulness' criteria in evaluation of the sessions (charts 4.3.1, 4.3.2, 4.3.3).

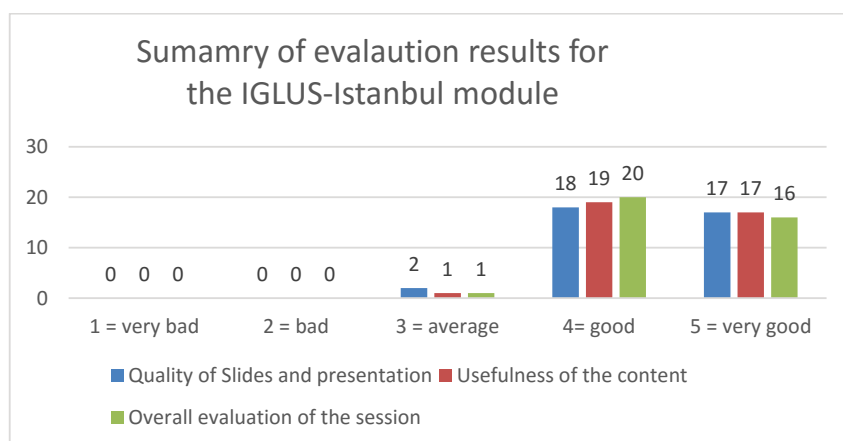


Chart 4.3.2 - summary of IGLU-HK evaluation

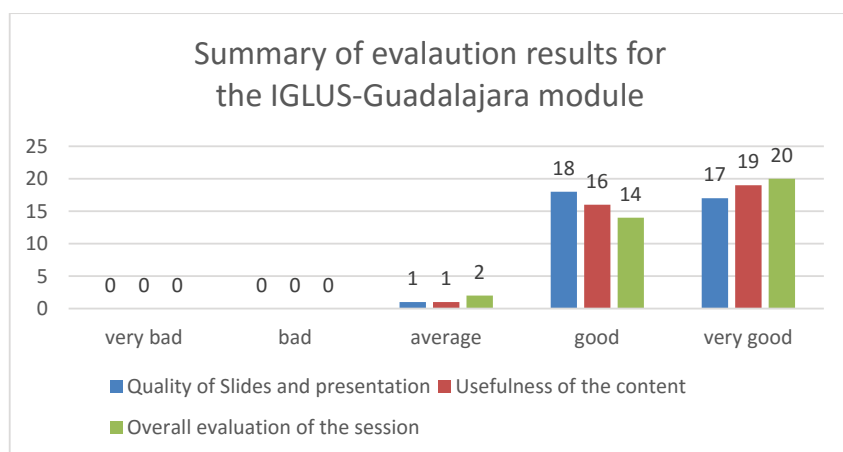


Chart 4.3.3 - summary of IGLU-HK evaluation

The results of the evaluations of IGLUS-Hong Kong training sessions were showing a significant improvement in satisfaction of the participants from the training module. However, the qualitative data which I could gather via my direct observations in the class, informal discussions with the participants and group discussion in the wrap-up sessions was not totally in line with this significant improvement. One important factor that should be considered when interpreting the data which is summarized in these graphs can be the cultural differences among our local participants and our international participants. Based on my discussions with the two groups of participants, I can say that our local participants (who were master or PhD students) were generally evaluating the sessions more positively compared to our international participants (who were all practitioners). So, the aggregate results of evaluations might not be reflective of some shortcomings in the training module which was mostly conceived by our international participants.

By critically reflecting on the experiences from the Guadalajara, Istanbul and Hong Kong training module, I could still see immense opportunities for improving our training practices in the IGLUS training program. So, after my return from Hong Kong and consultation with Prof. Finger about our experiences in the past modules of the program, I started to prepare the IGLUS-Dubai training module and a side event (an inaugural academic workshop) by using the inputs from the previous training modules (AR inquiry cycles).

Chapter 4 (Case studies)

4.4 - Section 4 – IGLUS Dubai case study

4.4.1 Introduction:

4.4.1.1 Overview of the training module:

The IGLUS-Dubai module was the fourth training module of the IGLUS Executive Master program and took place in February 2015 in Sharjah-Dubai. Table 4.4.1 outlines the position of the IGLUS-Dubai module in relation to the overall program of the IGLUS Executive Master. Similar to the previous modules of the training program, the training sessions of the IGLUS-Dubai module were held during 11 working days over a period of 2 weeks.

Table 4.4.4 – Position of the IGLUS-Dubai module in the overall IGLUS-Executive Mater program

Guadalajara Social Challenge (June 2014)	Istanbul Cultural Challenge (Sept. 2014)	Hong Kong Optimizatio n Challenge (Nov. 2014)	Ras Al-Khaimah Dubai Sustainability Challenge (Feb. 2015)	Detroit Chicago Economic Challenge (April 2015)	Seoul Technological Challenge (June 2015)	Rhine-Ruhr Metropolitan Challenge (Sept. 2015)
Housing and Use of Land	Disaster Management	Sustainable Transport & Housing	Innovative Finance of Urban Mobility	Utilities Regulation and pillars of Sustainability	Smart Transport	Regional governance
Transport and Mobility	Green infrastructures	Metropolitan Finance	Governance of sustainable Water & Waste systems	Industrial ecology	Smart Energy and Water	Metropolitan mobility
Human and Citizen Security	City Governance	Energy, Water and Wastewater	Urban resilience & Environmental sustainability	Sustainable Urban Economy	Urban ICT policy & governance	Urban forests & ecosystem balance
Transparency & Accountability	Transport Planning and Finance	Smart City and urban Resilience	Housing and Zoning policies	Urban Leadership	Governance of Integrated Systems & Green performance	Metropolitan Finance

This training module was organized in collaboration with the American University of Sharjah (hereafter- AUS), located in the Emirate of Sharjah. However, the focus of the training module was primarily on the case of Dubai, while important cases from other Emirates in the UAE were investigated as well. Based on the overall curriculum of the IGLUS Executive Master, the IGLUS-Dubai module was supposed to have a special focus on urban sustainability challenges; accordingly, five broad topics were selected to be covered during the IGLUS-Dubai module, namely:

1. Sustainable infrastructure management (green, water, energy and waste infrastructures)
2. Land use and housing policies
3. Innovative financing of urban infrastructures (especially in the transportation sector)
4. City branding and competitiveness
5. Urban resilience

The final program of the training sessions in the IGLUS-Dubai module is summarized in Table 4.4.2.

Table 4.4.2 – final program of the IGLUS-Dubai training module

Date	Topic
Monday 2.2.15	Governance theory sessions (EPFL)
	Dubai governance structure
	Dubai governance structure – Dubai development history (policy initiatives and leadership)
Tuesday 3.2.15	Green Infrastructures and sustainability (lead professor on green infrastructures and a guest practitioner)
	System thinking for urban practitioners (guest lecturer for US)
Wednesday 4.2.15	Land use planning and housing market dynamics (UN-Habitat)
	Iconic projects visit
Thursday 5.2.15	Urban planning in UAE
	Planning information systems
	Urban branding
Friday 6.2.15	Free
Saturday 7.2.15	Sustainability in the Gulf region
	EPFL reflection session
	Metropolitan finance (WB)
Sunday 8.2.15	Energy day (Masdar Smart City visit and lectures)
Monday 9.2.15	Public Private Partnerships (BCG)
	Globalization and urban challenges (Immigration and foreign work force in UAE)
	Projects session (EPFL)
Tuesday 10.2.15	Transport operation and finance in Dubai
	CEMEX session
	Visit of transport infrastructure
Wednesday 11.2.15	Energy governance in UAE
	Energy Policy and sustainability in Dubai
	Visit of waste management facilities in RAK
Thursday 12.2.15	Dubai Smart city initiatives
	Water governance in UAE

	Veolia session
Friday 13.2.15	Urban Resilience (UN-Habitat)
	Wrap up (EPFL)

4.4.1.2 Participants

In this module, we had one of the lowest number of participants among all the IGLUS training modules. Only six participants from our international pool and five local participants attended the IGLUS-Dubai module. As was the case in the IGLUS-Hong Kong module, all the international participants in the Dubai module had been present in least in one of the three previous training modules, and thus were already familiar with our approach. Four of the five local participants in this module were practitioners who were working in the UAE or Bahrain. The other local participant was a recent graduate from the Urban Planning Master's program at AUS. The profiles of the participant in this module are summarized in Table 4.3.3.

Like what happened in the Istanbul and Hong Kong modules, some of the local participants in the Dubai module later decided to continue with the master program and officially enrolled in the IGLUS Executive Master's program in February 2015. Indeed, after this module, three of our local participants confirmed that they would like to continue their learning experience in the program.

The fact that in three consecutive modules of the program (Istanbul, Hong Kong and Dubai) at least one of the local participants, who was initially interested in attending only one of the training modules, were persuaded to enrolling in the complete master program was an important and encouraging observation to us. The enhanced interest of these local practitioner-participants in the discourse and curriculum of the program after attending in one of the training modules could be seen as an indication of relevance and richness of this training program for the target audience.

Table 4.3.3 – Profile of participants in IGLUS Dubai module

Names	Affiliated city	Educational/Professional background	Number of modules that she/he had already attended
A.S.A.S	Ras Al Khaima - UAE	Electrical engineer – local government official	0
N.M.A	Bahrain (country)	Transport engineer – Ministry of transportation in Bahrain	0
R.A	Bahrain (country)	Transport engineer – Ministry of transportation in Bahrain	0
T.I	Sharjah - UAE	Master student in AUS	0
M.S	Dubai - UAE	Engineer – office of special zones in Dubai	0
J.A	Mexico, Guadalajara	Civil engineer – rural development planner	2
B.C	Mexico, Guadalajara	Social activist (NGO for improved children nutrition)	2
R.M	China – Hong Kong	Master student in international studies	1
H.E.L	Mexico, Guadalajara	Senior architect and urban planner	2
M.M	Colombia, Cali	Director of Infrastructure planning in municipality of Cali	2

M.L.P	Venezuela – Maracay	Urban planner / Civil engineer	2
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4.4.1.3 Our initial conceptualization of the module and its evolution

Over the past 30 years, Dubai has experienced exponential population growth. The rapid economic growth of the city-state of Dubai and the limited availability of a local labor force to support this rapid economic growth has resulted in huge influx of expatriate workers (Al-Awad 2008). The active daytime population of Dubai has risen from around 1,900,000 in 2007 to more than 3,500,000 in 2015⁸¹. This rapid increase in Dubai's urban population has resulted in increasing demands for basic urban services, which ultimately puts the urban infrastructures and the surrounding urban ecosystem under significant pressures.

Meeting the surging demand for urban services (electricity, water, waste management, housing, transport, etc.) in a sustainable manner is becoming an increasingly important challenge for many urban agglomerations in 21st century. Dubai is already dealing with sustainability challenges in its daily urban infrastructure governance/management practices (Issa and Al Abbar 2015). So, the Dubai context could provide a great learning opportunity for the participants to learn about the complexities in governance of urban infrastructures to deal with sustainability challenges in provision of urban services.

As discussed in chapter 2, sustainability is one the most complex challenges that cities in 21st century are facing with. Addressing sustainability-related issues calls for holistic and multidisciplinary approaches. However, urban practitioners are often not very well trained to address complex problems associated with urban infrastructures from an integrated, holistic and multidisciplinary point of view. So, we decided to focus on the theme of sustainability during the IGLUS-Dubai module, and by doing so, firstly provide the participants with an opportunity to get a real touch of sustainability challenges in a city that deals with such challenges in its daily operations, and secondly provide a rich context for training our practitioners about the importance of adopting holistic-multidisciplinary approaches when dealing with such complex urban problems, by benefiting from practical examples about the case of Dubai.

With these objectives in mind and based on our learnings and observations from the IGLUS-Guadalajara, IGLUS-Istanbul and IGLUS-Hong Kong training modules, in November 2014, we started to prepare the curriculum of the IGLUS-Dubai module in collaboration with the American University of Sharjah.

⁸¹ Numbers obtained from the official Dubai Statistics Center available at: <https://www.dsc.gov.ae/en-us/Themes/Pages/Population-and-Vital-Statistics.aspx?Theme=42> (accessed 17 May 2016)

4.4.2 Preparation of the module (planning)

4.4.2.1 Learnings from the previous modules and modifications in our approach

As a result of our reflections on the learnings and experiences that we had in the previous modules of the program, we recognized several issues that had to be further addressed in the IGLUS-Dubai training module. These issues included: further elaboration of our conceptualization of urban performance so as to better organize class discussions (building on the ideas that emerged during the IGLUS-Hong Kong module); further development of our governance framework in order to prepare an easy to understand analytical-toolkit that the practitioners can use to critically and systematically analyze the inputs they receive in the training modules (and face in their professional jobs); better coordination with lecturers to prepare for more interactive and hands-on sessions (e.g. role-play scenarios, discussions); organizing more reflection sessions; providing further support to the participants to help them to better frame their research projects; and enhancing the role the participants play in conceptualization exercises.

As explained in the previous case study (IGLUS-Hong Kong), by reflecting on our experiences and learnings from the previous training modules of the project, which constituted the three first Action Inquiry cycles covered in this thesis, we realized that using highly customized analytical frameworks to reflect on the diverse inputs from our local and international lecturers in the program, and training the participants to do so via facilitated class discussions, seemed to be the ideal formula that we were looking for to train urban practitioners to address complex urban challenges from a holistic-multidisciplinary point of view. Referring to 'systems theory' as a bridging approach during the Hong Kong module represented a turning point in our conceptualization of governance and performance of urban infrastructure systems.

In the IGLUS-Hong Kong module we could achieve to a relatively balanced approach towards our teaching objectives (to recall: helping practitioners to analyze and ultimately address complex urban problems from a holistic-multidisciplinary approach) that was both theoretically solid and practically useful for the participants in the class. Our goal for the IGLUS-Dubai module was to build on this balanced analytical-practical approach, institutionalizing it as an established approach in the curriculum and training practices in the program. Thus, the approach we adopted in the IGLUS-Dubai module was not fundamentally different from that of the IGLUS-Hong Kong module, but more so signified a progression of our approach in the IGLUS-Hong Kong module. However, in this module we wanted to build upon our pre-existing approach by further contextualizing our analytical approach to different urban infrastructure contexts.

The approach we adopted in IGLUS-Dubai, was very much in-line with the general evolution of our approach throughout the training modules. As explained in the previous case studies, the evolution of our approach started in the Guadalajara-module where we provided the participants with some

generic theoretical inputs and conceptual frameworks and left it to them to determine how they could incorporate these theoretical inputs into their own practical contexts. In Istanbul we changed our approach by providing the participants with some fundamental theories (Transaction Cost Economy) as well as some more practical inputs (Principal-Agent theory) in order to illustrate the practical applications of the theories; however, we still left it to the participants to develop their own toolkits and analytical frameworks for the analysis of concrete problems in their professional contexts. In the IGLUS-Hong Kong module, we further modified our approach by taking the lead for customization and contextualization of our analytical frameworks in order to better suit the practical needs of practitioners addressing complex problems in governance of large urban infrastructure systems from a holistic and multidisciplinary perspective. Finally, in IGLUS-Dubai, we further refined the focus of the program and introduced highly contextualized frameworks that the participants could readily use to analyze a diverse range of cases in governance of urban infrastructures from a holistic-multidisciplinary perspective.

Figure 4.4.1 is a graphical illustration of the evolution our approach underwent over the course of four training modules reported in this thesis.

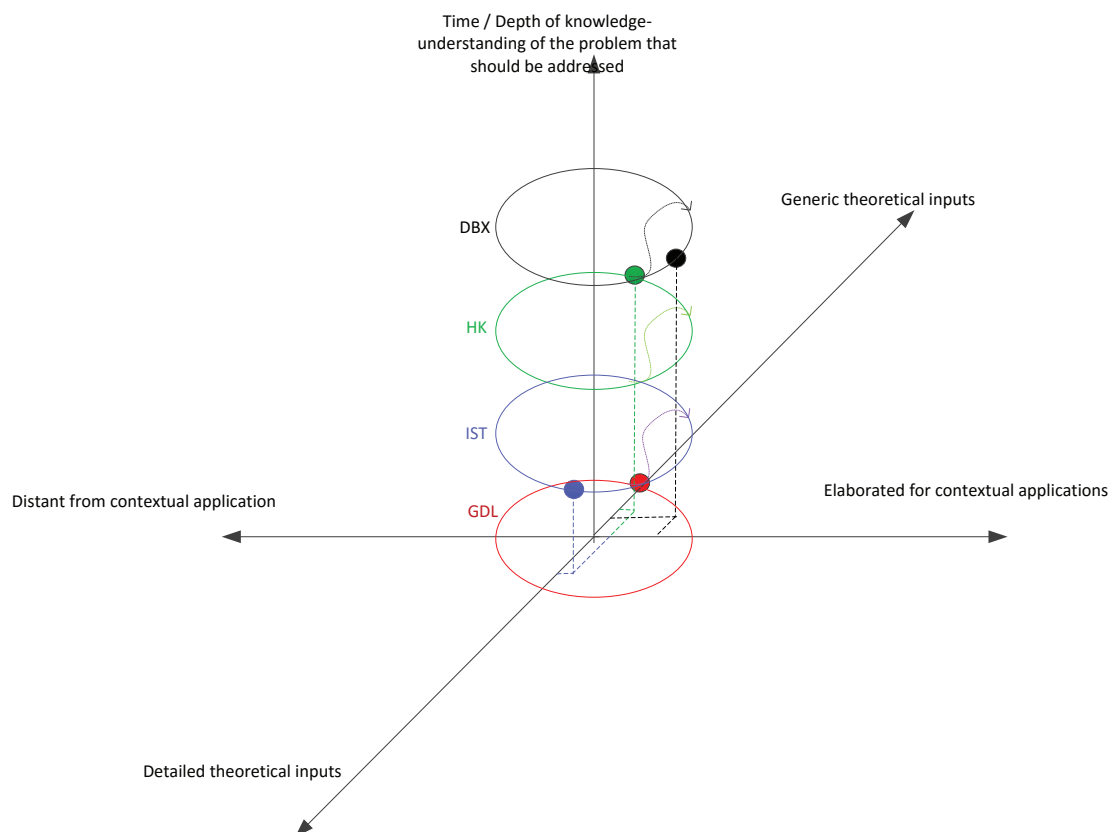


Figure 4.4.1 – graphical illustration of evolution of our training approach in 4 Action Inquiry Cycles of the project.

As discussed in the IGLUS-Hong Kong case study, the evolution of our approach in the training modules should be seen in light of the progress of the project. As the participants progressed throughout the program they gained a greater understanding of the theoretical basis upholding our discourse, and hence they become increasingly capable of adapting their abstract learnings to different contexts in order to address their practical problems. By conducting AR inquiries, we could also learn from our previous experiences and make the necessary changes to our approach so as to enhance the practitioners' abilities to relate our teachings to their professional contexts. Indeed, throughout these AR inquiry cycles our understanding of the *exact problems* which we should address in training urban practitioners was also enhanced. So the z-axis in Figure 4.4.1 can be also seen as representative of our, and our participants', *depth* of knowledge and understanding of the *problems* to be addressed in governance of large urban infrastructure systems.

4.4.2.2 Choice of our theoretical inputs for the module:

The main elements of our theoretical inputs in the IGLUS-Dubai module were closely tied to the theoretical inputs that we introduced in the IGLUS-Hong Kong module- namely focusing on the systemic perspective, elaboration of urban performance dimensions, and improved conceptualization of governance in the IGLUS framework. However, as explained in the previous paragraphs of this case study, in the Dubai training module (which constitutes the 4th AR cycle of the project), one of our main objectives was to further develop and contextualize our analytical framework to the case of large urban infrastructure systems. We wanted to elaborate more details in our conceptual frameworks in order to provide more guidance for the participants and enable them to use it in their analysis of real-world cases.

The IGLUS-Hong Kong module marked a turning point in our thinking about our pedagogical approach in the program. Consequently, we revised our choice of theoretical inputs for the coming training modules, including the Dubai module. More precisely, after the IGLUS-Hong Kong module we realized that instead of providing the participants with a selection of theoretical inputs from different academic literatures⁸², we should prepare and present highly customized and detailed conceptual frameworks⁸³ that the participants could refer to, to analyze complex problems in governance of large urban infrastructure systems from a holistic-multidisciplinary point of view. So, after returning from the Hong Kong Module, I started to rethink our conceptual frameworks with the aim of developing a more detailed and highly customized framework that practitioners could use to

⁸² Superficially, it may seem that we reverted our training approach back to that with which we started the program in the IGLUS-Guadalajara module (which was based on presenting the general IGLUS framework and subjecting it to the participants' critical feedback). However, our training approach in the IGLUS-Dubai module was actually an updated and more matured version of our approach in IGLUS-Guadalajara (see Figure 4.4.1). Correspondingly, our theoretical inputs in the IGLUS-Dubai module were more elaborate and detailed compared to the theoretical inputs introduced in the IGLUS-Guadalajara module. Our success in this realization could only have been achieved thanks to the learnings accumulated throughout the previous cycles of this Action Research Inquiry.

⁸³ These conceptual frameworks were based on synthesis of different theoretical insights; in light of my critical-self-reflections on the intellectual demands practitioners had in our program.

better understand the relationship between the governance and performance of large urban infrastructure systems and its multi-dimensional nature.

In this process, I tried to reflect on my previous bibliographic research⁸⁴ that I had conducted during the preparation and planning phase of the project by using insights from the learnings I obtained; being a moderator in this training program. As a researcher and coordinator of the IGLUS training program, I could understand the potential practical implications of these diverse theoretical perspectives to the different, but systematically related, dimensions important for the analysis challenges in governance/management of large urban infrastructure systems from a holistic-multidisciplinary point of view. However, it was apparent that the participants in the program can hardly make sense of all these seemingly unrelated bodies of theories. And more importantly, the ability of the participants (practitioners) to realize the implications of these theories in addressing their practical problems could not be taken for granted (this claim can be attested by many of the observations I made over the past three modules of the program).

So, I was further reassured that to deliver a meaningful learning experience to our practitioner-participants we cannot rely on introducing a mixture of theoretical inputs and *assuming* that, simply by being familiarized with diverse theories, the participants can address complex urban problems from a holistic-multidisciplinary point of view (even though this is the most common recommendation in the pre-existing literature on the design of multidisciplinary-holistic courses; see chapter 2 of this thesis for a review of literature on this topic). Indeed, I realized that useful theoretical inputs for the IGLUS training program would not be the standalone theories, but it is the synthesis of relevant theories around specific problems (in this case impact of governance on performance of urban infrastructures) - ideally packaged together as conceptual frameworks – that can serve our purposes. And in such theoretical syntheses, maintaining a healthy balance between analytical rigor and practical relevance would be of primary importance.

Thus, in the IGLUS-Dubai module we decided to present our updated version of governance-performance framework, which was aimed at depicting important elements from different bodies of theory, clarifying their relevance to analyzing different aspects of the problems, and structuring them in a coherent manner that is understandable for the practitioners.

In addition to our theoretical inputs about governance and performance, we also decided to use a theoretical paper on urban growth to open the discussions about the case of Dubai. To that effect, we benefited from the ‘city as a growth machine’ paper by Harvey Molotch (1976). With the above

⁸⁴ This bibliographic research consisted of topics drawn from an amalgamation of academic fields, including literature from Institutional Economics (NIE and OIE); Governance of Infrastructures as Social-Technical Systems (transportation, energy, housing, etc.); Large Technical Systems; Transition Studies (Multi Level Perspective, Strategic Niche Management, Transition Management); Urban Governance (Public Choice Theory, Regime Theory, Participatory Governance, etc.); Systems Theory (System Dynamics, General Systems Theory); Public Administration Studies (Agency Theory, Public Management, New Public Management, Infrastructure Finance) and Systems of Innovation (especially sectoral systems of innovation). In addition to having conducted a review of these diverse bodies of literature in the first two years of my research, my previous educational background in the field of Management and Business Administration (Resource Based View of strategy, Dynamic Capabilities of the firms, Absorptive Capacity of the firms, Organizational Learning, etc.) also played an important role in this reflective process.

mentioned approach and theoretical choices, we started to prepare the curriculum of the IGLUS-Dubai module.

4.4.2.3 Organizing the first inaugural IGLUS workshop in Ras Al-Khaimah

One of our important considerations to ensure the long-term success of the broader IGLUS project, and the IGLUS training program, was to develop an intellectual community of researchers and lecturers who believed in the importance of holistic-multidisciplinary approaches for addressing complex problems in large urban infrastructures and were interested in training urban practitioners with such a perspective. Because the IGLUS-Dubai training module occurred exactly halfway through the first edition of the IGLUS Executive Master program, we decided to organize a side event just before the start the module to discuss our long-term research and training with a small group of researchers and lecturers, who were involved in the broader IGLUS project. To that effect, we organized a one-day workshop and invited all of our contact professors from each of the partner universities, as well as some other researchers whose research approaches we believed to be relevant to the program. The aim of the workshop was to discuss collaboration opportunities for training and research among the academic partners of the project and to also develop a joint agenda to further improve the quality of training and research initiatives across the broader IGLUS project. This event was organized on February 1, 2015 with the support of the EPFL's Middle East branch, which is located in Ras Al-Khaimah-UAE.

Representatives of five of our partner universities from Mexico, Turkey, South Korea, Germany and the UAE confirmed their presence in this event. In addition, our lead professor, in charge of green infrastructures, as well as five well-known scholars from the field of urban infrastructure governance also attended.

On the morning of the workshop, all participants presented their recent research activities and explained in which areas they would be interested to further collaborate. The presentations focused primarily on the researchers' ongoing research activities and tended to be highly focused on well-defined academic disciplines. After all of the participants had presented, we opened up a group discussion to identify potential areas for collaboration in terms of research and training activities with the ultimate goal of improving the quality of the IGLUS professional training program through conducting practice-relevant research. In this discussion session, it quickly became apparent that, perhaps not surprisingly, the academic partners of the project are highly dependent on their well-established funding sources that typically mandated their research trajectories, and these proved to be primarily discipline-specific research projects.

The participants were generally agreeable that in order to ensure the long-term success of the project and to improve the quality (and relevance) of the training inputs from the partner universities, establishing a joint research agenda aimed at understanding complex challenges in governance of urban infrastructure from a holistic-multidisciplinary perspective is a necessary step forward. However, finding a proper research funding scheme that could enable the involved scholars from the

partner universities to engage in such research endeavors proved to be the main obstacle. In this session, potential opportunities for joint application for research grants were discussed (mainly EU Horizon 2020 research funds), but it quickly became evident that due to the complicated application process required for multi-stakeholder projects, the partner universities would be reluctant to make a strong commitment to apply for these funding schemes.

Through this workshop, we came to understand that it would be highly unrealistic to consider large-scale joint research projects with academic partners as an effective strategy to develop theoretically rigorous and practically relevant research outputs which can later be used as inputs for training urban practitioners in the IGLUS training programs. It is important to note that even if sufficient funding can be secured for conducting multi/inter-disciplinary research on complex urban issues, the research outcomes are often not satisfactory due to the inherent complications for coordinating such large scale projects among several stakeholders (e.g. see Evans and Marvin 2006 discussion about the case of prompting interdisciplinary urban research in UK).

Despite these discouragements, through this meeting we did come to realize that, from a practical point of view, our existing collaboration strategy with the partner universities for the development of the training materials of the IGLUS-training modules was highly justifiable. More precisely, we realized that our strategy to ask the partner university to provide context and topic specific inputs for the training module and having us, as the program organizers from EPFL, take the lead in developing inputs that further enabled the participants to analyze complex problems from a holistic and multidisciplinary perspective (i.e. our theoretical inputs, moderation of training sessions to create opportunities for critical reflections, developing dedicated reflection sessions, preparing and assigning written exercises) seemed to be a highly effective (and resource efficient) approach for organizing the training modules of the program.

Although the conclusions we drew from this inaugural workshop did not directly affect the training module in Dubai, the workshop did provide us with important insights for planning the next phases of the broader IGLUS project.

4.4.2.4 Designing the curriculum of the module with the Partner University and partner institutions

4.4.2.4.1 Working with AUS as our local partner university

As explained in the three previous case studies, we placed a special emphasis on the importance of developing the module's detailed curriculum in *close collaboration* with the partner university, instead of having it solely designed by either EPFL or the partner university. The main reasoning behind this strategy was to ensure that we can include the most important inputs available from the local context into the curriculum of the module without compromising the overarching coherence and connectivity of the complete Executive Master's program. We tried to do so by providing enough

freedom to the partner university and its affiliated lecturers to shape the main part of the curriculum according to their insights about the host city. In the same time, we kept our partial control on defining the broad learning objectives of the modules to ensure the coherence among the different modules of the master program.

We began to prepare for the IGLUS-Dubai module in early 2014 by establishing our initial contact with the Department of Architecture and Urban Planning at the American University of Sharjah. A mutual understanding about the objectives of the project was easily reached between us and our contact professors at the AUS after several rounds of discussion. After the IGLUS-Istanbul module and prior to the start of the IGLUS-Hong Kong module, we initiated our first round of discussions with the representative professor from AUS, during which the framework for our collaboration was outlined. Once we were reassured that all of the perquisites for a smooth collaboration with AUS were in place, we decided to postpone the practical steps of our collaboration for development of the detailed curriculum of the program after concluding the IGLUS-Hong Kong module. The main reason behind this decision was to be able to benefit from our reflections on the learnings we could have from the IGLUS-Hong Kong module.

With that, in November 2014 we started an intensive period of collaboration with AUS to develop the joint curriculum of the IGLUS-Dubai module. In preparing the curriculum of this module, we generally followed the same process we had previously established for joint curriculum development, as was explained in the IGLUS-Guadalajara and IGLUS Istanbul case studies. The process of joint curriculum development with AUS started with several rounds of conversation between me and the contact professor at AUS to decide about the most important and interesting topics that should be addressed in the Dubai training module. Thanks to the insights gained through these rounds of informal exchange, I was able to draft a very broadly structure of the curriculum for the module (Table 4.4.4). I then asked our colleagues at AUS to reflect on this initial proposal and to propose more concrete and detailed proposals for each of the sessions and to also propose any additional sessions that they believed would be important to cover in the program.

After several rounds of review of the draft curriculum, the final curriculum of the IGLUS-Dubai module was finalized (presented in Table 4.4.2). The communications with AUS throughout the curriculum development process were very smooth and constructive. Flexibility of both parties during the curriculum development process and their openness to introducing changes in the curriculum was significantly helpful for emergence of a constructive dialogue and helped to ensure that the inputs from both parties were effectively respected in order to develop a locally-relevant training module that was highly in coherence with, and complementary to, the previous training modules of the program. The positive impacts of following a flexible and collaborative process in developing the curriculum in the IGLUS-Dubai module can be illustrated by comparing Table 4.4.4 and Table 4.4.2, which outlines the significant changes made between the initially proposed structure for the module (which itself was the result of several rounds of discussions and brain storming) and the finalized version of the curriculum, in terms of the covered topics and the ordering of the sessions.

Based on our learnings from the previous modules of the program and feedback from the participants, I had a keen focus on organizing more interactive sessions in the process of curriculum development for the IGLUS-Dubai module (such as discussions and role-play sessions). So, I asked

our contact professor at the AUS to strictly instruct the local lecturers to be prepared for interactive sessions and to *allocate enough time for discussions* during the training sessions⁸⁵. This persistence on allocation of enough discussion time in each session of the module proved to be fruitful as, in the IGLUS-Dubai module, we had almost no incidents in which the lecturers were not willing/ready to engage in class discussions. However, the willingness of local lecturers to engage in a discussion with the participants does not mean that the lecturers were themselves exhibit a critical attitude in their presentations and discussions of local case studies. Indeed, some the local lecturers in the IGLUS-Dubai module had a stronger focus on covering the positive dimensions of the case studies they presented. In these situations, the class discussions only became critical when our international participants began asking critical questions. This point will be discussed in greater detail in section 4.4.3 of this case study.

Another adjustment I had made in the organization of this module based on my reflections on the experience of IGLUS-Hong Kong module was to place a greater emphasis on the importance of having multiple lectures cover each topic addressed in the module. In doing so, I was trying to ensure that the participants would be exposed to different perspectives on relevant issues in order to receive the necessary inputs that could help us to understand and analyze the presented issues from a more holistic-multidisciplinary perspective. As a result of our close collaboration⁸⁶ with the AUS on this issue, several topics in the curriculum of the module were covered by more than one lecturer (e.g. urban planning, energy, governance of Dubai). Indeed, after our inability to reproduce our successes in organizing panel sessions after the IGLUS-Guadalajara module⁸⁷, we managed to have two panel sessions in the IGLUS-Dubai module (on the governance of Dubai, urban planning in the UAE); these sessions were greatly appreciated by the participants.

⁸⁵ In the next modules of the program, which are not covered in this thesis, I took it one step further and proposed a recommended timeframe for each of the sessions to the partner universities. I asked them to allocate approximately one third of each session to theoretical inputs, one third to illustration of a local case study, and one third to class discussions.

⁸⁶ Here, I must acknowledge the support I received from two of my colleagues from EPFL, Mr. Maxime Audouin and Mr. Amin Dehdarian, who significantly contributed to the organization of 2 days of the IGLUS-Dubai module (the waste management and energy management sessions).

⁸⁷ In IGLUS-Istanbul module, we hosted a panel session at the very end of the training module which was quite successful. However, the panel structure was not really embedded in the structure of the program as it was the case in Guadalajara and Dubai modules.

Table 4.4.4 – draft version of curriculum proposal to AUS										
Mo	Tue	Wed	Thu	Fri	Sat	Mo	Tue	Wed	Thu	Fri
Intro (EPFL)	Green infrastructure theory	Sustainable Dubai policy and governance (Energy focus)	AUS input	BCG input	UN input (Real estate)	Special issues about UAE (cases, challenge, etc.)	Transport operation and finance Dubai	Solid waste and recycling policies	Dubai smart cities	UN input (resilience)
Theory session (EPFL)	Green infrastructure theory	Sustainable Dubai policy and governance	AUS input	BCG input	UN input (Real estate)	Special issues about UAE (cases, challenge, etc.)	Transport operation and finance Dubai	Solid waste and integrated energy systems	Dubai Economic development policies	UN input (resilience)
Guest lecturer from US	Dubai governance structure	Masdar visit	Dubai zoning and land use planning	WB input	UN input (Real estate)	Security in UAE	Visit of Transport infrastructures	Visit of waste management facilities	Water governance (agriculture, residential, etc.)	firm presentation
Guest lecturer from US	Dubai governance structure – Dubai development history (policy initiatives and leadership)	Masdar visit	Urban branding (branding - infrastructure)	WB input / Iconic projects tour	UN input (real estate) /Iconic projects tour	EPFL (projects)	Visit of transport	Visit of waste management facilities	Water governance (agriculture, residential, etc.) / visit of water treatment facilities	EPFL wrap up
Reception	Dinner									

One of the main shortcomings in organizing the previous modules of the program was our limited success in enforcing our policy of collecting and reviewing the local lecturers' presentation materials before the start of the program. Based on the negative experience of losing control over the presentation materials of the local lecturers in the previous modules of the program (poor quality of some of the presentations, repetition of materials, etc.) that were rooted in this failure, for the IGLUS-Dubai module I decided to place more pressure on our contact professor at the AUS to urge all the local lecturers to prepare and share their training materials before the start the module. Unfortunately, despite my persistence and our contact's continuous follow ups, we failed to review almost all of the 'content' presented by the local presenters prior to the start of the module. According to our contact professor, one of the main reasons behind this failure was the dominance of informal relationships among collaborators at the AUS and the local lecturers' spontaneous attitudes (different working cultures).

In the IGLUS-Dubai module, as in the previous three modules of the program, in addition to the sessions that were organized by the partner university (AUS) and delivered by local lecturers, we had to design 2 other types of sessions- namely, the IGLUS-EPFL sessions and the IGLUS-Partners' sessions. In the coming pages, I will explain the process of designing these two other types of sessions in more detail.

4.4.2.4.2 Designing the EPFL sessions

Similar to the previous modules of the program, in the IGLUS-Dubai module we continued to reserve some of the training sessions for 'EPFL inputs' to make sure that our core inputs were being directly conveyed to the participants. Based on our learnings from the previous modules (AR cycles) of the project, in the IGLUS-Dubai module we planned to include four types of EPFL sessions, namely *Theoretical Opening Sessions*, *Reflection Sessions*, *Project Sessions* and the *Module Wrap-up Sessions*. In the coming sections, I will explain and reflect on the processes that we went through for designing these four types of sessions.

4.4.2.4.2.1 Designing the Theoretical Opening Sessions

As briefly discussed in sections 4.4.2.1 and 4.4.2.2. (approach and choice of theoretical inputs), based on our reflections on our learnings from the previous modules of the program, and especially the IGLUS-Hong Kong module, we realized that in the theoretical opening sessions, instead of presenting a mixture of stand-alone theories, we should favor the use our conceptual frameworks. With this objective in mind, in IGLUS-Dubai we decided to follow our promising approach which emerged during the IGLUS-Hong Kong module⁸⁸; but to further elaborate on the practical applications of our

⁸⁸ To recall: after reflecting on the outcomes of IGLUS-Guadalajara, where we provided our participants with generic theoretical inputs to familiarize them with the complex and multidisciplinary nature of challenges in the governance of large urban infrastructure systems, we decided to adopt a new approach and presented more focused and disciplinary theoretical inputs to our participants in the IGLUS-Istanbul module. Based on our learnings from these first two AR cycles,

ideas and the framework in the context of governance of large urban infrastructure systems (different infrastructures, different urban development stages, etc.). Also, we decided to provide more of the practical details necessary for transforming the abstract framework into a practical toolkit that can be easily understood and used by urban practitioners. Figure 4.4.2 provides a graphical representation of the evolution of our theoretical inputs throughout the four IGLUS modules.

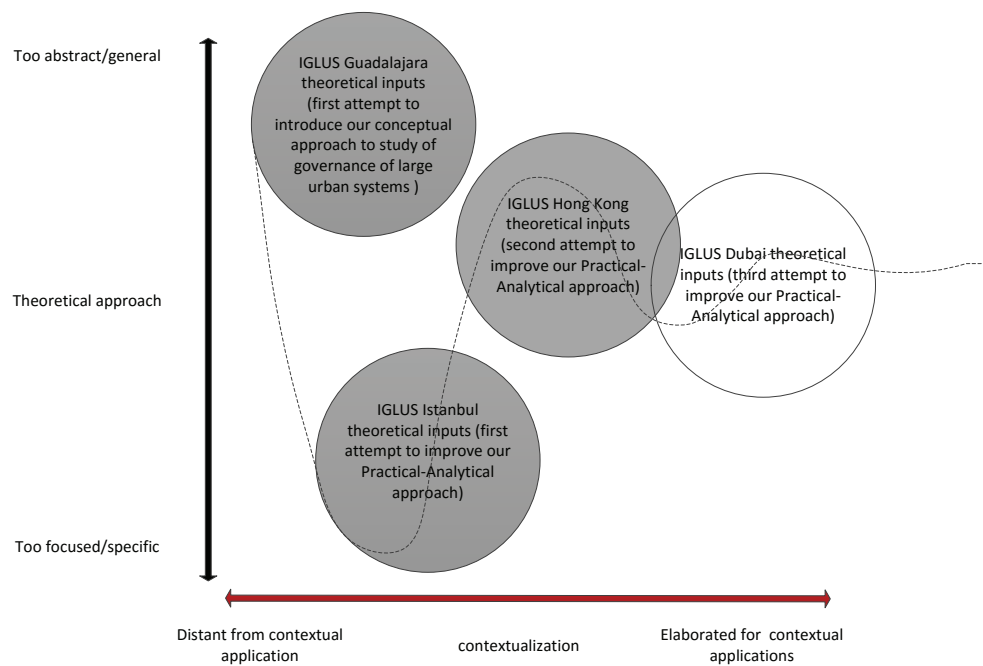


Figure 4.4.2 – Evolution of our theoretical inputs

To that effect, after the conclusion of the IGLUS-Hong Kong module I initiated an intensive round of conceptualization with the goal of developing a more elaborated conceptual framework about the relationship between governance and performance of large urban infrastructure systems. As discussed in previous sections, in this process, I made use of theoretical inputs from my previously conducted bibliographic research as well as my reflections on my learnings from the past three modules (AR inquiry cycles) of the project. In addition, I also benefited from close consultation with Prof. Finger who had extensive experience running executive education programs and is known

we realized that for the IGLUS-Hong Kong module, in order to fulfill our intended objectives (training urban practitioners to address complex challenges in governance/management of large urban infrastructure systems), we would need to better balance our analytical and practical approaches when designing the theoretical inputs for the program. Thus, we used inputs from systems theory and tried to contextualize these theoretical inputs to the context of urban infrastructures; these efforts resulted in significant improvements in our conceptualizations of performance and governance of large urban infrastructure systems.

globally for his research in the field of governance and regulation of infrastructure systems (e.g. see Finger et al.,2005, 2010).

Conceptualization of performance

The *first part* of this conceptualization effort was dedicated to elaborating on of *the concept of 'performance'* by incorporating more direct references to the General Systems Theory as well as the understanding of cities as socio-technical systems. As discussed in the previous case study- the IGLUS-Hong Kong training module- by referring to the definition of systems, we argued that performance of cities, understood as socio-technical systems, can be studied in three interrelated layers (Figure 4.4.3): namely the urban infrastructure subsystems that shape the city as a system of systems (corresponding to efficiency dimensions); the urban socio-technical system as a functional whole (corresponding to resilience dimensions); and the urban systems in their larger socio-ecological environments (corresponding to sustainability dimensions).

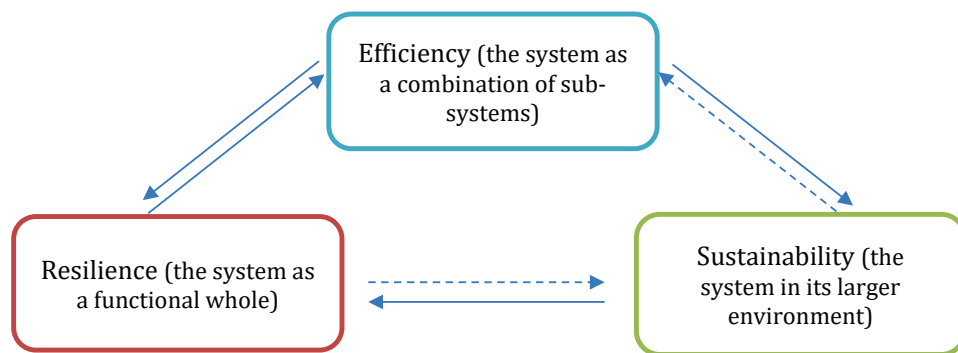


Figure 4.4.3. Conceptualization of performance of cities as socio-technical systems

The main difference between our conceptualization of performance in the IGLUS-Hong Kong module and in the IGLUS-Dubai module revolves around our attempts to have a more explicit definition of 'urban systems' in the Dubai module. More precisely, after the initial spark of using this approach to conceptualize urban performance during the Hong Kong module, I realized that we have to further clarify our definition of 'urban systems' in order to avoid confusion among the participants, which could result from the use of loosely-defined terms such as resilience and sustainability among urban scholars and practitioners when discussing 'urban systems' (e.g. economic resilience, infrastructure resilience, environmental sustainability, social sustainability, economic sustainability, etc.). So, after several rounds of discussion with Prof. Finger and after hearing the opinions of some of the scholars who attended the inaugural IGLUS workshop in Ras Al Khaima, I concluded that we should clarify that our main focus in this conceptualization of urban performance is the city as a socio-technical

system, or in other words, the city as a complex system of interrelated infrastructures (technological systems) embedded in a social, economic, political and ecological context.

Conceptualization of the link between governance and performance

The second part of our conceptualization efforts in preparation of our theoretical inputs for the IGLUS-Dubai training module was focused on elaborating the *link between governance and performance* of large urban infrastructure systems from a holistic-multidisciplinary point of view. As briefly discussed in the previous sections of this case study, in this conceptualization process, one of *my* main objectives was to provide enough details to enable the participants to *operationalize* the abstract concepts presented in the framework (which were adopted from theories) and use them in analysis of real-world cases. The detailed governance-performance framework which was the result of this conceptualization exercise can be found in the Annex of this thesis.

Once the revised version of our governance-performance framework was ready, we started several rounds of internal discussions for finalizing the design of our theoretical opening sessions. In this process, *we* concluded that presenting our conceptualizations, and their links to different theories, in too much detail could cause the participants to become confused. Indeed, we concluded that although presenting the framework as our main theoretical input stands to be an effective strategy for linking the different arguments from well-established theories (that are important for understanding the problems from a holistic-multidisciplinary point of view), presenting the framework as a complete package could be confusing due to large number of variables and dimensions that are incorporated into it. So, the detailed framework became an internal reference point for our team, based on which, we could better plan our theoretical inputs and elaborate on a variety issues that are pivotal to the analysis of complex challenges associated with governance of large urban infrastructure systems.

Similar to our approach in the IGLUS-Guadalajara module, when designing the IGLUS-Dubai theoretical sessions, we had a special attention to the fact that our audience in the class are adult learners with significant knowledge about a variety of urban issues, thanks to their professional experience (Knowles, et al.,2014). Thus, our aim for this session was not primarily to ‘teach’ our conceptual frameworks to these practitioners, but to ‘present’ our current state of thinking and conceptualization and ask for their critical reflection on our inputs. In other words, the theoretical sessions in the IGLUS-Dubai module were mainly conceived to serve as a structured discussion forum where we present our conceptualization of the link between governance and performance of large urban infrastructure systems and figure out how this way of thinking might help a practitioner to address complex urban challenges from a more holistic-multidisciplinary point of view. I will further detail the dynamics of the theoretical sessions in section 4.4.3, where I cover the main observations made throughout the IGLUS-Dubai training module.

As part of the preparatory assignment for the IGLUS-Dubai module, we asked the participants to develop a simple conceptual framework to explain their understanding of the Dubai development process, based on several assigned readings. So, in designing the theoretical opening sessions of the IGLUS-Dubai module, we decided to allocate almost half of the time of the sessions to the presentation and discussion of participants’ framework about development of Dubai. We asked the participants to

more actively get engage in the practice (or exercise) of ‘conceptualization’ of complex urban issues, and documenting their understanding of these complex issues in order to ensure that they can practically translate their learnings from the program to simple practical toolkits for analyzing complex urban issues from a holistic and multidisciplinary point of view.

Our decision to engage the participants in conceptualization exercises was very much in-line with our learnings about the importance of using ‘conceptual frameworks’, instead of stand-alone pieces of theoretical inputs, to effectively train urban practitioners to address complex urban issues from a holistic-multidisciplinary point of view. In simple words, we decided to ask the participants to develop conceptual frameworks, instead of analyzing theoretical papers, to take a next step towards enabling our learners to change their disciplinary perspective in the analysis of complex urban problems.

This new initiative in the program (asking participants to work on their personal conceptual frameworks to understand complex problems in the host city of the program) was heavily inspired by my personal reflections on the experience of in-class reflective exercises with the participants in the past three modules of the program and positive feedback of the participants regarding the usefulness of these sessions to help them organize and structure their learnings. This exercise was, in effect, complementary and supportive to our continuous efforts to enable the participants to critically reflect on their observations and learnings throughout the training modules in order to help them to come up with a more holistic understanding of complex challenges in governance of large urban infrastructure systems.

The conceptual frameworks that the participants developed were also used during the Dubai training module (especially in reflective sessions) as a reference point to help them to reflect on their learnings from the lectures and field visits in order to help them improve their understanding of development of Dubai (a complex real world problem). In addition, in the wrap up exercises of the module the participants were asked to refer back to their initial framework and revise it based on their learnings from the module. The goal of this activity was to create an opportunity for the participants (and us) to better evaluate their progress after attending in this training module⁸⁹. I will cover these issues in more detailed in the coming sections.

4.4.2.4.2.2 Designing the Projects session:

As discussed in the previous cases, we had a special emphasis to closely support the participants in their attempts to define and conduct high quality practical-research as their master projects. We advised the participants to define the topic of their master project according to their professional experience and interests. The participants’ master projects was an essential part of our pedagogical approach (or in Knowles’ words: “our Andragogical approach”) in this training program due its important function for contextualizing the learnings of each participant according to his/her

⁸⁹ The results of our new design of theoretical sessions were so promising that after the IGLUS-Dubai module, we used the same structure in the opening sessions of all of the upcoming training modules of the first edition of the Executive Master’s program (IGLUS-Detroit/Chicago, IGLUS-Seoul, IGLUS-Dortmund) and later in the second edition of the program.

personal experiences and professional interests. In other words, we regarded the participants' master projects as an opportunity to help each participant to use his/her learnings from the training modules to answer a 'personal' question, and by doing so, help each participant to create a unique, relevant and meaningful learning experience for him/herself.

Based on our learnings from the project/methodology sessions as well as the wrap-up essays of the participants after the IGLUS-Hong Kong training module, we decided to provide the participants with more support in the process of defining their projects' topic. Since the participants were still not in a stage to start working on their project (data collection and analysis) and still needed to further improve their project proposals, I decided to allocate the limited available time for the project/methodology session to discuss the participants' research questions. For this session, I decided to use the same group learning techniques, which proved to be successful in the IGLUS-Hong Kong module. To fill the methodological-skills gaps of the participants, I decided to consult with each participant on an individual basis to advise him/her based on his/her specific methodological needs and avoid providing general research methodology lessons to the group.

4.4.2.4.2.3 Designing the Reflection and wrap up sessions:

Following the successful practice of incorporating dedicated reflection sessions in the curriculum of the IGLUS-Hong Kong module, I decided to also incorporate dedicated 'reflection sessions' in the program of the IGLUS-Dubai module. The dedicated reflection sessions were additional to my continuous presence in all of the module's training sessions as a moderator; ensuring that the participants would have the opportunity to discuss and critically reflect on the inputs of lecturers and encouraging the participants to ask critical questions and to share their opinions with the group when relevant. Due to time restrictions, I could plan only one dedicated reflection session for the IGLUS-Dubai module. However due to several last minute cancelation of presentations by local lecturers, I could also organize some other spontaneous reflection sessions during the Dubai module.

The two last sessions of the IGLUS-Dubai module were reserved for wrap up activities with similar structure to wrap up sessions at the IGLUS-Guadalajara and IGLUS-Istanbul modules. However, in the wrap up sessions of this module we benefited from some group discussion techniques (jointly designed with our contact professor at the AUS) to enhance the quality of open discussions and ensure that the participants could freely share their learnings and their feedback on their learning experience with the group.

4.4.2.4.3 Designing the joint sessions with external partners (UN housing unit, UN resilience unit, World Bank, BCG, Veolia, Cemex)

In IGLUS-Dubai module, six lecturers affiliated with our external partners agreed to share their practical knowledge with the class. A senior representative from the UN-Habitat housing team agreed to discuss housing market dynamics from a global perspective and also reflect on the housing market

crisis that occurred in Dubai in 2008. As part of our new agreement with the UN-Habitat City Resilience Profiling team, a representative from this team agreed to present the UN-Habitat City Resilience Profiling Project and share a case study about Barcelona's urban resilience initiative. The same urban lead specialist from the World Bank group who had presented in two of the previous modules of the program also agreed to host a session (via video conferencing) about the different typologies of Metropolitan Governance by providing both theoretical inputs and practical examples from several case studies. Based on our preliminary studies of Dubai and Sharjah, it was clear to us that a lack of a metropolitan governance structure in this urban agglomeration, which is controlled by two different Emirates, has resulted in a series of challenges for efficient planning and operation of urban infrastructures (especially transport, housing and waste). So, this session by the World Bank Group could provide interesting insights into potential solutions for dealing with such metropolitan governance challenges.

In addition to the lectures given by representatives of these two international organizations, we also had three lecturers from the partner companies present in this module. The same lecturer who represented for BCG in the IGLUS-Istanbul module agreed to provide a lecture about PPPs and how they can help to fill the infrastructure investment gap. Since PPP contracts were being more frequently used in development of infrastructures in Dubai (Dulaimi, et al., 2010), the topic of this presentation was highly relevant to this module.

Organizing the sessions with these institutions who had previously contributed in the program was relatively straightforward as parties (EPFL and the partner) were familiar with our established process of session development. In each of these cases, I personally got in touch with our guest lecturers and provided them with the general learning objectives that we expected from their session in the IGLUS-Dubai module. Since these lecturers were already fully informed of the program's general objectives and structure, I was able to easily engage them in a discussion about the content of their session and ensure that their contributions would address the issues from a global-expert's point of view. The lecturers were informed that we would like to reflect on their inputs by using examples from the participants' experiences as well as our learnings about the local challenges that had been presented by local lecturers; thus we expected them to encourage class discussions during their presentations.

In addition to these four lectures, which were organized in collaboration with those partners whom had previously collaborated with us in the previous modules of the program, we had two lecturers from Veolia and Cemex who were new partners of the program and with whom we had no previous collaboration experience. I decided to organize these two sessions by following the successful process which I used to organize the partner companies' first sessions in the three previous modules of the program. To that effect, I personally got in touch with the lecturers and briefed them about the structure and learning objectives of the training program, topics we had covered in the previous training modules of the program, and our intention from incorporating private company presentations in the program (emphasizing that the goal was not corporate marketing, but providing the private-firm point of view on challenges in urban infrastructure systems). More precisely, I communicated customized versions of the following main learning objectives with our contact persons at Cemex and Veolia as the expected learning outcomes from their presentation:

1. Understanding how the private sector perceives the challenges in cities related to urban infrastructures (the private actors' point of view about urban infrastructure challenges)
2. General understanding of the solutions/innovations that the company is offering to improve performance of cities in its respective infrastructure sector
3. Understanding the governance challenges associated with realizing such solutions/innovations in large urban systems (infrastructure) from the private actors' point of view

As explained in previous cases, the practitioner-lecturers who presented in the first three modules of the program proved to be highly competent and delivered clear, relevant and comprehensive lectures to our audience. They were also quite open to critical discussions about the complex challenges in management/governance of urban infrastructures as well as potential solutions to address them. Our experience with Veolia was very similar to these previous experiences we had working with private companies in the program and was very successful. Unfortunately, due to unforeseen circumstances, the representative from Cemex canceled his presentation in the IGLUS-Dubai module.

4.4.2.5 Local recruitment to ensure presence of context specific experiences and inputs in the class

Following our policy in the previous modules of the training program, we asked our partner university in the IGLUS-Dubai training module (AUS) to recruit some local participants to attend our module. As explained before, our primary motivation behind adopting this local recruitment strategy was to enrich the quality of discussions and learning outcomes in the module by bringing local and international participants into the same classroom in order to have a more diverse set of perspectives in the discussions about complex challenges in governance of urban infrastructure.

While preparing for the IGLUS-Dubai module, AUS informed us that they have limited opportunities to recruit urban practitioners from Dubai and Sharjah for the module. Based on my experience from the complications in local recruitment for the IGLUS-Hong Kong module and the negative consequences that resulted from the lack of significant inputs from local participants in that training module, I decided to initiate a parallel recruitment campaign in the MENA region in order to reduce our dependency on the AUS for implement our local recruitment strategy. To that effect, I asked one of our master students at EPFL, who had conducted an industrial internship in the UAE and had a well-developed professional network there, to take the lead of our regional recruitment campaign and contact potential organizations there to nominate candidates for the training program. He was asked to take some further help from two Arabic speaking students to directly contact and share the information about the project with public and private offices in the region. As a result of this two-month campaign, four local practitioners had been recruited to attend the IGLUS-Dubai module. Three of these participants later decide to continue their learning journey by formally enrolling in the complete Executive Master program. In addition, a recently graduated Master student from the AUS also eventually attended the IGLUS-Dubai training module.

The presence of these 5 local participants significantly enriched the quality of the training sessions in the IGLUS-Dubai module. In addition to providing inputs about local challenges, these new participants (who, mostly had several years of working experience) proved highly capable of engaging in the intellectual discussions throughout the module. They also helped providing critical feedback on our training practices and intellectual discourse, which resulted in further improvement of the training program in the long term. Especially, the fact that this group of participants were able to experience the program and our discourse with a fresh eye- unlike our original group of international participants who had been involved in the program since its instigation and played a significant role in formation of our discourse and training practices- resulted in some interesting discussions about the validity of our approach in this training program, which I will elaborate in the next sections of this case study. In fact, the experience of having a mixed group of participants (people who had just started the program as well as others who had been attending in their third training module in the IGLUS-Dubai module) and the challenges associated with it (familiarity with terminology and definitions, understanding the approach, etc.) became our starting point for developing of a Massive Open Online Course on the Management of Urban Infrastructures. This MOOC later became a foundational course for all new participants who wanted to attend this modular training program.

4.4.2.6 Preparatory assignments

As discussed in the previous paragraphs of this case study, based on our learnings from the previous training modules of the program (our first three AR inquiry cycles), we realized that the practice of developing and using 'frameworks' for analysis of complex urban systems can play an important pedagogical role in fulfilling the learning objectives of this program⁹⁰. The practice of developing simple frameworks about complex urban problems could help the practitioner-participants to experience the intellectual process of extracting the main elements that are important for understanding a problem, synthesizing the relationship between these elements to develop a framework and use the results of such syntheses for analyzing complex urban problems from a more holistic and multidisciplinary point of view. Therefore, I decided to change the design of the preparatory assignments in the IGLUS-Dubai module and adapt a stronger emphasis on the practice of framework development and using the framework to compare different cases. This decision was also in line with my findings from the analysis of preparatory assignments of the IGLUS-Hong Kong module (second question of the IGLUS-Hong Kong preparatory assignment) where I could observe

⁹⁰ I am using the term framework as it is defined by Imenda 2014 (p.189): "...a conceptual framework may be defined as an end result of bringing together a number of related concepts to explain or predict a given event, or give a broader understanding of the phenomenon of interest – or simply, of a research problem." This definition is also in line with the widely accepted use of the term framework by E. Ostrom (2009, pp. 413-414): "The framework contains a nested set of building blocks that social scientists can use in efforts to understand human interactions and outcomes across diverse settings... While the terms frameworks, theories, and models are used interchangeably by many scholars, we use these concepts in a nested manner to range from the most general to the most precise set of assumptions made by a scholar."

that we should further empower the participants to use frameworks for comparing different case studies in a structured and comprehensive manner.

The first two questions of the preparatory assignments of Dubai were focused on this new type of exercise by asking the participants to read a descriptive-analytical case study about Dubai (Hvidt 2009, plus some further optional readings including Bagaeen 2007 and Masad 2007) and develop a simple framework that can describe the underlying dynamics in development of Dubai and then use their own-developed frameworks to compare the development process in their home cities and Dubai. In addition to the 'conceptualization' part of the assignment, the participants were asked to read a more practical article on tourism planning (Sharples 2008 and Stephenson & Ali-Knight 2010 as complementary material) as well as a professional sustainability report about Dubai by DEWA⁹¹ and use the insights from these articles to propose a series of recommendations for their own cities. More precisely, the participants were asked to:

"1) Sketch the main elements of development in Dubai in a 1 page diagram (graphical model). To do so, you can think of it as you want to present the result of your readings about development of Dubai (first article) in a graphical way. If it is hard for you to draw a diagram on computer, you can send us the scan or photo of your hand drawing.

2) In 2-3 pages, compare your own city with Dubai. You can use the elements of your graphical model of Dubai development as a basis and then compare your own city with Dubai by using your model. Which elements are different between Dubai and your city, which elements are the same? How can you explain the differences between the development stage in your city and Dubai on the basis of your model?

3) Based on the article of "Planning for tourism, the case of Dubai" write a 1.5-2 page executive report on how your city should plan for tourism?

4) Look at the DEWA sustainability report and strategy and explain (1.5-2 pages) if your city can use the same strategies to achieve some of its sustainability goals. If yes, please explain how can it happen considering the potential differences between your city and Dubai? If not, please explain why?⁹²" [adopted from the instructions of preparatory assignment for the IGLUS-Dubai module]

In the coming pages, I try to highlight the main points from the participants' answers to these questions.

4.4.2.6.1 Selected quotes from the participants' essays

Questions 1)

The participants' responses to the first two questions of the preparatory assignment highlighted some major difference among our different participants' abilities to 'conceptualize' the main factors

⁹¹ Dubai Electricity and Water Authority. The report is accessible online at https://www.dewa.gov.ae/images/DEWA_Sustainability_report_2013.pdf (Accessed 30 May 2017)

⁹² The length of the preparatory essays were intentionally kept short to accommodate the busy schedule of the participants.

behind the case of development of Dubai and to illustrate the systemic feedbacks among those factors in this complex process.

For example, one of the participants - director of infrastructures in one of the biggest Colombian cities who had attended in two previous modules of the program - could only provide an organigram of 'Dubai business structure' (figure 4.4.4) but could not incorporate the several other elements of Dubai development which were highlighted in the preparatory readings.

However, most of the other participants could capture more elements in their conceptual models and illustrate more holistic and multidimensional understanding about this complex process in their answers. For example, one of the participants from Mexico included a large number of factors in her conceptual model by using the analytical structure of the main preparatory text (Hvidt 2009) but still could not provide 'her own' synthesis of the systemic feedbacks among these many factors in her model (Figure 4.4.5)

The most interesting observation from this conceptualization exercise comes from the essay of one of our Mexican participants - activist in an NGO with educational background in statistics and computer science - who had developed a highly sophisticated framework by proposing several layers of categorization to organize the factors that were mentioned in the preparatory papers. In addition to categorization of factors in a different structure compared to the paper of Hvidt, she could also illustrate some feedback loops among these factors in her conceptual model (Figure 4.4.6).

The fact that some of the participants could capture the main elements of the process of development of Dubai from the paper by Hvidt, but were only partly successful in conceptualizing the links and feedback loops among these factors showed that we have to further enhance the conceptualization capabilities of the participants in the coming modules of the program. More precisely, we realized that we should continue our initiative which started in IGLUS Hong Kong module to familiarize the participants with the 'systems' perspective and its practical applications for analysis of complex urban problems. However, the important fact that the participants' approach in analysis of complex problems (case of Dubai development in this example) was not any more highly disciplinary was an important observation that showed some achievements of the program. In other words, the fact that the participants were analyzing such complex problems by considering several important dimensions (social, economic, political, technological, environmental) was already showing a significant improvement in their ability to adopt a more holistic-multidisciplinary perspective in analysis of complex urban problems.

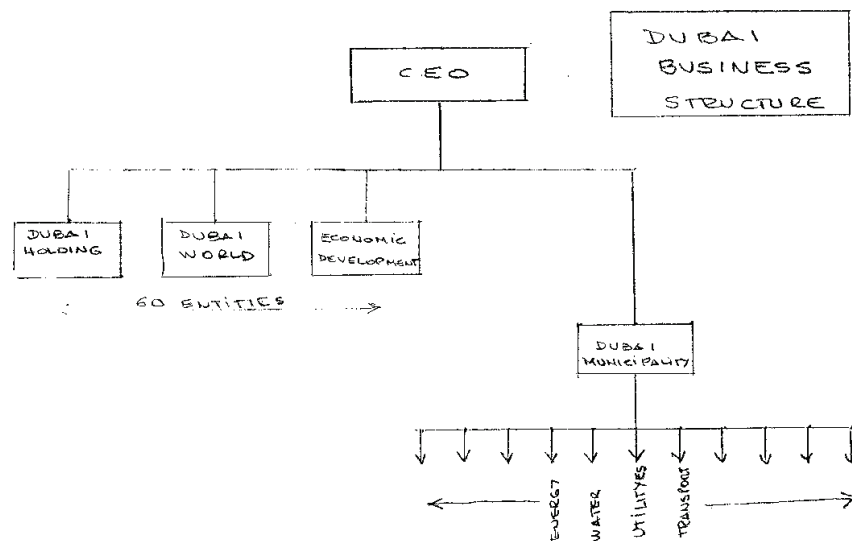


Figure 4.4.4 – framework of Dubai development process by one of our Colombian participants [M.P.4]

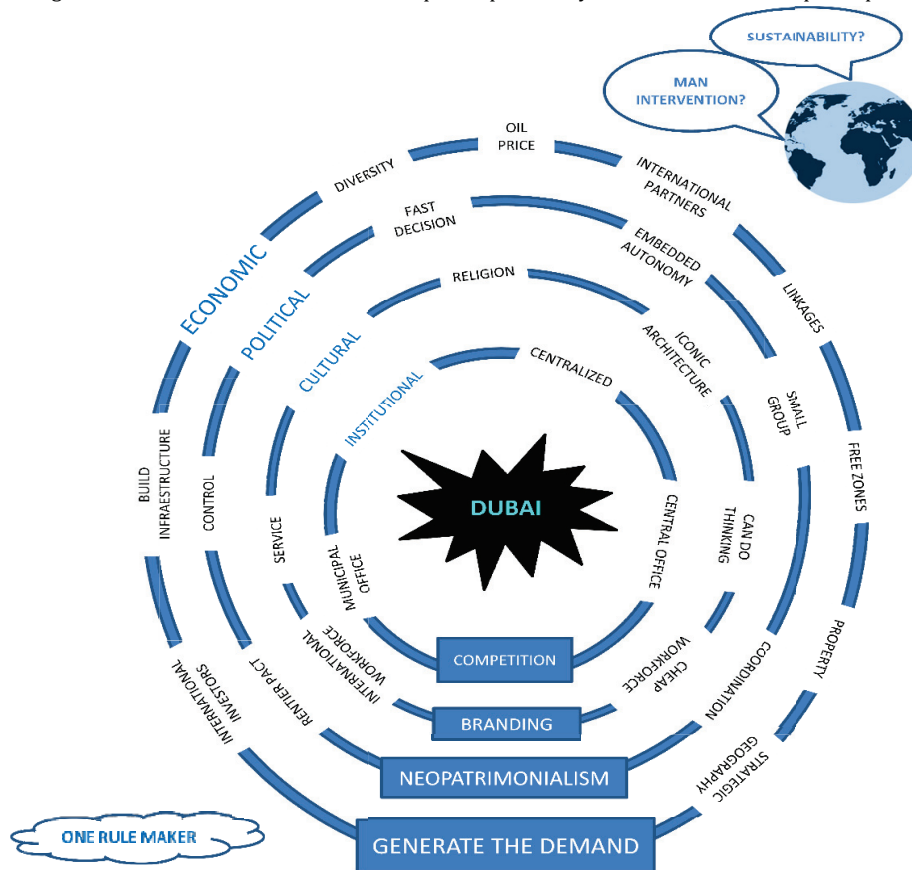


Figure 4.4.5 – framework of Dubai development process by one of our Mexican participants [A.P.4]

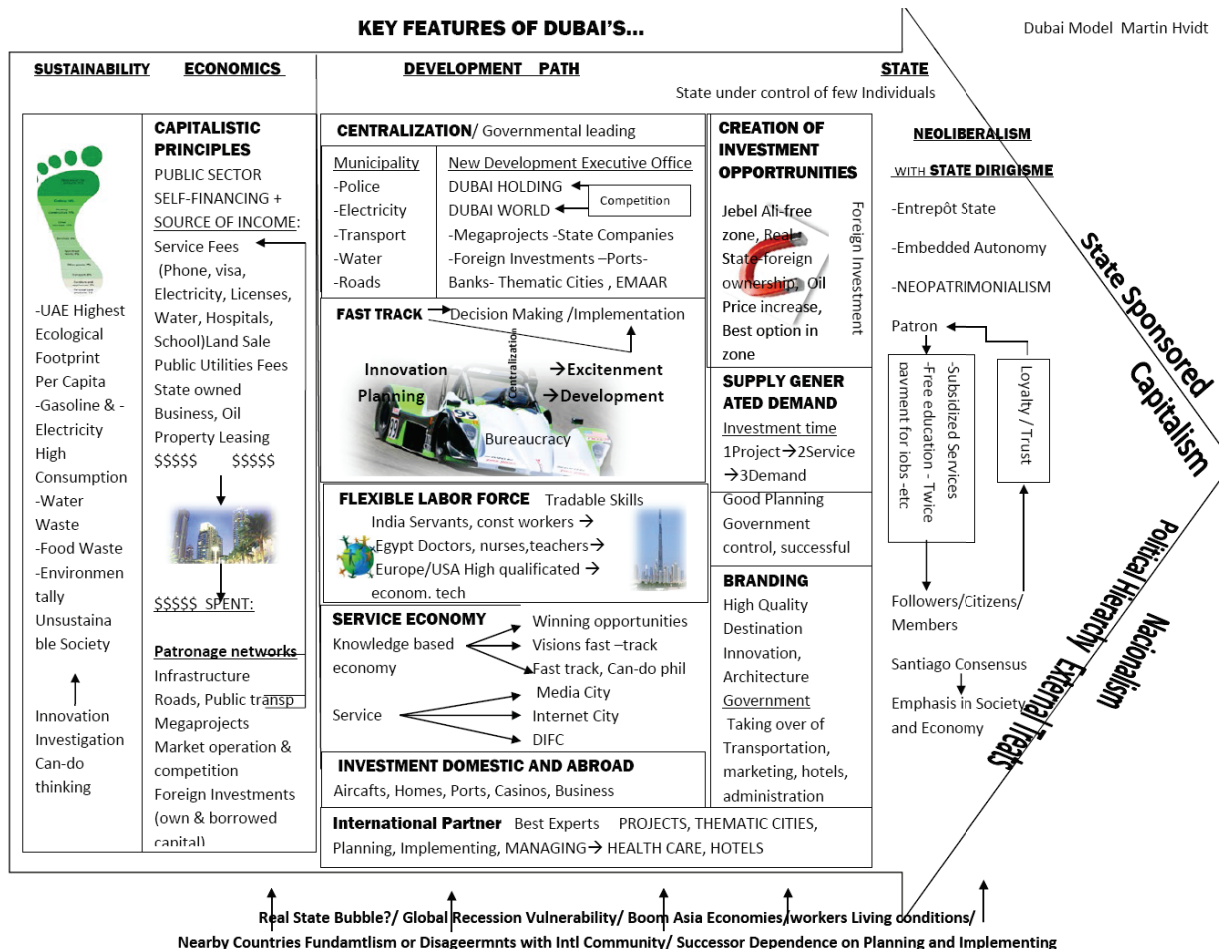


Figure 4.4.6 – framework of Dubai development process by one of our Mexican participants [B.P.4]

Question 2)

In the second preparatory assignment, participants were asked to compare the development process in their home city and Dubai. They were asked to use their own developed conceptual models as a framework for this comparative analysis exercise. Not surprisingly, participants' answers to this question were highly influenced by the quality of their answers to the first question. For example, our Columbian participant who could not fully capture the complex dynamics of the development process in Dubai in the first question, could barely conduct this comparison and mostly relied on very general and anecdotal arguments in his answer to the question with a strong focus on the political difference between the two cases⁹³.

⁹³ It should be noticed that this participant had previously showed to be highly capable to analyze similar kinds of problem from a more holistic and multidisciplinary point of view (e.g. see Hong Kong case study). So, his poor quality

"Colombia is a democratic and pluralistic Republic, with popular election of their organs of power, with the impossibility of re-election. His regime is Capitalist where the state does not invest in private development projects. The state belongs to everyone. There is freedom of religion and opinion... . Dubai is a monarchy. For a long time he lived in income from petroleum, which their leaders amassed large sums of money. When they felt that their oil reserves were not so great, decided to invest in its territory and make a profit to stay in time. With a planning strategy for the short, medium and long term, defined in investing, managing to diversify your investment by ensuring work for his subjects and using their money not only to lend through international banks, but to generate development, climate seeking investment liquidity in the Arab world through public private partnerships, were made in Dubai...." [A.P.4]

But those participants who could develop a more comprehensive conceptual model in the first part of this assignment proved to be more successful in conducting a well-structured comparison between their home city and the case of Dubai by adopting a holistic point of view. As an example of such answers, I shall refer to some illustrative quotes from the essay of one of the participants from Mexico, whose model was presented in diagram 4.4.5).

"Focus on the obvious differences in subjects such as geography or demographics will not contribute significantly to understand why the large gap between the two cities, that is why, based on the article "The Dubai model of development", this work is divided into four sections, which correspond to the economic, institutional, political and cultural factors...

ECONOMIC FACTOR

.... While in Guadalajara, economic government efforts are focused on providing services to places where, several years ago, the demand was generated; in Dubai they made exactly the opposite...

POLITICAL FACTOR

... It's easy to be a state in which important decisions are taken quickly and in a coordinate way, when you only have to convince a small group of individuals, who simultaneously control the economy and development of Dubai... The bureaucratic system, the search for more society participation in decision-making and the political cost that represents any decision, makes our [Guadalajara] development very slow.

CULTURAL FACTOR

Although Dubai is considered a cosmopolitan City, where religion has reduced its rigor, and Guadalajara is the most Catholic city of Mexico, there are many cultural differences, starting with religion and how it affects believers behavior.

INSTITUTIONAL FACTOR

In Mexico, as well as in UAE, public administrative institutions are centralized, however, in Mexico there're government-owned firms protected of any economic situation; paying liabilities with public funds, while government in UAE, foster competition between government-owned firms. Competition always generates innovation and quality characteristics that Mexican government-owned firms don't have."[A.P.4]

answer to this question (with regard to adhering the holistic-multidisciplinary approach) might be attributed to his poor performance in developing the conceptual model in the first part of this assignment.

An interesting point in the answer of this participant is her critical and reflective analytical approach (by referring to her personal point of view and raising several new questions) in formulating her answer to this question:

"...Now, after all this analysis, is essential ask what could be the weaknesses and threats for Dubai's development. What might be the future consequences of basing the development of an entire city in one person?"

Personally, human intervention in nature subjects, makes me feel anxious and raises many questions such as, What environmental consequences will have the development decisions made in Dubai?, Is it possible to construct artificial islands, extracting sand from the bottom the sea, interfere natural sea course without regional or global environmental consequences?" [A.P.4]

The fact that the participants in the program could critically reflect on the case studies and raise questions around them, like the above mentioned example, was an important observation for me because it was an indication of our progress in training practitioners for adopting a holistic-multidisciplinary approach in dealing with complex problems.

Question 3)

The main learning objective of the third part of this preparatory assignment, which was about developing an executive summary for tourism planning in home city of the participants, was to provide the learners with an opportunity to use their acquired knowledge and skills in the past modules of the program in a new and unfamiliar context (tourism planning). The paper by Sharpley (2008) provided an overview of different planning approaches for tourism and explored the case of Dubai in light of these established approaches. In this exercise, I was expecting that the participants can get the main elements of planning for tourism from the article and come up with a tourism plan for their home city which is in line with our holistic-multidisciplinary approach.

Some of the participants had a difficult time to reach to such a synthesis, especially to use the inputs of the paper by Sharpley in their answers. For example, one of the participants from Mexico – senior architect and urban planner – could barely use the insights of the paper in developing an executive summary plan for tourism of GMA. However, she had clearly adopted a holistic-multidisciplinary approach in formulating her answer by focusing on importance of infrastructure development in combination with using cultural assets to better utilize the tourism potentials of GMA region, and highlighting the role of economic and political actors in making this happen:

"... Because they have a good local and regional connectivity is critical to the development of tourism, so I propose:

- *Expand and improve the operation of the airport*
- *Strengthen regional nodes*
- *Ensure public safety, in this case I take it as part of the infrastructure of the city.*
- *Improve public cleaning*

- *Improve the urban landscape, the landscape of hits both the airport, bus station and road are in very poor condition and with great visual pollution*
- ... The combination of traditional and contemporary culture can be very attractive, in Guadalajara there is the case of the "Hospicio Cabañas" is one of the most visited places, combines a neocolonial building mural by David Alfaro Siqueiros, one of the three great mexican muralists... . Finally, but not less important is the issue of institutions ..." [H.P.4]*

Or another participant from Mexico – NGO activist – proposed her own analysis of the problems for promoting tourism in GMA (looking at economic considerations, environmental vulnerabilities, organizational competencies, etc.) and also adopted a holistic-multidisciplinary approach in her analysis to formulate a set of recommendations to deal with these dimensions (by using training initiatives, improving transport and telecommunication infrastructures, involvement of civic society, etc.). However, she couldn't fully use the theoretical inputs from the article by Sharpley in her answer.

But, one of the participants could incorporate more inputs from the preparatory reading in her answer while keeping her holistic-multidisciplinary analytical approach. A participant from Mexico – Civil engineer working for local government - clearly used the inputs from the paper and link them to some other important factors in the context of her city, to propose a more holistic approach for enhancement of tourism in GMA.

"As the article "Planning for Tourism: The case of Dubai" says, tourism planning is an inherently political action. Government intervention is not only planning, they have to prepare social, political and economic characteristics in order to develop tourism. For emerging economies, like Mexico, more government intervention is needed in order to establish policies and plans.... Is of paramount importance to understand that tourism is affected by a large number of policies, that's why it's necessary to align all the governmental agencies in order to guarantee the success of the efforts to develop tourism planning. So, it is necessary to develop the framework for setting a guideline to coordinate all stakeholders, local government, private sector and other relevant actors..." [A.P.4]

Despite the limited success of the participants in using the 'new' insights about tourism planning in their answers, the fact that most of them were significantly considering the complex nature of such problems and accordingly analyzed them and proposed solutions by adopting holistic-multidisciplinary points of view was another indication that our strategies to improve the quality of this training program were effective.

Question 4)

The fourth section of the preparatory assignment of the Dubai module was asking the participants to reflect on a professional report (not an academic paper) which was elaborating the sustainable development strategies of Dubai Electricity and Water Authority and explain if the strategies which have been developed for Dubai can be transferred to the context of their home cities or not.

Most of the participants could argue in favor/against the transferability of DEWA strategies to their home cities by referring to institutional and contextual similarities/difference between their home cities and Dubai. More interestingly, most of the participants could also highlight some *practical* considerations for implementation of such strategies in their home city, and in some cases they could provide relatively high levels of practical details in their analysis. For example, one of the participants from Mexico – senior architect and urban planner – had a strong emphasis on the importance of both technological and institutional changes and involvement of a variety of stakeholders, especially universities and companies, to achieve ‘results’ in her home city.

“...to seek a sustainable development implies a change in the current strategy, long-term vision, it must necessarily use the governance and use of technology to managing resources efficiently... This process should involve all sectors of society, but in my opinion, companies and universities should play a key role in research for the production and use of clean energy, management of natural resources and waste. To achieve results, this would have to be comprehensive and inclusive manner; from conception and planning to management processes, and of course the transparency of financing and managing financial resources...” [H.3.P]

An interesting example from an answer with immense practical details, yet holistic analysis of transferability of strategies from Dubai to other context, comes from the preparatory essay of another Mexican participant – NGO activist – who went over each of the mentioned strategies in the DEWA report in details and explained transferability/non-transferability of each of them for the context of GMA. As an illustration, I just use some quotes from her analysis of one of the strategies which pertained to use of alternative energy resources:

“The solar potential of Mexico (particularly in zones like GMA) is the third largest in the world. It is estimated that gross solar potential of the country is 5 kWh/m² per day; it corresponds to 50 times the national power generation. In 2005 there were 328,000 m² of solar thermal panels and 115,000 m² of solar modules. Despite this potential use was not possible at the necessary and desired levels primarily because the cost involved in these technologies. The use of solar panels in the houses is a good strategy that well could be implemented, however, without incentives or support from the Government for the implementation of these technologies is very difficult that an individual can solve the excessive spending that this implies. The installation of photovoltaic systems is only deductible taxes in our country for companies. Energy-saving and therefore monetary savings achieved once the equipment is installed could well be possible if the Government granted facilities or loans to install them. Investment in this technology for a House (with reserves of spreads that there is consumption per family) is recovered in about 5-6 years; however significant savings given to decrease the ecological footprint involves an immediate recovery in the sustainability of a city.” [B.3.P]

As it can be seen from this example, she provides a high level of details about the technical feasibility of the solution and then explain the financial obstacles underway of diffusion of this special technology and provide some suggestions to overcome them (e.g. loans to households).

The ability of the participants in the IGLUS-Dubai training module to answer the questions of the preparatory assignment from a holistic-multidisciplinary point of view and their ability to refer to

their learnings from previous modules of the program to support their arguments (e.g. frequent reference to the concept of governance, importance of stakeholders involvement, role of infrastructures (technological systems) in combination with institutional factors such as political will, financial viability, civic society support, etc. in addressing complex urban problems, etc.) was an indication that our attempts to enhance the quality of the program with regard to the main objectives of this Action Research inquiry were in the right direction and could result in some tangible improvements. Especially, our focus on *conceptualization activities* in the first two questions of this assignment proved to be a highly effective pedagogical tool during the IGLUS-Dubai module and supported our assumption about the importance of using conceptual frameworks as a useful strategy to achieve an acceptable balance between analytical and practical dimensions of the training approaches in the IGLUS program. Consecutively, the practice of engaging the participants in this type of preparatory exercises and using the result of participants' conceptualizations during the training modules became a standard practice in the next training modules of the program.

After all these preparations, it was time to start the training module in Sharjah-Dubai where we could put our plans for this module into action and observe the results of our actions in this fourth cycle of this Action Research inquiry.

4.4.3 During the module (Action and Observation)

The IGLUS-Dubai module started on Monday, February 2, 2015 at the American University of Sharjah with 11 participants. In this section, I will refer to my personal observations to explain the main incidents that occurred over this two-week training module.

4.4.3.1 First day of the program – EPFL sessions

The main objectives of the first day of the IGLUS-Dubai module were to introduce the IGLUS project and Master program to the new participants who joined the group in Dubai module, to present the outline of the IGLUS-Dubai module to all the participants, to discuss the process of rapid growth in Dubai as a complex challenge by using inputs from the academic literature and the participants' conceptual models (developed as a preparatory exercise), and to present and critically discuss our conceptualizations of performance and governance. In addition to the first sessions of the first day, which were dedicated to EPFL inputs, based on the participants' feedback on the previous modules of the program - which emphasized the importance of having some contextual knowledge about the general governance structure and history of the host city (this was especially a concern in the IGLUS-Istanbul and Hong Kong modules) - we allocated the afternoon sessions of the first day of the module to discuss the governance structure in Dubai (and the UAE) and its development history.

Similar to the previous modules of the program, we started the day with a short welcome from Professor Finger and our main contact professor at the AUS, followed by a brief introduction of the

participants. After this official welcome session, Professor Finger presented the general IGLUS project and the Executive Master program to familiarize the new participants who joined the IGLUS-Dubai module with the structure and purpose of this initiative. After this briefing session, I provided the participants with latest updates about the project. As discussed previously, sharing all the project updates (including the results from the previous module's evaluation survey, new partnerships, etc.) was part of our regular communications with the participants in the program to further convey our message about the participatory nature of this project and strengthen the sense of shared ownership of this training and research initiative with the participants.

We then hosted a session about growth of Dubai. In this session, Professor Finger started the session by presenting some theoretical inputs derived from the academic literature (focusing on the thesis of 'City as a Growth Machine' by Harvey Molotch 1976 that was assigned as a required reading). He then opened the discussion up to the participants by asking them to explain their own understanding of Dubai's development process. The participants' preparedness to engage in a well-structured discussion (thanks to their preparatory work to develop a simple conceptual framework) and to actively contribute to the wider understanding of the case of Dubai, and not to only react to the lecturer's inputs and questions, resulted in a very dynamic learning experience during this session. However, the drawback of this practice was that the new participants in the program who had less familiarity with the program were not able to fully engage in the discussion. This was a first and early sign that combining more advanced participants with totally new participants in the Dubai training module might result in some complications due to the lack of a shared vocabulary and dissimilar understandings of the conceptual foundations. This mixture of more advanced and new participants had profound impacts on the training sessions throughout the IGLUS-Dubai module and reflecting on its effects led us to start developing a complementary training tool (a MOOC: Massive Open Online Course) after the module's conclusion.

As I discussed in the previous sections of this case study (the analysis of the participants' preparatory essays), most of the participants could highlight the important factors that affect the process of development in Dubai, but the majority were only partially successful to elaborate the links among these factors and explain the systemic feedbacks that underlie the dynamics of this complex problem. So, not surprisingly, in this session most of the participants' inputs remained limited to descriptions of different factors and not the relationships among these factors (e.g. leadership, encouragement of foreign investments). As a result, we had to play a more active role to facilitate the discussions in order to help the participants to further think about the 'relationships' linking the many factors that they were raising in the discussions. I used this opportunity to remind the participants that the goal of this exercise was not to gain a complete understanding of such a complex phenomenon in just one session, but to start a process that enables the participants to develop their own understanding of this problem by the end of the training module.

After this discussion session about the development process of Dubai, where we focused primarily on the participants' conceptualization exercises and less on theoretical inputs, we started our second theoretical session. In this session, Professor Finger and I presented our latest conceptualizations about governance and performance of large urban infrastructure systems. As discussed in the previous sections of this case study, the idea behind *presenting* our conceptual frameworks and shaping a discussion around them instead of simply *teaching* some theories (which was our main

approach in IGLUS-Istanbul) was to provide the participants with a *synthesis* of several bodies of theory, *customized* for analyzing complex problems in governance of large urban infrastructure systems.

One of the main outcomes of the conceptualization efforts that I undertook between the IGLUS-Hong Kong and IGLUS-Dubai modules was an updated conceptual framework that depicted the relationship between governance and performances of large urban infrastructure systems. Once the initial version of this framework was complete (it can be found in the annex), we realized that presenting the framework with its full details might result in confusion of most of the participants. So, we decided to extract a more simplified process-flowchart (Figure 4.4.7) from our detailed framework that was only highlighting the main steps to be followed when analyzing the impact of governance *on* performance (efficiency, resilience and sustainability) of complex urban infrastructure systems. We used this simplified framework as our main input for this theoretical session of IGLUS-Dubai module⁹⁴.

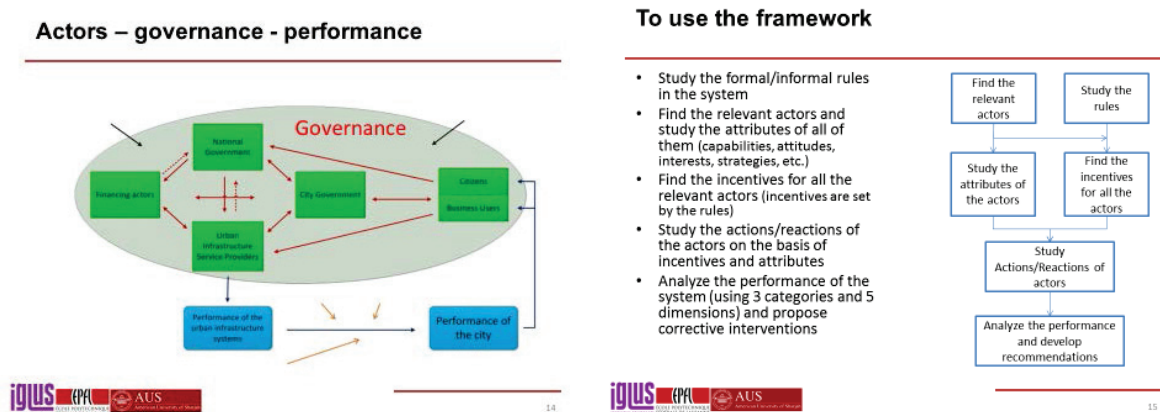


Figure 4.4.7 – presentation slides from the IGLUS-Dubai theoretical opening sessions
Source: original work of the author

Similar to the previous modules of this program, we asked the participants to critically reflect on the conceptualizations we presented (if it make sense to them as practitioners, if they find it helpful for analyzing practical problems, etc.). The feedback from the more advanced participants, who were already familiar with our discourse and have been involved throughout the development and evolution of our conceptualizations (by providing feedback in previous modules of the program) was generally positive. However, the new participants were more critical of the conceptualizations and curious about their purpose and legitimacy. The new participants seemed to be more familiar with conventional training practices that were based primarily around teaching well-established

⁹⁴ The more sophisticated versions of these frameworks were later used in the reflection sessions for discussing specific cases that we explored throughout the two weeks of training.

theoretical inputs to the participants. Thus, these participants were not immediately convinced of the 'necessity' of focusing on conceptual frameworks instead of founding theories, as they were accustomed to.

An important point worth noting in these sessions, is that the class discussions were mainly developed around the performance conceptualization. This was not highly surprising, because on one hand, the performance conceptualization was more elaborated in this session (in terms of allocated time in presentation) and on the other hand, we did not present the detailed governance-performance framework in this session, and the simplified version of the framework (which was based on the general IGLUS framework) was already very familiar to the advanced participants and thus could not trigger many questions or comments among them. On the other hand, the new participants seemed hesitant to critically reflect on the framework since they were joining the class from the middle of the program and they felt they needed time to become more familiar with the general discourse of the program before they are enough confident expressing their opinions.

In comparison to the *theoretical opening sessions* of the IGLUS-Guadalajara, IGLUS-Istanbul and IGLUS Hong Kong modules, the IGLUS-Dubai theoretical opening sessions were more problem-focused (understanding the link between governance and performance in urban infrastructures, by using the case of Dubai as an illustrative example). However, due to the newness⁹⁵ of our approach in these sessions (presenting conceptual frameworks as a synthesis of several theoretical inputs instead of separate theoretical inputs) and the mixture of new and advanced participants with different levels of familiarity with our concepts and approach, the participants had less contributions to discussions in the theoretical opening sessions; when comparing the Dubai and Hong Kong module. However, as we approached the end of the IGLUS-Dubai module, I started to observe higher levels of participation and reflective inputs from the participants.

The afternoon sessions of the first day of the module consisted of two roundtables; one focused on the governance structure in Dubai and the UAE, and the other one on history of development in Dubai. Since these panel sessions took place after the morning sessions, which were focused on the conceptualization of Dubai's development process, we were able to have very dynamic discussion during the panels where the participants (with our facilitation) could ask the panelist to reflect and elaborate on several points that were raised in the morning discussions. The ability of participants to ask relevant questions from the panelists, by using ideas they developed in their preparatory works and insights from the morning sessions, made for high-quality discussions in which the panelists were really challenged by the participants. Especially, since the governance structure of Dubai, and other city-states in UAE, was relatively different from the conventional governance structures that were familiar to our international participants, the participants were challenging the panelists on the long-term viability of Dubai's governance structure and how it would affect the development of city in future.

Presence of three panelists in this session was significantly contributing to the enhanced quality of discussions. The fact that different issues were not addressed from only one perspective and the

⁹⁵ As discussed previously, although our approach in this module and in the IGLUS-Guadalajara module were seeming similar when seen on the surface (presenting conceptual frameworks in both), the depth and maturity of our discussions in Dubai are not comparable to the IGLUS-Guadalajara module (see Figure 4.4.1).

other panelists often provided complementary details to each other's arguments helped the participants to reach to a more holistic understanding of a variety of important topics on the first day of the program.

After covering the main theoretical and contextual inputs on the first day of IGLUS-Dubai module, it was time for planned contributions of the partner university, industrial partners and international organizations. Similar to the previous case studies in this thesis, and following my argumentations about the structure of the cases which were discussed in the methodology chapter, in the coming sections I mainly discuss the key incidents of this training module. The main incidents of the IGLUS-Dubai module that will be explained in greater detail in the coming pages are:

1. Different participation level / Heterogeneous capabilities and knowledge base of participants (intensified by mixing of advanced and new participants in the class)
2. Different expectations from the training program among new and advanced participants
3. Issues with quality of presentations - lack of critical perspective by lecturers
4. Different political cultures and values and intensive moments in discussions
5. Well-structured reflection sessions based on conceptual frameworks
6. Positive outcomes of group learning sessions (projects) and interactive sessions
7. Distant location and logistics complications at AUS and their negative impact on the overall learning experience in the module

4.4.3.2 Main Incidents during the Dubai training module

4.4.3.2.1 Different participation level / Heterogeneous capabilities and knowledge base of participants

As discussed in the previous sections of this case study, in the IGLUS-Dubai module we had five local participants who joined the class (4 practitioners and 1 recent graduate of urban planning at AUS). Similar to the IGLUS-Istanbul training module, presence of local practitioners in the IGLUS-Dubai module could significantly enrich the quality of discussions during the training sessions. For example, in several occasions one of the participants who was working in the sustainability office in charge of sustainability policy and regulations in free industrial zones of Dubai could provide highly practical examples and insights about the policies which were at place in Dubai to reduce environmental impacts of economic development initiatives by adopting much stricter environmental standards in comparison to previous years. In addition, presence of practitioners from other cities than Dubai (Abu-Dhabi as well as Bahrain, though it is a country with similar scale to a large city) could bring valuable insights to the class discussion thanks to the possibility of comparing Dubai with its neighboring areas. However, reaching to a point that these new local participants feel enough

comfortable to engage in discussions, within the group of our advanced participants, was associated with some difficulties.

Indeed, the mix of old and new participants in this module resulted in some challenges in moderating the class discussions. Most importantly, in the first few days of the IGLUS-Dubai module I realized that the different levels of familiarity of our advanced and new participants with our terminology, concepts and frameworks results in some difficulties during the training sessions and discussions. On one hand, we could not allocate a large portion of the IGLUS-Dubai training time to review the concepts for our new participants because the concepts had been deeply discussed with our advanced participants in the previous modules of the program. Allocating too much time on reviewing the concept could lead to repetition for our old participants which was not desirable. On the other hand, our new participants could not fully understand all the concepts, assumptions, definitions, frameworks and examples which we were referring to, especially during the class discussions, and thus felt 'lost' in the class discussion and start to avoid asking questions and let the old participants to take the lead in the class discussions, which was equally not a desirable setting.

Based on my personal observation that our new participants cannot fully get engaged in the class discussions, I started to talk to each of them individually and ask them to share their concerns and feedback about their learning experience with me directly. In our informal talks, most of these participants mentioned that they are not understanding the underlying logic behind some of the class discussions, but in the same time do not want to ask questions which might be irrelevant or too easy for the rest of the class and prefer to listen more instead of asking questions. This was an alarming observation because participants' engagement in the class discussions and being an active learner was an important consideration for us to ensure a high quality learning experience for our participants (Prince 2004). To deal with this challenge, I could envision two possible options; first, to provide the new participants with more information about our previously covered topics in order to improve their understanding about the main building blocks of our governance-performances discourse at the cost of repeating some materials for the old participants. And second, to ensure the new participants that asking questions is an important part of our training exercises and they can freely ask their questions and express their points of view without being concerned about the appropriateness or correctness of their inputs; as all the other advanced participants had also undergone the same process of 'learning to ask good questions' when they initially started their learning journey in the program.

The first option did not seem to be a viable strategy. Our advanced participants could reach to their current level after at least attending in two modules of the program; thus providing a short summary of main concepts could not fully fill the knowledge-gap and capabilities-gap between our advanced and new participants with regard to analysis of complex urban problems from a holistic-multidisciplinary point of view. Indeed, we had already provided a short introduction to the concepts in the first day of the program and it couldn't resolve this unbalance of knowledge levels among the participants. The second option could be a better strategy in comparison to the first option, especially because the training program was based on the adult learning principles which assume that adults are *autonomous and self-directing* and resist to arbitrarily impose of information to them (Knowles, et al., 2014, Kenner & Weinerman 2011). So, in a series of individual and informal chats I started to

brief each of the new participants about the professional, but supportive atmosphere of our training modules and ensure them that their participation in the discussions are highly welcomed by us (as the organizers of the program) as well as the participants (who had experienced the same challenges at the start of the program in Guadalajara). In addition, I asked if our advanced participants could resonate my message by talking to their new peers and sharing their personal experiences with them about their initial difficulties to get involved in discussions and asking 'good questions' when they started their learning journey in the IGLUS-Guadalajara module.

Besides using these communication strategies, I also decided to use the reflection sessions and class discussions as an opportunity to provide more inputs from the previous training modules of the program in the training sessions of IGLUS-Dubai module. To that effect, I tried to formulate my reflective questions from the lectures with direct reference to examples from the previous modules of the program and by doing so, without direct repetition of the contents from the previous modules, provide our new participants with more background information. Also, I followed my previously tested strategy to directly ask the participants to explain their personal point of view about the issues that we discussed in training sessions by referring to examples from their home cities in order to ensure that all participants had a chance to get engaged in our reflective class discussions.

Combination of these several strategies could improve the level of participation of our new participants during the class discussions, especially in the second week of the IGLUS-Dubai module. However, the gap between the advanced and new participants' capabilities to analyze the presented examples in the training sessions from a holistic-multidisciplinary perspective remained notable until the last days of the IGLUS-Dubai module.

My observations about the fact that combination of a group of advanced and new participants in the class might result in inefficiencies in communications and discussions, and our further reflections on this experience (with Prof. Finger) resulted in the birth of the idea of developing an online course as a complementary learning tool to the existing Executive Master program. This MOOC (massive open online course) was aimed at covering the principles and theoretical inputs which could be followed by new participants who wish to join the program in the coming editions of the Master program. This idea became a reality in February 2016 with the launch of our first MOOC on Management of Urban Infrastructures⁹⁶.

4.4.3.2.2 Different expectations from the training program among new and advanced participants

Another important incident, also resulting from the mix of new and advanced participants, was a series of inconsistencies between the expectations of some of the local participants from the program and the learning objectives of the program. As an example, some of our local participants who had just joined the program were expecting to learn more *case studies* about *best practice* in governance

⁹⁶ <https://www.coursera.org/learn/managing-urban-infrastructures-1> (accessed 6 June 2016)

of urban infrastructure systems while the main focus of our training program was to empower the participants to change their perspective in analysis of complex problems in governance of large urban infrastructure systems from a disciplinary perspective to a more holistic-multidisciplinary perspective, and not only loading the participants' minds with 'new information' and 'case studies'. In other words, the focus of this training program was on changing the perspective of participants in addressing complex problems by *using some cases studies as a means to this goal* (a double loop learning experience) while the expectations of some of the new participants were focused on learning more cases about *best practices across the world as a goal in itself* (a single loop learning experience).

Thanks to explaining the philosophy and main learning objectives of the training program in the first session of the IGLUS-Dubai module and continuous discussion between me and the new participants, as well as support of the advanced participants by sharing their own experiences in evolution of their expectations, this partial mismatch between the expectations of most of the new participants and philosophy of the program was resolved by the end of the training module. However, in one case the mismatch of one of our participants' expectations and the objectives of the program persist until the end of the module. As a result of this persistence mismatch, at the end of the IGLUS-Dubai module this participant decided not to continue her studies in the program (unlike the other participants who continued with the master program).

The mismatch between the expectations of our new local participants and the learning philosophy and objectives of the training program was both a challenge and opportunity in this AR inquiry cycle. The mismatch was absolutely a challenge because it could directly affect the perception of the participants (who were all adult learners) about their learning experience and negatively impact on their motivation and willingness to actively engage in this learning process; if they found the training sessions irrelevant for them and lose their motivation for learning. Since our training strategy in this project was heavily reliant on critical reflections on inputs from the lecturers; and since each participant could play a significant role in this reflection process by bringing his/her unique perspective on the issues (based on his/her previous knowledge as an adult learner), losing the interest of some of the participants in the class discussions could significantly undermine our attempts to reach this goal. So, I had to play a more active role in moderation of discussions and communication with the new participants to close this gap and to keep the program intrinsically interesting for them. The fact that by the end of the IGLUS-Dubai module, three out of four local participants (who were working as professional and were not students) decided to continue their studies in the coming module of the program showed that we could successfully deal with this challenge.

On the other hand, the mismatch between expectations of some the participants and the learning objectives and philosophy of the program was a unique opportunity for myself to critically reflect on the assumptions and producers which were governing our actions in this project. These self-reflections resulted in a series of consecutive discussions with the participants as well as my supervisor in this project (Prof. Finger) which ultimately introduced some significant changes to the program after the IGLUS-Dubai module. For example, the decision to develop a preparatory online course which contains more 'informative/technical' learning material to better prepare the participants to engage in more 'reflective learning exercise during their physical presence in the

classes' was a direct result of these critical reflections on our own assumptions and training practices in the project. Also, after this module we decided to delegate a more significant role to our more advanced participants to play a more active role in the training program by leading some of the class discussions, and not only reflecting on the inputs from the lecturers.

4.4.3.2.3 Issues with quality of presentations - lack of critical perspective among lecturers

As briefly explained in the previous sections of this case study, similar to the previous modules of the projects, we could not enforce our policy about reviewing the presentation materials of local lecturers before the start of the training sessions in the IGLUS-Dubai module⁹⁷. Despite these obstacles, it appeared that our general guidelines for design of the sessions which were communicated to the lecturers through the channel of AUS could help some of the lecturers to prepare highly relevant presentations for their sessions (e.g. the sessions about sustainability frameworks in the region, most of the sessions on energy governance in UAE, etc.). However, in several sessions of the IGLUS-Dubai module, we faced with presentation materials which were poorly articulated and were covering very basic concepts (e.g. see Figure 4.4.8 which is adopted from the presentation about transportation planning in Dubai) or were mainly focused on technical/disciplinary fields of expertise of the lecturers (e.g. the session on Water governance in UAE) which were not fully appropriate for our learning objectives from the sessions.

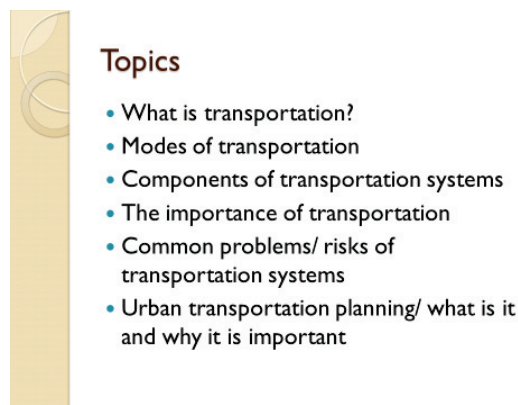


Diagram 4.4.8 –sample slide from one of the presentations about transportation planning in Dubai

Another important observation from the training sessions of the IGLUS-Dubai module was the strong focus of some of the local lecturers on the *positive aspects* of local practices in governance of different

⁹⁷ The main reason behind our inability to control the detailed content of the lectures before the presentation day in this module was that our relationship with the local lectures was mainly handled by the partner university and AUS (the partner university) could not ask the local lecturers to follow our policies, due to special working culture in the university as well as relationship of organizer of the module at AUS (who was an expatriate professor) with local lecturers (whom in most cases were Emirati citizens from well-known and influential families).

infrastructures in Dubai, and UAE more generally. The achievements of Dubai in terms of infrastructure development and implementation of iconic projects are not negligible (Burj Khalifa, the Palm islands, massive residential complexes, metro lines, highways, airports, etc.). However, the aim of choosing Dubai as the host city of the fourth module of the IGLUS training program was not to only focus on the positive dimensions of infrastructure developments in Dubai, but to have a comprehensive understanding of the case of Dubai. So, the strong emphasis of local lecturers on presenting the local cases and practices as 'all good' initiatives was neither in-line with the philosophy of this training initiative nor the learning objectives of the IGLUS-Dubai module.

This was not the first time that we were facing with such challenges associated with the mismatch between the content of lectures organized by the partner universities and the learning objectives of the module and philosophy of the program. As explained in the previous cases studies, in the IGLUS-Guadalajara, IGLUS Istanbul and IGLUS-Hong Kong training modules, I was usually trying to develop a discussion about governance challenges around the lecturers' input and by doing so, instead of getting into the details of presentations of the lectures (when they were not matching with our learning objectives), make the most use the local knowledge and expertise of the lecturers. To that effect, I was asking them a series of governance related questions and calling on them to reflect upon those questions. By doing so I was trying to help the participants *to learn to ask their own questions* from the local experts (lecturers) and shape their own learning experience via questioning the governance practices and reflecting on them by referring to their professional experiences.

An interesting observation in IGLUS-Dubai module was that the participants (especially the more advanced participants who attend in at least 2 previous modules of the program) started to gradually take on my role by actively asking governance-related questions from the lecturers and helping the lecturers to provide inputs which were useful and relevant for the participants. For example, in discussing the successful urban economic development cases in the Emirate of Dubai (a city-state), the participants could raise important questions about the impact of such urban development projects on environment and natural resources, the role of residents who account for more than 90% of population in UAE (not only Emirati citizens) in the decision making process and the impact of such development projects on these residents, as well as long term sustainability of current development strategies in Dubai which were highly influenced by visionary leadership of its rulers⁹⁸. The ability of the participants⁹⁹ to challenge the lecturers by asking relevant questions from a diverse range of perspectives and reflecting on the answers by using their personal experiences as well as their learnings from the previous modules of the program was a very promising sign that the

⁹⁸ Similar examples were also happened in discussion of urban planning practices in UAE and the lack of metropolitan coordination mechanisms, water governance in UAE, etc.

⁹⁹ It is important to note that as discussed in the previous section, our new participants who had joined the program from the IGLUS-Dubai module were less engaged in the discussion at the beginning of the module. In order to both encourage further contribution by these participants and also bring a more diversified range of perspectives to the class discussions (and compensate for the lack of critical attitude in presentations of local lecturers), I was often asking the local participants to share their perspective on the discussed issues. However, my interventionistic approach in facilitation of discussions was mainly limited to get the new participants involved in the discussion (and not the advanced participants who were already actively engaged in class discussions).

participants are becoming more capable of analyzing complex urban issues from a holistic-multidisciplinary perspective.

Last but not least, it should be mentioned that the readiness of our local lecturers in the IGLUS-Dubai module to get involved in highly interactive discussions was also an important factor that supported the discussions in most of the training sessions of this module. As explained in the previous case studies, this was not the case in IGLUS-Istanbul and IGLUG-Hong Kong module. However, in some occasions the contrasting cultural values between our international participants and local lectures and participants resulted in some challenges which I will discuss in the next section.

4.4.3.2.4 Different political cultures and values; intensive moments in discussions

The governance structure of Dubai was highly different from the other cities where the previous modules of the program took place (Guadalajara, Istanbul and Hong Kong). The highly centralized governance structure and strong role of the visionary Ruler of Dubai in the policy making and implementation processes, as well as the limited participation of about 90% of the population who live in Dubai as a flexible body of labor force and not citizens in decision making processes (Hvidt 2009) was highly in contrast with the political culture¹⁰⁰ and values of most of our international participants. This contrast was mostly shocking for the participants from Latin America who were highly bonded to democratic values such as social participation and role of citizens in decision making processes¹⁰¹ (Booth and Richard 2014).

The contrast between the political culture of our international participants and the unique governance structure of Dubai, in some occasions resulted in intensive discussions between the participants and the local lecturers. More precisely, our international participants were frequently asking *highly critical questions* about the viability of elite-governance structure (McCargo 1998) which has been often highlighted by local lecturers as one of the key drivers of developments in Dubai. In several cases, I could observe that the lecturers' responses to these questions turned to become protective and focused on highlighting the merits of existing practices in UAE and Dubai against the critiques of participants about shortcoming related to 'lack of 'real' democracy and social participation'. Despite the fact that asking critical questions about different dimensions of governance practices in Dubai by participants could be a great opportunity to understand the complex cases which were discussed in the class from a more holistic point of view, emergence of a defensive atmosphere in the discussions (lecturer's protection against criticism, more criticism by participants against the protectionist answers of the lecturer, stronger projectionist approach by the

¹⁰⁰ Political culture can be defined as "...beliefs, expectations, and attitudes of actors in political systems and gives shared meaning to citizens' behaviors and political processes" (Booth and Richard 2014, p.4)

¹⁰¹ "In summary, democratic values predominated authoritarian ones everywhere in Latin America in 2010..." (Booth and Richard 2014, p.64)

lecturer) could not result in a favorable learning context (Argyris 1982) to fulfill the learning objectives of this training program.

To deal with this challenge, I decided to play a more active role in moderating the discussions to ensure that the discussions would not enter into non-constructive cycles of attack and protection. Since the participants had already shown some capabilities to ask critical questions and reflect on the inputs of lecturers by using their learnings from the previous modules of the program, my role as initiator of reflective discussions was less necessary in the IGLUS-Dubai module. However, when I was spotting that a discussion is going to the direction of argumentation, I was starting to play a more active role to keep the discussions on the right track.

My first strategy to do so was to occasionally paraphrase the participants questions to less offensive questions and reemphasize on the philosophy of this training program (to analyze complex urban problems from a holistic-multidisciplinary point of view) to prevent the lectures to adopt a defensive attitude toward participants' critical inquires. For example, instead of criticizing the existing situation in Dubai, I was often providing a contrasting example from previous modules of the program that could highlight the peculiarities of Dubai and ask the lecturer to reflect on those comparative examples. An example of such an incident happened during the session on transportation planning in Dubai and the discussions about inability of municipalities to develop a metropolitan transportation infrastructure due to strict political distinctions and competition among the neighboring emirates of Dubai and Sharjah¹⁰² (which was often referred to as a strength of the governance structure in UAE by our local lecturers since it could incentivize each city-emirate to improve its service delivery levels). To prevent the discussions from entering into argumentation, I decided to ask the lecturer to reflect on the experience of Istanbul (instead of defending the Dubai's experience against participants' continuous questions) where the Istanbul metropolitan government was in charge of whole metropolitan area and as a result, the transportation infrastructure is planned from a metropolitan perspective. By putting the critical questions in the context of comparisons between Dubai and other host cities of the program and using a less provocative language in formulating the questions, the local lecturers and the participants proved to become further engaged in discussion discussions, and not argumentation.

In addition, I decided to use this challenge as an opportunity to further enhance the capabilities of *the participants* to compare different cases with each other. The fact that the governance structure of Dubai case was an extremely outlier case, especially in comparison to Guadalajara and Istanbul, provided me with a great opportunity to show how one can learn from seemingly irrelevant cases by comparing them along a series of important dimensions. Indeed, Dubai and its significant differences with the previous cities in the program provided a unique opportunity to see whether, or not, our focus on conceptual frameworks and comparison of cases along some fundamental questions can help the participant to make sense of seemingly irrelevant cases by reflecting on the underlying

¹⁰² E.g. the metro line is just stopping at the border of Emirates of Dubai and Sharjah and thus many commuters who live in Sharjah but work in Dubai have to use their private cars which results in highly congested traffic flow during the morning and evening peak hours and is seen as one of the big challenges in both cities, but is not yet resolved due to the existing jurisdictional structure.

factors that result in emergence of significant differences among cases and their impact on the long term performance of the urban infrastructure systems.

Besides my focus on using examples from previous modules of the program to shape a dialog with our local lecturers, I decided to also dedicate a specific session to further practice systematic comparison of different cases with the participants. To that effect, I used our only pre-planned reflection session of the module to work with the participants to compare the cases of Guadalajara, Istanbul, Hong Kong and Dubai by using our presented frameworks in IGLUS-Dubai module as well as the learnings from comparative analysis sessions during the IGLUS-Hong Kong module. In this first reflection session of the module, I worked with the participants on a simple exercise that was aimed at understanding how different development agendas in cities might affect the urban development strategies, and how these strategies might result in certain subsequent challenges (which were less pertinent in other cases). As I was expecting; based on the successful experience in using this strategy in previous modules of the program, the participants, especially the more advanced ones, could actively engage in this exercise and discuss the differences among the four cases (Figure 4.4.9).

	Guadalajara	Istanbul	Hong Kong - China	UAE
Purpose (main objectives - drivers)	Solving insecurity – preventing the sprawl	Urban regeneration because of natural risks – changing the image of city as a global hub	Efficiency to deliver services	Economic development for city
Tools	Social participation	Large Scale engineering oriented plans	Central planning for integration of all urban services	Facilitating real estate development – innovation in construction
Challenges	Making things happen! Economic development	Social dissatisfaction and sense of belonging	City prioritized over citizens	Worker – Residents balance (city for whom?)

Figure 4.4.9 – result of participants' work on an exercise during the reflection session in IGLUS-Dubai module

This comparative exercise could significantly help the participants to put the differences they were observing across the different cases into the context; thanks to reflecting on the underlying causes of such differences, and not the differences themselves.

In addition to the above mentioned strategies, I decided to urge the participants to further focus on using their own frameworks as their personal intellectual guideline for engaging in constructive discussions which really help them to clarify the unclear spots in their understanding of the case of Dubai (which they could not understand by only using the bibliographical resources); and not to engage in ideological-political arguments. To that effect, in an informal session after the normal training sessions (fifth day of the program), I discussed this issue with the participants and recalled that the main objective of each of the modules and training sessions is to help 'them' to better

understand the problems they find to be important for themselves (personal motivations) by gathering more information and reflecting on them, and not to necessarily convince the local lecturers about the shortcomings in their home cities. And that in this process, their conceptual frameworks can help them as a guiding tool. This communication, in addition to enhanced understanding of our international participants about the prevalent political culture in UAE and the region (as a result of valuable inputs from our local participants to the class) proved to be a helpful strategy to deal with this challenge as I could observe that the discussions of the second week of the program became more focus on the concrete problems related to governance of urban infrastructures.

4.4.3.2.5 Well-structured reflection sessions based on conceptual frameworks

Since I had to allocate our only pre-planned reflection session of this module to the comparative exercise session (discussed before), I had to find an opportunity to plan a spontaneous reflection session to further discuss the application of conceptual frameworks for analysis of complex problems in governance of large urban systems. In the second week of the program, one of the local lecturers canceled his presentation with a very short notice. I decided to use this opportunity to plan a second reflection session to present a more elaborated conceptual framework, that I had been working on after the IGLUS-Hong Kong module, and was aimed at providing more practical details to enable the practitioner-participants to use our frameworks by translating highly our abstract ideas to more operational concepts (diagram 4.4.10 and 4.4.11).

I started this reflection session by recalling the fact that in IGLUS-Hong Kong module, we (I and the participants) were trying to come up with a more structured process to reflect on inputs from the local lecturers from a holistic-multidisciplinary perspective; by focusing on a series of important questions about technological, political, social and economic dimensions of governance of large urban infrastructure systems in the host cities. I explained to the participants that this elaborated version of the governance-performance framework is indeed *a first attempt to clarify and communicate my personal thinking process* when I have been trying to understand a complex problem associated with governance of urban infrastructure systems from a holistic point of view. And I disclosed the fact that this framework is the result of my synthesis of a several bodies of theories based on my bibliographical research on this topic, as well as my reflections on the experience of moderating the class discussions in the program over more than eight months.

Conceptualizing Governance

- The basic idea is that the governance structure will result in emergence of an institutional setup. The institutional setup will influence on the interactions of the actors and interaction of actors will result in performance.
- Our basic questions in analysis of governance structures:
 - How are the rules of the game shaped?
 - How do these rules influence on the interaction of actors?
 - What does bring a dynamics into the system which can result in systemic changes?



Figure 4.4.10 – sample slide from reflection session on the link between governance and performance

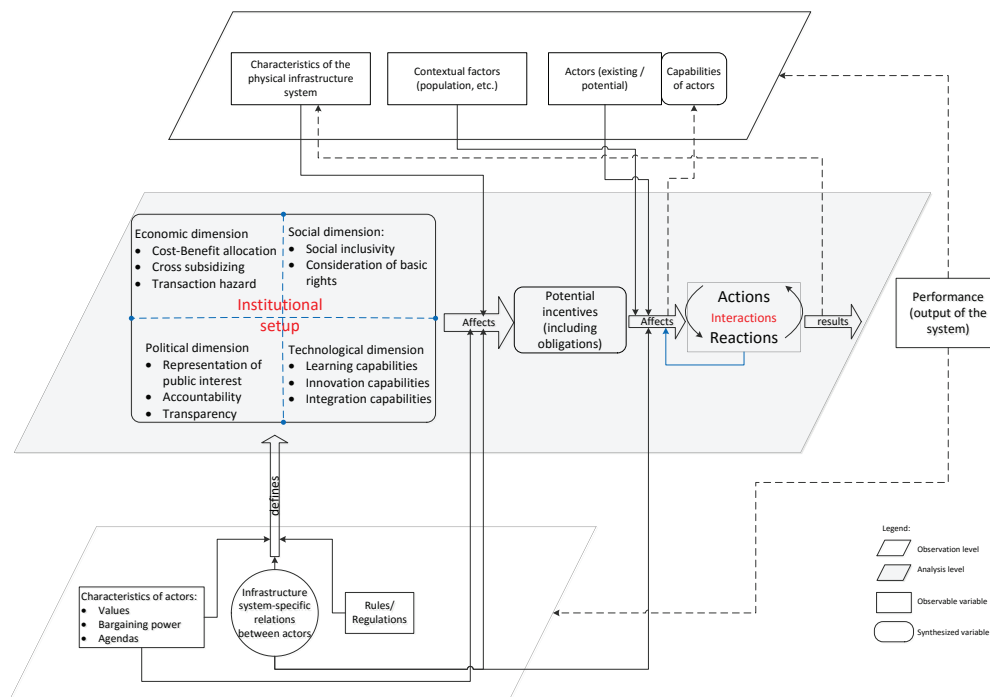


Figure 4.4.11 – detailed conceptual framework to understand the relationship between governance and performance of large urban infrastructure systems
Source: Author's original work of the

I started my presentation with explaining each of the elements of the framework and how they can be used for understanding complex problems associated with governance of large urban infrastructure systems from a holistic point of view. However, I soon realized (from impressions of the participants in the class) that explaining the framework in an abstract language is hard to understand for the participants. So, I decided to explain different elements of the framework by practically using it to discuss the impact of current governance practices on the housing infrastructure in Dubai. Using a practical example for explaining the framework could help the participant to better understand and make sense of the elements of the framework.

After presenting the framework by using the examples from the housing infrastructure in Dubai, I asked for critical reflection of participants about the framework to see whether they find it relevant, and useful, as an analytical tool for analyzing real problems in their jobs. The participants' feedback on the general relevance of the framework for analysis of complex problems associated with governance of urban infrastructure systems was generally positive. Especially, our more advanced participants who were more familiar with the reasoning behind the framework and its application in practice (my illustrations in previous modules of the program) could appreciate the merits of the framework. However, the participants seemed to have some difficulties to capture the many details of the framework and use it for analysis of practical problems on their own. Despite these initial difficulties, the governance-performance framework proved to be a highly practical tool in the next modules of the program and the participants eventually become more familiar with using it to analyze practical problems¹⁰³.

It is important to note that the participants' difficulties in capturing *details* of conceptual framework was not only pertaining to the specific case of this governance-performance framework, but was also the case in some other sessions of the program. For example, similar difficulties have emerged during a presentation by a lecturer from Arup about development and implementation of sustainability frameworks in countries in the Persian Gulf region.

The practitioners' difficulties in understanding the complex details of frameworks highlighted an important fact that the primary aim of using conceptual frameworks should not be 'teaching the framework' as an instrumental piece of knowledge; because using the frameworks is a *means* to reach to the ultimate goal of the training program - which was to empower practitioners to address complex problems from a holistic point of view - and not a *goal* in itself. Rather, the aim of using frameworks in this training program should be to demonstrate the process through which one can develop conceptual frameworks as an auxiliary intellectual tool for translating generic ideas into more concrete concepts and set of relations that are practically useful for analytical purposes in the real world. Indeed, after the IGLUS-Dubai module I become further confident in my personal reflections during the previous modules of the program (especially the Hong Kong module) that an important function of the conceptual framework is to keep the link among dispersed training materials by providing an intellectual foundation that enables us to reflect on the inputs from

¹⁰³ The IGLUS-Detroit/Chicago, IGLUS-Seoul and IGLUS-Dortmund modules are not covered in this thesis, but the framework was used in these module as a main analytical tool in the reflection sessions and the results were quite promising after several rounds of repetition of its main building blocks and how it can be used. Particularly, this framework played a pivotal role in the training sessions of the second edition of the IGLUS-Executive Master program.

different lecturers (and cases) by referring to some general concepts which are embedded in the framework.

4.4.3.2.6 *Positive outcomes of group learning sessions (projects) and interactive sessions*

As discussed in the previous case studies, after the IGLUS-Hong Kong module we realized that the participants need more support to define the scope and focus of their master projects and frame actionable master projects with a holistic-multidisciplinary perspective, but in the same time not to lose their focus and control over the projects. Based on the successful experience of using group learning strategies in the project sessions of IGLUS-Hong Kong module, I decided to organize the project sessions of IGLUS-Dubai module by using the same strategy. In the first part of the session, I recalled the main learning objectives from the Master project in the overall structure of the Master program and emphasized on the pedagogical importance of the Master projects in this learning journey (see diagram 4.4.12)

The Master thesis	Your projects
<ul style="list-style-type: none"> • A mandatory requirement to obtain your Master degree <ul style="list-style-type: none"> – 60 pages long document – Should be submitted in maximum 4 months after finishing your 5th module • The backbone of our pedagogy and your learning experience <ul style="list-style-type: none"> – The IGLUS master should help you find the answer of your questions (the big question) which are derived from your work experience. – The master thesis is our concrete tool to ensure you get your stake in every module, besides the general knowledge which you gain by participating in every module 	<ul style="list-style-type: none"> • You need a clear research question <ul style="list-style-type: none"> – Your motivation matters – Scope should be clear – Have in mind your potential data sources – You need to know the literature and be very precise • You need a solid research design <ul style="list-style-type: none"> – What are the steps ahead of you to find the answer of your question and how they are related with each other (flowchart!) – Timeline matters (Gant chart!) – Continuity is important (deliverables)

Figure 4.4.12 – presentation slide from the project sessions
Source: Author's presentation in the IGLUS-DBX training module

After this short introduction, I asked the participants to formulate their research questions as a clearly written *sentence* which they can read (without orally explaining it) to the class. After this short individual exercise, I asked each of the participants to share her/his research question with the class and asked the other participants to provide her/him with feedback regarding the clarity of the question and the scope of research as well as the practicality of doing such a project by considering potential limitations in data collection.

I was actively moderating the session to ensure that the discussions are focused on the subject of the session (providing critical, but constructive feedback on participants' research questions) and also

to ensure that each of the participants gets engaged in the discussions. Putting the participants in both positions of 'researcher' as well as 'research evaluator' could help the participants to think about their projects in a more critical way, thanks to the experience of discussing their peers' projects. I followed this session with a series of one to one discussions with each of the participants to further work on their research questions and give them individual advice on the research design and appropriate methodology. Similar to the IGLUS-Hong Kong module, this session was very much appreciated by the participant; even in the final wrap up session, many of the participants asked for replication of these sessions in the coming modules of the program due its positive impact on their thinking about their project and their broader learning experience in the program.

Besides the project sessions, during the IGLUS-Dubai module we had several hands-on sessions where the participants had to play a very active role in shaping the class learnings by practicing some techniques in the class and not only engaging in reflective class discussions (e.g. Small Group Techniques such as close and open Fishbowl discussion techniques to manage social participation processes, Nominal Group and Stepladder techniques, etc.) (e.g. see the below picture)



A group of participants working on using Stepladder techniques in a class exercise

The participants' feedback on these hands-on sessions were generally positive. Most of the participants appreciated the opportunity to practice concrete managerial techniques (e.g. social participation management) in the class under supervision of an expert. The results of this experience were so successful that we decided to ask our contact professor in AUS, who took the lead in designing the hands-on sessions, to get more involved in design of similar sessions for the future training modules of the program.

4.4.3.2.7 Distant location and logistics complications at AUS and their negative impact on the overall learning experience in the module

Another important observation during the IGLUS-Dubai module was a series of shortcomings in logistics related issues during the two weeks of the training. Most importantly was the distant location of the AUS campus from Dubai and non-existence of public transportation means to access the campus. As a result, the participants had to spend on average between 1.5 to 2 hours each day to commute between the campus and their hotels. This had a significant negative impact on our ability to plan informal activities after the normal training sessions during the IGLUS-Dubai module. As a result, in this module, the participants could not have the same level of *experiencing the city* which they could have in previous modules of the program. Experiencing the city and its infrastructures (specially transportation network) had proved to be an important learning element in our training modules. However, the poor location of AUS resulted in very limited opportunities for the participants to benefit from these informal learning opportunities during the IGLUS-Dubai module.

In addition, some other shortcomings in planning the logistics of the training sessions (e.g. organization of coffee-breaks, availability of internet connection in the class room, cleanness of the room, etc.) resulted in partial disturbances for the participants which had a negative impact on their learning experience during the training module. For example, due to distant location of cafeteria and food court, where the coffee breaks and lunch had been organized (10 minutes walking distance), we were facing with frequent delays in starting the training sessions which negatively affected the overall learning experience of the IGLUS-Dubai module. Not surprisingly, these shortcomings were among the top list of issues that the participants referred to during my informal discussions with them and also the final wrap-up session of the program.

4.4.3.3 Field visits of the IGLUS-Dubai module

For the IGLUS-Dubai module, we planned four official field visits from the transportation system, a waste management facility, the Masdar City and a guided tour of the city developments and iconic projects.

In the same line with the previous modules of the program, we had two main goals in organizing two different types of field visits during the IGLUS-Dubai module; namely 1) learning about innovative initiatives of the host city and 2) discussing governance challenges directly with the stakeholders of projects.

The guided field visits from the Iconic projects in Dubai and the Transportation Infrastructure were mainly aimed at learning about innovative initiatives of the host city. The visit from the Iconic projects in Dubai was led by our contact professor in AUS who explained the history of developments in Dubai while the students were visiting the projects across the city. Understanding the process of development of the city from the perspective of an expatriate professor (in urban planning) who

could point to both positive and negative consequences of rapid developments could be a great learning opportunity for the participants. However, due to poor planning of the tour and time limitations, which resulted in spending most of the time of the visit in the bus, we could not have well-structured and focused discussions among the group. Therefore, the discussions during the visit were mainly developed around several one to one discussions among the participants and the visit leader. Not surprisingly, the one to one discussions were not as dynamic as our previous successful experiences with group discussions during the field visits.

The visit from the transportation infrastructure was canceled with a short notice. As a replacement, I asked our contact professor from AUS to co-organize an interactive/hands-on session. The knowledgeability of our contact professor in AUS about different participation techniques and his flexibility to design joint sessions in a short notice by using insights from the previous sessions of the module helped us to design an interesting session to discuss the nominal group technique and use it to prepare a series of recommendations for a hypothetical policy document about affordable housing. However, the cancelation of field visit resulted in increased number of in-class sessions which made our already intensive training schedule even more intensive for the participants (and ourselves), leading to some dissatisfactions among the participants.

The field visit from the Masdar city was organized and led by a colleague of mine who had a special focus on governance of urban energy systems. In this visit, in addition to learning about innovative technological solutions which were demonstrated on the field (e.g. driverless vehicles, passive building designs, etc.), several lectures were delivered by researchers and practitioners who were working on different initiatives at Masdar city. The participants were especially interested in a lecture by one of the managers of the project who was leading the practical deployment of some projects in the Masdar city. However, since the initiative was a Greenfield/pilot project and could not yet scale up from its demonstration phase, very few governance-related discussions were emerged and most of the discussions were focused on understanding the visionary green-tech innovations which were deployed in this project.

In the second week of the IGLUS-Dubai module, we had a field visit from the Bee'ah waste management facility in Sharjah. In this visit, in addition to visiting different operations which were taking place in the facility, we had a presentation by one of the directors of the company (director of environmental awareness and education). After this informative presentation, the participants had the opportunity to ask their questions from the lecturer. Interestingly, although it was the first time that the topic of waste management was covered in the program, the participants proved to be highly competent in asking relevant governance questions about this infrastructure initiative; inquiring about the financing of the facility and its business model (based on a PPP contract), territorial coverage of waste collection operations and its impact on the economic feasibility of the project, environmental regulations and authorities in charge, impact of this new facility on the lives of waste pickers and its social consequences, process of choosing the proper technology for waste to energy generation units, etc.

The fact that the participants could engage in elaborated discussions to understand the complexities associated with initiation of a brand-new infrastructure initiative in Sharjah (a centralized and highly automated waste management facility) from a holistic-multidisciplinary perspective (referring to

economic, political, technological and social dimensions) was a promising sign that our training practices could have some positive impacts on the way the participants think about such complex problems, even if it is the first time they encounter with it (as explained before, it was the first time we were covering the waste management topic in the program).

4.4.3.4 Wrap up sessions of the IGLUS-Dubai module

The last session so the IGLUS-Dubai module was dedicated to wrap up activities to conclude the module. Like the previous modules, the main goal of this wrap up session was firstly to illustrate the learnings of the Dubai module in the broader context of the master program and secondly to understand the view points of the participants about their learning experience in the module.

In this session, I asked the participants to openly share their main learnings from the IGLUS-Dubai module and also share the strengths and weaknesses in organization of this module from their own perspectives. In the initial group discussions, most of the inputs from participants were focused around the strength and weaknesses of the program and we had too few inputs about the learnings from the module. Intensive schedule of the program, logistical shortcoming during the training module, poor location of the campus and the associated difficulties to access it, low quality of some presentations (specially one session about transportation planning) and limited knowledgeability of some of the local lecturers about the purpose and expectations from the program, and inability to have un-official visits from the city were among the main issues which were raised by the participants. In addition, some of the participants were asking for presentation of more in-depth case studies during the module (similar to a case study session about the Barcelona resilience initiatives by one of our external lecturers from UN-Habitat). On the other hand, the quality of preparatory papers, usefulness of preparatory assignments and high quality of the overall training program (as a “wonderful learning experience”, in words of one of the participants) were among the main strength of the module according to the participants.

After these open discussions, and since we had very few reflections about the learnings from the module by the participants, I decided to play a more active role in recalling the main topics which were covered during the module and how they fit into the overall structure of our program. After this overview, I started a discussion with the participants to recall their role as adult learners in shaping their learning experience and encourage them to continue, and enhance, their active role in reflection on lecturers’ inputs in each module. More precisely, I urged the participants to use their research projects as a guiding tool in their learning process to find their ‘own’ answers to their ‘big questions’ in each of the modules and not only paying attention to what the ‘lecturers’ might think to be useful for them.

4.4.4 After the module

4.4.4.1 The wrap up exercise

In the same line as the previous training modules of the IGLUS program, after the IGLUS-Dubai training module we asked the participants in the program to write a wrap-up essay. The IGLUS-Dubai wrap up essay was developed around two main themes; 1) reflection of participants on their own professional practices by referring to their learnings from the IGLUS-Dubai module and 2) to further develop their master project proposals. The below description is adopted from the instructions that were sent to the participants for this wrap-up activity:

1. *"Please explain what will be different for you once you are back to your jobs after participating in the IGLUS-UAE module. In other words, what is your "to do" list back in your job, based on your learnings in IGLUS-UAE module, and how do you want to make them happen? (2-3 pages)*
2. *Now that you attended the IGLUS-UAE module, please go back to your preparatory assignment and look at your graphical 'model of Dubai growth'. Based on your learnings in the past two weeks, please update your graphical model and send it to us again (maximum 1 page– hand drawing is also acceptable).*
3. *From your perspective, what are the two good lessons in the Dubai practice of urban governance which can be adopted by your city? Also, please explain the two main challenges that you think Dubai will face in the near future due to its current practice of urban governance. (1.5 - 2 pages)*
4. *Based on the discussions we had during the projects session in IGLUS-UAE module; please write your final research question. The research question should be a single sentence, clear and precise. Also, please define the exact scope of your research and the sources of data which you will need to answer your question (maximum 1 page).*
5. *Once you write your research question, please sketch the updated version of your research design (the flowchart of the steps you should make to answer your question). (1 page – hand drawing is also acceptable)"*

4.4.4.1.1 Challenges to collect the essays of the participants and frequent missing deadlines

Before reviewing the key themes from the participants' preparatory essays, I should note that during the IGLUS Executive Training program, we were facing with a significant difficulty to ensure that the participants deliver their preparatory and wrap-up essays in a timely manner. On average, we were giving the participants 20 days to deliver each of these essays. However, in practice we realized that most of the participants do not effectively observe the deadlines. As briefly discussed in the content of previous case studies, based on the feedback of participants with regard to their tight schedule due to work commitments and difficulties to allocate enough time to write their essays, we introduced a series of changes in the preparatory and wrap-up essays of the program such as extending the

deadline for delivery of essays from 2 weeks to 3 weeks and reducing the reading load (both in number of the readings and their complexity). However, the problems with receiving the essays of some of the participants in a timely manner continued to persist during the program.

As we progressed in the training program, the adherence of some of the participants to the deadlines were becoming more troublesome. This was specially the case in IGLUS-Dubai wrap up essays where we had the lowest record of essay submissions by the participants (four essays which are covered in the next sections). To deal with this problem, in the next module of the program (IGLUS-Detroit/Chicago which is not covered in this thesis) I directly raised the issue with the participants and recalled that these essays play an important role in the pedagogy of the whole program and adherence to their delivery deadlines significantly contributes to the quality of the overall learning experience. In addition, I asked the director of the program (Prof. Finger) to also put a special emphasis on the importance of meeting the deadlines.

These new rounds of communications could slightly improve the orderly delivery of essays from the participants, but could not fully resolve this challenge due to intensive nature of this training program (2-weeks of training with almost 2-month of interval time) for the practitioners. Although this was a significant problem in conducting this project, it was due to practical limitations (work load of participants in their professional jobs, time limitations of the project, etc.) that I could not really influence them, and thus had to accept them as partly exogenous factors.

In the coming pages, I try to highlight the main points from the participants' answers to these questions.

4.4.4.1.2 Selected quotes from the participants' essays

Question 1)

The first question of this wrap-up activity was asking the participants to reflect on their own practices in their jobs by referring to their learnings during the Dubai module. And to develop a to-do list and explain how they want to make their ideas happening in their jobs. An interesting observation among the answers of participants to this question was further elaboration of holistic perspective among the participants who attended in most of the previous module of the program in analyzing their learnt-lessons (looking at different dimensions of problems, links among different systems, etc.). For example, one our participant (senior architect and urban planner from a municipality in Mexico) mentioned:

"I'm convinced that the city must be understood and addressed in an integrated and inclusive manner, that their large urban systems are always interconnected, (although for practical reasons we have to study separately), which at the interconnection lie its main strengths and weaknesses, so I find it very interesting the potential to trigger strategic projects with these interactions, investments in

projects and works that impact two or more systems may be doing that generate large changes in the city, for example; a transport hub, housing, green infrastructure services, etc., in the opposite, I believe the small, isolated projects although they are novel, impacting only a part of the city, a neighborhood, a colony, a district.” [H.W.4]

Indeed, our more advanced participants could both look at issues from a holistic point of view and in addition, use their learnings from the other modules of the program in new contexts (in their own practices) which were not the main focus of the training program. In other words, they could use their learnings to develop new perspectives and ways of thinking; and were not limiting themselves to the ‘technical’ learnings. For example, one of the participants (NGO activist from a municipality in Mexico), mentioned her plans to develop a training program for local students (which was never covered in the IGLUS-training modules) to familiarize them with sustainability issues to ‘change the way that people live’ and more interestingly, to extend her work to be able to cover these topics in a broader context:

“... I am preparing a course based in some knowledge I have learned in this (and the past) module and that can have repercussions in the way people of my social center live... The main features that the course will contain are about sustainability (water, greens, waste) and about taking advantage of mechanisms of participation as a part of the governance that our city has (proactively). These courses could be able to be adapted for elementary, middle and high school levels in order to educate citizens in these important subjects. On the other hand, I am planning to extend the social work I am doing in order to extend the current social centers and open a new one in San Juan de Ocotán Neighborhood... (And she then explains some practical steps she has already taken for her project)” [B.W.4]

Or another participant (civil engineer working for a local government in Mexico) whom the Dubai module was her third training module, interestingly mentioned her plans to use her learning from the program (which were mostly focused on urban context) in the rural contexts (which was not really the focus of the training modules):

“When I decided to study this master's, what caught my attention was the name of innovative government, after studying three modules the big question that I would like to solve is how you can apply this governance on a small scale for example in rural areas that is in I work.. (And then she continued with her learnings about governance from the Dubai and other modules of the program) ...in the implementation of new forms, it is important to first identify key stakeholders since engage, that is part of the governance process. This involvement must be from the origin of the idea of change to ensure proper participation and application for the benefit of the participants. After these three modules I can see that Mexico is a country where citizen participation is fairly new, but it has been very well received and although sometimes may encounter barriers, most of the population has accepted with joy and enthusiasm. On the other hand, in Istanbul or Dubai it seems that only a few select groups may have access to information, which may be understandable from its form of government.” [A.W.4]

The emergence of a holistic-multidisciplinary approach and change in the perspective of those participants who had been involved in the program for a longer time becomes more evident when their answers are analyzed in comparison to the essay of a newly engaged participant in the program (engineer working in private company in UAE) who had a clear focus on more instrumental learnings (referring to practical lessons he learnt from the case of Dubai), even though he also shows that he could understand the essence of complexities and multidimensionality of governance after attending his first training module:

"... The leadership of Dubai has achieved quality of life and amenities to its residents. I would say that my city Ras Al Khaimah should adapt some concepts of Dubai model such as treating the government entities as private sectors to encourage competition among the government entities for better service to both individuals and investment. ...The other admiration to Dubai model of development is construction the infrastructure of the city through private sector, using the concept of PPP... On the other hand there is a challenge for Dubai if it continues to govern the city the way it is now. Traffic congestion is a major obstacle that Dubai is facing and the indicators show it is going to be worst. ... the structure of municipality should give space to interact with actors, introduce planning support system to the city to give visibility of the interactions of urban systems within the city, start making projects with PPP concept and provide quality of service, are all key issues I need to execute. ... the second initiative is to build structure that can interact with all actors affecting decision making and plans of the municipality. The actors are the Federal ministries such as Water, Electricity, Education, Environment, Transportation etc. ..." [S.W.4]

The fact that the participants (both new and advanced ones) could highlight the complex and multidimensional nature of urban infrastructure systems and their governance was an important observation which was already known to us from the previous modules of the program, but was further reaffirmed in this training module. However, the fact that our old participants were addressing more fundamental learnings and were showing some signs of changes in their perspectives (talking about introducing changes in some practices which have not been even covered in the program) was a relatively new observation in this module, and became especially recognizable due to the contrasts among the old and new participants' ways of thinking which were reflected in their wrap-up essays and comments during the training module.

Questions 2)

Unfortunately, only one of the participants in the Dubai module effectively answered the second question of the wrap up essay. Despite the limited number of answers to this question, the participant who delivered her updated framework (NGO activist from Mexico) could interestingly add some important elements (highlighted in yellow) to her framework which were not present in her initial version of the framework (Figure 4.4.6 compared with Figure 4.4.13), such as training initiatives, cooperation mechanism and several other factors which were not mentioned in the preparatory readings but were added by this participant to the framework based on her personal learnings from the module.

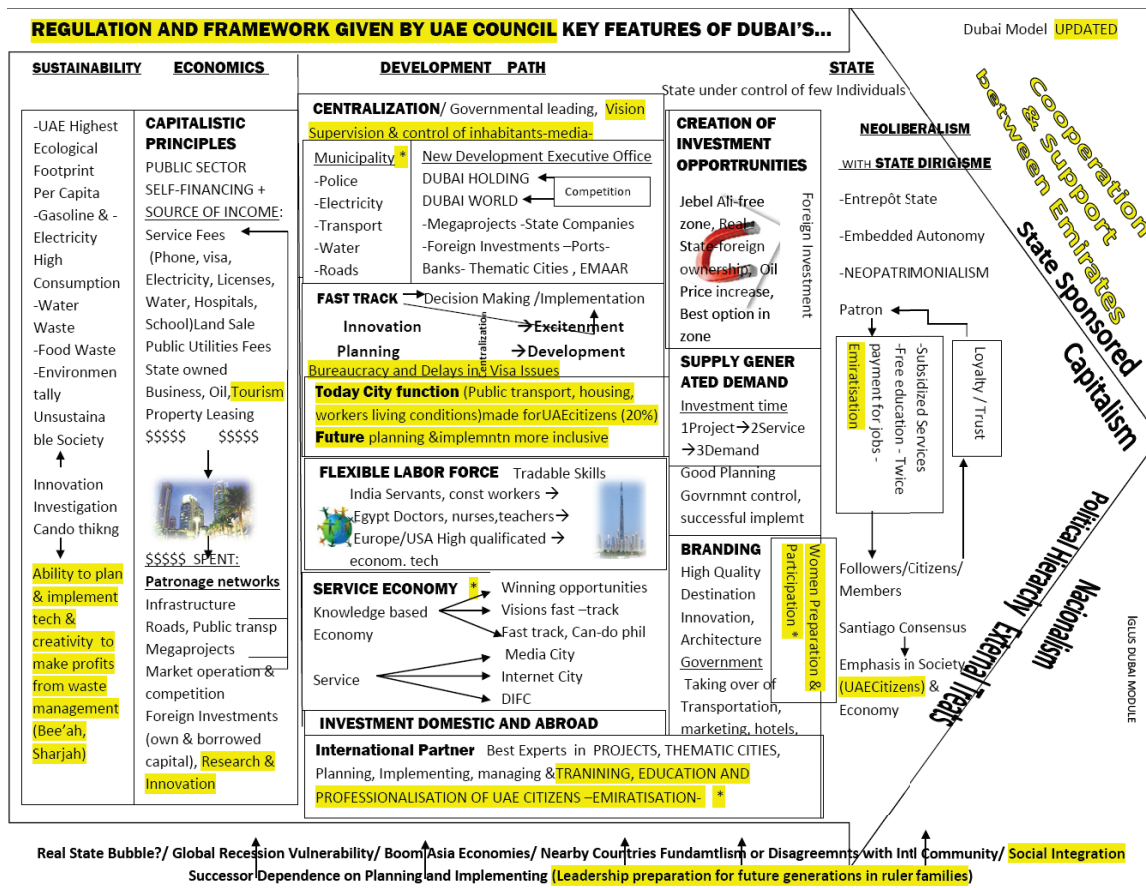


Figure 4.4.13 – updated framework of Dubai development process by one of our Mexican participants [B.W.4]

The fact that most of the participant did not introduce any changes in their initial frameworks or just didn't answer the question could be a sign of difficulties that the participants had in developing conceptual frameworks. However, as we progressed with the training program, we could see some improvements in the ability of the participants to translate their learnings from the modules into conceptual frameworks (especially in Seoul and Dortmund modules of the program which are not covered in this thesis).

Question 3)

The third question of the wrap up assignment was asking the participants to highlight two positive and two negative aspects of Dubai urban governance system, according to the participant's professional point of view. Although the focus of the question was on urban governance practices, some of the participants answered the question by referring to broader lessons from the module, including lessons from the infrastructure initiatives in Dubai. Similar to the first question of this wrap-up activity, an interesting point in the answers of participants was their holistic-

multidisciplinary perspective in discussing the positive and negative lessons which they found in the case of Dubai by looking at technological, as well as non-technological dimensions for analyzing the case of Dubai. For example, one of the participants (NGO activist from Mexico) focused on the water recycling in Dubai as a lesson for her own city and discussed the issue from a holistic-multidisciplinary point of view by referring to technological, institutional and financial dimensions that are associated with such initiatives and also reflecting on the situation in her own country with regard to these important dimensions:

“Although the waste of water remains as a challenge for Dubai, (As it is mentioned in the next question) shortage of the liquid made the city of Dubai find new ways of recycling and obtaining it.... Researches undertaken by Dubai government and innovative methods in this regard have led to the development of several methods that go from the ultimate technologies to some as creative as the use of a type of plants that desalinate water, in such way that where there were only salt water flooding, today is a green area in the middle of the desert.... [then she looks at the issue from a multidisciplinary perspective to argue if her city can benefit from this lesson or not]

- *Are there in my country enough institutions and human resources for the investigation and research of this type of technology (mechanized or natural)? Yes there are.*
- *Are there enough financial resources to undertake them? Probably not, however, as we saw in several lectures on past Modules, there are international institutions -Veolia Group, World Bank, UN, etc - willing to support well-targeted and sustained efforts in the use of this resource that clearly goes beyond the borders.*
- *Do we in GMA have the awareness that such innovations are needed? Yes, clearly we have it.*
- *Do governmental leaders have the willingness to take the risk and even pay a political cost while follow these objectives? It seems that most of them do not have it.” [B.W.4]*

And similar to my findings from the previous training modules, the participants could show their competency to look at both positive and negative lessons from the host city. For example, one of the participants (senior architect and urban planner working for municipality in Mexico) discussed the positive and negative lessons from the non-inclusive decision making practices in Dubai:

“...The leadership and the process of decision making to achieve; how do things happen?
The main component of governance is concerned with the processes in decision- making, in Dubai this process is very fast as it is between very few people who have a common goal, this was mentioned several times how one factor key to the rapid growth of Dubai, the best example of [naming a lecturer], it took only a day's signature on the establishment of Dubai Electricity & Water Authority, DEWA. I was pleasantly impressed how they make things happen. Although this process has its downside in that many actors and citizens are not included in decisions although apparently share in the benefits that result.” [H.W.4]

Another important point among the answers of participants to this question was their focus on more fundamental learnings which were related to the underlying perspectives in governance/management of urban infrastructures systems, and not only discussing the practices at

their surface values¹⁰⁴. For example, one of the participants (civil engineer working for the local government in Mexico) explicitly referred to her learnings from the Dubai (and Istanbul) module(s) and compared them with her own city which seemingly helped her to realize the importance of ‘perspective’ or ‘paradigm’ change:

“After this module I have observed that it is necessary to have new methods of planning, we need a paradigm shift. If we want different results we must do different things, so we must lose our fear in innovation and be creative even in areas where we believe everything is seen... It seems very important to point out that although it is important to know the situations and solutions that have happened in other parts of the world they cannot be applied in the same way everywhere, the reality of a country to another is always changing, so it is important to know but also to provide solutions to discern according to the conditions where the conflict is generated.

*According to what I have learned and lived in this module, it is clear that Dubai had to make a very big ideological shift to allow economic growth. In economic matters, we could say that public-private partnerships represents for Mexico one of a possible solution to economic problems, but as a society accustomed to a national companies, this is an issue that generates conflict mainly by the belief that foreign capital investment mean a resource drain to other countries, which is why private investment in economically relevant issues has been very little... In this regard, it is of primary importance to put attention how business works in Istanbul or Dubai, since on the one hand are metropolitan or government companies that accept private investment and even managed like a private company.” [A.W.4]*¹⁰⁵

The fact the participants’ answers to this question in the IGLUS-Dubai wrap-up activity had some references to more fundamental learnings from the training module and not only ‘learning the best practices’ was a very important observation for me. Specially, this observation in the wrap-up essays of the Dubai module is significant because in IGLUS-Hong Kong, the participant’s answers to a relatively similar question were mostly focused on practices which were presented or experienced during the Hong Kong module and had little links to changes in their perspectives. Achieving this objective was important for us because as explained before, our program was aimed at helping the practitioners to really change their approach in thinking about complex urban problems (from a simplistic/ disciplinary perspective to a holistic and multidisciplinary perspective) and not only training them about a large number of concepts and some local examples on a shallow-surface level.

Questions 4 and 5)

Questions 4 and 5 were aimed at helping the participants to further clarify their research questions and research designs. Unfortunately, only two of the participants answered the questions completely which can be understood as an illustration of difficulties that the participants had in developing

¹⁰⁴ This was one of the shortcomings which I referred to in the IGLUS-Hong Kong case study, but we could see significant improvements about it in the IGLUS-Dubai module.

¹⁰⁵ The Underlines were added by myself for further illustration and are not present in the original text from the wrap up essay of the participant.

doable research projects from their practice-originated concerns. However, when analyzing these two answers, an interesting fact is the impact of the training program on evolution of one of the participants' ideas (NGO activist from Mexico) for her master project and her ability to use the opportunity of attending the training modules and getting in touch with peers from other cities around the globe to further elaborate her master project:

"My question is not yet well defined.....Two Possibilities for me:

Question 1

What are the common features in NGOs that are working successfully in some Large Urban Systems?

The Scope:

Take one or two representative ONGs in every city where I have studied an IGLUS Module and identify the features that have allowed them to work with successful results. I am considering including some NGOs of cities that I have not visited, but that I can be redirected to by some of my classmates or lecturers (Cali, Bahrain, Rio, Barcelona, etc)....

Question 2

What are the most fruitful mechanisms of dissemination, disclosure and education that are used in order that citizens could shift from just observers to active subjects of Governance in Large Urban Systems?

...My first motivation when I enrolled to these Master Program was the volunteer work. Later I understand that not volunteers, but the whole citizen participation is a crucial part of the governance.... After three modules, some readings and interviews, it seems that I am taking a step back with this big question, that is because I am in the understanding process that before achieve a positive active involved citizen, it has to be achieved an informed, educated citizen. ...

The Scope:

In every city where I have studied an IGLUS Module identify the mechanisms of disclosure and dissemination a that this city use to inform and educate citizens and compare this use of mechanisms with initiatives and actions citizenship (by itself or with political and private alliances) has achieve in the improvement of the City. I am also considering including examples from cities that I have not visited, but that I can be oriented by some of my classmates or lecturers (Cali, Bahrain, Rio, Barcelona, etc)." [B.W.4]

When comparing the research questions of this participant with the research question of another participant who had just joined the program from IGLUS-Dubai module, we can see an interesting difference between the concerns of the two participant, when the more advanced participant had picked a more fundamental/philosophical question as she continued her studies in the program while the new participant chose a more 'instrumental/practical question':

"How to make the municipality of Ras Al Khaimah run professionally?

The scope of the question is to compare the current practice and structure of RAK municipality to the ideal or the best practices in the world. Focusing on the structure is essential because it is the base for all the activities. How can the services provided of the sectors of the municipality be high quality looking at the drives of that?" [S.W.4]

Both participants could also develop acceptable research designs (a flowchart) by referring to the main steps which had been explained to them in the classes (defining the research question, reviewing the literature, data collection, (revisions), data analysis, reporting).

4.4.5 Brief reflections on the IGLUS-Dubai training module

The IGLUS-Dubai training module (and its associated AR inquiry cycle) became one of the most important milestones in the first edition of the IGLUS-Executive Master program because it could help us to find an acceptable balance between analytical and practical dimensions of our approach in the IGLUS training program. The practice of using conceptual frameworks, not only as a teaching tool by myself, but also as a 'learning' tool to help the participants organize their thoughts and engage in making sense of seemingly un-related pieces of information proved to be a highly effective strategy; helping the participants to reflect on their learnings from the different modules of the program.

In addition, the fact that our more advanced participants, who had spent a longer time in the training program, could analyze the issues from a more holistic-multidisciplinary approach and search for more in-depth lessons from the cases (by reflecting on the more fundamental dynamics that had led to emergence of those cases), instead of looking at the inputs of lecturers as 'best/worst practices', illustrated that our attempts to encourage the participants to 'ask critical questions', as well as our approach to use the inputs from the different lecturers as opportunities to create discussion arenas to 'critically reflect on different practices' was a helpful strategy to help the participants change their perspective in analysis of complex urban problems. This argument becomes more attested when I compare the contributions from the more advanced and new participants in the IGLUS-Dubai training module, and also the contributions from each of the advanced participants in IGLUS-Dubai module in comparison to their own contributions in the very first modules of the program (this issue is further discussed in the analysis chapter).

It is also worth noting that an important decision about the curriculum of the second edition of IGLUS-Executive Master program was made after the IGLUS-Dubai module. Indeed, after experiencing the difficulties in dealing with the un-balanced knowledge background of the participants in the program, we realized that albeit the flexibility in the curriculum can bring certain values to the program (and is in-line with the general recommendations which can be found in the literature; see chapter 2), too much flexibility in the program might result in some difficulties for both the participants and organizers of the program. Indeed, since some of the participants have not been present in some the training modules of the program (they could choose 5 modules among 7 offered modules), they could hardly get involved in reflective discussions which were based on comparison of learnings from different modules of the program that they were not present in. So, after the IGLUS-Dubai module, we decided to keep the curriculum of the program flexible, but not too much. More precisely, we decided to reduce the number the offered module in the program to only six (instead of seven) to reduce the chance of occurrence of such problems, while keeping the curriculum of the program relatively flexible.

4.4.5.1 Results of evaluation surveys for the IGLUS-Dubai training module

In IGLUS-Dubai training module, like all the previous modules of the program, each of the training sessions was evaluated by the participants. The evaluation was done by means of a short survey, exactly similar to the survey which was used in the previous modules, which asked the participant to evaluate each session alongside three dimensions:

- Presentation skills and quality of the slides of the presenter
- Usefulness of the content of the presentation
- Overall evaluation of the session

Participants were asked to fill the survey at the end of each day. The survey was anonymous to encourage the participants to express their real opinion about the program. From 11 participants in the IGLUS-Istanbul module, on average 9 people filled the survey¹⁰⁶.

The summary of evaluation result of the IGLUS-Dubai module is presented in Chart 4.4.1.

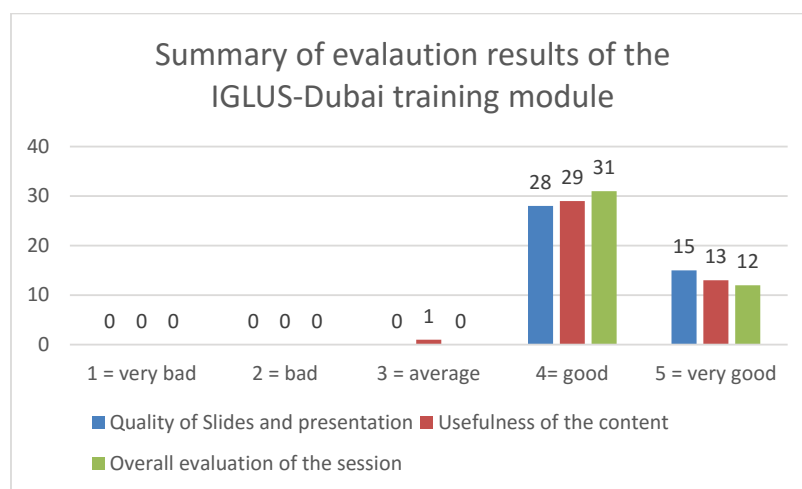


Chart 4.4.1 – summary of IGLUS-DBX evaluation

As explained in previous case studies and the methodology chapter, the evaluation survey was not my principal data collection tool in this project. However, the results of the survey can be somehow indicative. The fact that ‘overall evaluation’ of all the sessions have been rated as good or very good

¹⁰⁶ The number of evaluated sessions is slightly different from the total number of sessions during this module because I did not include the evaluation results for those sessions which had been rated by too few participants (less than 4 participants)

(among the 43 evaluated sessions) and no session received an average to below average evaluation on this criteria (overall evaluation) showed that the participants were generally satisfied with their learning experience from the training sessions of the IGLUS-Dubai module.

However, the number of sessions with 'very good' *overall* evaluation in IGLUS-Dubai module (12 sessions) had decreased in comparison to the evaluation results of the previous modules of the program (26 very good sessions in Hong Kong, 16 very good sessions in Istanbul and 20 very good sessions in Guadalajara). Instead, the number of sessions with 'good' overall evaluation had increased significantly compared to previous modules of the program. The same analysis is also valid for the 'usefulness' as well as 'quality of presentation' criteria (charts 4.4.1, 4.4.2, 4.4.3 and 4.4.4).

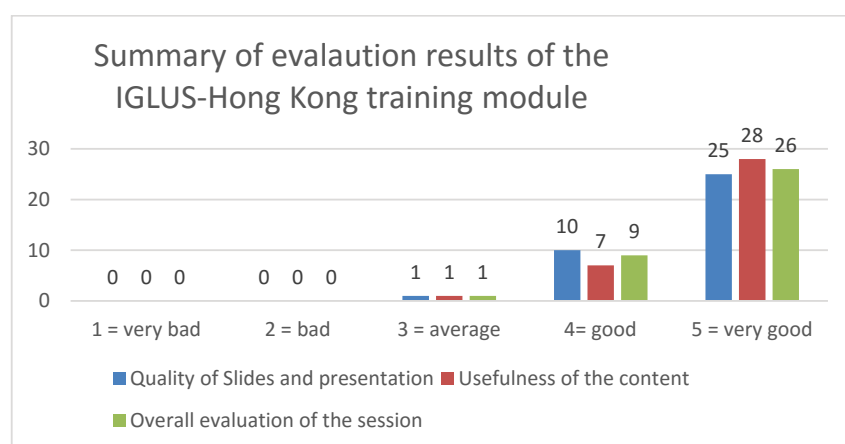


Chart 4.4.2 - summary of IGLUS-HK evaluation

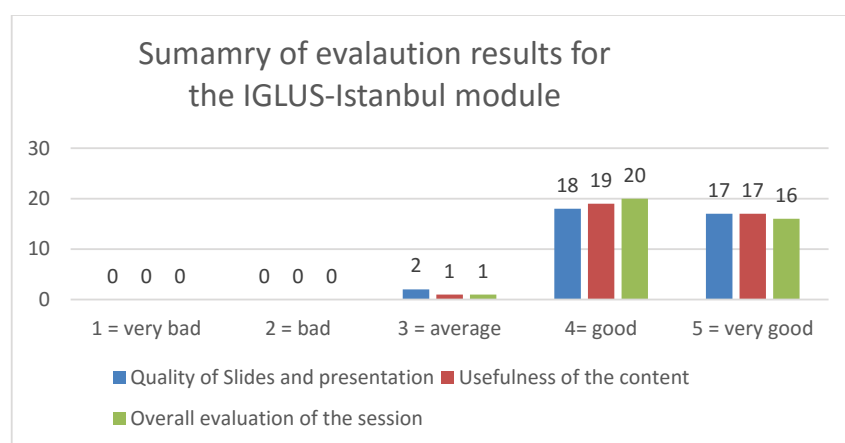


Chart 4.4.3 - summary of IGLUS-IST evaluation

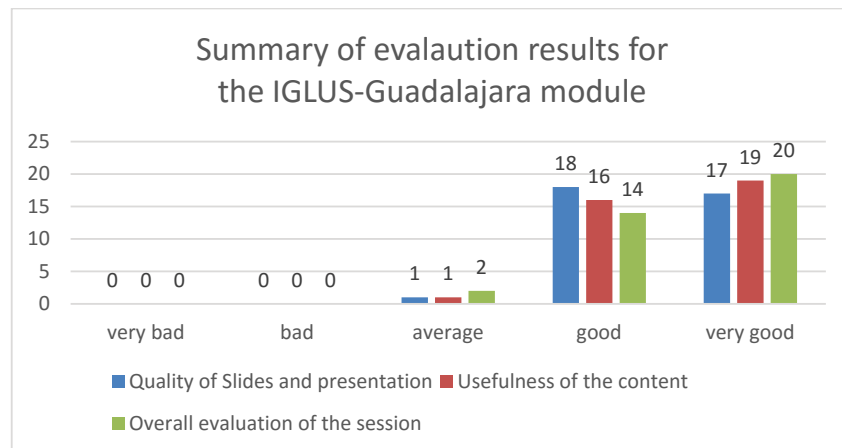


Chart 4.4.4 - summary of IGLUS-GDL evaluation

The only session which received an average evaluation (only in usefulness criteria) was the 'transportation planning session' which was explained in more details in previous pages of this case study. The results of the evaluations of IGLUS-Dubai training sessions were showing a defendable performance in this training module. However, in comparison to the previous modules of the program the IGLUS-Dubai module seems to be less successful in achieving 'very good' evaluation results and was mostly seen as a 'good' training module. However, these aggregate results should not be taken on their face value. Based on my personal observations in the class and informal discussions with the participants, I could realize that most of the advanced participants in the program (who attended in 2 or more training modules of the program) were highly satisfied with their overall learning experience in the module, while the new participants who had joined the program in IGLUS-Dubai module were less satisfied with their learning experience in their first module.

4.4.5.2 After the IGLUS-Dubai module

The IGLUS-Dubai training module is the fourth and last training module from the first edition of the IGLUS-Executive Master program which is reported in this thesis. However, after the IGLUS-Dubai training module, the first edition of the program and my personal AR inquiries continued in IGLUS-Detroit/Chicago (April 2015), IGLUS-Seoul (June 2015) and IGLUS-Dortmund (September 2015) training modules. In these training modules, our fundamental approach to this training program was not significantly changed in comparison to the IGLUS-Dubai module. However, we tried to improve the quality of the training module by improving our training practices (using the frameworks in classes, using group learning activities, organizing reflection sessions, etc.). The second edition of the program was started in November 2015 where some significant changes were introduced to the

structure of the program based on the learnings from the first edition of the program and the associated AR inquiry project which have been reported in this thesis.

In the next chapter of this thesis, I will further analyze my empirical data which have been reported in this chapter and discuss the main findings of this Action Research inquiry.

Chapter 5 (Analysis of data – Key findings)

In this chapter, I provide an overall analysis of my empirical data. The chapter summarizes the key points from the reported case studies and illustrates the main challenges associated with training urban practitioners in the IGLUS training program. It also elaborates some effective strategies to deal with these challenges in practice. The chapter is concluded by discussing the main findings of the thesis in light of academic literatures.

5.1 Introduction

One of the most important steps in any scientific research is the analysis of data. Data analysis is also one of the most important steps in Action Research inquiries. As explained in the methodology chapter of this thesis, due to the reflective nature of Action Research, which requires a certain level of meaning making from data in the process of AR inquiry, in this thesis I follow a multi-layer data analysis approach (Herr and Anderson 2005). In concordance with my methodological choice, I have conducted some preliminary analysis on my data in reporting my case studies by inferring the main incidents in each of the training module as well as extracting the key points from the preparatory and

wrap up essays of the participants; which have been discussed in details in chapter 4 of this thesis (see chapter 3, specially section 3.10 for more detailed discussions on methodological justifications).

The main aim of this chapter is to conduct an overall analysis across all the cases studies and in doing so, extract the main findings of this AR inquiry taken as a whole. More precisely, in this chapter I will answer my main research questions by synthesizing my findings from the four Action Research inquiry cycles that have been reported in the previous chapter.

To that effect, I will firstly summarize the key points I drew from each of the four case studies. These summary tables shall be used to illustrate the evolution of different elements of the IGLUS training program from the IGLUS-Guadalajara training module through to the IGLUS-Dubai training module. Based upon my findings from the case studies, I will illustrate the main challenges associated with training urban practitioners to address complex problems in governance of large urban infrastructure systems from a holistic-multidisciplinary point of view. By reflecting on the practical experience of dealing with these challenges throughout the IGLUS Executive Master's program, I will also illustrate some potential strategies for overcoming them. I will then discuss my main findings in the light of insights from academic literature about inter/multi-disciplinary education and Transformative Learning Theory (Mezirow 1991), which stands to be one of the most influential theories in the field of adult learning and education (Marsick and Finger 1994, Cranton and Taylor 2007).

5.2 Review and summary of the key points from the case studies

In this section, I will provide a summary of the key points that have been previously discussed in greater detail in each of the four reported case studies. The summaries I present are structured according to the three basic phases in each of the training modules, namely preparation of the module, implementation of the module, and finally post-module activities.

Before summarizing the key points drawn from the cases studies, I will draw the reader's attention towards a summary of general information about the four training modules given in Table 5.1.

Table 5.1 - Background information about the training modules					
		IGLUS- Guadalajara	IGLUS- Istanbul	IGLUS- Hong Kong	IGLUS- Dubai
Profile of participants	Number (percentage) of local/regional participants	15 (94%)	8 (47%)	11 (58%)	5 (45%)
	Number of international participants	1 (6%)	9 (53%)	8 (42%)	6 (55%)
	Number (percentage) of participants attending their 1 st module	16 (100%)	10 (59%)	11 (58%)	5 (45%)
	Number (percentage) of participants attending their 2 nd module	NA	7 (41%)	4 (21%)	1 (10%)
	Number (percentage) of participants attending their 3 rd module	NA	NA	4 (21%)	5 (45%)
	Number (percentage) of participants attending their 4 th module	NA	NA	NA	0 (0%)
Number (percentage) of training sessions delivered by each partner	EPFL	5 (13%)	7 (18%)	9 (26%)	8 (19%)
	Local university	21 (54%)	18 (45%)	15 (43%)	14 (33%)
	Partner institutions/lecturers	7 (18%)	10 (25%)	6 (17%)	17 (40%)
	Field visits	6 (15%)	5 (13%)	5 (14%)	4 (9%)

As shown in Table 5.1, the composition of the participants in the training modules (local vs. global as well as their advancements in their studies) have changed over the course of the program. The proportion of training sessions led by different categories of partners in the program have also changed over time.

Some of these changes were natural as our international participants progressed through their studies, as was the case for the evolving number of participants attending their 1st, 2nd, 3rd or 4th training modules. Other changes were subject to relatively independent factors on which we had limited control, such as the composition of local vs. international participants, which was primarily related to the success of our local recruitment strategy which was not fully under our control. Some of the other changes resulted directly from our actions and the decisions we made in organizing the training modules to improve the quality of this learning experience for our participants; such as the evolving composition of sessions that were covered by different parties. Both the intentional and unintentional changes had significant consequences on different aspects of this learning experience; these have been thoroughly discussed in the case studies and will also be briefly summarized in the coming sections.

5.2.1 Summary of the key points from preparation of the training modules

By reflecting on the lessons learned from each of the training modules, we introduced changes, both to our intellectual approach as well as to the organization of each of the training modules, in order to continuously improve the learning experience for our participants. Table 5.2 provides a summary of the main points about our collaboration experience with the partner universities as well as our evolving intellectual approach across the first four training modules of the IGLUS Executive Master program.

As is shown in Table 5.2, developing the joint curriculum for the training modules with the partner universities and controlling the quality of the local lecturers' presentations in order to ensure that the training sessions of the program are effectively contributing towards helping us to materialize the learning objectives of the curriculum proved to be a persistent challenge in preparation of the training modules. Therefore, we introduce some changes in preparation phase of the training modules which can be found in this table.

The design of the training sessions that were directly delivered by us (IGLUS-EPFL sessions) as well as our conceptual inputs to the program also underwent some significant changes over the course of the four reported training modules. For example, instead of relying on "off the shelf concepts and theories", which were often too abstract and not-contextualized-enough to meet the needs of the participants, we eventually moved towards presenting tailor-made conceptual frameworks as our main conceptual input to the participants. Another example of such changes can be seen in the evolution of "Reflection Sessions". Although independent "Reflection Sessions" were not initially considered as part of the curriculum for the program, I began to organize spontaneous reflection sessions in the IGLUS-Istanbul training module. Later on, these sessions became a signature element of the IGLUS training modules and played a significant role in bringing coherence to the different training modules of the program and were also of paramount importance for sense-making from the seemingly unrelated training sessions in each of the training modules. Similarly, the project-sessions became a more significant part of the program from the IGLUS-Hong Kong module onwards and group-learning activities played a pivotal role in these sessions. Throughout the program, the design of the wrap-up sessions did not change fundamentally. But, we did try to improve the quality of the discussions by using more sophisticated discussion and moderation techniques. Table 5.2 provides a summary of the main changes that have been consecutively introduced to the preparation procedures for organization of the training modules throughout the IGLUS training program.

Table 5.2 - Summary of key points in preparation phase of IGLUS training modules				
	IGLUS-Guadalajara	IGLUS-Istanbul	IGLUS-Hong Kong	IGLUS-Dubai
<p>Collaboration with partner university during the joint development of the module's curriculum</p>	<ul style="list-style-type: none"> Difficulties establishing effective communication with our contact person at Tec, resulting from significant intellectual-background differences Concerns about our contact's ability to communicate the main learning objectives of the program to the local lecturers Developing the final curriculum for the module based on our broad curriculum proposal Inability to enforce our policy for reviewing the content of presentation in advance (different working cultures) 	<ul style="list-style-type: none"> Change of the partner university Smooth communications with contact person at BAU due to relevant research/educational background Developing the final curriculum for the module based on our broad curriculum proposal Concerns about BAU's ability to communicate the main learning objectives of the program to the local lecturers Inability to enforce our policy for reviewing the content of presentation in advance (in most cases) Trying to include more inputs from other partners (not only the local university) 	<ul style="list-style-type: none"> Change of the theme for the module due to political contingencies in Hong Kong Very limited communications opportunities with our contacts at HKUST due to very different working cultures and policies at HKUST Developing the final curriculum for the module without following our established process of using our broad curriculum proposal Inability to enforce our policy for reviewing the content of presentation in advance Adopting a strong focus on using our IGLUS-EPFL reflection sessions Complications in managing the operational details of the event 	<ul style="list-style-type: none"> Smooth communications with our contact at AUS due to relevant research/educational background and flexibility of the two parties Developing the final curriculum of the module based on our broad curriculum proposal Inability to enforce our policy for reviewing the content of presentation in advance in most cases Putting a strong focus on ensuring that enough time is allocated for class discussions in each training session Adopting a strong focus on using our IGLUS-EPFL reflection sessions Emphasizing the importance of including roundtables and hands-on sessions Trying to include further inputs from other partners (not only the local university)
	<p>Theoretical opening sessions</p>	<ul style="list-style-type: none"> Introducing more theoretical inputs based on well-known governance theories Bridging concepts 	<ul style="list-style-type: none"> Trying to provide a more complete conceptualization of governance and performance in large urban infrastructure systems Bridging approaches 	<ul style="list-style-type: none"> Providing a more comprehensive conceptualization of performance and governance Focusing on conceptualization as a pedagogical tool (Asking the participants to present their conceptual frameworks) Focusing on the practical steps to make use of conceptual frameworks
	<p>Design of IGLUS-EPFL sessions</p>			
curriculum development				

					for the analysis of real-world problems
					<ul style="list-style-type: none">• Structured around conceptual frameworks• Comparison of different cities and infrastructure by using a well-structured conceptual framework
Our intellectual approach (evolution of our conceptual inputs)	Reflection sessions	<ul style="list-style-type: none">• Not planned as independent sessions	<ul style="list-style-type: none">• Spontaneously organized reflection sessions• Primarily focused on comparing different infrastructures and cities and reflecting on the roots of their differences	<ul style="list-style-type: none">• First time to introduce reflection sessions as independent sessions in the curriculum of the program• Focused on improving our conceptualizations and sharing it with the participants• Explaining my personal approach for reflecting on complex problems to the participants	
	Projects sessions	<ul style="list-style-type: none">• Not an independent session• Brief discussion of the role of projects in this learning experience	<ul style="list-style-type: none">• Not an independent session• Brief discussion of the role of projects in this learning experience and the importance of the participants' "big questions"	<ul style="list-style-type: none">• Teaching some common research methodologies• Using a group learning approach to help the participants define their research projects	<ul style="list-style-type: none">• Using a group learning approach to help the participants define their research projects• Individual consultations on choice of methodology
	Wrap up sessions	<ul style="list-style-type: none">• Reflection on the participants' overall learning experiences• Open discussions about the program	<ul style="list-style-type: none">• Reflection on the participants' overall learning experiences• Open discussions about the program	<ul style="list-style-type: none">• Reflection on the participants' overall learning experiences• Open discussions about the program	<ul style="list-style-type: none">• Reflection on the participants' overall learning experiences• Discussions about the program by using some participation management techniques
		<ul style="list-style-type: none">• Highly abstract and generic• Using the preliminary IGLUS framework and some generic discussions about governance• Not focused on specific contexts (treating large urban infrastructures systems in general)	<ul style="list-style-type: none">• Highly abstract and generic• Using the preliminary IGLUS framework and some generic discussions about governance• Not focused on specific contexts (treating large urban infrastructures systems in general)	<ul style="list-style-type: none">• Highly focused and specific• Covering established theories with well-defined domains of application (TCE, principal agent)• Not highly-focused on specific contexts	<ul style="list-style-type: none">• Relatively balanced (neither highly abstract/generic, nor highly focused/specific)• Using Systems approach to conceptualize cities and complex challenges associated with the governance of large urban infrastructure systems ('wicked problems')• Partly contextualized for urban infrastructures

5.2.2 Summary of the key points from preparatory essays of the participants

As explained in the previous chapters, the preparatory activities were an indispensable part of the IGLUS training program. Table 5.3 provides a summary of key points about the participants' preparatory essays.

The design of the preparatory activities underwent significant changes from the first training module (IGLUS-Guadalajara) to the fourth training module (IGLUS-Dubai). For the first module of the program, theoretical papers dominated the assigned preparatory materials. However, based on our reflections on the outcomes of our decisions and actions, we changed the choice of preparatory materials dramatically throughout this AR inquiry. We eventually realized that it was advantageous to assign a more well-balanced set of preparatory materials, and we decided to include more case studies, professional reports, conceptual papers and even multimedia resources (videos) in future modules.

Alongside changes in our selection of preparatory readings, our expectations from the participants' essays also changed over the course of the training modules. In the first training module, the participants were asked to summarize the assigned papers and critically reflect on the main arguments of the papers by referring to their own professional experience. However, in later training modules, in addition to asking the participants to critically reflect on reading materials (not necessary theoretical papers), they were also asked to engage in more 'practical' activities such as developing simple conceptual frameworks and conducting comparative analysis of situation in their home cities and the host city of the module.

Over the course of the four modules, the participants' preparatory essays showed significant improvements in terms of their ability to analyze complex urban problems from a more holistic-multidisciplinary point of view. As the program progressed the participants were able to refer to their learned lessons from previous training modules as well as the specific preparatory materials assigned to them in order to demonstrate a more thorough and well-rounded understanding of the governance of large urban infrastructure systems. From the IGLUS-Dubai training module, we adopted a stronger focus on asking the participants to develop simple conceptual frameworks as part of the preparatory assignments which helped us to develop a stronger link between the participants' preparatory assignments and their reflective learning experiences during the training module.

Table 5.3 - Summary of key points from the Preparatory essays

Preparatory essays				
Our design and focus of the preparatory activities	Choice of preparatory materials		IGLUS-Guadalajara	IGLUS-Istanbul
	Expectations from participants		IGLUS-Hong Kong	IGLUS-Dubai
	<ul style="list-style-type: none"> • A selection of highly theoretical papers about governance 		<ul style="list-style-type: none"> • A professional report about Istanbul's strategic plan • An analytical paper about the evolution of governance in Istanbul • Two descriptive papers on green infrastructures 	<ul style="list-style-type: none"> • A conceptual paper about 'Wicked Problems' • Two empirical papers about housing and transport infrastructures in HK • A documentary video about HK
	<ul style="list-style-type: none"> • To summarize the papers • To reflect on the arguments presented in the papers based on their professional experience • To present their personal point of view about the main challenges in the governance of large urban systems 		<ul style="list-style-type: none"> • To critically analyze Istanbul's strategic plan and propose recommendations to improve it (as an expert) • To propose recommendations for the development and implementation of a strategic plan in their home cities • To describe the evolution of governance in their home cities, and compare it with that in Istanbul • To describe the main services Green infrastructures offer in their cities • To describe the main challenges associated with the governance of green infrastructure in their cities 	<ul style="list-style-type: none"> • A case study about the development of Dubai • A conceptual paper about tourism planning and Dubai's experience • A professional report about Dubai's water and energy sustainability initiatives
	<ul style="list-style-type: none"> • To develop a simple conceptual framework about the factors underlying development in Dubai • To use the frameworks they developed to compare the development process in their home cities with that in Dubai • To propose a plan for developing tourism in their cities • To critically evaluate the transferability of Dubai's strategic sustainability initiatives in the water and energy sectors to their cities 		<ul style="list-style-type: none"> • To critically reflect on the 'Wicked Problems' paper based on their professional experience • To describe the main sustainability initiatives in their cities, compare it with those in HK and propose recommendations for both their home cities and HK • To describe the main challenges to reduce personal car ridership in their cities by using insights from the case of HK • To critically reflect on the experience of dense urban development in HK, and propose alternatives to improve it 	

	<p>Main insights from analyzing the content of the Participants' essays</p>	<ul style="list-style-type: none"> • Ability to extract the main points made in academic/theoretical papers • Almost no case of synthesizing the arguments of different paper with each other • Understanding the complex/multidimensional nature of governance challenges • Having their own opinions on issues and ability to critically reflect on arguments of the theoretical papers by referring to their personal experience 	<ul style="list-style-type: none"> • Very detailed and practice-oriented approach towards analyzing professional reports • Some early signs of being able to connect the arguments presented in the different papers and synthesize them together • Ability to make use of some of the learnings from Guadalajara module to answer questions in the Istanbul preparatory essays • Limited ability to capture the analytical structures from an academic paper and use them to analyze new cases (analyzing issues from an academic point of view) • Early signs of being able to analyze a complex governance system from a holistic/multidisciplinary point of view • Expressed early signs of being able to analyze urban infrastructure systems and their performance from a holistic/multidisciplinary point of view • Being able to look at both the positive and negative sides of a case, demonstrating critical thinking skills 	<ul style="list-style-type: none"> • Ability to capture the main points of the 'Wicked Problems' thesis • Ability to reflect on the arguments made in the assigned papers from an abstract/logical point of view • Ability to refer to their professional experience in order to reflect on the arguments made in the papers from a practical point of view (expressing whether, or not, they deem the arguments relevant and practical) • Partial difficulties extracting the analytical structures from academic papers to use them for comparative analysis of the situation in their own cities and in the presented cases • Ability to critically reflect on the governance challenges presented in the papers from a more holistic point of view • Ability to propose cross-disciplinary recommendations to improve the performance of infrastructures • Focus on practical applicability of generic ideas • Ability to use learnings from Guadalajara and Istanbul modules to reflect on the case of Hong Kong (a new case), especially among the more advanced participants 	<ul style="list-style-type: none"> • Ability of the advanced participants to clearly elaborate the multi-dimensional nature of complex urban problems (economic, social, political, technological, environmental) • Partial difficulties for participants to develop simple conceptual frameworks based on the case study of Dubai's development • Ability to critically reflect on the case study and present their personal point of view • Partial difficulties making use of the conceptual frameworks they developed to conduct a comparative analysis between their home cities and the case study • Partial difficulties to contextualize the analytical frameworks presented in academic papers in new cases (their cities) • Ability to refer to what they learned in Guadalajara, Istanbul and Hong Kong to answer questions about Dubai • Ability to analyze and reflect on professional reports from a holistic point of view • Focus on practical details when discussing the transferability of strategies from one context to their cities
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5.2.3 Summary of key points based on direct observations during the modules

As explained in the methodology chapter, the double role that I held in this project, functioning as the coordinator/facilitator of the IGLUS training program as well as an Action Researcher, helped me to directly observe and experience the dynamics of each of the training sessions. Table 5.4 provides a summary of the key points from my observations, during each of the training modules.

As is shown in Table 5.4, in this program, the participants were generally able to take on their important roles as active learners. However, the style of their contributions (asking questions that were driven by curiosity vs. asking reflective questions that challenged the lecturers and the class), as well as their expectations from their learning experiences evolved over the course of the program. In the beginning of their studies, most of the participants were keenly interested in finding “best practices” that could immediately help them to resolve their practical problems. But this approach eventually gave way and transformed into an embedded interest in understanding the complexities that underlie urban challenges and learning how to address them from a more holistic point of view by considering a wide range of factors that can change a best practice, in one context, into a catastrophic solution in another. However, managing the participants’ different learning expectations, especially when groups of new participants became intermingled with the more advanced participants (see Table 5.1), proved to be a delicate task throughout this training program.

Reflecting on the observations I made during each of the training modules, I soon realized that we needed to introduce some major changes to our conceptual inputs for the program. Another important change to the program was the emergence of “Reflection Sessions”, a signature element of the IGLUS training modules, despite the fact that this type of session was not originally planned in the curriculum of the program. From the IGLUS-Istanbul training module onwards, comparative analysis exercises became the core of our reflective discussions throughout the program. Using group discussions was a core element of the IGLUS training modules. The group learning exercises played a significant role in the “Project Sessions” as well as in the “module wrap-up sessions” where participants could share and discuss their learning experiences with their peers.

When looking at the main incidents across all of the training modules of the program, managing the challenges associated with cultural differences (among both participants and lecturers) remained a persistent challenge. Also, keeping the intellectual coherence of the program despite the heterogeneous teaching styles and academic inputs of different lectures (which often tended towards a very technical and discipline-specific focus) and the uneven quality of the lectures was a continuous challenge across all of the training modules.

Creating opportunities for critical reflection on inputs of the lecturers was another persistent challenge that I strived to meet when moderating the training sessions. In addition, the successes afforded by the interactive/practice-oriented training sessions for helping to actively engage the participants in the co-creation of their learning experiences was not negligible and took on an influential role in all of the training modules of the program.

Both formal and informal field visits played a significant role in shaping the learning experiences in each of the training modules. The knowledgeable visit leaders played an instrumental role in our program by enhancing the learning opportunities from the field visits through enhancing the quality of critical and reflective discussions.

Table 5.4. Summary of key points in from action/observation phase of AR inquiries (during the training modules)				
	IGLUS-Guadalajara	IGLUS-Istanbul	IGLUS-Hong Kong	IGLUS-Dubai
Theoretical-opening sessions	<ul style="list-style-type: none"> • Significant contributions of participants to the class discussions by sharing their experiences and asking critical questions • Participants' keen interest in finding the 'best solutions' in discussions and lectures • Initial confusion/frustration among participants due to the misalignment of their expectations (finding best solutions, very practical) and the goals of the training (illustrating the complex nature of challenges associated with the governance of large urban infrastructure systems and the importance of adopting a holistic-multidisciplinary approach to addressing them) 	<ul style="list-style-type: none"> • Less contributions from participants to our highly theoretical presentation • Difficulties for participants to effectively contextualize theoretical inputs and understand the relevance to their professional practices • Realizing the need for a more elaborate conceptualization of performance in our framework 	<ul style="list-style-type: none"> • Limited success with our initial attempt to conceptualize "performance" • Positive results from using the "systems approach" and "wicked problem" thesis to elaborate on the underlying complexities of urban challenges • Effective engagement of the participants in reflective discussions 	<ul style="list-style-type: none"> • Active engagement of participants in conceptualizing the development process in Dubai • Complications in when moderating conceptual discussions due to the participants' different levels of advancement in the program (familiarity with terminologies, basic concepts, etc.) • Mixed feedback about the usefulness of the process flowchart we presented for analyzing complex governance structures by using the conceptual frameworks (positive feedback from the advanced participants; new participants were skeptical)
Reflection sessions	<ul style="list-style-type: none"> • No independent reflection sessions were planned • Delicate task of moderating discussions (to find the proper balance between time limitations and participants' enthusiasm during class discussions) 	<ul style="list-style-type: none"> • Participants' appreciation of spontaneously organized "Reflection sessions" that were aimed at helping them to make sense of the differences between the different infrastructures and cities • Realizing the importance of comparison as a reflection strategy 	<ul style="list-style-type: none"> • Using the reflection session as an opportunity for co-conceptualization with participants • Realizing the importance of comparison as a reflection strategy 	<ul style="list-style-type: none"> • Realizing that sophisticated conceptual frameworks were better suited as powerful reflection/discussion tools, and not as 'teaching' materials • Realizing the importance of comparison as a reflection strategy • Reflection sessions were institutionalized and became one of the most important elements of the learning experience in the program
Project sessions	N/A	N/A	<ul style="list-style-type: none"> • Realizing the usefulness of group discussions to help participants formulate their research projects 	<ul style="list-style-type: none"> • Realizing the usefulness of group discussions to help participants formulate their research projects
Key point from IGLUS-EPFL sessions				

	Wrap up sessions	<ul style="list-style-type: none">• Realizing the importance of reflective sense-making of the contents, instead of trying to develop an upfront narrative about the links among the training session• Realizing the important role of the moderator to extract more generalizable learnings from the participants inputs in the wrap up sessions	<ul style="list-style-type: none">• Realizing the importance of group discussions to share and discuss the learnings from the module• Realizing the important role of the moderator to extract more generalizable learnings from the participants inputs in the wrap up sessions	<ul style="list-style-type: none">• Realizing the importance of group discussions to share and discuss the learnings from the module• Realizing the important role of the moderator to extract more generalizable learnings from the participants inputs in the wrap up sessions• Realizing the importance of using innovative discussion techniques to improve the quality of wrap-up sessions	<ul style="list-style-type: none">• Realizing the importance of group discussions to share and discuss the learnings from the module• Realizing the important role of the moderator to extract more generalizable learnings from the participants inputs in the wrap up sessions• Realizing the importance of using innovative discussion techniques to improve the quality of wrap-up sessions
Critical incidents during the two weeks of training	<ul style="list-style-type: none">• Difficulties for 'academic' lecturers to train 'practitioners' - difficulties for practitioners to get the essence of 'training vs open discussion'• Heterogeneous academic inputs and teaching styles of invited lecturers• Lecturers being challenged on 'how' questions - Importance of contextualization of abstract concepts/arguments• Strong focus of local lecturers on their technical 'disciplines' - role of the moderator to create opportunities for critical reflections• Focus of the participant's questions on exploring more information about specificities of cases• Fruitful mix between local and international participants and its associated challenges• Challenges for reaching a balance between locally relevant yet globally applicable learnings• Language barriers• Importance of toolkits	<ul style="list-style-type: none">• Problems associated with quality of lectures from local lecturers and their relevance to the learning objectives of the program• Heterogeneous teaching styles of lectures - Discouragement of critical discussions / birth of reflection sessions• Cultural conflicts• Introducing the green infrastructures and conceptualization challenges associated with it• Comprehensive sessions / success of non-academic partners' sessions• Talking about each participant's 'Big questions' and its important in this learning experience (Master projects)• Difficulties in organizing hands-on sessions	<ul style="list-style-type: none">• One-lecturer-per-topic policy of HKUST / Strong disciplinary approach• Lack of critical discussions from the lecturers (cultural differences, political sensitivity)• Limited input from the local participants to the discussions• Success of the methodology/project sessions to help the participants to better formulate their research projects, by using group learning strategies• Successful role-play sessions with UN-Habitat• Accumulation of examples from the IGLUS-Guadalajara and IGLUS Istanbul modules and covering another new infrastructure (Water and waste water)	<ul style="list-style-type: none">• Different participation level / Heterogeneous capabilities and knowledge base of participants (intensified by mixing of advanced and new participants in the class)• Different expectations from the training program among new and advanced participants• Issues with quality of presentations - lack of critical perspective by lecturers• Different political cultures and values and intensive moments in discussions• Well-structured reflection sessions based on conceptual frameworks• Positive outcomes of group learning sessions (projects) and interactive sessions• Distant location and logistics complications at AUS and their negative impact on the overall learning experience in the module	<ul style="list-style-type: none">• Different participation level / Heterogeneous capabilities and knowledge base of participants (intensified by mixing of advanced and new participants in the class)• Different expectations from the training program among new and advanced participants• Issues with quality of presentations - lack of critical perspective by lecturers• Different political cultures and values and intensive moments in discussions• Well-structured reflection sessions based on conceptual frameworks• Positive outcomes of group learning sessions (projects) and interactive sessions• Distant location and logistics complications at AUS and their negative impact on the overall learning experience in the module

<p>Key points from the field visits</p>	<ul style="list-style-type: none"> Instrumental role of knowledgeable visit leaders (ideally practitioners) to have effective critical discussions 	<ul style="list-style-type: none"> Instrumental role of knowledgeable visit leaders (specially practitioners) for developing effective critical discussions 	<ul style="list-style-type: none"> Importance of learnings from informal visits Instrumental role of knowledgeable visit leaders (specially practitioners) for developing effective critical discussions 	<ul style="list-style-type: none"> Importance of learnings from informal visits (by experience the negative impacts of its lack in the Dubai module) Instrumental role of knowledgeable visit leaders (specially practitioners) for developing effective critical discussions
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5.2.4 Summary of the key points from the wrap-up essays of participants

Participants were asked to write a short wrap-up essay at the end of each of the training modules. The goals of the wrap-up essays were two-fold: to help the participants to personally reflect on their learnings from the training modules and to help them to define doable and relevant master projects and taking some step toward realization of their project. Table 5.5 provides a summary of the key points from analysis of the participants' wrap-up essays.

Participants' self-reflections on their learnings from the training modules by referring to their professional experiences was a core element in the design of the wrap-up activities. Beginning in the IGLUS-Istanbul training module, we introduced a new element to the wrap-up assignments and also asked the participants to start thinking about their Master projects. Continuing onwards from the IGLUS-Dubai training module, we focused on conceptual frameworks as the third and final element to the wrap-up activities.

As shown in Table 5.5, in the first modules of the program (especially Guadalajara and Istanbul), the participants referred to the "information" which they could obtain from the training module as their main learnings. In the same line, we had frequent requests from the participants to provide them with more information-rich training sessions (discussing "best practices", more cases studies, coverage of more topics such as urban health, education, etc.). Interestingly, even in these first modules of the program examples from the participants' essays highlight the deeper impacts of the training program on the way that the participants were understanding and working on the complex problems they experienced in their workplaces. Indeed, the participants were already beginning to adopt a more holistic approach towards their problems and considering new dimensions that they had not been sensitized to prior to their attendance in the training program. The emergence of more holistic/multidisciplinary approaches in thinking about, and addressing, complex urban problems became increasingly evident as the participants advanced throughout the training program (in the Hong Kong and especially the Dubai modules).

Table 5.5 also summarizes some of the key points I drew from the analysis of participants' responses about their Master projects. The very first step of the participants towards defining the problem they intended to address through their Master projects was taken after the IGLUS-Istanbul training module. In this phase, the participants often showed a keen interest in finding solutions that could help them address very specific issues and practically improve *their* professional circumstances. But, their ideas were often too broadly formulated and seldom had a direct link back to the main theme of the training (governance of large urban infrastructure systems). However, as they progressed through the training program, they could further elaborate their ideas and incorporate what they learned in the program to formulate relevant and practical research questions.

Table 5.5 - Summary of key points from the wrap up essays

		IGLUS-Guadalajara	IGLUS-Istanbul	IGLUS-Hong Kong	IGLUS-Dubai
<p>Our design and focus of the wrap up essays (expectations from participants)</p>	<p>Main insights from analyzing the content of the Participants' essays</p>	<ul style="list-style-type: none"> • To summarize their main achievements from the GDL training module • To depict three important challenges that have to be tackled in their cities, and proposing practical steps to address them by using their insights from the GDL module • To list any missing topics in the lecturers' discussions of the GDL module from their personal point of view 	<ul style="list-style-type: none"> • To explain their personal 'Big Questions' which they wanted to have an answer for by the end of the program • To reflect on their learnings from GDL and IST module which could help them to progress toward answering their personal "Big Questions" • To Describe what else they would expect to learn to be able to answer their "Big Questions" 	<ul style="list-style-type: none"> • To reflect on their professional activities in light of their learnings from the HK module and propose some practical recommendations to improve the main aspects of their jobs • To follow our discussions during the HK module and draft an initial proposal for their Master projects (research question and research design) 	<ul style="list-style-type: none"> • To reflect on their professional activities in light of their learnings from the DBX module, develop a to do list for themselves and propose concrete actions to make their list happen • To revise their simple conceptual framework (developed in preparatory essay) based on their learnings from the module • To critically reflect on the urban governance practices in Dubai and describe its main pros and cons from their personal perspective • To prepare a new version of their research proposals based on the discussions we had during the DBX module
	<p>Reflections of participants on their learning experience</p>	<ul style="list-style-type: none"> • Focus on new information, familiarity with new perspectives, and the overall experience of the module as key learnings • Some participants proposed generic changes for their city or national levels, without clarifying their personal role/agency in that process • Some other participants proposed concert change initiatives for themselves, in their practices and working procedures (operational changes) as well as in their perspectives 	<ul style="list-style-type: none"> • Often referring to their more general learnings about urban governance and management (e.g. importance of Metropolitan governance systems), and not necessarily infrastructure related learnings, as important inputs for answering their "big questions" • Strong focus of the participants on new "information" which they obtained about the practices in host city as their main learnings (e.g. Latin American participants fascinated with unique metropolitan governance structure of Istanbul) • Ability of very few of the participants to see the links and synthesize among different dimensions of complex problems in governance of large urban 	<ul style="list-style-type: none"> • Participants being inspired by their experience in Hong Kong (both positive and negative aspects of dens-urban development practices in HK) • Proposing practical change initiatives, both in the domain of operation of infrastructures (e.g. smart transport card) as well as planning perspective (focused on holistic-integrated approach in city planning) • Very few participants critically reflecting on their own practices, but they were mostly reflecting on the experience of Hong Kong from a critical point of view 	<ul style="list-style-type: none"> • Challenges associated with collection of essays in a timely manner • Stronger evidence of emergence of holistic-multidisciplinary approaches in the ways that our more advanced-participants were thinking about their learning from the modules (looking at different dimensions of problems, interlinkages among different urban systems, etc.); specially in contrast to the new participants' answers • Focus of the advanced-participants on more fundamental learnings (ways of thinking) from the module, and not only their learnings about 'best practices' (information) • Ability of participants to extend the implications of their learnings from the training program to new contexts (their own jobs) which were not directly covered in the training modules

		<p>infrastructure system in the host city</p> <ul style="list-style-type: none"> • Asking for coverage of more case studies and methodologies in the program • Asking for coverage of new topics which were not in the domain of our focus (e.g. urban health, urban education, etc.) • General satisfaction with the underlying philosophy of the training (adopting a more holistic/multidisciplinary perspective to address complex urban problems) 	<ul style="list-style-type: none"> • Difficulties for most of the participants to develop/revise conceptual frameworks • Ability of participants to critically analyze cases by looking at both positive and negative aspects
	<p>NA</p> <p><i>Participants' inputs about their projects</i></p>	<ul style="list-style-type: none"> • Expressing diverse range of interests, but in most cases focusing on finding ways to change specific practices in their own contexts (very personal, though often broadly formulated questions) • Very limited references to the topics with clear link to infrastructure as research questions (mostly focused on broader urban development dimensions) 	<ul style="list-style-type: none"> • Too few essays received from the participants • Clear impact of attending in the training program on evolution of research questions of our more advanced-participant • Consideration of the opportunity of attending in the upcoming training modules as well as access to other participants in the class as a strategy for data collection
		<ul style="list-style-type: none"> • Strong link between the questions and professional experience of the participants • Strong link between formulation of research questions and learnings from the program (looking at governance challenges from a holistic-multidisciplinary perspective) • Difficulties for some of the participants to develop a research design that effectively support their adopted holistic/multidisciplinary approach in the research questions • Difficulties for a limited number of participants to define doable projects from their general concerns/interests 	

5.3 Main challenges in training urban practitioners

As discussed in the previous chapters, this research project aims to shed more light on two practical research questions. Firstly, “What are the main challenges associated with training urban practitioners to address complex problems in governance of large urban infrastructure systems from a holistic/multidisciplinary point of view?”. And secondly, “What are the effective strategies to address these challenges in the real practice of professional training of urban practitioners?”. In this section, I address my first research question by illustrating the main challenges that I identified in this Action Research project. In section 5.4 I will address the second question by elaborating on the main strategies that we adopted to deal with these challenges in the context of the IGLUS Executive Master program. Finally, in section 5.5, I will discuss these findings in the light of academic literature.

By reflecting on my findings from the four case studies (each case study being associated with an Action Research inquiry cycle), I identify eleven main challenges that we faced in training a group of urban practitioners to address complex urban problems in governance of large urban infrastructure systems from a holistic/multidisciplinary point of view. These challenges can be categorized into three broad categories based on their underlying roots. Table 5.6 categorizes and briefly summarizes these eleven challenges. I will explain these challenges in more details in the coming sub-sections.

Table 5.6 - Main challenges associated with training practitioners to address complex challenges from a holistic-multidisciplinary point of view (illustration of challenges based on the overall analysis of cases)			
Category (underlying source of the challenges)	Challenge	Short description of the challenge	Significant in which case studies
Content and delivery	<i>Maintaining a delicate balance between the theoretical rigor and practical relevance of the content</i>	<i>How to ensure that the training-contents are relevant to practice, but also have solid theoretical and conceptual foundations?</i>	Guadalajara - Istanbul - Hong Kong - Dubai
	<i>Maintaining a delicate balance between adopting a holistic-multidisciplinary approach and 'becoming naïve-lost'</i>	<i>How to avoid becoming naïve or lost while adhering to our objectives of adopting a holistic-multidisciplinary approach?</i>	Guadalajara - Hong Kong
	<i>Disciplinary approach/knowledge of lectures</i>	<i>How to manage the paradox of disciplinary/technical focus and knowledge base of invited lecturers instructing in a program focused on fostering holistic-multidisciplinary approaches?</i>	Guadalajara - Istanbul - Hong Kong - Dubai
	<i>Making sense of the seemingly dispersed pieces of information delivered by different lecturers</i>	<i>How to ensure the delivery of a coherent and meaningful learning experience to practitioners; while involving a large number of lecturers from academic and non-academic partners to cover a variety of important topics?</i>	Guadalajara - Istanbul - Hong Kong - Dubai
	<i>Heterogeneous teaching styles of different lecturers</i>	<i>How to deal with the variability among the different lecturers' teaching styles and competencies?</i>	Guadalajara - Istanbul - Dubai - Hong Kong
Participants	<i>Diverse educational and professional backgrounds of the participants</i>	<i>How to deal with the participants' diverse knowledge bases?</i>	Guadalajara - Dubai
	<i>Managing the expectations gap</i>	<i>How to manage the gap between the participants' expectations from the program and their perceived learning experiences?</i>	Guadalajara - Dubai
	<i>Status quo mindset of the participants</i>	<i>How to open up the status quo mindset of the participants so they can embrace alternative approaches for analyzing and addressing complex urban challenges?</i>	Guadalajara - Istanbul - Dubai
	<i>Cultural differences</i>	<i>How to deal with communication complications and misunderstandings among participants (and lecturers) with diverse cultural backgrounds?</i>	Istanbul - Hong Kong - Dubai
Implementation	<i>Ensuring the quality and relevance of lectures organized by partner universities</i>	<i>How to ensure the quality and relevance of the sessions organized by partner universities while having only limited possibilities to control and communicate with the lecturers?</i>	Guadalajara - Istanbul - Hong Kong - Dubai
	<i>Different working cultures/processes</i>	<i>How to manage a cross-cultural collaboration exercise with the partners in the program?</i>	Guadalajara - Istanbul - Hong Kong - Dubai

5.3.1 Maintaining a delicate balance between the theoretical rigor and practical relevance of the content

Maintaining the balance between the theoretical rigor and the practical relevance of our approach in developing the content of the training sessions was a delicate task. On one hand, the training program was targeted at urban practitioners and was aimed at helping them to address the complex problems that they face in their professional practices from a more holistic-multidisciplinary point of view. As such, the content of the training program needed to be highly practice-relevant. On the other hand, the program was also designed to deliver a high caliber learning experience built upon rigorous theoretical foundations. But, each of these objectives could often be improved by bearing some compromises in improving the other one. The dilemma between these two objectives became more significant when off-the-shelf theories were used as the primary inputs for the training sessions without enough attempts to contextualize them to better suit practical needs of the practitioners (highly rigorous in terms of academic standards but often not practical enough for practitioners who deal with complex real problems). Or, when purely descriptive case studies were used as the main inputs for the training sessions without enough conceptualization about the potential learnings from the cases for other contexts (highly relevant for local practices but often not generalizable to other contexts).

It is important to note that at the time of conducting this Action Research project, there was still very limited progress in both the academic and professional worlds, towards conceptualizing and documenting the necessary elements and processes that must be considered and followed if one is to understand, and ultimately address, complex problems associated with the governance of large urban infrastructure systems from a holistic-multidisciplinary point of view¹⁰⁷. In fact, when we began developing the IGLUS training program, there was almost no coherent and established body of theory or agreed-upon set of practices upon which the content for this training program could be developed. For these reasons, the content of the training sessions, as well as our intellectual inputs, had to be developed almost entirely from scratch by engaging in extensive bibliographic research and conceptualization efforts. This pre-maturity of the available academic literature and professional reports about the topic of the program was one of the main motivations behind developing the IGLUS training program, but it also significantly contributed to the inherent difficulties that we faced while striving to maintain the balance between the theoretical rigorousness and practical relevance of the program's content.

¹⁰⁷ Over the past few years, multi-, inter-, and transdisciplinary research and education have attracted more and more attention; this is especially thanks to an increasing awareness about the importance of sustainability challenges, which call for more holistic-multidisciplinary approaches to problem solving (e.g. see Scholtz and Steiner (2015a, 2015b)). However, such an approach in research and education is still in its infancy in the context of urban infrastructure systems and in particular governance of these systems as complex socio-technical systems. For a more detailed review of literature about this argument, please see chapter 2 (literature review) of this thesis.

5.3.2 Maintaining a delicate balance between adopting a holistic-multidisciplinary approach and ‘becoming naïve-lost’

Despite the importance and necessity of striving to adopt a holistic-multidisciplinary approach towards dealing with complex problems, such a mindset might also lead practitioners to become too naïve; ignoring the underlying complexities of the real world problems and losing the relevance and rigor of the envisioned strategies for addressing practical problems. In this program, maintaining the focus on helping the participants to address complex urban problems from a more holistic-multidisciplinary point of view, while avoiding the trap of becoming too naïve was another big challenge. Especially, because of the highly complex nature of urban problems and their extensive interrelations, discussions and lectures about such problems could easily stray from careful analyses of the different dimensions of such problems and their interrelatedness to poorly articulated arguments that were too generic and shallow for our purposes.

On the other hand, concentrating on the very complex underlying dynamics of urban challenges could put the participants in a position where they become so obsessed with understanding more about the complexities of the systems and its various dimensions, that they could hardly decide on any course of action to tackle the practical problems. Simply put, the practitioners could become *lost* in the complexities of the problems and found themselves experiencing the phenomenon of “paralysis by analysis” (Langley 1995).

5.3.3 Disciplinary approach/knowledge of the lectures

In this training program, many of the lecturers, especially those associated with our local partner universities, were coming from academia. In most cases these lecturers had a strong technical/discipline-specific focus on one (or few) of the topics covered in the general curriculum of the program. Because of this, they often had a deep understanding (closely related to their specific academic research or teaching domains) of some *specific dimensions* of the problems that were of our participants’ interests.

But, one of the main objectives in organizing this training initiative was to enable the practitioners to address complex urban challenges from a holistic-multidisciplinary point of view, and not from a solely disciplinary/technical perspective. Having lecturers who had a strong disciplinary focus on-, and knowledge about, the urban problems in such a training program - which was inherently aimed at promoting a more holistic-multidisciplinary approach among its participants - was a paradoxical situation that was unavoidable due to the very practical limitations of finding knowledgeable local lectures who could be better fits for the training sessions of the program.

5.3.4 Making sense of the seemingly dispersed pieces of information delivered by different lectures

The ultimate goal for this training program was to help urban practitioners to address complex problems in governance of large urban infrastructure systems from a more holistic-multidisciplinary point of view. In order to cover the different dimensions of the complexities associated with large urban infrastructure systems, their interdependent nature and important considerations related to the governance of these complex socio-technical systems, a wide range of topics had to be covered. To that effect, and in-line with recommendations made in the academic literature, a large number of lecturers from academic and non-academic partners were involved in the IGLUS training modules in order to sufficiently address this wide range of topics.

One of the main challenges in this training program was ensuring that the participants understood how all these seemingly dispersed inputs from the guest lecturers were related and make sense of this 'collage of academic and non-academic inputs' as a *coherent and meaningful learning experience*. This was an important challenge both *in* each of the training modules - to make sense of the links among training sessions of the module, but also across the training modules - to make sense of the links among training sessions from different training modules of the program. Figure 5.1 is a simplified graphical representation of this challenge where the colored circles represent different training sessions/topics, and the small rectangles represent the different training modules. The bigger rectangle represents the overall Executive Master program.

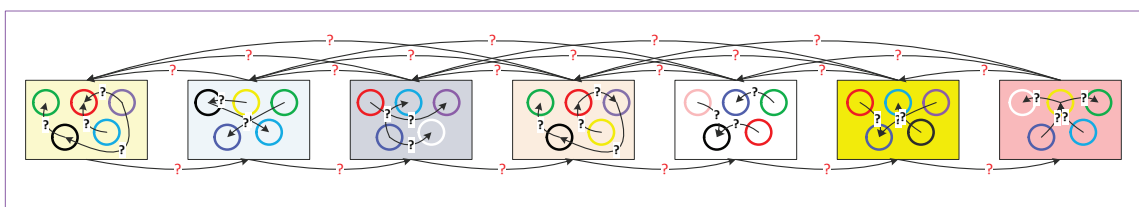


Figure 5.1 – A graphical representation of the challenge of making sense of dispersed training sessions in the context of each of the training modules and the overall Executive Master program

The intellectual linkages between training sessions and the importance of each of the sessions to understanding the bigger picture of the complex nature of governance challenges in large urban infrastructure systems were rarely discussed or touched on by the guest lectures. Therefore, making sense of this big collage of training sessions from a coherent intellectual point of view posed a significant challenge that had the potential to undermine the ultimate goal of the program- to help the learners to reach a more holistic-multidisciplinary understanding of the complex problems, and to not just overload them with a huge amount of new information from different topics and contexts.

5.3.5 Heterogeneous teaching styles of different lecturers

Having a large number of invited lecturers teach in the program could have hardly been avoided due to the diverse range of topics (e.g. transportation, energy, green infrastructures, etc.) that had to be covered in the program (which itself is a direct result of complex nature of problems in governance of large urban infrastructure systems, conceptualized as complex socio-technical systems). In addition, our interest to discuss the local practices in dealing with such complex problems also called for more inputs from local lecturers in the program.

Not surprisingly, this large pool of invited lecturers did not necessarily share similar teaching styles and were not evenly competent in lecturing about their topic of expertise to our group of practitioners. These *personal*, *professional* and *cultural* differences among the lectures posed a significant challenge throughout the training program.

We were considering an active role for participants in the training program as adult learners. Correspondingly, we placed a special emphasis on the importance of hosting interactive discussions in the training sessions. The lecturers had an important role in obtaining this objective as they could facilitate or prohibit the development of such interactive discussions in the class. However, different lecturers held different attitudes towards this objective and were not equally capable to engage in such interactive discussions or encourage a critical dialog among the participants. For example, while some lectures were quite open to critical questions from the participants and even encouraging them to share their personal experiences during the training sessions, some other lecturers were not comfortable (or in some cases not competent) to engage in critical discussions with the learners who did have extensive professional experience related to many of the issues being presented by the lecturers. In some extreme cases, the lecturers even explicitly suppressed the enthusiasm of the participants to ask questions or reflect on the presented inputs in the class by giving discouraging responses to the questions of the participants.

Such variability in the lecturers' teaching styles could send confusing signals to the participants because their attempts to get engaged in critical discussion with the lecturers (which was strongly encouraged by us as one of the core elements of the IGLUS training program) could result in different (sometimes completely opposite) reactions from the lecturers. In addition, the capabilities of different lecturers to deliver a well-structured and relevant presentation was significantly variant which held back our attempts to provide a world-class training program to the participants and even left them confused (or even frustrated) about what they should expect from the training sessions.

5.3.6 Diverse educational and professional backgrounds of the participants

As discussed in the previous chapters, ethnic, educational and professional diversity among learners is often associated with positive impacts on multidisciplinary learning experiences, thanks to the valuable insights that can be obtained from each participant's perspective (see chapter 2 for more details). One of the primary reasons behind the decision to cater to a global audience in this training program was to enhance the quality of the learning experience for the learners by leveraging on the participants' diverse knowledge base and practical insights as practitioner-participants. However, diversity among participants can also result in certain challenges that undermine the effectiveness of multidisciplinary learning experiences (Van Der Vegt, et al., 2005, Dahlin, et al., 2005, Cörvers, et al., 2015, Wiek, et al., 2013).

Indeed, because of the participants' diverse educational and professional backgrounds, we did not expect them to have a shared intellectual foundation. We also acknowledged that the familiarity of the participants with the terminologies and main concepts could not be taken for granted. Therefore, when organizing this training program, we first had to develop a common intellectual foundation upon which the next steps of this training exercise could be developed. However, developing such a foundation presented a big challenge. On one hand, this foundation could not be developed by simply starting from the very basics; such an approach would undoubtedly frustrate those practitioner-participants who had extensive knowledge and experience of some of the topics we were addressing. On the other hand, this foundation development process could neither be overpassed because unfamiliarity of some of the participants with the basics of our approach and fundamental concepts could distort communications and result in poor learning experiences for the participants. We were again faced with the challenge of finding a delicate balance, this time between introductory and advanced foundational concepts for the program. The necessary intellectual elements which had to be covered in this foundation development process were far from being obvious at the start of the program.

In addition, since we tried to include some local participants from the host city in each of the training modules, and considering the flexibility of the curriculum of the program which let each of the participants to choose five training modules to attend from the seven that were offered in the first edition of the program, the profile of the participants was consistently changing from one module to the other (see Table 5.1). This constantly changing profile of the class amplified the challenges associated with the participants' diverse educational and professional backgrounds and further challenged us to develop an acceptable fundamental intellectual basis upon which we could build in deeper, critical, reflective discussions.

5.3.7 Managing the expectations gaps

The expectations of different learners from their learning experiences in this training program varied significantly. The program's broad goals and learning objectives had been communicated with the

participants. However, *each learner's interpretation* of those communicated objectives was significantly different from the others. As a result, we were facing with a diverse range of expectations from the program in terms of *what* the ultimate result of this learning experience would/should be for each participant as well as *how* these objectives could/should materialize¹⁰⁸.

In simple words, we were facing with as many different expectations about the focus and objectives of the program as the number of participants in the training program. And these differences in expectations of the participants became increasingly amplified due to their diverse personal, educational and professional backgrounds. For example, some learners were expecting that by completing the program, they would be able to find 'best ways' to manage cities and were assuming that this goal shall be realized by learning about as many best practices as possible. Contrastingly, some other learners were expecting to learn how different cities are managed across the world and were assuming that this goal would be eventually realized by attending the lectures and visiting the host cities.

It is important to note that the issue of different expectations from the program was not unique to the participants in the training program, but can be discussed for all of the other main stakeholders in the project as well. For example, my personal understanding of the main objectives of the program and how they could be realized was not always in full accordance with the program director's point of view, or with the understanding that our Mexican, Turkish, Chinese, Arab, American, Korean and European academic and non-academic partners had for each of the training modules. As an analogy, the IGLUS Executive Training program was the 'elephant in the dark room', understood differently by each of the stakeholders in the project! (see Figure 5.2)

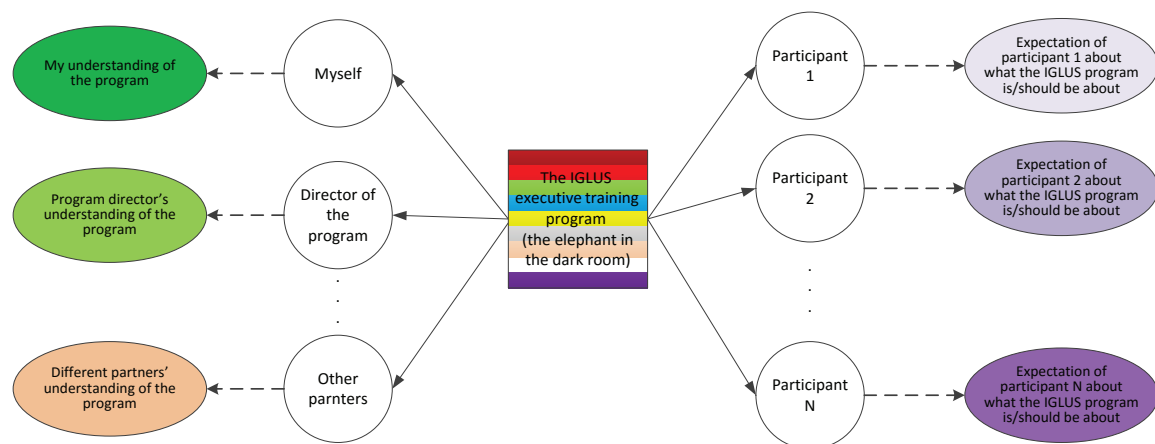


Figure 5.2 – Different perspectives and expectations from the program

¹⁰⁸ This was also in-line with my epistemological assumptions in this project, which were based on pragmatic research and call for pluralistic means to reconcile the different perspectives that are recognized and accepted in the research process. See chapter 3 of the thesis for a more detailed discussion of philosophical assumptions made in this project.

I should clarify that when I am talking about the expectations gap, I am not referring to the differences among expectations of the participants versus a very 'objective' and/or agreed-upon reality which can be called the IGLUS Executive Training program. More precisely, the expectations gap can be defined in reference to the difference between the expectations of every two individuals who had a stake in the program. However, by considering the focus of this research, I was mostly concerned with the differences among expectations of each of the participants with the other participants; which practically implied that the group of participants were not sharing a fully coherent set of expectations from the program. Even in some cases, the expectations of participants from the program were inconsistent or contradictory with each other.

Managing these different expectations presented a significant challenge for organizing this training program. Indeed, we had to ensure that the gaps between each individual's expectations and the delivered training (in each of the training modules and the overall Executive Master program) did not become too wide. Otherwise, the learners might have felt detached from the training program and found it to be irrelevant. If this had been the case it could have significantly undermined all of our attempts to get the participants engaged in the training program as active learners.

5.3.8 Status quo mindset of the participants

Opening up the status quo mindset of the participants so as to consider alternative ways of analyzing and addressing complex urban problems was another significant challenge in this training program. This professional training program was targeted at urban practitioners who already had a university degree and several years of working experience. Thanks to their previous education as well as their embedded learnings from their professional experience, the participants had their very own personal point of view on different issues that were discussed in the training program. In other words, as professionals with extensive working experiences on specific domains in their home cities (e.g. land use planning as urban planners, transportation planning as transportation engineers, etc.), the participants had their own status quo mindset and understanding about a wide variety of urban issues. For example, they often had their own preconceived notions of what the most important challenges in cities are (e.g. increasing density, integrating land-use and transport plans, etc.), potential solutions for addressing them (e.g. strong leadership of political leaders, genuine involvement of civic society in planning, letting the engineers do their job without sabotaging their projects with political justifications, etc.), as well as the practical obstacles that impeded the implementation of their ideal solutions (e.g. referring to politics as the main obstacle).

In addition, the participants were often highly sensitive to any kind of 'external' idea or criticism that undermined the viability of their personal practices as urban professionals (and, in some occasions, seeing themselves as their country's representative). In many instances, when they were faced with new ideas or propositions that were in contrast with, or critical to, their status quo mindset or

personal practices, they were opposing the applicability of those ideas in the real world by sharing challenging examples from their professional experience.

The status quo mindset of the participants could significantly hinder their ability to benefit from the training program. This could also undermine the fundamental objective of the program- to train urban practitioners to address complex problems associated with the governance of large urban infrastructure systems from a holistic-multidisciplinary point of view- which was inherently aimed at changing the perspective of the participants from a purely technical/discipline-specific perspective to a more holistic-multidisciplinary one.

5.3.9 Cultural differences

The cultural differences among the participants, as well as among the participants and the lecturers, occasionally complicated the communications and led to misunderstandings. Dealing with these challenges was a delicate task that expressed itself differently in each of the training modules.

The international mix of the participants was the primary source for such cultural differences. In each of the training modules, a new group of local participants joined the class; increasing the cultural diversity of the group, and intensifying the cultural differences in the group.

In addition to the changing profile of the participants (see Table 5.1), the host city and host university also changed in each of the training modules. One of the results of this change of context was the introduction of new local lecturers in each of the training sessions. These local lecturers were not necessarily sharing similar cultural values with our international participants. Therefore, these changes in each of the training modules often further increased the cultural diversities in the program.

When such cultural differences were leading to complications in communications among the participants, as well as among the participants and local lecturers, we had to come up with (often spontaneous) solutions to resolve the issues before they led to chronic dissatisfaction among the participants. But at the same time, we also had to be careful that our actions and interventions did not discourage the participants from openly sharing or critically discussing their different points of view in the class.

5.3.10 Ensuring the quality and relevance of lectures organized by partner universities

In each of the training modules, the local partner university was asked to involve a number of knowledgeable local lecturers to cover some of the training sessions in the module. Ensuring the quality of these sessions and their relevance to the main learning objectives of the training module and the underlying philosophy of the program was a persistent challenge throughout this training program.

In most cases, we could not have direct contact with the local lecturers because the partner university was generally responsible for communications with the local lecturers. We also did not have any direct control over the local lecturers, because from an administrative and financial point of view, these lectures were associated with the partner university and not the IGLUS-EPFL project. And, as previously discussed, due to some contextual factors (which will be explained in the next sub-section) we often could not enforce our policy for receiving the lecturers' training materials before the start of the training modules.

The combined effect of these factors was that the quality of the sessions that were delivered by local lecturers became highly dependent on the quality of the collaboration between the partner university and its affiliated lectures. However, as is shown in Figure 5.3, this was not the case for the sessions that were directly organized by the IGLUS-EPFL team and our direct- partner lecturers (mostly non-locals).

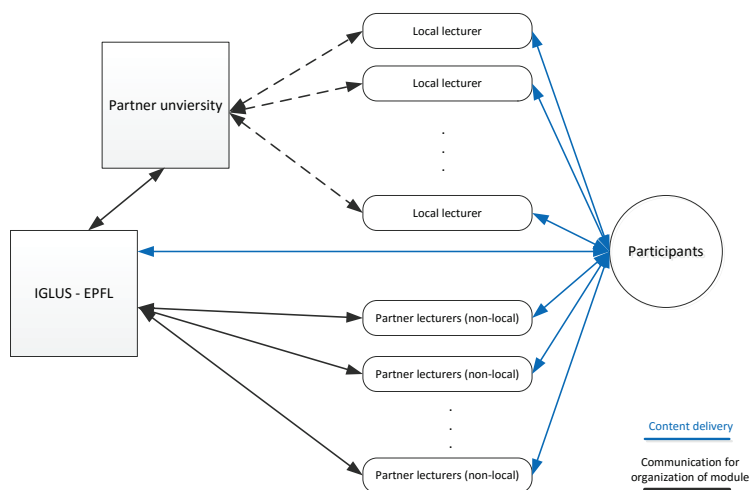


Figure 5.3 – communications for organization of a sample training module

The fact that we did not have any direct influence on the quality of a significant portion of the training sessions, and that we had to solely rely on the partner university's capabilities to organize these

sessions, posed persistent challenges to our aspirations to deliver a high quality learning experience to the participants.

5.3.11 Different working cultures/processes

Working with a series of international partners (both academic and non-academic) to organize this training program was a cross-cultural collaboration experience. Despite all of the benefits associated with the strategy of working with a network of global partners in developing this training program, there were still occasional mismatches between the parties' working cultures and processes, which posed significant challenges for implementation of this project. A prominent example of such challenges was our failure to enforce the policy of receiving all of the lecturers' teaching materials prior to the start of the training module.

Such challenges were especially significant in the working relationships with academic partners, which can be attributed to the more institutionalized and bureaucratic nature of these collaborations. The importance of these challenges become more evident when considering the fact that the local partner universities were our sole channel for ensuring the quality of those sessions which were covered by local lecturers (see figure 5.3).

Since each of the training modules of the program was planned to take place in a different city, developing every module of the program was associated with in a brand-new cross-cultural collaboration experience. Due to the importance of considering different working cultures and processes of the partner universities, a standardized protocol for the organization of the training modules could not be developed. Instead, we had to remain fully engaged throughout the development of each of the training modules and had to be consistently available to deal with the emerging contingencies. Therefore, it was clearly impossible to effectively outsource the organization of the training modules to local universities and easily replicate the training modules in new contexts.

5.4 Our main strategies to deal with the challenges in training urban practitioners

As discussed in the methodology chapter of this thesis, Action Research inquiries are expected to contribute to both the practical and academic bodies of knowledge. Therefore, it is essential that the Action Researcher not only observe the practices, but also devise methods to improve them. In this Action Research project, in addition to studying the challenges underway of achieving the ultimate learning objectives of the IGLUS professional training program, I was also genuinely interested in

finding effective strategies (or using the AR terminology: “*interventions*”) that could help dealing with these challenges and improve the quality of this learning experience for the participants. I believed that studying these challenges and developing strategies to overcome them in the context of the IGLUS project could also provide useful guidance for others who are dealing with similar challenges in other professional training programs.

In this section, I will discuss the main elaborated strategies to deal with the challenges which have been outlined in the previous section. I do so by reflecting on the findings from the four case studies (AR cycles) reported in this thesis. More precisely, the twelve illustrated strategies¹⁰⁹ in this section are the result of my reflection on all the four cases together (in a horizontal fashion) which helped me to illustrate the main strategies that we devised incrementally to deal with the practical challenges that we faced throughout the IGLUS training program. Table 5.7 provides a summary of the main strategies which helped us to *materialize* the *idea* of training urban practitioners to address complex urban problems from a holistic-multidisciplinary point of view in a full scale Executive Training program. These strategies are explained in more details in the upcoming sub-sections. Next, in section 5.5, I will discuss these findings in light of the academic literature.

¹⁰⁹ It is important to note that because some of the strategies pertain to more than one challenge, there is no one to one relationship between the twelve illustrated strategies in this section and the eleven elaborated challenges in the previous section.

Table 5.7 - Our main strategies to deal with the challenges in training practitioners to address complex challenges from a holistic-multi disciplinary point of view (elaboration of strategies based on the overall analysis of cases)		
Strategies to deal with challenges	Description	To Which challenges they mostly pertained to
<i>Using several lecturers to cover related topics (in each module and across modules)</i>	<i>We tried to discuss each of the five main infrastructures which were covered in the program in more than one of our training modules. And in each training module, the covered infrastructures/topics were discussed by more than one lecturer.</i>	<ul style="list-style-type: none"> • <i>Disciplinary approach/knowledge of lectures</i>
<i>Developing conceptual frameworks and using them for reflection and comparison among cases</i>	<i>We became actively engaged in conceptualizing the important dimensions in governance of large urban infrastructure systems and used the outcomes of our, and our participants', conceptualizations and frameworks as one of the main conceptual inputs in the program.</i>	<ul style="list-style-type: none"> • <i>Maintaining a delicate balance between the theoretical rigor and practical relevance of the content</i> • <i>Making sense of the seemingly dispersed pieces of information delivered by different lecturers</i>
<i>Focusing on concrete real world problems and cases by using inputs from practitioner-lecturers</i>	<i>We tried to use concrete examples and case studies as an indispensable element in the training sessions and did our utmost to avoid purely theoretical/abstract presentations.</i>	<ul style="list-style-type: none"> • <i>Maintaining a delicate balance between adopting a holistic-multidisciplinary approach and 'becoming naive-lost'</i> • <i>Status quo mindset of the participants</i>
<i>Focusing on master projects throughout the training program to individuate the learning experience of each participant</i>	<i>We tried to personalize (individuate) the learning experience for each participant by working closely with him/her to develop their individual master projects throughout the training program.</i>	<ul style="list-style-type: none"> • <i>Maintaining a delicate balance between adopting a holistic-multidisciplinary approach and 'becoming naive-lost'</i> • <i>Managing the expectations gap</i> • <i>Making sense of the seemingly dispersed pieces of information delivered by different lecturers</i>
<i>Having a facilitator who could live the same intellectual journey as what was expected from the participants (someone in the middle of the hierarchy, not a student but also not a professor)</i>	<i>The opportunity to have a facilitator (myself) who could experience the same intellectual journey which we have been expecting to happen for the participants provided a living example in the class that could practically demonstrate what it means to critically reflect on training inputs and assumptions in this training program.</i>	<ul style="list-style-type: none"> • <i>Making sense of the seemingly dispersed pieces of information delivered by different lecturers</i>
<i>Active, continuous and creative engagement of the facilitator in the training program to create opportunities for reflection</i>	<i>We had a facilitator (myself) who was continuously and actively present throughout all the training session of the program. This helped us to ensure that the conditions necessary for constructive reflective discussion were guaranteed throughout all of the training sessions in the program.</i>	<ul style="list-style-type: none"> • <i>Heterogeneous teaching styles of different lecturers</i> • <i>Maintaining a delicate balance between adopting a holistic-multidisciplinary approach and 'becoming naive-lost'</i> • <i>Making sense of the seemingly dispersed pieces of information delivered by different lecturers</i>

			<ul style="list-style-type: none"> Cultural differences
Using online education tools	<i>We started to develop and offer an online course that covers the basic principles of governance/management of urban infrastructures as a prerequisite to attend the second edition of the IGLUS Executive Master program</i>		<ul style="list-style-type: none"> Diverse educational and professional backgrounds of the participants
Benefiting from change: changing context of the training modules (comparison for reflection) / diversity of infrastructures that were covered in the course / change of positions (participants being outsiders vs. insiders to similar systems)	<i>We tried use the opportunities associated with the diversity of host cities of the program, the diversity of topics that were covered in the program, and the changing position held by the participant in order to help them experience alternative points of view when dealing with complex urban challenges.</i>		<ul style="list-style-type: none"> Status quo mindset of the participants
Providing the participants with a sense of co-ownership of the IGLUS project and their collective learning experience	<i>We tried to reiterated our guiding philosophy that the participants are the ultimate owners of this learning experience by taking practical steps that promote a sense of co-ownership over the project</i>		<ul style="list-style-type: none"> Managing the expectations gap Cultural differences Ensuring the quality and relevance of lectures organized by partner universities
Establishing effective communications thanks to informal/friendship relationships	<i>We tried to develop a very close relationship between ourselves and the group of participants by engaging in informal activities outside of the classroom. These friendly relationships helped us to improve our professional communications and mutual understandings throughout the training program.</i>		<ul style="list-style-type: none"> Cultural differences Managing the expectations gap
Including more inputs from our non-academic partners	<i>We tried to benefit from the contributions of our non-academic partners as a strategy to gain more control over the quality of the training sessions delivered by guest lecturers.</i>		<ul style="list-style-type: none"> Ensuring the quality and relevance of lectures organized by partner universities
Engaging in long term collaborations with partner universities	<i>We tried to establish a long-term relationship with partner universities in order to improve the quality of our collaborations in the next editions of the program.</i>		<ul style="list-style-type: none"> Different working cultures/processes

5.4.1 Using several lectures to cover related topics

To ensure that our participant can hear different perspectives, and become familiar with different aspects of the challenges in governance of large urban infrastructure systems, we tried to use several lecturers covering different dimensions of similar topics (e.g. governance and management of transportation infrastructures) throughout the program. When possible, we also tried to organize panel discussions. This strategy was helping us to deal with the paradox of relying on guest lecturers who had a disciplinary approach/technical knowledge in a training program that was championing the importance of adopting a holistic/multidisciplinary approach when dealing with complex urban problems.

In addition to using several lecturers to cover similar topics in each of the training modules, we also covered similar topics across the different training modules of the program. This proved to be a very successful strategy, as it enabled us to have critical discussions about the same topic in different contexts (Mexico, Turkey, Hong Kong, and Dubai).

5.4.2 Developing conceptual framework and using them for reflection and comparison among cases

Getting engaged in a serious and continuous conceptualization effort- which was aimed at providing a better understanding of urban infrastructures, their performance and governance- was one of our main strategies to deal with several challenges associated with developing the content of the training program. This strategy was especially helpful to deal with the challenge of maintaining the delicate balance between the theoretical rigor and practical relevance of the content and our intellectual approach in the program.

This strategy was emerged as a result of our reflections on the non-satisfactory experience of using well-established theories on specific topics, as well as using more generic theoretical inputs as our main conceptual inputs in the first two training modules of the IGLUS training program. We eventually realized that we need an original conceptualization of the governance and performance on large urban infrastructure systems because pre-existing frameworks about these notions did not fully fit with our demands in the program. Therefore, we considered a more comprehensive conceptualization component for this project. This enhanced awareness was subsequently followed by several rounds of conceptualization to describe the relationship between governance and performance of large urban infrastructure system throughout the project. The result of these efforts significantly improved the quality of our conceptual/intellectual inputs in the program over time. Indeed, the outcome of these conceptualization efforts constitute our main intellectual input in the program and our primary toolkit for reflecting on, and comparing, the cases that have been discussed in the training sessions of the program from a well-balanced theoretical-practical point of view. Developing a solid conceptualization about the impacts of governance on the performance of large

urban infrastructure systems (by relying on systems theory) let us to extract several conceptual frameworks out of it. This helped to translate our abstract thoughts into more practice-relevant frameworks, which in turn also helped us to improve our, and our learners' abilities to make sense of, and reflect on, the seemingly dispersed pieces of information which was being presented throughout the program by different lecturers.

Our starting point for developing conceptual frameworks was the observations about the limited power of "off of the shelf theories" to *make sense* of the increasing number of examples and case studies which have been discussed in the training sessions of the program in a structured and coherent manner. These observations (mainly in IGLUS Guadalajara and Istanbul modules), which were attained thanks to my engaged participations in all of the training sessions of the program as a moderator, signaled a practical and urgent problem and served as a powerful guideline to help us maintain a balance between theoretical rigor and practical relevance of our conceptualizations in later stages of the project (mainly in IGLUS Hong Kong and Dubai modules).

Indeed, the final *product* of this conceptualization process (the frameworks) helped the participants to better understand the links between the different training sessions in the program and also served as a tool for analyzing complex governance systems from a more holistic-multidisciplinary point of view. But more importantly, by being part of the *process of developing conceptual frameworks* (through engaging in discussions, informal chats, reflection sessions, etc.) our participants were also exposed to a *new way of thinking and sense-making* about the seemingly unrelated topics and examples which was fundamentally different from using a single theory or relying on pure intuition for making sense of new information about un-familiar cases and examples.

5.4.3 Focus on concrete real world problems by using inputs from practitioner-lecturers

Focusing on real world problems in class discussions was our main strategy to avoid moving from adopting a holistic-multidisciplinary approach in addressing complex problems to becoming naïve and un-focused about the complexities that underlie the overwhelming complex problems in urban settings. Referring to real problems and cases also helped us to avoid leaving the participants in a state of "paralysis by analysis" and help them to differentiate between considering the many dimensions of complex urban problems and feeling "lost" when they deal with such complexities.

To that effect, we tried to involve as many practitioner-lectures in the training program as possible. Unlike some of the academic-lecturers who could elaborate very limited practical examples from their own experiences in dealing with complex problems, the practitioner-lecturers consistently engaged in detailed and concrete discussions based on real examples from their professional practice with our participants. Benefitting from the practitioner-lecturers practical experience contributed significantly to helping us to maintain a healthy balance between addressing complex issues from a holistic-multidisciplinary approach while avoiding generic and shallow discussions in the class.

In addition, the fact that the participants could see practical examples of how other people in similar positions (the practitioner-lecturers) could address complex urban problems, and achieve some concrete results, also significantly contributed to helping the participants to avoid feeling “lost” and helpless when dealing with many the dimensions of complex urban problems. Seeing practical examples of how other practitioners turned innovative ideas into practical solutions to improve the quality of urban services in cities could also put some ‘cracks in the status quo mindset’ of the participants, thanks to the credibility with which the participants regarded the practitioner-lecturers’ inputs (as colleagues, not academics).

5.4.4 Focus on master projects

Focusing on the participants’ master projects was our main strategy to individuate the learning experience of each of the learners according to his/her professional interests. This could significantly help us to deal with participants’ different expectations from the program and to re-direct them towards a genuine holistic-multidisciplinary approach and prevent them from becoming naïve-lost.

Rather than considering the master projects to be the final product of the program, we tried to use these projects throughout the training modules as a valuable asset to personalize the learning experience for each of the participants. The master projects, whose topics were determined by the participants based on their main concerns and professional interests, constituted the core of each participants’ learning experience as they served as an important learning tool that could help him/her to look for the most relevant and important information in each of the training sessions (and modules) that could help him/her answer his/her questions in the master project. In other words, we considered the master projects to be the *participants’ personal projects*, as opposed to a mandatory requirement for graduating from the program, which the training program should help them to develop for themselves. The training was aimed at helping the participants to adopt a more holistic approach to analyze and address their practical problems at work, and the master project served as an excellent arena to test out this approach.

Since the master project could give a personal flavor to the learning experience of each of the participants, it also helped us to manage the challenges associated with the different expectations of the participants from the program. We were acknowledging the fact that the training program was not a one-size-fits-all prescription, and instead understood it as an arena in which each of the participants could develop a personal learning experience form him- or herself. Therefore, we tried to put the participants in charge of their own learning experience and regarded them as responsible learners who could develop their own learning experience through our facilitation. By doing so, we indeed embraced the variability of the participants’ expectations from this learning experience and tried to use it as a valuable resource to create a more individuated learning experience for each of the participants.

The master projects also helped us to make sure that the participants would not fall into the trap of becoming naïve-lost. Each project was developed around a concrete problem that the participant was practically dealing with it at his/her work. Structuring the project around such a practical and relevant issue helped the participants to think clearly about some very concrete issues; avoiding generic or ideological argumentations. Put simply, the projects helped us to ensure that our emphasis on adopting a holistic approach would help the participants to produce some clear and concrete results, and not lose their focus amidst the vast, and varied, pool of information that was being introduced in the program.

5.4.5 Having a facilitator who could live the same intellectual journey as what was expected from the participants

My double role throughout this program, as both a facilitator who was fully engaged in all of the training sessions of the program, and at the same time also an Action Researcher who was constantly reflecting on my personal observations from the training program, helped me to actually live the same learning experience which had been envisioned for the participants in the program. Through this role, I was participating in the same lectures, visiting the same places and engaging in the class discussions throughout the training program. This provided me with the unique opportunity to experience the very same moments that the participants had throughout the training program. Reflecting on my personal learning experience helped me to better understand the shortcomings of the IGLUS training program and, in response, find more effective ways to help the participants to make sense of their learnings and derive meaning from the seemingly unconnected training sessions and modules of the program and develop a coherent and meaningful learning experience.

Since I had been actively involved in the curriculum development for the entire Executive Master program as well as for each of the training modules (through collaborating with the partner universities), it was personally important for me to ensure that we deliver a meaningful and coherent learning experience in each of the modules, and throughout the overall Executive Master program. However, since I was a researcher and not an urban practitioner, I had to place myself in the position of an urban practitioner (and not a purely theoretical researcher) and try to construct a meaningful learning experience for myself out of the inputs from the invited lecturers. Also, thanks to my personal relationship with the participants, I was able to constantly engage in informal discussions with each of them about their learning experiences throughout the training modules, which helped me to better understand the learning interests of the practitioners from such a training program.

This personal learning experience was instrumental in helping me to understand the intellectual challenges that our participants were facing when trying to extract a meaningful learning experience out of this highly modular training program. More precisely, I was able to comprehend the difficulties that the participants were facing to make sense of all of the training sessions in each modules as well as the links among the modules. By understanding these difficulties and by reflecting on my own

personal learning experience, I was able to help the participants by taking them through similar reflective processes that I was going through when I was trying to establish the link among all these seemingly dispersed pieces of information.

In the beginning, I was not so successful in sharing the intellectual *processes* that I was going through, and what I was mostly sharing with the participants was the final outcomes (the conclusions) of my own reflections on the course contents and what their meanings were for me, in the context of the program. But with the progress of the AR inquiry cycles, I could improve my capabilities in helping the participants to understand the thinking processes (and not its final outcomes) that I was following when I was trying to understand complex problems in the governance of large urban infrastructure systems from a holistic-multidisciplinary point of view through personal reflection on the inputs of the lecturers.

Indeed, by using insights from my self-reflections on my own learning experience in the program, I was able to create more effective reflection opportunities that could help the participants to reflect on their learnings from the training sessions and modules, and by doing so, make sense of their learnings from the program. Using conceptual frameworks and asking the participants to engage in developing their own conceptual frameworks, as a pedagogical tool and not necessarily as teaching material, played a significant role in this process, which clearly illustrated its values in the reflection sessions of the program.

5.4.6 Active, continuous and creative engagement of the facilitator in the training program to create opportunities for reflection

Active engagement of the facilitator (myself) in the training sessions was our main strategy to deal with heterogeneous teaching style and competencies of the lecturers. This strategy also helped ensuring that the participants have enough, and effective, opportunities to engage in critical discussions and reflect on the inputs of the lecturers throughout the program.

The active engagement of facilitator in the training sessions to create opportunities for reflection had three important functions. Firstly, it could ensure that the lecturer provides enough time and opportunities for critical discussions and reflection and the session will not become a traditional monolog lecture and by doing so, mitigate the impact of heterogeneous teaching styles and competencies of the lecturers on the quality of the training sessions. Secondly, it could encourage, and help, the participants to engage in critical and reflective discussions with the lecturers and their other peers and by doing so, help them to make sense of their learnings from the sessions and share it with the others. And thirdly, it could help us to deal with contingencies that could often rise in the training sessions due to cultural and personal differences among the participants, and also lecturers.

Because I was the coordinator the program from EPFL, I could assume an outsider position when listening to the lectures of the invited lecturer and therefore, could freely, and critically, reflect on the

inputs from the lecturers. Holding such an outsider position (as neither a ‘student’- nor a ‘lecturer’, but as a facilitator whose aim was to improve the quality of reflective discussions) put me in an advantageous position where I could initiate reflective discussions and also encourage the participants to engage in critical reflections on the material being presented by the lectures.

An important point to note about the facilitator’s role in this training program was the relatively *independent* and *reachable* position of myself in the program. Since I was not a professor nor the ultimate authority in the management hierarchy of the program (e.g. director of the program), the participants could see me as an attainable role model and become inspired by my actions in the program, eventually taking on more active roles in class discussions and reflections. If I could ask questions and challenge the lectures, they could do so too. This point became more evident when I was conducting the validity-check interviews and the interviewees mentioned that when the academic director of the program, Prof. Finger, was asking questions from the guest lecturers, they didn’t regard themselves as being at the same level (seeing him as a senior professor who is also the director of the program) and did not feel the courage to do the same. But when I was asking critical questions, being neither senior nor a professor, they were more reassured that they could in fact do the same.

5.4.7 Using online education tools

Harnessing the potentials of online education tools became our main strategy for dealing with the participants’ different educational and professional backgrounds. After reflecting on the difficulties that we were facing in the training modules due to the participants’ diverse educational and professional backgrounds, we came to the conclusion that a comprehensive preparatory learning package would be a must for the IGLUS training program. Such a preparatory package could help any participant who was going to join the program to obtain a basic understanding of the fundamental concepts and terminologies that are used in the training program before the start of his/her first training module. This could help us to avoid repeating the same basic concepts in each of the training modules for the new cohort of participants. In this way, a preparatory package could significantly improve our utilization of the limited time available in the training modules.

Including most of the “information-rich” training materials - which are mainly aimed at giving new information to the participants - in a preparatory package that the participants can learn on their own without being present in a face to face classroom setting could free up significant amounts of the limited available time of the training modules. This time could instead be used more appropriately for reflection and critical discussions, ultimately improving the quality of the learning experience for the participants.

In this project, due to the numerous benefits of online learning platforms over more traditional distance learning practices (e.g. seamless accessibility, online discussion forums, availability of multimedia tools, etc.), we decided to develop this preparatory package as a Massive Open Online Course (MOOC) that could be easily, and flexibly, used by anyone across the globe. This MOOC, on

principles of management of urban infrastructures, became a mandatory prerequisite for participants after the second edition of the IGLUS training program.

5.4.8 Benefiting from the change

Change of the host city in each of the training modules and coverage of a wide range of infrastructures, which didn't necessarily match the existing domain of expertise of each of the participants, proved to be highly effective strategies to help most of the participants to reflect on, and ultimately revise, their status quo mindsets. These constant changes acted like 'shocks' to our participants due to their occasional incompatibility with the previous experiences of participants and their status quo mindset. This could help them to adopt a more open mindset and consider alternative approaches and practices to deal with complex problems in governance of large urban infrastructure systems.

The change of the host city also proved to be beneficial as it forced the participants to change their 'position' from being *insiders* to the systems to being *outsiders*; able to observe different examples from a more detached position, thus enabling them to adopt a more critical stance towards conventional urban practices during the training modules. For example, while most of our Latin American participants felt as though they were 'insiders' when we studied the urban governance systems in the IGLUS-Guadalajara module, they could find themselves as total outsiders in the IGLUS-Istanbul, Hong Kong and Dubai modules. This feeling of *disassociation with the context of the program* proved to be instrumental for encouraging the participants to critically reflect on the governance practices in the host cities of the program, and through these reflections and by comparing the practices in the host cities with their own practices, they could ultimately become more open to alternative ways of thinking and acting in their professional practices.

Also, covering different urban infrastructure systems and their interrelations helped the practitioners, who typically had a narrowly defined area of expertise (e.g. transport planning, social development planning, etc.), to better understand the systemic nature of urban problems. Again, taking on the role of an outsider studying a new domain of urban infrastructure (e.g. being a transport engineer who is now reflecting on housing challenges) helped the participants to become more open to adopting a new approach towards studying urban problems (a holistic approach instead of a highly technical/disciplinary approach), in comparison to when they would have studied an urban infrastructure that was very familiar to them.

Such dynamics were further amplified by the diverse professional, educational and cultural backgrounds of the participants and lecturers in the program. The fact that in the same class, the participants and lecturers had very different points of view about problems could familiarize the participants with the fact that there is no single right or wrong way of understanding and tackling complex urban problems. *Living this experience of diversity* and constant change in the IGLUS training program proved to have significant impacts on the participants' mindsets when addressing complex urban problems.

5.4.9 Providing the participants with a sense of co-ownership of the IGLUS project and their collective learning

Cultivating a sense of ownership about the IGLUS project and their collective learning experience among the participants was an effective strategy to deal with the challenges associated with expectations gaps and perceived shortcomings of the program. Indeed, in many instances the participants were voluntarily engaging in actions and starting initiatives that could directly improve the quality of this learning experience, not only for themselves, but for the entire class.

The fact that we genuinely considered the participants' points of views and feedback throughout this training program and the associated AR inquiry¹¹⁰, combined with our continuous efforts to consider the individual differences among the participants in order to not treat them all in the same way, helped us to reinforce our message that the participants are an important stakeholder of the IGLUS training program, and that they indeed have partial ownership of the project. As a result of nurturing this sense of co-ownership about the training program, when the participants were feeling a shortcoming in the program, they were responsibly sharing their opinions and recommendations with us so as to improve not only their personal learning experience, but also to improve the *program* as a whole. In addition, in many instances they were even taking it a step further and leading their personally devised initiatives to improve the quality of the program; for example, many of our veteran participants took it upon themselves to talk to the new participants and share their personal learning experiences in the program, which helped us to deal with the expectations gaps in the program.

Treating the participants as co-owners of the problems and not solely as people affected by the problems created countless opportunities to continuously improve the quality of this training program through our action inquiry cycles. It is important to note that these opportunities grew from our sincere attitude to see the participants at the core of this training program and its associated AR inquiry processes, as well as active and open communication of our principles with the class (e.g. sharing the results of all of the evaluations with the class, listening to them, etc.).

5.4.10 Establishing effective communications thanks to informal/friendship relationships

Our ability to develop informal and friendly channels of communication with the participants significantly helped us to manage the contingencies that arose throughout the training program. These informal relationships also proved to be especially valuable for dealing with challenges associated with cultural differences. Because the participants regarded me as part of their group, and

¹¹⁰ An acceptable level of participant participation is also a fundamental methodological requirement in AR inquiries. For a more detailed discussion of the level of participation in this project, see the methodology chapter of this thesis.

as I was able invest a significant amount of time with them in more informal activities outside of the classroom, I managed to develop a very close, friendly relationship with most of the participants.

Through these relationships I held a position where I could help to breakdown the communication barriers between the participants and myself. This had two important consequences. Firstly, the participants could comfortably share their concerns or discomforts with me. Such fast communications helped me, and the other participants, to become immediately sensitized to any potential misunderstandings or complications that arose throughout our communications. Because we were adverted to such concerns so quickly, we were able to tackle the emerging problems before they become chronic; therefore, we were able to maintain a healthy atmosphere in the group despite all the cultural diversities. Secondly, because of the nature of my relationships with the participants, they perceived me as a *'friend'* who is trying to help resolving inter-group frictions- and not as an authority demanding that the participants act in a certain way. This position enabled me to provide our participants with necessary feedback, or even intervene in class discussions, without putting the participants in an uncomfortable position or making them feel defensive.

Indeed, we used the incidents of cultural frictions among the participants, and also the lecturers, as opportunities to recall the importance of considering cultural and personal differences as a perquisite to have effective professional communications for the participants. Similar to the points I had made about managing the expectations gaps in this project, embracing the differences among the participants in our communications, instead of trying to neglect such difference and treat the class as a uniform and homogenous group of participants, could help us to deliver a more personalized and individuated learning experience to our practitioner-participants.

5.4.11 Including further inputs from non-academic partners

As discussed previously, we had limited opportunities to oversee the relations between the local partner universities and their affiliated lectures, and therefore we had very limited control over the quality of the lectures that were organized by the partner universities. To mitigate the impacts of this challenge on the overall quality of our training program, we eventually decided to include more inputs from the non-academic partners (e.g. practitioners from the local offices of our partner companies and international organizations) in the training modules. In addition, we also decided to have our own team lead more sessions (reflection sessions, project sessions, topic specific session, theoretical opening session). Chart 5.1 illustrates this change in our approach.

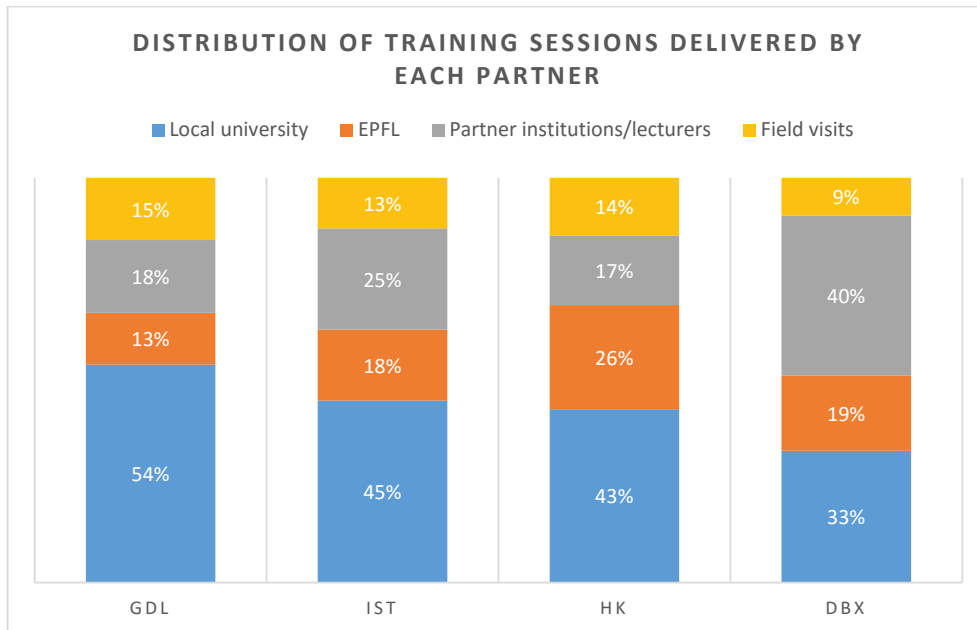


Chart 5.1 - Percentage of training sessions delivered by each partner

Having more training sessions led by our non-academic partners also resonated with our strategy to focus on concrete real world problems in order to maintain the balance between adopting a holistic-multidisciplinary approach and becoming naïve-lost.

5.4.12 Engaging in a long term collaboration with some partner universities

To reduce the difficulties we experienced throughout our cross-cultural collaborations with our partner universities, we tried to establish a long term working relationship with some of them. The motivation behind this was to reduce the complications we might experience while organizing the next editions of the training modules by leveraging the learnings made on both sides from the collaboration in the first edition of the program.

Although the training modules in the second edition of the program are not covered by this thesis, it is important to note that such long term relationships could significantly improve the process of organizing the next edition of the program. We were able to accomplish this by presenting the feedback and insights that we gathered about the quality of the sessions delivered in the first edition of the program with our partners. Also, the enhanced understanding among the lecturers who contributed to the first edition of the program about the objectives of the project and our

expectations from the training sessions was quite beneficial to improve the quality of lectures in the second edition of the program.

5.5 Discussion of the main findings in the light academic literature

There are some important dimensions to the IGLUS training program that distinguished it from the other training programs; namely the focus of the program on training urban practitioners, its aspirations to promote a more holistic-multidisciplinary approach towards addressing complex problems in governance of large urban infrastructure systems, and the manner in which it is structured through a global collaboration between EPFL, and a series of academic and non-academic partners. Indeed, these are the features that I considered when defining the main bodies of literature and theories upon which I will discuss my findings¹¹¹. Figure 5.4 illustrates a graphical representation of these main features and the corresponding academic bodies of literature that I will refer to in the proceeding discussion of my findings.

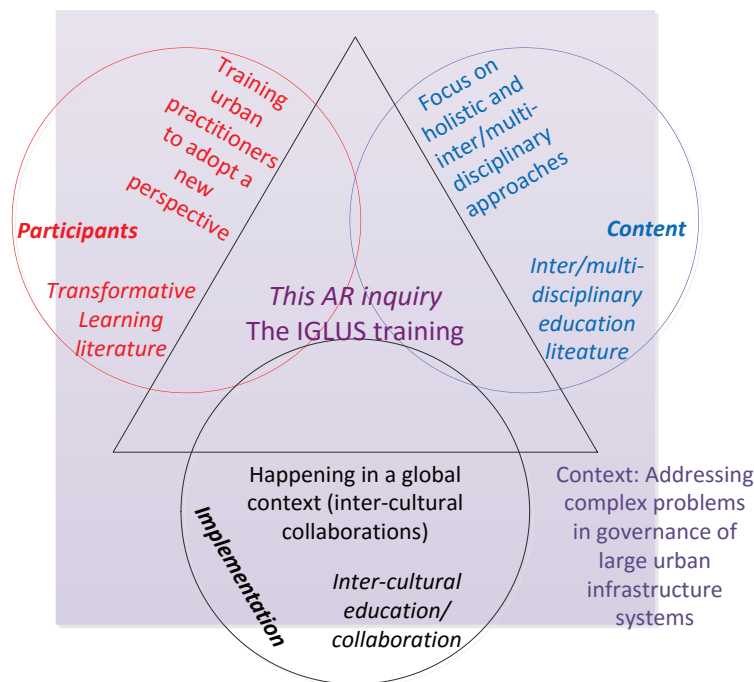


Figure 5.4 – Main features of the IGLUS training program

¹¹¹ As discussed in the literature review and methodology chapters of this thesis (chapter 2 and 3), Action Research inquiries are not aimed at theory testing, but to develop practice-relevant knowledge which is scientifically rigorous. Therefore, my following references to different bodies of literature and theories should be seen as means to discuss the findings in the light of literature and not using my findings to test theories.

Firstly, the underlying philosophy and objectives of the project were based on the importance of adopting holistic-multidisciplinary approaches in dealing with complex problems in governance of large urban infrastructure systems. The inter/multi-disciplinary education literature is an obvious choice for discussing these aspects of my findings in this Action Research inquiry. I will specially use this body of literature for discussing some of the extracted *challenges* which have been reported in section 5.3 of this chapter.

Secondly, the target audience of the training program were urban practitioners. This choice of target audience is making the adult education literature a relevant body of literature for discussing some of the findings of this research. Since the ultimate focus of this program was to help practitioners to adopt a new perspective when facing their professional challenges, I would argue that, from the many subsidiaries of the adult education literature, Transformative Learning Theory (Mezirow 1991) is the most applicable theoretical framework to my research context. I will refer to this theory primarily when discussing the *strategies* that I have reported in section 5.4. In addition, I will also discuss some of the challenges illustrated in section 5.3 in light of the adult education literature.

Thirdly, the IGLUS training program was aimed at training an international group of participants and was also organized and implemented in collaboration with a network of global academic and non-academic partners. Therefore, with regard to the practical aspects of the project implementation, the literature on cross-cultural education and collaboration also provides some useful insight for discussion of my findings.

After discussing my findings in the coming sub-section, in the next chapter (Chapter 6 - Conclusion), I will elaborate on the contribution of this thesis to the existing bodies of literature, and I will explain how this thesis represents a step forward in filling the research gap that was identified in chapter 2.

5.5.1 Discussing the identified “challenges” in this thesis in light of academic literature

The challenges associated with training urban practitioners to address complex problems related to the governance of large urban infrastructure systems from a holistic-multidisciplinary perspective that were reported in section 5.3 were extracted from the analyses of the four reported case studies about the IGLUS training modules. Therefore, it might be argued that these challenges are specific to the first four IGLUS modules, and thus only valid for this single study. However, by referring to the relevant bodies of literature, one can easily confirm that similar challenges have also been reported by other researchers in different contexts.

Nevertheless, this research still contributes to the existing body of research by addressing four specific value-added aspects of the aforementioned challenges. Firstly, the illustrated challenges in this thesis are based on a solid empirical ground and not abstract or purely theoretical argumentations. Secondly, this research was conducted in a new, but increasingly important, context

(education about governance of large urban infrastructure systems). Thirdly, this thesis examined these challenges in a comprehensive study and not as dispersed pieces of the puzzle which are scattered in different bodies of literature; and fourthly, this study took a step further and elaborated practical strategies to tackle the challenges in a full scale Executive Master program and test them in practice (which will be discussed in section 5.5.2).

Most of the challenges related to the “**content and delivery**” in the IGLUS training modules (see Table 5.6) that were illustrated in this study have been also discussed in the inter/multi-disciplinary literature, management education and research literature, and in the education for sustainable development literature. For example, the challenge of *maintaining a balance between the theoretical rigor and practical relevance* is also widely reported in the literature on inter/multi-disciplinary research and education (see for example part 4 of the Oxford Handbook of Interdisciplinarity; edited by Frodeman 2010), and also constitutes an important topic in the management education and research literature (Chia 2014, Varadarajan 2003, Grey 2002). For example, Davis (2013) discussed the challenge of maintaining a healthy balance between the rigor and relevance of management research and education in business schools, and he claimed that, to help boost a school’s position in the academic rankings, the balance often tilts in favor of theoretical rigor. Painter-Morland (2015) claims that current practices in management education and research are so focused on improving the rigorousness of disciplinary approaches that they tend to hinder the development of ‘responsible management education’, which could have contributed to sustainable development through fostering interdisciplinary analysis.

The challenges associated with *maintaining the delicate balance between adopting a holistic-multidisciplinary approach and ‘becoming naïve-lost’* are also reported in the inter/multi-disciplinary literature. For example, Scott and his team (2012) discuss the potential dysfunctionality large multidisciplinary teams may experience due to the ‘paralysis by analysis’ syndrome in the context of medical education practices; meanwhile, Mansilla (2005) condemns the occasional misuse of the interdisciplinary label to hide naïve explanations of complex issues in undergraduate training programs in three world-class American universities.

Dealing with the paradox between *disciplinary approach and technical knowledgeability of the lecturers and the holistic-multidisciplinary focus of the training program* proved to be a significant challenge throughout the organization of the IGLUS training program, but similar challenges have been also reported in the academic literature on environmental sustainability education. For example, Jones et al., (2010) argue that one of the major impediments to effective sustainability education is that academic personnel typically feel that they lack the necessary multidisciplinary knowledge and expertise to adequately teach about sustainability issues. Palmer (2002) highlights the mismatch between the requirements for multidisciplinary environmental education practices and traditional, disciplinary-based academic principles as a major limitation to effective environmental education programs.

The challenges associated with making sense of the seemingly independent information delivered by different lecturers as a coherent and well-integrated training package are also reported in the literature on inter/multi-disciplinarity. For example, Szostak (2012) argues that the university lecturers are typically not trained to teach interdisciplinarity and therefore experience only limited success when teaching about such topics. Aldrich (2014) highlights the importance of course coordination when multiple academic lecturers are to cover a topic from a multidisciplinary point of view. Klein (1996, p.92) also emphasizes the importance of integration of inputs from different disciplines in order to achieve an “interdisciplinary product”; he also criticizes the common “shortfall of integration” when it is assumed that mixing several disciplines in a classroom can spontaneously result in the emergence of interdisciplinarity.

Dealing with heterogeneous teaching styles of different lecturers is also reported as a substantial challenge in some studies on higher education for sustainable development. For example, Kurland et al., (2010) report the negative impacts of different styles of the lecturers on developing an undergraduate interdisciplinary course on sustainability. Similarly, Pirrie, et al., (1999) underline heterogeneous teaching styles as one of the main issues that should be handled in multidisciplinary education.

Most of the challenges related to the “**participants**” (see Table 5.6) that were identified in this study closely resemble prominent arguments made in the adult education literature. For example, the importance of considering the diverse educational and professional backgrounds (experiences) of adult participants, their personal expectations from their learning experiences and the well-established, pre-existing mindsets among adult learners are also discussed in the theory of Andragogy (Knowles 1973, Knowles et al., 2014); while the importance of different personal expectations from their learning experiences and pre-existing mindsets are discussed by many authors in the Transformative Learning literature (e.g. Mezirow 1981, 1991, 1997, 2000, Cranton 1994, 2002, Dirkx 1998).

The challenges associated with different educational and professional backgrounds of adult learners is recognized by Brookfield (1986, p.145) who emphasizes the importance of considering the “diversity of intellectual stages present in any class” when he discusses the role of facilitators in adult learning. Hendrickson (2001) highlights a lack of shared vocabulary as a challenge in multidisciplinary education and research in the field of civil engineering. Knowles considers the *experience* to be the richest source of learning for adults. In addition to discussing the positive outcomes of ‘experience as a resource for learning’, he also considers the more challenging dimensions of experience in adult learning. He explains that “*experience*” increases the diversity among adult learners and therefore enhances the complexity of designing adult education programs to effectively deal with the inherent diversities among adult learners (Knowles, et al., 2014).

The importance of managing the expectations gap is thoroughly discussed by Boud (2012, 2013) who adopts a more philosophical stance and argues that by placing an increasing focus on individualism in contemporary societies, democratic practices in organizations, and by increasing number and diversity of learners in higher education, learners become more intellectually heterogeneous,

thereby creating an education system that calls for more progressive and autonomy-friendly educational practices. The call for more autonomy-friendly educational practices is also widely echoed in the transformative learning literature (Dirkx 1998).

The importance of considering the *status quo mindset of the adult learners* is clearly at the heart of Transformative Learning theory. As Mezirow nicely explains, Transformative Learning is: “... *the process of effecting change in a frame of reference... Frames of reference are the structures of assumptions thought which we understand our experiences. They selectively shape and delimit expectations, perceptions, cognition and feelings... We have a strong tendency to reject ideas that fail to fit our preconceptions*” (Mezirow 1997, p. 5). From this excerpt alone, it is clear that dealing with the adult learners’ status quo mindset, or to use the more accurate terminology of transformative learning theory, their “*frames of reference*”¹¹², presents an important challenge to all training practices that are aimed at changing the perspective of their adult learners.

The challenges associated with the *cultural differences among learners* in training practices are also widely reported in different bodies of academic literature. In the Handbook of Intercultural Training (J. Bennet, et al., 2003), the editors enumerate the significant training challenges in intercultural contexts, and they discuss the importance of intercultural training for improving the competencies of learners to work in a globalized world. In a different study, Guy (1999) emphasizes the importance of considering cultural differences in adult education practices in the United States. Similarly, Parrish and Linder-Van Berschot (2010) discuss the growing number of challenges in educational practices that are due to the prevalence of multi-cultural education settings, specifically referring to the difficulties educators face to distinguish between those behaviors of the learners that are embedded in deep cultural values and should not be challenged and those behaviors that result from shallower practices and may be challenged and improved upon during the learning processes.

The challenges sourced from the “*implementation*” of the training program (see Table 5.6) that have been previously discussed in this study are consistent with points made in the literatures about cross-cultural collaboration challenges and management, as well as inter/multidisciplinary education. For example, Hodson and Thomas (2001) discuss the growing number of challenges that UK based universities face for ensuring the quality of collaborative educational programs that are delivered through international partnerships due to the significant diversity among higher education institutions in different countries. Along a similar line, Casey (2010) and Miller (2010) discuss the challenges in administrating inter/multi-disciplinary training programs due to the institutional inertia in universities that hinders the effective collaboration of academics with different working cultures. Bardecki (2015) discusses the challenges associated with integrating different faculties and staff into an environmental science and management inter/multi-disciplinary program through informal and flexible relationships by referring to the different faculties’ academic norms and cultures.

¹¹² As Mezirow explains the main elements of his theory of Transformative Learning in 1997, a frame of reference is: “... composed of two dimensions; “habits of mind” and a “point of view”. ... Habits of mind are broad, abstract, orienting, habitual ways of thinking, feeling and acting influenced by assumptions that constitute a set of codes... Habits of mind are more durable than point of view. Points of view are subject to continuing change as we reflect on either the content or process by which we solve problems and identify the need to modify assumptions... We can try another person’s point of view and appropriate it, but we cannot do this a habit of mind.” (Mezirow 1997, pp. 5-6)

With regard to the challenges associated with *different working cultures and processes for organization of the program*, Hall (2005) points to the different professional cultures as potential impediments for teamwork in the context of healthcare. Chevrier (2003) reaffirms that managing projects in transnational collaboration teams is an inherently challenging process due to the embeddedness of management practices in cultural norms, which are highly heterogeneous across different regions and countries, and the non-existence of a universal best practice for managing cultural differences. Finally, Binder (2016) discusses the importance of ‘soft skills’ and ‘informal project management’, such as improvising and networking, for dealing with challenges in cross-cultural project management.

As discussed in the previous paragraphs, the identified challenges associated with training urban practitioners to address complex problems in the governance of large urban infrastructures that were extracted from analyzing the four case studies reported in this thesis are generally supported by arguments made in the existing academic literature about inter/multi-disciplinary education, adult education and management research/education. In the next sub-section, I will discuss my findings about the strategies to overcome these challenges by using insights from the Transformative Learning Theory (Mezirow 1991, 2000).

5.5.2 Discussing the elaborated “strategies” in this thesis in light of academic literature

In this sub-section, I will refer to the Transformative Learning Theory (Mezirow 1991, 2000) as my primary analytical lens for discussing the ‘strategies’ reported in section 5.4 of this chapter. To recall, these strategies were aimed at tackling the challenges associated with training urban practitioners to address complex problems in governance of large urban infrastructure systems from a holistic-multidisciplinary perspective.

As discussed in the previous chapters of this thesis, one of the main objectives of this Action Research project, which was defined around the IGLUS training program, was to contribute to the improvement of the training practices in the IGLUS Executive Master program. The focus of the IGLUS training program was to train urban practitioners to adopt a more holistic-multidisciplinary point of view, instead of their often predominant technical-discipline-specific perspectives, in dealing with complex problems in the governance of large urban infrastructure systems. Therefore, this Action Research inquiry can be understood as a systematic effort to enhance the effectiveness of the IGLUS training program to change the perspective of its participants in addressing complex urban problems from a technical-disciplinary perspective to a more holistic-multidisciplinary one.

Transformative Learning theory, or Perspective Transformation theory (Marsick and Finger 1994), is aimed at explaining the process through which adults change their *frames of reference* (or ‘meaning perspectives’ as Mezirow calls it in his most recent contributions, e.g. Mezirow 2000) through which

they see, or more precisely live the world (Mezirow 2000). In one of his latest formulations of the theory, Jack Mezirow (1923-2014), who is known as the architect and the most influential thinker in the field of Transformative Learning Theory (Brookfield 1995, Cranton and Taylor 2012), defines Transformative Learning as:

"Transformative Learning refers to the process by which we transform our taken-for-granted frames of reference (meaning perspectives, habits of mind, mind-sets) to make them more inclusive, discriminating, open, emotionally capable of change, and reflective so that they may generate beliefs and opinions that will prove more true or justified to guide action." (Mezirow 2000, pp.7-8)

He mentions that Transformative Learning Theory is aimed at explaining this process and outlining its implications for 'action oriented adult educators' (Mezirow 2000).

Since the IGLUS training program and this AR inquiry were ultimately aimed at changing the perspective of practitioners, who were indeed adult learners, Transformative Learning Theory can serve as a powerful analytical lens to discuss some of my findings in this research project, which have been elaborated in section 5.4 (strategies to overcome the practical challenges we faced in the IGLUS training program)¹¹³.

Transformative Learning Theory places a strong focus on the 'actions' that should be undertaken by adult educators. Marsick and Finger reviewed the evolution of Mezirow's thinking until 1991 and underscored the fact that: "... his theory has evolved from a theory of social role taking to a theory of consciousness raising, a theory of adult development, and most recently to a theory of action" (Marsick and Finger 1994, p.10). It is based on these points that I argue that Transformative Learning can serve as the perfect theoretical lens for discussion of the training strategies elaborated in this AR inquiry.

5.5.2.1 A brief review of the Transformative Learning Theory

Systematic formulation of the idea of Transformative Learning (or perspective transformation) was pioneered by Mezirow in his study of Women returning to college in US (Mezirow and Marsick 1978) in the late 1970s (Kitchenham 2008). He continued to develop these ideas, and in his 1991 book, 'Transformational Dimensions of Adult Learning', Mezirow proposed the first comprehensive

¹¹³ It might be argued that since the IGLUS trainings and this Action Research inquiry do not exclusively address adult education practices, but also have important links to inter/multi-disciplinarity, the strategies which have been reported in this chapter should be discussed with reference to several theoretical frameworks (similar to what has been done in the discussion of the "challenges" presented in section 5.5.1) and not only one theoretical framework (Transformative Learning). In response to this critique, I would like to restate the fact the essence of this research revolved around studying training practices that could help us to achieve the main objective of the IGLUS trainings (helping the participants to adopt a more holistic-multidisciplinary perspective as opposed to a technical-discipline-specific perspective). Although the content of the training program (inter-multi/disciplinarity) can be logically regarded as an important factor in such a study, as will be discussed in the upcoming sections, the most important element in adult learning, and especially transformative learning experiences, is the process of learning - not the information delivered to the learners. Based upon these arguments, my decision to use the transformative learning theory- which appropriately addresses the process-dimensions of adult learning, and is also the most commonly studied theory of adult education throughout the past few years (Taylor 2007), - and not combining it with literature from inter/multi-disciplinary educations - which are far weaker from a theoretical rigor stance and are more focused on the content (information) - can be strongly justified.

formulation of the Transformative Learning Theory (Marsick and Finger 1994, Cranton and Taylor 2012). In the past few years, most of intellectual work in the field of Transformative Learning has been developed upon the seminal works of Mezirow (Taylor 2007).

I will also use the Mezirow's formulation of Transformative Learning for my discussion in this section. Mezirow's own formulations of his original theory of Transformative Learning has undergone some changes over the years (Marsick and Finger 1994, Kitchenham 2008, Baumgartner 2012). Therefore, in this section I will refer to two of his latest attempts to formulate his theory; the first was presented in his article published in 2000, entitled '*Learning to think like an adult: Core concepts of Transformation Theory*' (also republished in the Handbook of Transformative Learning in 2012), and another article in 1997, entitled '*Transformative Learning: Theory to Practice*'¹¹⁴. These articles will stand as my main starting point from which I will provide an overview of Transformative Learning Theory in the coming paragraphs.

5.5.2.1.1 Learning and the notion of 'Frames of Reference'

For Mezirow, "*learning is understood as the process of using a prior interpretation to construe a new or revised interpretation of the meaning of one's experience as a guide to future action*" (Mezirow 2000, p. 5). Based upon this understanding, the learning process is indeed the process of making meaning from experiences; which is heavily influenced by the learner's frame of reference, which Mezirow defines as "*the structures of assumptions through which we understand our experiences*" (Mezirow 1997, p.5). In other words, learning is not a result of accumulating information or experiences, but is an outcome of a person's ability to draw meaning from these inputs.

Inspired by Habermas, Mezirow distinguishes between two main categories of learning, namely *instrumental* learning and *communicative* learning (Marsick and Finger 1994, Mezirow 2000)¹¹⁵. Instrumental learning is defined as "*learning to control and manipulate the environment or other people, as in task-oriented problem solving to improve performance*" (Mezirow 2000, p.8). Communicative learning is defined as "*learning what others mean when communicate with you. This often involves feelings, intentions, values, and moral issues*" (Ibid)¹¹⁶.

Figure 5.5 illustrates a simplified graphical representation of the '*normal*' learning process as it is conceptualized in Transformative Learning Theory.

¹¹⁴ I shall declare that in this section, I am intentionally using frequent direct quotations from the original writings of Mezirow instead of paraphrasing them. I do so to ensure that the very delicate concepts which he has used in his theory are not distorted in the process of paraphrasing.

¹¹⁵ In his latest conceptualizations Mezirow considers the *emancipatory learning*, which is proposed as a distinctive learning category by Habermas, as a transformation process which can pertain to both instrumental and communicative learnings (Mezirow 2000)

¹¹⁶ Based on these definitions, in the IGLUS training program we were dealing with both types of learning. This is in-line with the Mezirow's argument that "*most learnings involve elements of both domains*" (Ibid p.9).

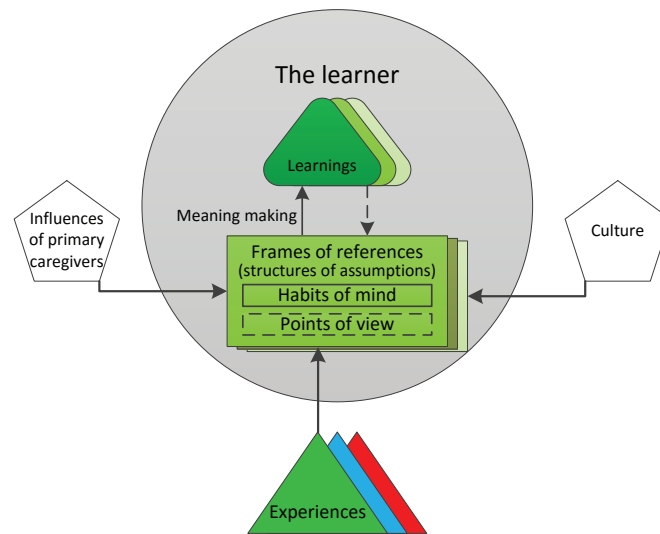


Figure 5.5 – Conceptualization of the normal learning process in Transformative Learning Theory
(Source: Author's original work based on Mezirow 1997 & 2000)

Dominice (2000) highlights the critical importance of understanding the notion of 'frames of reference' in the field of adult education. Frames of references are often highly influenced by cultural paradigms or personal perspectives derived from primary caregivers, and have two main dimensions; *habits of mind* and *points of view* (Mezirow 2000). According to Mezirow:

"A frame of reference is composed of two dimensions, habits of mind and resulting points of view. A habit of mind is a set of assumptions – broad, generalized, orienting predisposition that act as a filter for interpreting the meaning of experience. ... A habit of mind becomes expressed as point of view. A point of view comprises clusters of meaning schemes – sets of immediate specific expectations, beliefs, feelings, attitudes and judgments – that tacitly direct and shape a specific interpretation.... They arbitrarily determine what we see and how we see it. ... They suggest a line of action that we tend to follow automatically unless brought into critical reflection." (Mezirow 2000, pp. 17-18)

While habits of mind are more durable than points of view, points of view can be subject to frequent changes. Mezirow writes:

"... points of view are subject to continuous change as we reflect on either the content or process by which we solve problems and identify the need to modify assumptions. This happens whenever we try to understand actions that do not work the way we anticipated." (Mezirow 1997, p. 6).

Indeed, points of view are relatively accessible to our awareness and to the feedback from others; we can even *"change our point of view by trying on another's point of view. We are unable to do this with a habit of mind"* (Mezirow 2000, p. 21).

5.5.2.1.2 Transformative Learning

Based on this conceptualization of learning and its underlying dynamics, Mezirow proposes four processes (or ways) of learning (Mezirow 2000):

1. *Elaborating existing frames of reference* > (not the main focus of the IGLUS trainings)
2. *Learning new frames of reference* > (one of the main focuses of the IGLUS trainings)
3. *Transforming one's habits of mind* > (one of the main focuses of the IGLUS trainings)
4. *Transforming one's points of view* > (one of the main focuses of the IGLUS trainings)

Transformative Learning is defined as “the process of effecting change in a frame of reference” (Mezirow 1997, p. 5). More precisely:

“Transformative Learning refers to transforming a problematic frame of reference to make it more dependable in our adult life by generating opinions and interpretations that are more justified” (Mezirow 2000, p.20).

Critical reflection is the key element of Transformative Learning. Frames of references can be transformed by becoming critically reflective of the assumptions ¹¹⁷ that underline them and becoming aware of the roots and consequences of the taken-for-granted beliefs (Mezirow 2000). As Mezirow puts it:

“We transform our frames of reference through critical reflection on the assumptions upon which our interpretations, beliefs, and habits of mind or points of view are based.” (Mezirow 1997, p.7)

Mezirow proposes three key areas which can become subject to critical reflection on assumptions (Mezirow 1995 & 2000, Kitcehnham 2008):

1. *Content reflection*: Looking at the content of the problem
2. *Process reflection*: Looking at the processes for problem solving
3. *Premise reflection*: Looking at the fundamental perspectives which results in seeing the problems as we do, and not differently

Mezirow argues that critical reflection on the assumptions underlying the content, process or premise can occur in both Instrumental and Communicative learning. He continues on to explain that we often transform our points of view by critically reflecting on the assumptions that support the content and/or process of problems solving while we may transform our habits of mind by critically reflecting on our premises in defining the problem (Mezirow 2000, pp. 20-21).

For Mezirow, ‘Reflective Discourse’ is a very important process through which one can critically reflect on their assumptions, especially in the domain of communicative learning. In the domain of instrumental learning, one can empirically test the validity of problematic beliefs. However, since

¹¹⁷ Mezirow uses Brookfield (1995) to propose three important categories of assumptions in critical reflection (Mezirow 2000):

Paradigmatic assumptions (the most difficult to identify and reflect upon)
Perspective assumptions (what we assume should happen in different situations)
Causal assumptions (how the world works and how it can be changed)

such empirical testing cannot be used for assumptions in communicative learning, we have to rely on rational discourse - as the only alternative to tradition, authority or force - to test the validity of our assumptions. Also, he points to the role of *imagination* as a crucial way to examine alternative interpretations of one's experiences (Mezirow 1997 & 2000).

Figure 5.6 is a simplified graphical representation of the process of '*transformative*' learning.

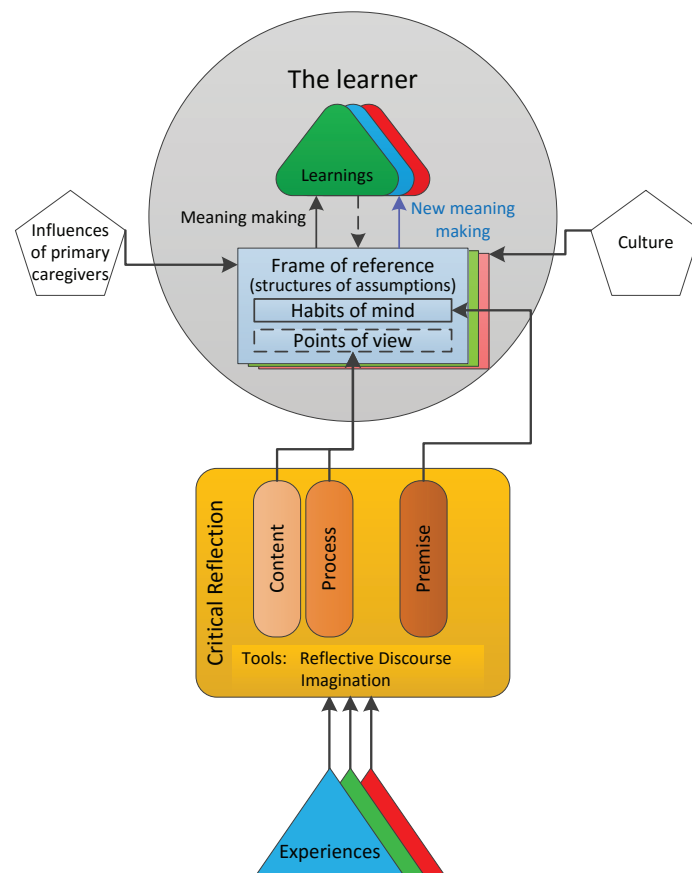


Figure 5.6 – Conceptualization of the Transformative Learning process
(Source: Author's original work based on Mezirow 1997 & 2000)

5.5.2.1.3 Implications for adult education and educators

For Mezirow, transformation is not an add-on to adult education, but is its essence (Mezirow 1997). Therefore, he conceives the ultimate goal of adult education programs as: *“to help the individual become a more autonomous thinker”* (Ibid p. 11). Dirkx writes:

“For Mezirow the outcome of transformative learning reflects individuals who are more inclusive in their perception of their world, able to differentiate increasingly its various aspects, open to other points of view, and able to integrate differing dimensions of their experiences into meaningful and holistic relations” (Dirkx 1998, p.4)

This understanding of the adult education process has important implications for adult education practices and adult educators.

In transformative learning, new *information* becomes only a resource in the adult learning process, and not the ultimate goal of learning (Mezirow 1997). In this sense, the role of transformative educators is significantly different from the more instrumentally-oriented educators; not because the former necessarily teaches fundamentally different contents, but because he/she teaches the content *“with a different end in view and often using different instructional strategies”* (Dirkx 1998, p. 2). As Mezirow writes:

“To facilitate transformative learning, educators must help learners become aware and critical of their own and others’ assumptions. ... Educators must assume responsibility for setting objectives that explicitly include autonomous thinking and recognize that this requires experiences designed to foster critical reflectivity and experience in discourse. ... To promote discovery learning, the educator often reframes learner questions in terms of the learner’s current level of understanding. ... The educator functions as a facilitator and provocateur rather than as an authority on subject matter.” (Mezirow 1997, pp.10-11)

So, the role of the adult educator in transformative learning processes is not to simply provide the learners with more new information, but it is to help the learners to become aware of their own and other’s assumptions by critically reflecting on them through engaging in critical-reflective discourse, and ultimately to act upon their validated beliefs (Mezirow 1997, Mezirow 2000).

Mezirow summarizes his approach for the ideal adult education process as follows:

“The process involves transforming frames of reference through critical reflection of assumptions, validating contested beliefs through discourse, taking action on one’s reflective insight, and critically assessing it. This understanding of the nature of significant adult learning provides the educator with a rationale for selecting appropriate educational practices and actively resisting social and cultural forces that distort and delimit adult learning.” (Mezirow 1997, p.11).

Figure 5.7 is a graphical representation of this process:

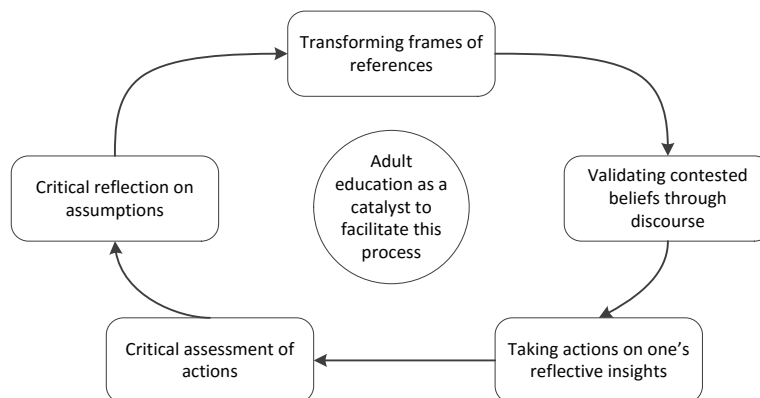


Figure 5.7 – Ideal process of adult education based on the Transformative Learning perspective
 Source: Author's original work of based on Mezirow 1997

Based on this understanding of the practice of adult education, Mezirow, and other scholars in the field of Transformative Learning, propose some practical recommendations for adult educators to help the learners to critically reflect on their own, and others', assumptions and, ultimately, to transform their problematic frames of references. The following list is a summary of some of the most important recommendations for *adult educators* based on Mezirow's original writings:

- I. To adopt a learner-centered, participatory and interactive approach to education (Mezirow 1997)
- II. To try to create the *ideal* situation for effective discourse, where participants:
 - *"have full information*
 - *are free from coercion*
 - *have equal opportunity to assume the various roles of discourse*
 - *become critically reflective of assumptions*
 - *are empathic and open to other perspectives,*
 - *are willing to listen and to search for common ground or a synthesis of different points of view*
 - *can make a tentative best judgment to guide action"* (Ibid, p.10)
- III. To use instructional materials that are closely related to the learners' real-life experiences, which can be very helpful to promote critical reflection and discourse in the group:
 - *"The idea is to help the learner actively engage the concepts presented in the context of their own lives and collectively critically assess the justification of new knowledge."* (Ibid, p.10)
- IV. To help the learners *"to transform his or her frame of reference to fully understand the experience"*; when needed (Ibid):
 - *"To become meaningful, learning requires that new information be incorporated by the learner into an already well-developed symbolic frame of reference, an active process involving thought, feelings, and disposition."* (Ibid, p. 10)

- V. To create an environment that promotes 'self-direction' where *"learners become increasingly adept at learning from each other and at helping each other learn"* (Ibid, p.11)
- VI. To act as a role model who genuinely exercises critical reflection:
 - *"The facilitator models the critically reflective role expected of learners. Ideally, the facilitator works herself out of the job of authority figure to become a colearner..."* (Ibid, p. 11)

5.5.2.2 Discussion of our strategies in the IGLUS training program in light of Transformative Learning theory

In the light of this review of transformative learning theory and its implications for adult education, I can now discuss our main strategies in the IGLUS training program - which emerged in a bottom up and incremental fashion through my personal reflections *in*, and *on* our actions in the four reported Action Inquiry cycles – from a more theoretical point of view. To that effect, I will briefly reflect on each of the strategies introduced in section 5.4 by referring to the above mentioned recommendations in Transformative Learning Theory¹¹⁸.

Our strategy to use several lecturers to cover related topics (in each module and across modules) was aimed primarily at ensuring that the different topics in the program's curriculum were discussed from different dimensions and in different contexts- despite the often technical-disciplinary approach and knowledge of the guest lecturers. Indeed, this strategy was more focused on delivering the right mixture of information to the participants in order to fulfill our goal of preparing the participants to adopt a more holistic-multidisciplinary perspective towards their professional problems. In this sense, this strategy might seem to be more relevant to the content of the training modules rather than the training processes. However, this strategy also served as an important step towards improving the conditions for effective reflective discussions by enhancing the knowledgeability of the learners about the topics which is an important prerequisite of effective discourses.

Our strategy of developing conceptual frameworks and using them for reflection and comparisons among the different cases is very much in-line with Mezirow's point about the importance of supporting the learners to make sense of new information and ultimately transform their frames of reference. As discussed in the case studies, after concluding the first two training modules of the program, we realized that it is fairly difficult for the participants to conceptualize the links among important dimensions of governance of large urban infrastructures from a holistic-multidisciplinary point of view (in a theoretically rigorous, yet practically relevant fashion). Therefore, we decided to

¹¹⁸ Even though the unit of analysis in Transformative Learning Theory is often the individuals, the implications of this individual-level theory for the broader adult education practice is more than evident. So, despite the fact that the unit of analysis in this research was the training modules of the IGLUS training program while the unit of analysis in Transformative Learning theory is the individual, it is justifiable to use the *implications* of Transformative Learning Theory for discussing my findings in this research project.

become more actively involved in developing conceptual frameworks that could help the participants to make sense of the different inputs they were receiving throughout the program so that they could create a coherent and meaningful learning experience for themselves. We tried to frequently refer to these conceptual frameworks to compare different cases and examples with each other, and to make meaning out of the dispersed inputs which were presented in the training sessions by guest lecturers. Indeed, this exercise of developing conceptual frameworks, which later became one of the main pedagogical tools in the program, proved to be successful in helping the participants to derive meaning from the diverse learning opportunities that arose throughout the modules. Furthermore, by being exposed to these frameworks and the associated thought processes, the participants' questions evolved from being un-structured and spontaneous to becoming more structured and organized questions that critiqued the underlying assumptions that guided the problem solving practices, unique to each of the host cities.

Our strategy to focus on concrete real world problems by using inputs from practitioner-lecturers is very much in-line with Mezirow's recommendation to use instructional materials that are close to the living experiences of the learners. The fact that the inputs from different lecturers were closely related to the participants' professional experiences enabled them to better understand and reflect on the content of the training sessions. Thanks to this close link between the content of the training sessions and the participants' professional lives, the participants were able to effectively engage in critical discussions about infrastructure governance practices in the host cities of the program and also *share their own professional experience*; these elements constituted a priceless source of learning in the IGLUS training program.

Our strategy to focus on master projects could significantly help us to adopt a more learner-centered approach in the training program. By emphasizing the importance of practical master's projects, we could also encourage the participants to further reflect on their practices by using their learnings from the program. In some cases, this resulted in developing new roadmaps for future actions of the participants in their professional occupations. In essence, the master's projects functioned as a personalized arena where each of the participants could try to materialize the implications of his/her learnings in a concrete problem solving exercise in his/her own job.

Our strategy to provide the participants with a sense of co-ownership over the IGLUS project and their collective learning experience are very much in-line with Mezirow's recommendation to adopt a participatory approach in adult education programs and to promote self-direction among the learners. The fact that our more advanced participants were voluntarily taking personal responsibility to contribute to the improvement of their personal learning experiences, as well as to the collective learning experience of the class, provides a clear illustration of the success of this strategy in promoting self-direction in this learning experience.

The fact that in this training program, I – being the facilitator/coordinator of the program as well as an Action Researcher – could live the same intellectual journey that we expected from the participants (functioning as someone in the middle of the hierarchy-, not a student but also not a professor) can be seen as a clear example of Mezirow's recommendations about the ideal role of the facilitator. In this position, I could become a role model for the participants and share my personal learning experiences about how I could benefit from critically reflecting on the examples and lectures which were

delivered in each of the training modules. I could practically demonstrate how I benefited from these self-reflections to come up with a clearer understanding of the complexities in governance of large urban infrastructures. And, I could also explain how I was using my learnings, from these critical self-reflections, to envision new courses of actions to deal with these complexities from a more holistic-multidisciplinary point of view.

I also argue that many of our emergent strategies in this training program are very much in-line with Mezirow' recommendations for cultivating ideal conditions for reflective discourse.

For example, the continuous and active presence of a facilitator to create opportunities for reflection in all of the training sessions of the program could help us to ensure the basic perquisites for constructive critical discourse, such as ensuring that all of the participants have enough opportunities to participate in discussions; that the class discussions are, to the maximum possible extent, free from coercion and defensiveness (for both the lecturers and the participants); and that the discussions do not get into the trap of group thinking (Brookfield 1995) and instead remain genuinely focused on critical reflection.

Our decision to develop online education tools for the next editions of the program represented an obvious step towards ensuring that all the participants gain 'full information' about some fundamental concepts necessary for engaging in constructive critical discussions in the class, before they come of the program.

Our strategy to further improve communications among, and with, the participants, thanks to informal-friendship relationships in the group which was emerged as a result of our ability to spend time outside the class, could significantly help the participants' to become more emphatic to each other's points of view. Furthermore, because the participants felt comfortable with me, I was able to intervene in discussions, when necessary, and provide feedback to each of the participants (while respecting cultural differences) without discouraging their enthusiasm to engage in heated discussions throughout the program.

In this training program we tried to make the best use of the opportunities associated with the changing context of the training modules (having the training modules organized in different cities across the globe). The change of the context of the training modules, the diversity of covered topics (infrastructures) and the diversity of perspectives among the participants and lecturers that we encountered throughout the program significantly increased our opportunities to engage the participants in a truly critical reflective process in their learnings, which, ultimately, helped us to realize the main goal of the IGLUS training program. Figure 5.8 graphically illustrates this argument.

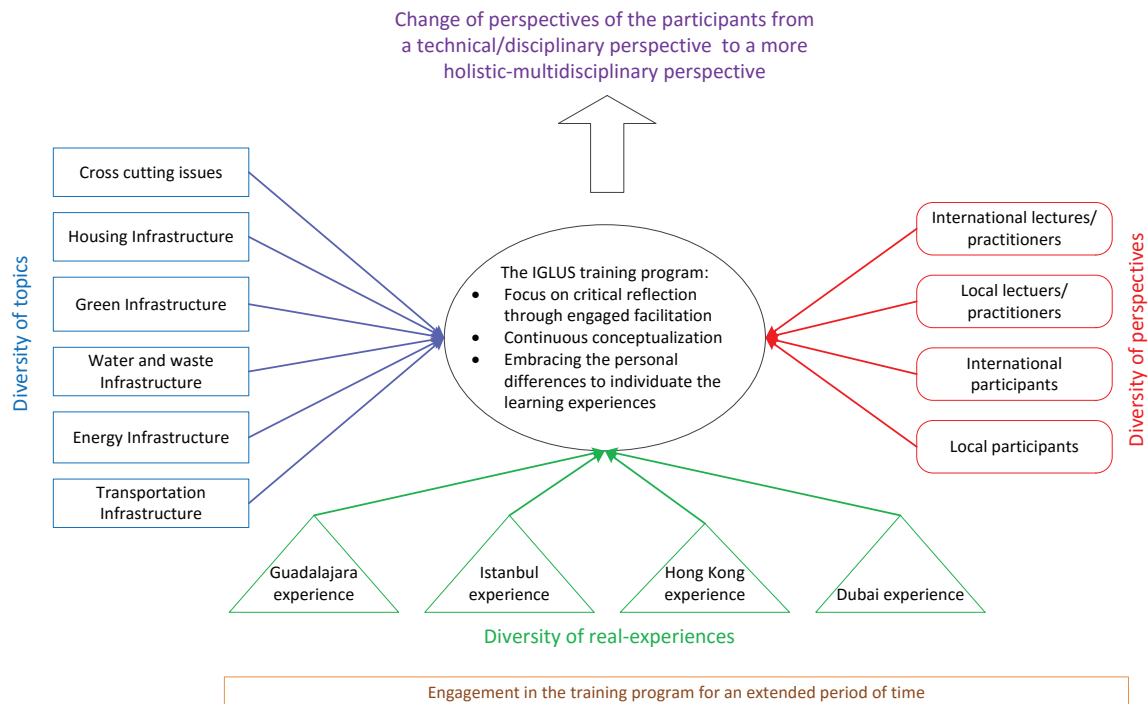


Figure 5.8 – Important factors that shaped the perspective transformation experience in the IGLUS training program

The change of the context of the training modules enabled the participants to experience several different cases (different cities) and sensitized them to their differences; helping them to compare these cases with each other, and with their home cities. This proved to be a very effective way to engage the participants in critical reflective discussions about different solutions, the process of developing such solutions, and how the solutions should be adapted to address complex problems in different contexts. *Experiencing these differences in real-world examples* was indeed very helpful to put some significant *cracks in the defensive shields of participants' status-quo mindset* (or more precisely: points of view) about how complex problems in cities can, and should, be addressed. Indeed my focus on the importance of “experiencing real differences” is very similar to what Mezirow calls facing “a disorienting dilemma” in his description of ten common phases in transformation experiences¹¹⁹ for individuals (Mezirow 2000, Marsick and Finger 1994).

¹¹⁹ Mezirow mentions that: “Transformations often follow some variation of the following phases...

1. A disorienting dilemma
2. Self-examination with feelings of fear, anger, guilt, or shame
3. A critical assessment of assumptions
4. Recognition that one's discontent and the process of transformation are shared
5. Exploration of options for new roles, relationships, and actions
6. Planning a Course of action
7. Acquiring knowledge and skills for implementing one's plans
8. Provisional trying of new roles
9. Building competence and self-confidence in new roles and relationships
- 10 “A reintegration into one's life on the basis of conditions dictated by one's new perspective” (Mezirow 2000, p 22)

The presence of a large number of local and international lecturers, as well as mixture of local and international participants with different educational, professional and cultural backgrounds provided us with countless priceless opportunities to have a wide range of different perspectives represented in class discussions. Having a continuous stream of diverse perspectives in the class (changing all the time) also helped us to avoid any potential group-thinking traps and pushed us to remain open to new perspectives, which continually popped up in the training sessions.

In addition to these benefits, the changes in the context of the program, as well as covering a wide range of topics (infrastructures) in the program also introduced an important opportunity to put the participants in different positions as insiders or outsiders to problems. For example, a transportation expert could find himself to be an insider during the sessions addressing the different aspects of transportation infrastructures, but he/she would become an outsider when we were discussing the energy or green infrastructures. In the same manner, when participants attended a training module that was not held in their home city/region (e.g. our Latin American participants after the IGLUS-Guadalajara module) they could truly study the system from an outsider perspective and become more critical in their thinking. These changes of position constituted an important factor that enhanced the quality of reflective discussions throughout the program¹²⁰.

5.5.2.3 Discussion about the transformative dimensions of the IGLUS learning experience

Taken as a whole, the overall IGLUS training program can be seen as a case of a transformative learning experience. This claim is very well supported by referring back to the findings of the case studies which clearly illustrate that our advanced participants could ultimately adopt a more holistic-multidisciplinary perspective in understanding complex urban problems, while they had shown stronger signs of having a disciplinary/technical perspective in the beginning of their learning journey. This transformative experience was also a main theme in the participants' answers to my questions in the validity check interviews about the general impact the training program had on them.

In the next paragraphs, I will briefly discuss the different dimensions of this transformation experience by referring to Mezirow's classifications of transformations (transformation in habits of mind vs. transformation in points of view; incremental vs. epochal transformation; objective vs. subjective transformation; mindful vs. mindless transformation). Mezirow explains that:

¹²⁰ Two other strategies, which have been mentioned in section 5.4, namely our decision to use more inputs from our non-academic partners and to engage in long-term collaborations with some of the partner universities, are more relevant to the practical dimension of organizing the training program. Therefore, it is not relevant to discuss them using insights from Transformative Learning Theory. Since these strategies were not a main contribution of this thesis, I will not use a separate body of literature to discuss them in more detail.

"Transformations may be focused and mindful, involving critical reflection, the result of repetitive affective interaction or of mindless assimilation – as in moving to a different culture and uncritically assimilating its canon, norms, and ways of thinking." (Mezirow 2000, p.21)

"Transformations in habit of mind may be epochal, a sudden, dramatic, reorienting insight, or incremental, involving a progressive series of transformations in related points of view that culminate in a transformation in habit of mind." (Ibid)

"Transformative learning may occur through objective or subjective reframing. Objective reframing involves critical reflection on the assumptions of others encountered in a narrative or in task-oriented problem solving.... Subjective reframing involves critical self-reflection of one's own assumptions about... a narrative..., a system..., an organization or workplace..., feelings and interpersonal relations..., the way one learns" (Ibid, p.23)

Transformation in habits of mind vs. transformation in points of view

The transformation experience in the IGLUS training program is closer to transformation in points of view (or perspectives as I had called it in the previous chapters) than transformation in habits of mind. In most cases, the focus of our reflective discussions was on the content and process of problems solving approaches, helping the participants to see the merits of adopting a more holistic-multidisciplinary perspective when addressing complex urban problems. This focus on the content and process could lead to a transformation in the participants' points of view. However, this argument does not imply that we had no instances where we engaged in critical reflection on premises, which could have an impact on the habits of minds of the participants. For example, when we tried to adopt the 'systems' approach in order to conceptualize cities as socio-technical systems, we were trying to motivate the participants to critically reflect on their premises in understanding and conceptualizing the city and "defining the problems" (systemic paradigm versus reductionist paradigm). Such critical reflections had more profound impacts on the frames of references of the participants and was indeed become the turning point of this training program (see the case study about IGLUS Hong Kong module for a detailed discussion). But it is fair to say that in most cases, we were more successful in helping the participants to transform their points of view in addressing complex problems in governance of large urban infrastructure systems; which was the main objective of the training program, as well. Figure 5.9 is a graphical representation of the position of the IGLUS training program in the spectrum between transformation in habits of mind and transformation in points of views.

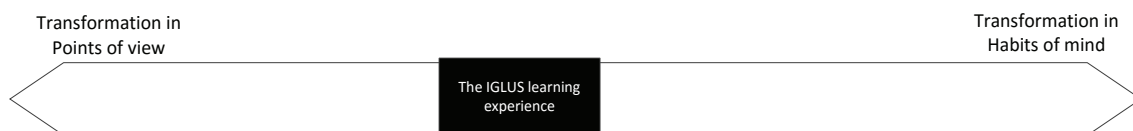


Figure 5.9 - position of the IGLUS training program in the spectrum between Transformation in Habits of mind and Transformation in Points of views

Incremental vs. epochal transformation

The transformation experience in the IGLUS training program can be seen as more of an *incremental* process of transformation than an epochal transformation. The accumulation of learning experiences through each new training module - which was representing a new context in governance of large urban infrastructure systems, as well as the ever-growing number of examples about governance of different infrastructures constituted a continuous stream of inputs that continually challenged the participants' technical-discipline-specific perspectives and ultimately helped them to adopt a new, more holistic-multidisciplinary perspective towards addressing complex problems in governance of large urban systems. Indeed, the participants could feel the higher dependability of this new perspective in interpreting the experiences which they were facing with in the program; in comparison to their status quo technical-disciplinary perspective. Figure 5.10 is a graphical representation of the position of the IGLUS training program occupies along the spectrum between incremental and epochal transformations.

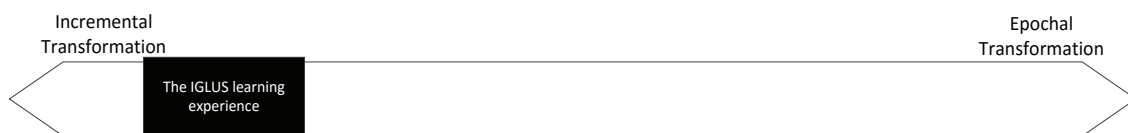


Figure 5.10 - position of the IGLUS training program in the spectrum between Incremental Transformation and Epochal Transformation

Mindful vs. mindless transformation

On the other hand, the transformation process in the IGLUS training program was more *mindful* than mindless. The experience of transformation in this program was achieved through persistent discussions and continuous critical reflection around a large number of cases and experiences. In addition, our efforts to improve the quality of each subsequent training module of the program through the Action Inquiry cycles also introduced a significant element of planning and mindfulness to this transformative learning experience. Figure 5.11 is a graphical representation of the position the IGLUS training program occupies along a spectrum that ranges from mindful to mindless transformation experiences.



Figure 5.11 - position of the IGLUS training program in the spectrum between Mindful Transformation and Mindless Transformation

Objective vs. subjective transformation

In terms of the subjective or objective nature of this transformation process, I argue that the IGLUS training program learning experience constitutes a mix of both *objective and subjective* transformations. Indeed, the experience of critically reflecting on the inputs from local and international lecturers, as well as from other participants in the program, could provide each of the participants with an opportunity to experience an objective transformation process. Contrastingly, our efforts to help the participants to critically reflect on their own practices and assumptions (mainly in the preparatory and wrap-up essays) also provided them with opportunities to experience a more subjective transformation process. Figure 5.12 is a graphical representation of the position that the IGLUS training program holds on a spectrum that ranges between subjective and objective transformations.

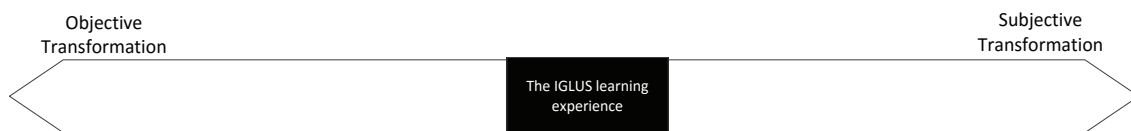


Figure 5.12 - position of the IGLUS training program in the spectrum between Objective Transformation and Subjective Transformation

After analyzing my findings in this Action Research inquiry and discussing the findings in light of the academic literature and Transformative Learning Theory, I shall conclude this thesis in the next chapter by summarizing the main findings of this research, how it could address the elaborated research gap identified in chapter 2 and contribute to the existing literature, the limitations of this research, and finally the path forward for future research.

Chapter 6 (Conclusion)

In this chapter, I provide a summary of the main findings of the thesis. Generalizability of the findings are discussed, and the contributions of the thesis to academic bodies of literature and its implications for the practice of professional training and development are outlined. Also, the main limitations of this Action Research inquiry are discussed and several promising future research pathways are proposed.

6.1 Summary of the main findings of the thesis

This thesis, which was developed on the basis of an Action Research inquiry, has resulted in several different findings, which have been presented and discussed in detail in Chapter 4 and Chapter 5 of this report. To conclude this thesis, I shall recall and summarize these findings in the following three sub-sections.

6.1.1 A comprehensive case study about the design, implementation and evaluation of brand-new training programs

Through a comprehensive case study (in Chapter 4), this thesis provides a detailed description of the processes undertaken for the design, implementation, and continuous evaluation of a full-scale Executive Master program on Governance of Large Urban Infrastructure Systems (IGLUS). This professional training program catered to an international group of learners and was delivered through a global network of academic and non-academic partners. The program was aimed at training urban practitioners to adopt a more holistic-multidisciplinary perspective towards addressing complex problems in governance of large urban infrastructure systems. The four reported case studies (IGLUS-Guadalajara, IGLUS-Istanbul, IGLUS-Hong Kong, IGLUS Dubai), which together constitute one big case study, provide a comprehensive documentation of the *intellectual and practical processes* which are often necessary for developing such a full-scale, innovative and multidisciplinary Executive Master program¹²¹. These aspects are discussed in terms of curriculum development, development of training materials, delivery of training sessions, design of individual and group learning activities, management of collaborations with guest lecturers, management of the relationships with practitioner-participants, and the instrumental role of program facilitators.

When analyzed in light of Transformative Learning Theory, the IGLUS training program can be also seen as a case of Transformative Education. From this perspective, the case studies reported in this thesis describe a practical example of how Action Research could be used as an effective tool for design, implementation and evaluation of meaningful training programs that can support a Transformative Learning experience for practitioners.

6.1.2 Main challenges in training urban practitioners to address complex problems from a holistic-multidisciplinary perspective

Through a comprehensive analysis of the four reported case studies, this thesis builds upon a solid empirical basis to provide a systematic and structured illustration of some of the most important challenges associated with training urban practitioners to adopt a more holistic-multidisciplinary perspective when addressing complex problems (chapter 5). The eleven challenges which have been thoroughly discussed throughout this Action Research inquiry can be categorized into three main categories:

- I. Content and delivery (challenges related to multidisciplinaryity):
 - *Maintaining a delicate balance between the theoretical rigor and practical relevance of the content*

¹²¹ To our knowledge, at the time of its inception in 2014, the IGLUS Executive Master program - which became the context of this Action Research inquiry - was the first program of its kind.

- *Maintaining a delicate balance between adopting a holistic-multidisciplinary approach and 'becoming naïve-lost'*
 - *Disciplinary approach/knowledge of lectures*
 - *Making sense of the seemingly dispersed pieces of information delivered by different lecturers*
 - *Heterogeneous teaching styles of different lecturers*
- II. *Participants (challenges related to working with adult learners):*
- *Diverse educational and professional backgrounds of the participants*
 - *Managing the expectations gap*
 - *Status quo mindset of the participants*
 - *Cultural differences*
- III. *Implementation (challenges related to cross-cultural collaborations):*
- *Ensuring the quality and relevance of lectures organized by partner universities*
 - *Different working cultures/processes*

6.1.3 Practical strategies to deal with the illustrated challenges in training urban practitioners

The thesis elaborates some practical strategies that educators and managers of professional training programs can employ to effectively deal with the abovementioned challenges; and ultimately deliver a transformational learning experience to practitioners. The twelve strategies which have been elaborated in this Action Research inquiry are:

- *Using several lecturers to cover related topics (in each module and across modules)*
- *Developing conceptual frameworks and using them for reflection and comparison among cases*
- *Focusing on concrete real world problems and cases by using inputs from practitioner-lecturers*
- *Focusing on master projects throughout the training program to individuate the learning experience of each participant*
- *Having a facilitator who could live the same intellectual journey as what was expected from the participants (someone in the middle of the hierarchy, not a student but also not a professor)*
- *Active, continuous and creative engagement of the facilitator in the training program to create opportunities for reflection*
- *Using online education tools*
- *Benefiting from change (the changing context of the training modules; comparison for reflection / diversity of infrastructures that were covered in the course / change of positions; participants being outsiders vs. insiders to similar systems)*
- *Providing the participants with a sense of co-ownership of the IGLUS project and their collective learning experience*
- *Establishing effective communications thanks to informal/friendship relationships*
- *Including more input from our non-academic partners*
- *Engaging in long term collaborations with partner universities*

The strategies elaborated in this research successfully pass the dual tests of scientific rigor and practical relevance. Indeed, these strategies have emerged in a bottom fashion from our reflections *in*, and *on* our actions in the IGLUS training program. However, they are also very much in-line with the recommendations in Transformative Learning Theory for adult educators.

The key findings of the thesis are that *critical reflection* is instrumental to developing meaningful learning experiences for adult learners. In learning processes such as those investigated in this research, developing and utilizing *conceptual frameworks* can serve an invaluable exercise for supporting the meaning-making processes for both the educators and the learners. Helping adults to effectively engage in critical reflections is an inherently complex and delicate task. Therefore, delivering a learning experience on the basis of promoting critical reflection requires a genuinely *innovative, reflective and comprehensive approach towards the design and delivery* of the training program; in these settings *knowledgeable, dedicated and creative program managers and educators* play a pivotal role.

6.2 Generalizability of the findings

As it is known, the findings of Action Research inquiries are not expected to have global generalizability, as it is often ‘claimed’ in positivistic research practices¹²². For a detailed discussion of generalizability of the findings of this research, I refer the respected readers back to the Methodology chapter of this thesis (Section 3.14). However, I will once again recall an illustrative quote from Argyris and Schon here:

“... their (Action Researchers’) generalizations are unlike the ‘covering laws’ to which normal social science aspire; they do not describe relationships in which the values of a group of dependent variables are uniquely determined by the values of a group of independent ones. Rather, their generalizations tend to describe thematic patterns derived from inquiry in one setting the valid transfer to other settings of which depends on confirmation there by further experiment.” (Argyris and Schon, 1989, p. 613)

Along the same line of thinking, I argue that although the findings of this thesis are based on one unique case study, they are partially generalizable (transferable) to other similar contexts.

The insights drawn from the reported case study can be valid and insightful inputs for the process of design and delivery of similar training programs. More specifically, the insights from the case of IGLUS Executive Master program can serve as a general roadmap for those in charge of the design and delivery of professional training program focused on helping practitioners to migrate from a reductionist paradigm towards a more systemic paradigm, and consecutively, to change their

¹²² This claim of positivists is itself a matter of substantial debates as I briefly discussed it in the Methodology chapter.

perspectives from a technical/disciplinary perspective to a more holistic/multidisciplinary perspective in addressing complex socio-technical problems.

The challenges identified in this thesis; being associated with training urban practitioners to address complex problems in the governance of large urban infrastructure systems, are also partially generalizable to other resembling contexts. As previously discussed, the illustrated challenges in this study can be attributed to three general factors; namely the content (holistic-multidisciplinary), the participants (adult learners) and cross-cultural nature of the collaboration. Therefore, if at least one of these three factors are represented in a training program, it is likely that one, or several, similar challenges will emerge during the process of design and delivery of the program. In this sense, the challenges discussed in this thesis are at least partially generalizable to other resembling training programs as well.

The elaborated strategies to overcome the aforementioned challenges can also be generalized, to some degree, to similar contexts. Indeed, if any of the abovementioned challenges are expressed in a professional training and development program, the corresponding strategies can be considered as viable alternatives for dealing with them. This is especially so if the professional training and development program is aimed at transforming the perspectives of practitioners towards the manner in which they address complex socio-technical problems¹²³.

6.3 Contributions of the thesis

One of the main features that distinguish Action Research inquiries from the more conventional social research inquiries is that in AR inquiries the researchers aspire to develop highly-practice-relevant knowledge, while at the same time, also contributing to the academic body of knowledge. Simply put, two important deliverables are expected from an Action Research inquiry; firstly, and most importantly, an improvement in the investigated practice as a result of conducted courses of actions and reflections, and secondly, an improved understanding about the subject of the inquiry. Therefore, I will discuss the contributions of this thesis in two sub-sections- namely, the contributions to academic bodies of knowledge and the contributions to (and, implications for) the practice of professional training and development.

¹²³ Despite these arguments favoring the partial generalizability (transferability) of the results presented in this study, I must re-emphasize the fact that I do not claim that the findings from this Action Research inquiry are globally generalizable. Making such a naïve claim would be in contrast to the pragmatic philosophical stance I maintain towards scientific inquiries, and would also be in opposition of my humble understanding of the immensely complex dynamics of adult learning, which are only further complexified when numerous cultures and personal peculiarities are also present in the context of research.

6.3.1 Contributions to the academic bodies of literature

In chapter 2 of this thesis (literature review), I presented a research gap that this research project aims to address. I argued that both the academic and professional literatures place a strong emphasis on the importance of adopting a holistic-multidisciplinary approach when addressing complex urban problems. Yet, the literature highlights knowledge-and-competency-gaps among urban practitioners, impeding their abilities to address complex urban problems from such a holistic-multidisciplinary perspective. The literature also recognizes the fundamental shortcomings in the conventional academic and professional training practices as a major source for this mismatch between the expectations from urban practitioners and their performance in practice (with regard to adopting a holistic-multidisciplinary perspective). Despite the wide acknowledgment of this paradoxical situation across the academic and professional literatures, a limited number of systematic and empirical studies have been conducted that shed light on the practical challenges associated with training urban practitioners to adopt such a perspective; even fewer have gone so far as to suggest strategies for overcoming these challenges in the real practice of professional training and development. Table 2.1 (in chapter 2) provided a summary of the key findings from the few studies published over the last few years that have attempted to shed light on this research gap, albeit they are typically only partially successful. This research sheds further light on this under-studied domain.

This Action Research inquiry clearly contributed towards filling this research gap by reporting an extensive case study and describing the detailed process of development and delivery of a full-scale Executive Master program that catered to urban practitioners to adopt a more holistic-multidisciplinary approach towards addressing complex problems in governance of large urban infrastructures systems. This research was successful, in large part, thanks to the access the researcher had to a solid and unique empirical basis for his investigation (the IGLUS Executive Master program).

By illustrating eleven primary challenges associated with delivering such training practices and by elaborating on twelve practical strategies to overcome them – through a systematic and structured investigation of a real world training program over an extended period of time and by using a wide variety of data sources - I argue that this study is one of the first and most comprehensive efforts to address this research gap made up to this date. From this perspective, the thesis does indeed contribute to the academic literature about professional training and development in the context of governance and management of urban infrastructure systems, as well as multi/inter-disciplinarity. Since *very few studies have been published addressing this topic*, the contributions of the thesis are mostly *exploratory and descriptive* in their nature.

In addition, this thesis also represents an extensive case study about a Transformative Education process. From this perspective, this study clearly contributes to the empirical literature in the field of Transformative Learning and Education.

Last but not least, this thesis also constitutes an empirical illustration of how Action Research can be used as an effective tool for the design and delivery of professional training programs. Therefore, I claim that this research also contributes to the empirical literature about the applications of Action

Research- not only as a strong research methodology, but also an effective program development strategy.

6.3.2 Implications of the thesis findings for the practice of professional development and training

As discussed throughout this thesis, one of the main objectives of this Action Research inquiry was to improve the program design and the training practices of the IGLUS Executive Master program. Therefore, in addition to the contributions this thesis makes to the academic literatures, the findings of this research project also closely address practical aspects of professional training and development programs. More precisely, the findings of this research have implications for *educators and facilitators with regard to the in-class-training-practices*; for *program managers and directors, with regard to the design and development of professional training programs*; and also for *top-level decision-makers with regard to the broader educational policy making*.

The findings of this thesis call for a high level of engagement of the educators and facilitators (both intellectually and emotionally) in the learning processes to create effective opportunities and tools (e.g. conceptual frameworks) for reflective discussions. More precisely, the educators and facilitators should ideally try to *undergo the same learning experience* that are envisioned for the participants; by doing so, place themselves in the learner's position and function as a *role model* for the learners. The findings of this thesis also underline the critical importance of the educator/facilitator capabilities to *think creatively* and *improvise* when necessary in order to deal with the numerous contingencies that will inevitably arise when working with a group of adult learners and lecturers with significant personal, educational, professional and cultural diversities. Such capable educators/facilitators will be able to harness the emerging challenges in the group and transform these potentially contentious occurrences into more enhanced learning opportunities for the class.

As previously explained, this extensive case study, conducted around the first edition of the IGLUS Executive Master, can in itself serve as a practical guide for those who work on the design and delivery of similar professional development programs; especially relevant for program managers and directors. In addition to the *operational-level recommendations* for design of the curriculum and delivery of the content (e.g. benefiting from diversity of topics, learners and lectures; managing the flexibility of the curriculum; valuing the opportunities for experiencing different contexts, etc.), this thesis also proposes some more *strategic-level* implications that should be regarded by program managers and directors. Most importantly, the findings of the thesis urge the program managers and directors to *continuously, and critically, reflect on the outcomes of their decisions and actions* with regard to the program design and implementation. They should do so, because initial plans are often highly incomplete (and may even be incompatible with reality) and, due to the highly complex nature of the learning processes, can rarely capture the ever-changing dynamics of professional training programs ex ante. Indeed, by reflecting on my personal experience as both a learner (holding an MBA

degree) and a person who had been closely involved in the design and delivery of professional training courses and programs, I would go so far as to argue that utilizing the potentials of Action Research is one of the most (if not THE most) effective strategies for delivering meaningful professional training programs.

At the policy-level, this thesis recommends that decision-makers should *change their focus from the content to the process of content delivery when considering different options to promote professional training and development practices.* This recommendation becomes an especially important consideration in the context of training and re-training urban practitioners to help an effective transition of cities from “legacy” to “smart” cities and to improve the efficiency, resilience and sustainability of cities in the 21st century. This thesis calls upon the decision-makers at the policy-level to support the prevalence of effective training *processes*, and not only collages of *trendy topics (hyped contents)* when they allocate the limited financial, human, and time resources available for the training (in higher education programs) and re-training (in professional training program) of urban practitioners.

There is currently a growing demand for competent urban practitioners who can effectively help cities to deal with the numerous challenges and opportunities associated with urbanization and disruptive innovations in the urban infrastructure sectors. Throughout this important urban transition period, we need to ensure a genuine transformation in the way urban practitioners think and address complex urban challenges. However, without careful consideration of the necessary training *processes (not only content)*, the available time, financial and human resources will be wasted in old-fashioned, information savvy training practices instead of carefully designed training programs that can result in transformative learning experiences for urban practitioners.

6.4 Limitations of this research

Research is bound to limitations. Despite all the preparations and careful consideration of the different aspects of the research process, this Action Research inquiry has several limitations, too. The limitations of this research can be primarily attributed to three main factors- namely, the *design and conduct* of the research, the *focus* of the research and its *embeddedness in time*.

6.4.1 Limitations associated with the design and conduct of the research

In this research, *a single researcher was simultaneously in charge of coordinating/facilitating the training program as well as data collection and analysis.* The fact that I, as a researcher and the program coordinator/facilitator, had to simultaneously fulfill several responsibilities might have

caused me to miss some potentially useful data. It would not be realistic to assume that I was always 100% successful to collect accurate and comprehensive data about all the incidents in the training sessions. There might be instances where I lost focus during some particular incident, or where I may not have recorded data as accurately as possible due to delays between the moment that an incident occurred and the time when I was able to document them. I have tried to minimize the negative impacts of such limitations on the validity of my findings by using video recordings of most of the training sessions as well as by employing data triangulation strategies.

In addition, the fact that *only one researcher and not a group of researchers*, has studied this training program might have resulted in the inclusion of personal biases in the observation, documentation and analysis of the data, which would ultimately increase the chances of emergence of *self-fulfilling prophecies*. My main strategies for dealing with this limitation were to rely heavily on data and methods triangulation. I also tried to further mitigate this limitation through conducting four validity check interviews to discuss my findings with participants in the program.

Another limitation of this research is potential *participant-selection biases*. The participants who attended the IGLUS training program were not randomly selected from a population of urban practitioners, but were indeed decided to participant in this training program and its associated AR inquiry based on their personal will and interests. Indeed, the majority of the participants in the program were coming from a Latin American background. Therefore, the learning dynamics that were experienced in this program cannot be “representative” of a normal population of urban practitioners. This limitation, which is common to a majority of qualitative research projects, further impedes the generalizability of the findings of the thesis. However, as previously discussed, the IGLUS training program is, to our knowledge, the first and only available full-scale professional training program with such a focus and agenda. Therefore, studying the IGLUS Executive Master program was indeed the best, and only, available context in which such a research project could be conducted.

6.4.2 Limitations associated with the focus of the research

Another limitation of this Action Research inquiry is its focus on studying a professional training program from a relatively broad and *macro perspective*, despite the fact that adult learning is a highly complex phenomenon which is affected by numerous micro-level factors. This research project that was aimed at understanding such a complex phenomenon by adopting a broad/macro perspective is therefore facing with some inherent limitations. For example, learning, and especially adult learning, is closely related to the psychological and personal attributes of the individual learners. However, in this research project, the training modules were taken as the unit of analysis- not the individuals attending the training program. Because of this, certain important dimensions of the learners’ personal attributes, which could have potentially affected the learning processes, were not covered in this research.

Although this presents an important limitation of this research (albeit an equally promising direction for future research), my choice to use the training modules as the unit of analysis in this inquiry is well justified when the exploratory and descriptive nature of this research is considered. Since this research topic had been rarely studied in the existing bodies of literature, the focus of the present thesis was intentionally chosen to be mostly on the exploration and description of the training processes, their challenges and strategies to overcome them from an exploratory and descriptive perspective. Therefore, a macro-focus was more in line with the exploratory and descriptive nature of this inquiry. The findings of this study have now prepared the ground for future studies with more detailed and micro level units of analysis (e.g. the learners, the facilitators, the guest lecturers, etc.).

6.4.3 Limitations associated with the time span of the research

The time span which is covered in this thesis is limited to duration of four training modules of the IGLUS Executive Training program. Therefore, this research could not investigate the *sustained impacts* this learning experience had on our learners' perspectives after they had completed the entire program and were back to their offices addressing complex problems in their jobs. So, this thesis can hardly claim any findings with regard to the long-term impacts and successes that the program may have had in helping the practitioners to change their perspectives when addressing complex problems in governance of large urban infrastructure systems in *practice*, and mostly focuses on the more immediate impacts of this learning experience on the learners. This represents an important limitation of this Action Research inquiry, but it is also a common limitation in the field of the social sciences. Unfortunately, due to the limited available time for conducting this research, this limitation was unavoidable.

6.5 Future research

As discussed previously, this study can be seen as a step towards a comprehensive understating of the challenges associated with training practitioners to adopt a more holistic-multidisciplinary perspective in addressing complex urban problems. However, this Action Research inquiry represents only one humble step towards realizing this goal, and additional research is undoubtedly required to improve our understanding of this complex domain. After concluding this thesis, I see a series of promising directions for future research as follows.

6.5.1 Conducting similar inquiries in other contexts

It would be very useful and interesting to test *whether, or not, the findings of this study are valid in the other similar contexts*. A promising direction for future research would assuredly consist of a series of studies on relatively similar training programs to see if the same challenges are also reported in those studies. If they are, it would be interesting to see how effective the proposed strategies in this thesis would be for dealing with the challenges. In particular, it would be interesting to see the result of similar studies in different cultural contexts (e.g. classes with different cultural compositions) due to the significant impact of cultural differences on learning dynamics of individuals and groups, and consecutively the effectiveness of educational practices.

If similar studies are designed and implemented in the coming future, they could provide both the academic and professional communities with a more realistic evaluation of the generalizability of the findings of this Action Research inquiry. Should such comparative research projects be planned, it would be highly advisable *that a group of researchers- instead of one single researcher-* be allocated to study each of the programs in order to minimize potential researcher-biases in the conduct of the study.

6.5.2 Examining the topic by focusing on other relevant units of analysis

Another strand of future research that could improve our understanding of the challenges associated with training urban practitioners to adopt a more holistic-multidisciplinary perspective in addressing complex urban problems is *to study the micro dynamics of learnings by focusing on the individual-level units of analysis*. Indeed, it would be interesting to conduct a study by choosing the participants as the unit of analysis (instead of the training program). Such a study would enable us to see the more detailed impacts the training practices have on individuals, considering their personal, educational, professional and cultural peculiarities. Similar studies could also be designed with a focus on facilitators/educators. Such individual-level studies would be highly complementary to studies with a macro-focus (such as this one) as they provide us with a more detailed and complete understanding of the complex process of learning among practitioners and how training practices can effectively affect it.

Another promising direction for future research, which could effectively build upon the findings of this study, would be to study *the impact of individual transformative learning experiences on the learnings of institutions and organizations* (e.g. city administration); and equally important- how such individual transformations could ultimately result in a perspective transformation experience at the collective-level (e.g. learnings in the urban infrastructure governance system as a whole, and not only individuals). More precisely, future research should try to shed more light on learning at collective levels, and not solely among the individual practitioners. Some examples of future research questions along this strand of research could be: Who, among the network of actors in urban infrastructure governance systems, should be the target(s) of the transformational learning experiences in order to

effectuate change at the collective-level? How can we improve the learning capabilities of the *governance systems* in the urban context (transforming the urban governance system into a learning network) and ideally shape '*learning institutions*' so that they are able to adapt to changes in their environment faster and more effectively (similar to the idea of learning organizations)?

6.5.3 Conducting longitudinal studies

One of the most interesting, important and insightful follow-up studies to complement the findings of this research would be a longitudinal study on the sustained-impacts this learning experience has on the real practices of the participants. This thesis covers only four training modules of the IGLUS Executive Training program, and therefore could not investigate the real changes that could have occurred in the participants' real working practices after finishing their studies. Follow-up research is necessary to study the long-term impacts this learning experience had on the participants' practices in the workplace. Such a study could show us whether, or not, the immediate learnings they obtained by attending the training program, which have been investigated in this inquiry, have a sustained-impact on the participants' professional practices.

Such a study can be also insightful for the previously mentioned recommendation for future research - investigating learning dynamics at the collective level - as it could help to establish the links between individual-level learnings and potential learnings at the collective-institutional-level in the long-term.

6.6 My concluding remarks

Conventional practices in managing cities - as major centers for natural resource consumption and pollution emission, but in the same time engines of growth - have led us teetering on the edge of irreversible catastrophes at the beginning of 21st century. Climate change, depleted natural reserves, and tremendous environmental pollution, cannot be addressed unless we genuinely transform our practices in managing cities. Such a transformation presents an intimidating goal, but the seeds of the change can sprout in the minds of decision-makers and practitioners. More effective training and development practices are essential for fostering such a drastic change in the mindset of people whose actions and decisions determine the future path of our urbanized world.

The ability of urban practitioners to address the increasingly complex urban challenges from a more holistic and multidisciplinary perspective serves as an important enabler for transition of our cities across the globe to become more livable, resilient and sustainable. Currently, we are dealing with a significant mismatch between the capabilities of our practitioners and the expectations we place on them to support such transitions. Therefore, we are facing with an urgent need to close this gap by

revolutionizing our conventional, and proven to be ineffective, practices for training and re-training urban practitioners (city officials, managers, politicians, planners, engineers, etc.).

Despite its limitations, this thesis was aimed at shedding light on the important field of professional training and development in the emerging and important context of governance of large urban infrastructure systems. I hope this study will serve as a stepping stone to pave the way for further research on this topic, and will ultimately contribute to materializing the required changes necessary to improve the way that we train and re-train politicians, decision-makers, planners, engineers and other relevant city stakeholders. In the era of knowledge-based economy, competent knowledge workers are a priceless asset for societies, and effective training and development processes are the most important catalyst for improving their competencies.

This is the end of this research project, but is absolutely just the beginning of my journey to make a meaningful contribution to the way we govern and manage our cities in the 21st century and serve an ever increasing portion of the global urban population. I hope that by doing so, I can contribute to the emergence of more sustainable and prosperous ways of living in our urbanized world for years to come. I can only hope that by reporting my findings in this research, I have helped the respected readers of this long text to set off their own journeys towards this goal from a more advanced starting point.

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Annex A- Table of codes of participants

acronym of the participant name	Prep assignment module 1 (GDL)	Wrap up assignment module 1 (GDL)	Prep assignment module 2 (IST)	Wrap up assignment module 2 (IST)	Prep assignment module 1 (HK)	Wrap up assignment module 1 (HK)	Prep assignment module 1 (DBX)	Wrap up assignment module 1 (DBX)
J.L.C	[J.P.1]	[J.W.1]	[J.P.2]	[J.W.2]	[J.P.3]	[J.W.3]	[J.P.4]	[J.W.4]
R.E.G.A	[R.P.1]	[R.W.1]	[R.P.2]	[R.W.2]	[R.P.3]	[R.W.3]	[R.P.4]	[R.W.4]
J.A	[A.P.1]	[A.W.1]	[A.P.2]	[A.W.2]	[A.P.3]	[A.W.3]	[A.P.4]	[A.W.4]
V.G.V	[V.P.1]	[V.W.1]	[V.P.2]	[V.W.2]	[V.P.3]	[V.W.3]	[V.P.4]	[V.W.4]
L.E.G	[L.P.1]	[L.W.1]	[L.P.2]	[L.W.2]	[L.P.3]	[L.W.3]	[L.P.4]	[L.W.4]
M.L.P	[P.P.1]	[P.W.1]	[P.P.2]	[P.W.2]	[P.P.3]	[P.W.3]	[P.P.4]	[P.W.4]
U.A.T	[U.P.1]	[U.W.1]	[U.P.2]	[U.W.2]	[U.P.3]	[U.W.3]	[U.P.4]	[U.W.4]
M.M	[M.P.1]	[M.W.1]	[M.P.2]	[M.W.2]	[M.P.3]	[M.W.3]	[M.P.4]	[M.W.4]
B.C	[B.P.1]	[B.W.1]	[B.P.2]	[B.W.2]	[B.P.3]	[B.W.3]	[B.P.4]	[B.W.4]
N.M.A	[N.P.1]	[N.W.1]	[N.P.2]	[N.W.2]	[N.P.3]	[N.W.3]	[N.P.4]	[N.W.4]
A.S.A.S	[S.P.1]	[S.W.1]	[S.P.2]	[S.W.2]	[S.P.3]	[S.W.3]	[S.P.4]	[S.W.4]

Annex B- Sample questionnaire of the short evaluation surveys

Session 1- Monday morning 2 February 2015 – Intro and governance theory

Dear Sir/Madam,

Please help us to improve the quality of IGLUS training series by filling this evaluation form:

- Quality of the slides and presentation skills of the lecturer
Very bad ☐ Bad ☐ Average ☐ Good ☐ Very good ☐
- Usefulness of the content of presentation
Very bad ☐ Bad ☐ Average ☐ Good ☐ Very good ☐
- Your overall evaluation of the session
Very bad ☐ Bad ☐ Average ☐ Good ☐ Very good ☐

Anything you want to mention?

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Session 2 – Monday morning 2 February 2015 – Intro and governance theory

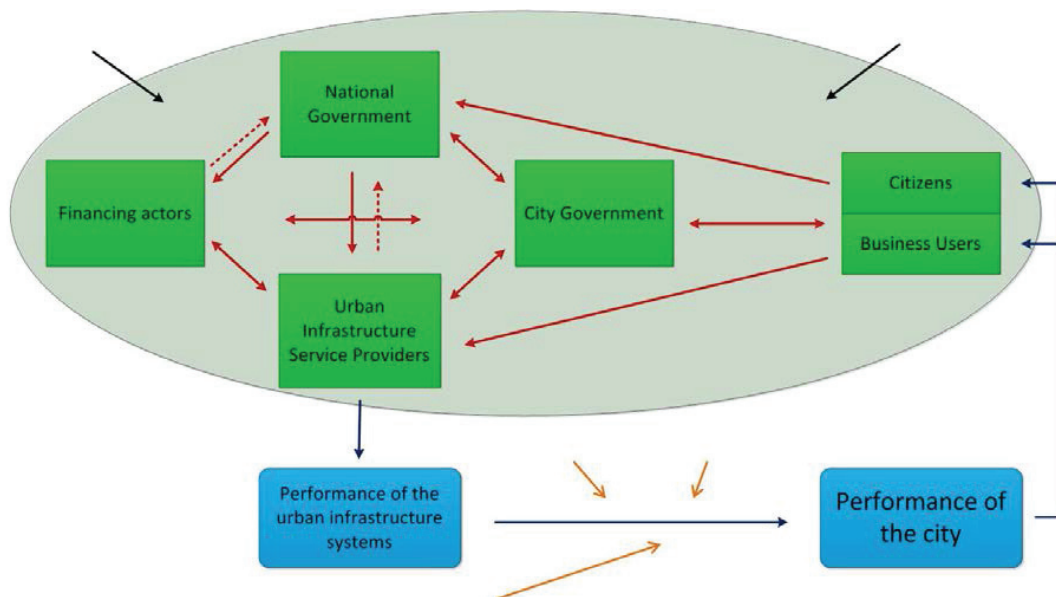
- Quality of the slides and presentation skills of the lecturer
Very bad ☐ Bad ☐ Average ☐ Good ☐ Very good ☐
- Usefulness of the content of presentation
Very bad ☐ Bad ☐ Average ☐ Good ☐ Very good ☐
- Your overall evaluation of the session
Very bad ☐ Bad ☐ Average ☐ Good ☐ Very good ☐

Anything you want to mention?

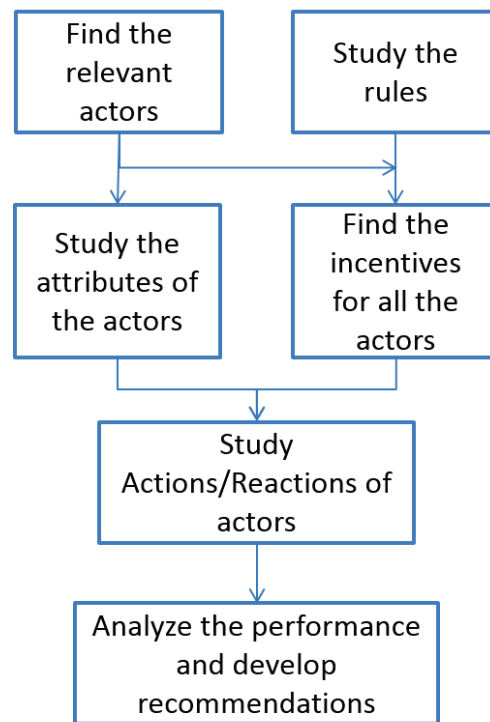
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Annex C - Frameworks

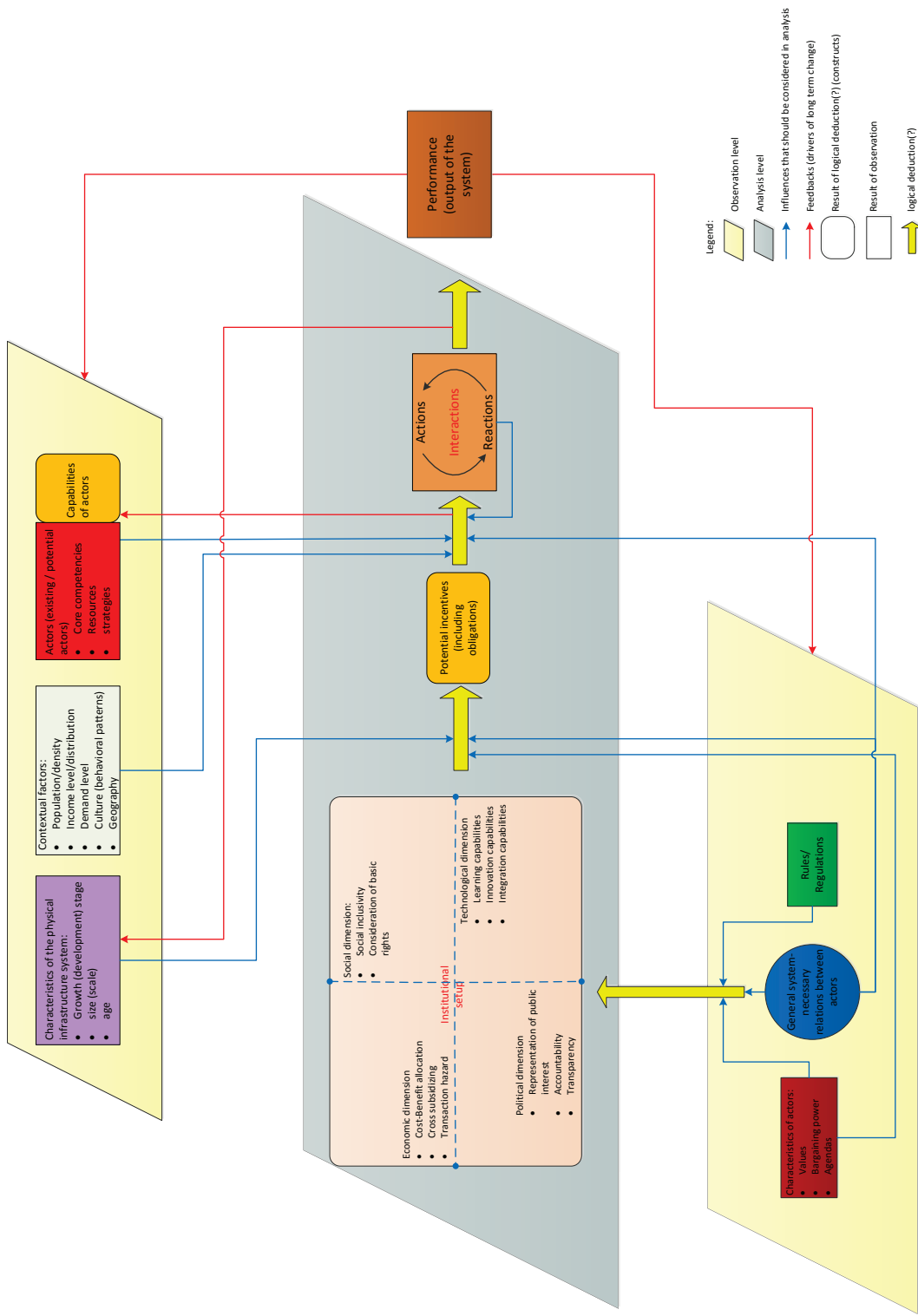
Preliminary IGLUS framework



Proposed flowchart to use the frameworks



Performance-Governance framework



Mohamad RAZAGHI

Mohamad.razaghi@gmail.com | Mohamad.razaghi@epfl.ch | Iranian | 11. April.1987

Education:

PhD	09 2012
Thesis title: An Action Research Inquiry into Professional Training and Development for Addressing Complex Urban Problems	11 2016
College of Management of Technology Institute of Technology and Public Policy <i>EPFL – Switzerland</i>	
MBA	09 2009
Graduate School of Management and Economics <i>Sharif University of Technology - Iran</i>	11 2011
B.Sc.	09 2005
Industrial Engineering <i>Sharif University of Technology - Iran</i>	06 2009

Awards:

AIT award – SwissNex - Brazil Being selected as one of the top 8 candidates from all over Switzerland who won an award to attend in the Academy-Industry entrepreneurship workshop (AIT camp) in Rio de Janeiro	11 2015
Brilliant talents fellowship – Sharif University of Technology - Iran Winning one of the 9 awarded fellowships, on the basis of previous educational performance and a rigorous interview process, to attend the full time MBA program in the number 1 ranked business school in Iran	06 2009

Professional Experience:

Program manager IGLUS professional development program – EPFL Developing a professional training program at EPFL, in partnership with the World Bank, UN-Habitat, 6 partner universities and 8 international companies, to improve governance practices in five major urban infrastructure sectors (transport, housing, energy, water and waste)	01 2014 Present
Senior project manager Developing two Massive Open Online Course (MOOC) on ‘Management of Urban Infrastructures’ and ‘Smart Cities’	05 2015 Present
Publication co-director and Editor in Chief - GIPC analytical bulletin Publishing an open access analytical bulletin that covers Governance, Innovation and Performance in Cities 3 issues have been published and distributed among more than 3000 subscribers	01 2015 Present
Strategy consultant Hamnava Education and Development Research Institute (NGO)	06 2010 09 2011

Publications and Research (2012-2016):

RAZAGHI, Mohamad; Matthias FINGER "A Multidisciplinary Conceptual Framework for Urban Governance Studies: Insights from Social, Political and Economic Theories of Governance" (2013), presented in European Urban Research Association Conference, the Netherlands

FINGER, Matthias, and Mohamad RAZAGHI. "Conceptualizing Smart Cities" Informatik-Spektrum (2016): 1-8.

AUDOUIN, Maxime, Mohamad RAZAGHI, and Matthias FINGER. "Can North-made IOT solutions address the challenges of emerging cities in the South? The case of Korean born Smart transportation card implementation in Bogota" (2016), presented in Tech4 Dev conference - UNESCO Chair in Technologies for Development, Switzerland

AUDOUIN, Maxime, Mohamad RAZAGHI, and Matthias FINGER. "How Seoul used the 'T-Money' smart transportation card to re-plan the public transportation system of the city; implications for governance of innovation in urban public transportation systems." (2015), presented in the 8th TransIST Symposium, Turkey

Academic co-director of the "Cities and Global Challenges" track in the upcoming European Urban Research Association Conference in 2017, with a special focus on the issue of Climate Change and Urban Resilience

Supervision of 13 semester projects – EPFL M.Sc. program in Management of Energy and Sustainability

Co-supervision of 7 Master thesis – HEC Lausanne M.Sc. program in management | EPFL IGLUS Executive Master program

Areas of interest and expertise:

Sustainable Urban Development | Urban Resilience | Smart City

Professional Education | Capacity Development | Online Education | Action Research | Organizational Development and Change Management | Transformative Learning

Governance of Urban Infrastructures | Socio-Technical Systems | Transition in Socio-Technical systems | Innovation Management | Strategic Management

Computer skills:

Stata, Excel, SPSS, Visual Basic

Volunteer experiences:

Social worker in a local center for protection of maltreated children
Tehran, Iran

10|2009
01|2010

