SpeakUp in the Classroom: Anonymous Temporary Social Media for Better Interactions

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Abstract
Student participation in class is an important aspect of the learning experience, and can provide valuable feedback for teachers. However, getting students to interact in large classrooms is challenging. This paper presents SpeakUp, a mobile temporary social media app, confined in time and space that aims to improve interactions in classrooms. In SpeakUp, teachers can create temporary chat rooms accessible to students located nearby. Students can then anonymously post messages, which can be rated up or down by others. Our evaluation results (with a class of 300 students over the course of a semester) show that temporary social media can be used as an effective tool to improve classroom interactions by providing: (i) confined classroom-like *here & now* interactions to foster adoption, (ii) anonymity to increase participation and (iii) social media rating for highlighting interesting content. Students appear to use SpeakUp not solely for asking questions but also as a general backchannel, which can result in spam.

Author Keywords
temporary social media, context-aware mobile interactions, backchannels, location-based systems, education, learning

ACM Classification Keywords
H.5.2 [User Interfaces]: Graphical user interfaces (GUI); K.3.1 [Computer Uses in Education]: Computer-assisted

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Introduction

A key success factor in classroom learning is the interaction between students and teachers [4]. Unfortunately, in large classrooms, student participation is rarely considered optimal. Technology can be used to increase the quantity and the quality of interactions.

In order to increase the quantity of interactions, *anonymity* can be used as an icebreaker. For instance, when asking for students' opinions in a traditional classroom, the number of hands raised rarely reaches the double digits. However, when asking the same question and allowing to answer anonymously with a clicker, the level of participation raises significantly, which contributes positively to the learning process [10].

In order to improve the quality of interactions, *social media* features are sometimes used to rate questions. In a traditional classroom, when a student dares to ask a question, neither the teacher nor the student herself know whether the question is relevant to others. With social media apps such as Reddit[1], users can share questions and rate them. This provides valuable extra information on each message that is completely out of reach in traditional classrooms. It also becomes possible to answer the ones with the best score or the most contested ones.

Social media provide a great opportunity to improve interactions in classrooms. However, interactions in mainstream systems, such as Twitter, are generally public and permanent. This contrasts with more private interactions in class confined to people located in a given room at a given time. Such *here & now* privacy is exactly what *temporary* proximity-based social media can offer. Temporary social media have recently gained huge momentum and have been described as one of the 10 breakthrough technologies of 2013 by the MIT Technology Review.[2] Their aim is to break away from the data persistence that characterizes mainstream social media and provide short lived messaging facilities that *"could enhance the privacy [...] and make people feel freer to be spontaneous."* As an illustration, we present the case of SpeakUp, a mobile temporary social media app. To recreate the *here & now* characteristic of classrooms, it allows to create localized temporary chat rooms accessible to nearby people without the need for formal authentication. To encourage participation, SpeakUp allows to anonymously post messages and to improve quality, it allows people to rate messages, and to sort them by score so that the best ones can be answered.

Our evaluation results with over 300 students suggest that temporary social media can indeed be used to improve classroom interaction. Hereafter, we propose SpeakUp and review related work. Afterwards, we present the evaluation before we conclude and discuss future work.
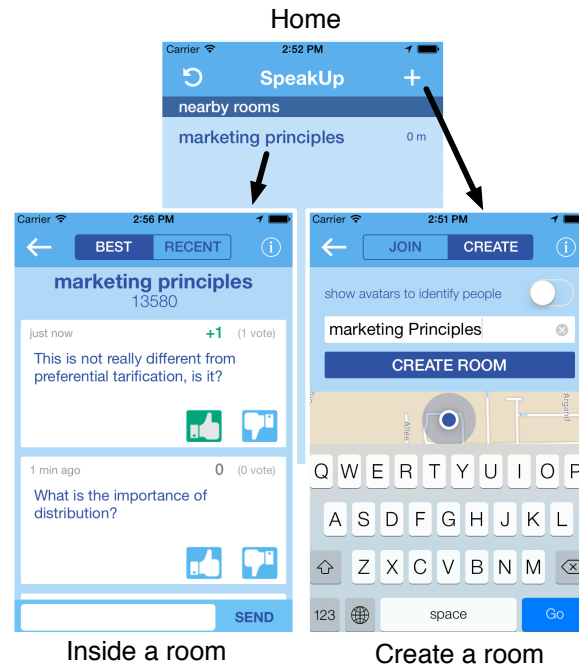
The SpeakUp app

SpeakUp[3] is a mobile temporary social media app, which provides anonymity, peer rating, and *here & now* interaction. A preliminary version of SpeakUp was presented and evaluated in [6].

When SpeakUp is launched, the chat rooms in the user's vicinity (200m radius) are displayed on the home screen

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Home

Inside a room   Create a room

Figure 1: The SpeakUp mobile app.

Figure 2: A message with an anonymous avatar

(see Figure 1). There is no sign-up process and users are never required to enter any personal information.

When pressing the '+' button on the home screen, users can create their own room at their current location. Once a user selects a room, she can read its messages and can vote by clicking the *thumb up* or the *thumb down* icon. For each message, the number of votes and the relevance score are displayed. This score is determined by the number of *thumbs up* minus the number of *thumbs down* of a message. The messages can be sorted either according to their publication time or to their score.

Other features. One can activate the *show avatar* option upon room creation. In this case, each user will be assigned an anonymous avatar, displayed on each of the user's messages (see Figure 2). With these avatars, one can find out whether messages come from the same author, while preserving her anonymity. Furthermore, a *public display* visualising the latest and trending messages can provide more awareness of SpeakUp activities.

Related work
Typical interaction tools to improve the learning experience include clicker-based software, such as TurningPoint[4], and social media such as Twitter. Clicker-based software is generally only designed for simple question-answer interactions and do not have social media features, such as peer rating. Social media provide such features, but they generally require an account for each student, and their messages are identifiable and persisted virtually forever. Hereafter, we briefly review interaction tools and compare them to SpeakUp.

ClassQue is a desktop Java application dedicated to classroom interactions, which includes some social media features [7]. It allows students to answer questions asked by the teacher *à la* clickers. Additionally, it contains an anonymous peer review process. However, students cannot spontaneously post questions or comments and the application needs to be set up. *TXT-2-LRN* was developed to overcome the setup burden [9]. With TXT-2-LRN students can freely ask questions or answer quizzes by sending SMS to the instructor's phone. TXT-2-LRN does not offer any social media features, such as ratings. Moreover, there is no anonymity since the phone number of the sender is known. The ease-of-use of TXT-2-LRN can be problematic due to SMS interface on

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basic mobile phones and students are not aware of others' messages. *SHERPA* [8] is a native mobile app for teacher-student and teacher-teacher messaging and allows students to find information about their classmates. However, it does neither provide anonymity, nor social media features and the data is persisted in the cloud. *TodaysMeet*[5] provides temporary chat rooms accessible via a browser, where users can write messages under a pseudonym. TodaysMeet lacks message rating and messages are not entirely anonymous due to the use of nicknames. *Backchan.nl* goes further than TodaysMeet as it offers also message rating and ranking [5]. However, rooms are not temporary and one student can potentially vote a few times for a message.

Based on this review, *SpeakUp* is the only tool providing a combination of (i) here & now authentication, (ii) anonymity and (iii) peer ratings. In the next section we evaluate how these features improve classroom interaction.

Evaluation

We evaluated SpeakUp in the Principles of Marketing course at HEC Lausanne[6] with over 300 Bachelor students for 5 weeks, 3.5 hours a week. Due to their large number, students were split in two groups both taught the same content by the same instructor. Group 1 (G1) of about 100 students was a control group, not using SpeakUp, and Group 2 (G2) of around 200 students used SpeakUp from the second lecture onwards. During the second and the third lecture G2 used SpeakUp without avatars, whereas in the last weeks avatars were displayed. Additionally, during the last lecture, the public display was projected. Typically, students would write messages during the

lecture and the instructor would check SpeakUp during the break and answer relevant questions afterwards. In both G1 and G2, we recorded the face-to-face interactions between students and the instructor, as well as all interactions in SpeakUp. Based on this information and two voluntary surveys, respectively completed by 60 participants in the third week and 163 in the last week, we conducted this evaluation described below.

Interactions. One of the main questions was whether SpeakUp was actually enabling more interaction in the classroom. Figure 3 illustrates both live and SpeakUp interactions. Three course experts categorized the SpeakUp messages into course content, questions related to the course organization, remarks about SpeakUp and irrelevant messages or spam. Overall, Figure 3 shows that there was more interaction in G2 using SpeakUp. G1 only asked content-related questions. While G2 was inquiring about the course organisation and SpeakUp, but also wrote spam (i.e. 47% of G2 interactions are spam). Lecture 4 shows most G1 interactions, which can be related to two factors: (i) during the G2 lecture SpeakUp had technical issues for over an hour and (ii) G1 was consistently asking more face-to-face questions than G2 (this is clear in the first lecture and in all other lectures G2 asked less than three face-to-face questions). The initial lectures also have more SpeakUp interactions, indicating a novelty factor, which is similar to our finding in [6]. Additionally, the two last lectures seem more prone to spam. In lecture 5 students watched a movie that triggered off topic conversations and lecture 6 was the last lecture of the semester where party and holiday topics were present. Furthermore, avatars were used and the public display was projected, which might have triggered more spam.
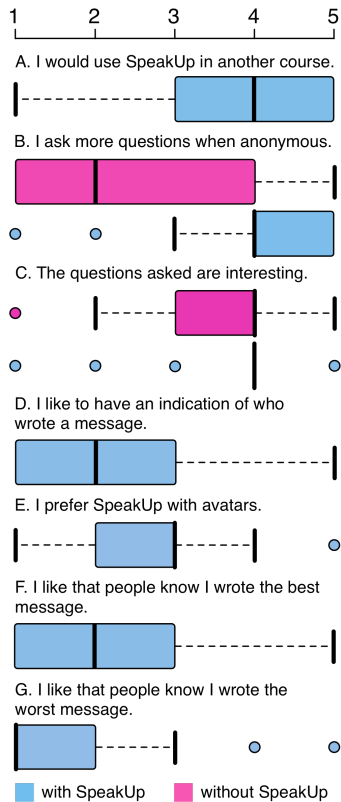
Figure 4: Box plot of the survey results (Likert scale: *'1 − Strongly disagree'* to *'5 − Strongly agree'*) (the •'s are outliers).
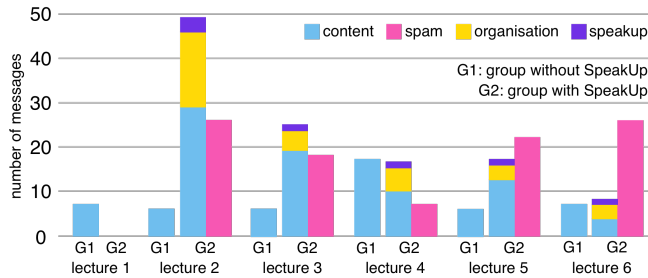
Figure 3: The categorized interactions per lecture and group.

One can argue that the difference in group size (G2 is double the size of G1) should affect the number of messages in Figure 3, since one might expect that more people create more interaction. However, research [3] shows a significant negative effect of class size on the amount of student-teacher interactions. This implies that without SpeakUp, there should be less interaction in G2 than in G1. This prediction somehow strengthens our results, as G2 demonstrated more interaction than G1.

Anonymity. Our assumption was that through anonymity interaction would increase. Although Figure 3 shows that SpeakUp increases interaction, our survey further inquired about the reason. Question B in Figure 4 was asked to both groups. G2 with SpeakUp prefers anonymity when asking questions, while G1 seems to need less anonymity. Furthermore, the survey questioned the use of avatars to provide some identity cues. Overall, students were not really interested in being able to identify other messages of an author (see question D in Figure 4) and they would prefer to be completely anonymous when asking the question with the best or worst score (see respectively question F and G in Figure 4). Ultimately, students did not prefer SpeakUp with the avatars over full anonymity (see question E in Figure 4). We believe the

use and impact of avatars requires further investigation.

Ratings. A substantial amount (47%) of the interactions are spam. SpeakUp employs social rating to filter interesting content. Spam messages sometimes received very high scores, although they are totally unrelated to the course (e.g. soccer related messages after the national team from the neighboring country won). We were unable to find strong correlations between the score and the categories. But, when asked if the questions were interesting, both groups gave a positive answer (see question C in Figure 4). We could not find a significant difference between the means of G1 & G2. This indicates that even with spam, the interestingness is not affected.

Temporary social media. To assess the time dimension in our *here & now* assumption, we asked both G1 & G2, how long they prefer to keep the interaction traces. Interestingly, students who did not use SpeakUp preferred long data retention, while SpeakUp users would rather prefer to keep the data shortly (see Fig. 5). This result also allows us to fine-tune the message expiry time, plausibly a period of a few days might please most users.

Usability. We applied the SUS survey [1] and achieved a mean score of 83, which indicates good to excellent usability [1]. Furthermore, SpeakUp was perceived as useful by the students (cf. the high median in A of Fig. 4).

Conclusion and future work
Overall, we can conclude that SpeakUp encourages more classroom interaction. Its *here & now* philosophy seems to appeal. The geo-bound chat rooms eliminate setup costs. SpeakUp users (G2) valued temporary social media more than the control group (G1). Conceivably, one has to experience temporary media before one understands the
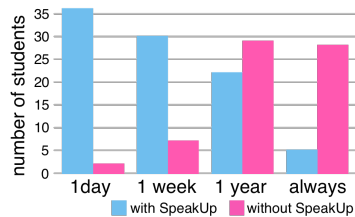
Figure 5: Student preferences of the duration of data retention of SpeakUp.

benefits. Students prefer to pose questions completely anonymously within a confined group which encourages participation. This feeling of anonymity can depend on the group size (smaller → less anonymous). We started investigating different levels of anonymity that might provide a balance between engagement and potential spam. Our approach with avatars was not wholeheartedly welcomed and requires further investigation.

Apart from course related questions, students also used SpeakUp as a backchannel. Blatchford et al. [2] found that students in large classes are more likely to interact with their peers, and less with the teacher. Furthermore, such students are often engaged in more task-related and social interactions, and also more off-task behaviours. Additionally, the *thumbs up – thumbs down* rating system indicates a level of interest – whether it is for a smart question or a witty joke. Student interest is not necessarily a spam filter nor reflects the teacher interest. Besides, irrelevant content can still provide a wider course context; or even a student mood indicator for the teacher. To combat real spam, SpeakUp could try to introduce a spam report function to differentiate with interestingness.

Our experience with SpeakUp led to several open issues that are still unresolved by current research, and that we believe are worth exploring. In the coming months, we want to compare a classroom with a conference setting, where the audience interacts with the speaker via SpeakUp. Additionally, we want to further analyse the rating behaviour of the students to better understand the level of interest versus real spam. Related to this we want to investigate whether a public display improves interactions or acts as distraction.

Finally, we would like to understand whether SpeakUp changes behavior. Does the social validation of receiving high scores on messages encourage one to interact directly? Typically gender inequality exists among questioners. Does SpeakUp alleviates this inequality through anonymity?

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