

From structured to unstructured learning via a technology-mediated learning framework

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Abstract

In this paper we propose a simple technology-mediated framework for course design. By way of a group project, students were asked to discuss issues about their local culture using their second language. We illustrate that this type of out-of-class learning stimulated the students to use a technologically enhanced learning environment by engaging them with meaningful communication and we show instances from the project data where the following areas were covered: content, collaboration, and learner autonomy. Smartphones, when used appropriately, can be a useful tool for content and language learning.

Keywords: Technology-mediated framework, out-of-class learning, smartphones

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1. Introduction

With the restricted time available in classroom-based syllabi teachers often encourage their students to look for ways to practice their learning outside of the classroom context. This applies to both content and second language learning. Not surprisingly, in the past 20 years or so the use of the Internet has been seen by teachers as an excellent source for exposure to authentic contexts and an additional language learning tool. For instance, in second language learning contexts where it is difficult, or impossible, for learners to have access to native-English speakers, or any other form of authentic texts, the Internet comes into its own as a lot of the material on the web is prepared for native-English speakers, or for international consumption. This aspect of authentic texts, combined with pictures and other semiotic devices, makes the Internet a highly motivating resource for learners.

New technologies, especially mobile technology, are being used in educational contexts worldwide as they offer personalized, location-free, cheap, authentic, deep and synchronous learning experiences [1]. In addition to these factors, the pervasiveness of smartphones, for instance,

allows us to consider using this technology for educational purposes. However, one of the major reasons why mobile learning has not been normalized, internationally speaking, is the lack of sound pedagogical frameworks to integrate the use of smartphones into learning purposes, especially in foreign language learning contexts. This may be due to teachers' reluctance to accept the use of personalized technology in their classrooms and it is not uncommon to find a 'no cell-phone' policy in many classes around the world. The uncontrollable nature of what students may access could be the issue here, but when projects are set up that link in-class learning with students' out-of-class learning we find that there are benefits to be had via a technology-mediated learning framework.

In this article, we aim to address the lack of a pedagogical framework for mobile learning. First, we review some of the key concepts in online learning, including content learning, collaboration, and learner autonomy. Based on this discussion, we propose a framework for integrating mobile technology in linking classroom and out-of-class learning. In the third section, a recently conducted mobile learning project is briefly presented to illustrate the idea of our framework. Finally, we conclude the paper with implications for future research.

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2. A Technology-mediated Pedagogical Framework

The objective of most tertiary level learning is to acquire new knowledge, and sometimes to apply that knowledge practically, or in case studies. The pedagogical approach often used in this endeavour is lecturing. The lecture, though, has been criticized as only a transmission mode of teaching/learning, with little or no emphasis on checking the depth of the knowledge acquired. Over the past 40 years there have been attempts to move away from this method of teaching, but recent results from a large-scale survey in the USA discovered that in STEM disciplines over 50% of classes were still taught using ‘conventional lecturing’ [2], and similar findings are seen in the business studies [3] and the humanities [4]. The main reason for a reliance on lecturing is large class sizes which do not usually lend themselves to more interactive methods of teaching. Furthermore, knowledge transfer may also be interrupted when students are second language users. As a way forward, various pedagogical approaches have been advocated in how best to teach content and language. Coyle [5] suggests a framework for the development of such a pedagogical model. This framework has had an important impact on content-based learning (CBL) and how we conceptualize the aims and objectives of course design. The 4C Framework proposes that CBL seeks to develop students’ abilities to handle *content*, *communication*, *cognition*, and *culture*.

Content has to be inherently interesting so that it motivates the learners. Therefore, the choice of content that can be sustained over a period of study (sometimes one full academic year) is of prime importance. *Communication* (which deals with the lexico-grammatical aspects of language, skills and strategies) can only be a focus of learning when the tutor makes it so. Without clear instruction and good linguistic models students may fail to comprehend the content. *Cognition* is the process of taking students outside their comfort zone and challenging them to think critically or creatively. This can usually only be encouraged by carefully structuring the content introduced to the learners and presenting them with new ways of conceptualizing topics. *Culture* can be realized in a content based class in two ways: culture with a small ‘c’ is when students with different disciplinary backgrounds or even junior vs senior students work together; culture with a big ‘C’ is realized when students from different cultural backgrounds (e.g., Chinese and American) work together and develop appreciations of each other’s ways of thinking and doing things. Although Coyle’s pedagogical framework may be operationalized within a lecture format, it is more effective with small classes, or when students work in groups.

One way in which students can work together on co-constructing their understanding of content is via mobile-mediated learning environments. The Internet has allowed learning to move from the structured classroom environment, where the teacher is usually in charge of all aspects of learning, to the unstructured learning environment – where learners usually make their own decisions about

what, when, where, with whom, and how much to learn [6]. Unstructured learning online is relevant and meaningful for digitally aware students as it connects with the learners’ ‘other’ lives: family, friends, and work. In their review of the Internet and language learning, Warschauer, Shetzer and Meloni [7] state that when students work collaboratively on internet-based projects the following characteristics are evident:

- students gradually learn to take greater levels of responsibility for their own learning;
- language integrates with technology in an authentic context to allow for ‘purposeful communication’;
- the teacher adopts the role of guide and facilitator;
- the outcomes of the students’ learning are not only shared with the teacher but also with wider audiences.

As Warschauer, Shetzer and Meloni [7] rightly point out, the role of the teacher in such unstructured learning environments should be carefully considered as teachers need to adjust their roles, for instance: instructor vs facilitator; teacher as decision maker vs group as a decision maker; summative assessment vs formative assessment. Although the teacher’s role changes in technologically-mediated learning environments it is still essential as it helps students’ communication move forward, and has the advantage of directing attention to certain learning points [8]. To some extent, a technological environment promotes a degree of autonomous learning, but students still need guidance to help link their structured and unstructured learning spaces. Even when most of the younger generation can be categorized as digital residents [9], teachers may need to provide content, technical and affective support in order to ensure more effective learning processes and outcomes [10] [11]. Students also need to consider their roles as learners in a technologically-mediated space as they often work with others in a collaborative fashion.

Collaborative learning, which already has a well-defined research body of work, is defined as students learning together, sharing their knowledge, and helping each other develop their language skills. When students learn in this way they develop their inter-subjective epistemologies – that is, the group becomes the learning agent [12]. When learning collaboratively, students may change their ideas or acquire new knowledge from their group mates. Kukulska-Hulme and Viberg [13], similarly, remark that collaboration “create[s] opportunities for ... building new knowledge and relationships inside and outside the classroom”. In this way, students move from unshared to shared information [14], and a Community of Learners [15] is established. A Community of Learners “...is based on the premise that learning occurs as people participate in shared endeavours with others, while all playing active but often asymmetrical roles in sociocultural activity”.

In order for collaborative group work to be successful students must be aware of elements of group cooperation and they must understand: the stated goal of the collaboration; the benefits they get by working together; the stated objectives of their learning; how to check each other’s performance and give relevant feedback; and the importance

of accepting collective ownership of working together [16]. As learners are social beings whose cognitive development is enhanced through their social interactions with each other [17], the collaborative nature of working together is central to its success as a learning tool. Collaboration enhances the students' learning experiences as it creates authenticity of texts, audiences and purposes [13]. Collaborative learning is reinforced when students are allowed to exercise their agency in choosing their topics; deciding how to collect and share information; and the roles and responsibilities they wanted to have in their Community of Learners. This often leads to students' becoming autonomous learners.

Driven by educational, political, and personal reasons [18], learner autonomy "...is a complex and still not well-understood concept as it changes depending on a host of factors: age, gender, first-language, educational background, motivation, desires, needs and wants" [19]. Having said that, we agree with Dam, Eriksson, Little, Miliander and Trbbi's [20] definition that learner autonomy: "...is characterized by a readiness to take charge of one's own learning in the service of one's needs and purposes. This entails a capacity and willingness to act independently and in cooperation with others, as a socially responsible person." Within this quite wide definition we see that students are given responsibility for their learning and work with others to construct meaning that is relevant to their roles in society. Learner autonomy relies on students developing their critical and creative thinking skills and these are not limited to the structured classroom learning environment. By encouraging students to extend their learning outside of the classroom the tutor encourages them to take more control over their learning [21] [22], and engage in exploratory and interpretative learning activities [10].

In recent years, researchers have put forward some well-designed learning frameworks specifically related to mobile technologies. For example, Wong and Looi [23] proposed ten dimensions in constructing a seamless mobile learning experience for learners. M. J. Wang, Xiao, Chen and M. Wang [24] proposed a mobile learning model, integrating Location, Technology, Culture and Satisfaction (LTCS Model). Based on the model, they further provided five design principles, including mobility, interactivity, knowledge construction and sharing. Similarly, Churchill, Fox and King [25] developed a RASE framework for supporting mobile learning. The framework offers insights into student learning from the planning (Resources), learning (Activity, Support), to the final Evaluation. In 2018, Wu [26], adapted Wen's Production-Oriented Approach (POA) by extending it to a mobile technological environment and attempted to offer students a transactional learning experience, i.e. a transformation from inert to active knowledge. Building on these design principles and relating our framework to language learning we developed the new model with learning resources, support, design and culture in mind (Figure 1).

In developing a suitable pedagogical framework that allowed our students to expand their knowledge about Chinese culture while using their second language, we combined the themes of Content, Collaborative Learning,

and Learner Autonomy, and asked the students to engage with a technologically mediated learning space (WeChat) with some guidance from their tutor (Figure 1). In the rest of this paper we expand on these notions, with examples from students' data, to show the success of such a pedagogical framework.

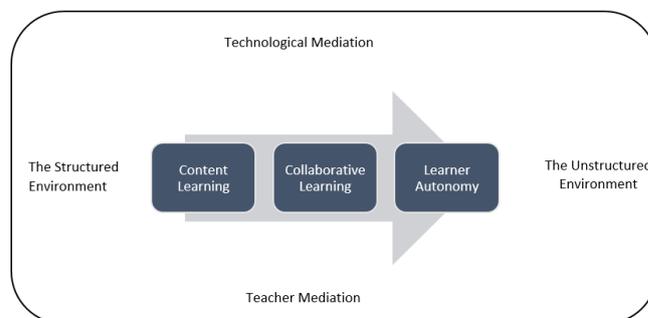


Figure 1. A technology-mediated pedagogical framework

3. Mobile-assisted language learning and WeChat

Mobile-assisted language learning (MALL) has attracted extensive attention in educational research and is now one of the most extensively researched strands in mobile learning. Various studies from different regions have suggested that mobile technology can be better leveraged to develop the four basic language skills [27], vocabulary learning [28], cultural learning [26], critical thinking [29], and learning motivations [30].

Among the various free apps on the market, WeChat has become the most popular communication app to almost every young Chinese citizen. According to the Tencent website, WeChat has attracted more than 900 million users in the Chinese-speaking community. It should be noted that WeChat is currently available in 18 languages and thus non-Chinese-speaking users use it as well.

With the pervasiveness of WeChat in China, the educational use of it has witnessed an increase in the past three years. In 2015, Guo, M. J. Wang and Sun [31] developed their pilot study of a learning management system on WeChat in China. By integrating the various functions of WeChat, for example, QR code scanning, students were supported to increase their autonomy in their English language learning. Y. Wang, Fang, Han and Chen [29] organized a WeChat tandem learning project with groups of Taiwanese and Australian students. Drawing upon the Community of Inquiry framework, they found that cognitive and social presences were facilitated by teaching presence. "[E]ffective task design, guidance on the side, and intervention when problems arose" are essential in moving student interactions to a deeper and more advanced level. In 2017, Xu, Dong and Jiang [27] conducted a one-semester WeChat study with the focus on providing oral corrective feedback to 35 Chinese students. Findings showed that

students appreciated the chance to get more detailed feedback through WeChat from their instructors. However, as the authors pointed out, the extra-curricular project added a heavy workload to the teachers and thus future research should encourage and train peers to give feedback to each other. Very recently, Jin [32] reported her organization of two groups of students (from the USA & China) via WeChat. Focusing on the affordances of WeChat, she found that WeChat is beneficial to the practice of a foreign language and increased the authenticity of interactions. However, one major caveat of the study was the lack of pedagogical structures in this telecollaborative project. Relying on students' self-initiated discussions, the study may misguide the reader by leaving a false impression that learners are able to organize learning by themselves as long as they are situated in a technological environment [8] [19]. Thus, most of the reported studies point to a lack of a pedagogical framework for WeChat-enabled learning, as such, this paper attempts to fill this research gap by presenting the results from a case study into the use of WeChat.

4. Case study

This section exemplifies the proposed learning framework by presenting an eight-week case study conducted in a Chinese university. It should be pointed out that the case study is chosen from a larger longitudinal research project. Some other preliminary findings can be found in Wu [26] [33].

The case study aims to extend students' learning beyond the traditional brick-and-mortar model by linking students' learning with their use of their smartphones outside of the classroom. The instant messaging app, WeChat, was adopted and a chat group was formed with nine Chinese participants (eight students + one tutor). Although all the student participants were studying in a Business English undergraduate program, four of them came from a year-1 cohort and four of them were in their second year of study. The purpose of inviting participants from different cohorts was that students with different years of school may have different perceptions and experience and knowledge (the small 'c' of culture), and thus it was hoped that the participants would be able to scaffold each other's language and content learning through their online interactions.

4.1.A mobile learning community based on the framework

In this section, we elaborate on the design and the implementation of our mobile learning project through the lens of content learning, collaborative learning and learner autonomy (Figure 1). The other four pedagogical constructs: technology mediation, teacher mediation, the structured and the unstructured environments are integrated under the three main subsections. Some data from participants' post-project interviews and chat transcripts are presented as evidence of how the conceptual framework enabled students'

participation and knowledge building in an informal mobile learning community.

4.1.1. Content learning

The project was designed as a seamless integration of content learning in the structured classroom environment to informal knowledge sharing in the unstructured technology-mediated environment. From our conversations with the participants, we found that the students were dismayed by the traditional lecture style adopted by their professors when attending courses on Chinese culture in their university. This frustration was compounded when we realize that the course was a credit-bearing language course, therefore students wanted opportunities to practice their language skills and try for high grades towards their GPAs. Although the tutor teaching the course used English as the medium of instruction, and the course book was written in English, students said that their instructor would use a lecture format for over 90% of the 80-minute class time. Another frequent comment from the students was that the content was considered boring as it did not seem to relate directly to their lives. Therefore, we decided to link a mobile discussion group to their compulsory course, A Glimpse of Chinese Culture, with the idea that knowledge should be experienced and co-constructed, rather than simply taught and memorized [8].

Seeing the students' frustrations when talking about this course, we designed a technology-mediated space for them to have weekly discussions on topics related to their course on Chinese culture. The mobile discussion community was established to provide an authentic learning experience by relating topics about Chinese culture directly to the students' lived experiences. First, the discussion topics were generated with a consideration of students' current learning and future workplace needs. As Business English major students, they were expected to be well aware of both Chinese and foreign culture in order to become globalized employees in today's competitive workplace. Second, the discussion questions were deemed authentic as 1) students had a high chance to encounter such situations in their interactions with foreign friends or business partners (e.g., introducing Chinese cuisine in English). 2) Students were not learning by their own and they had an authentic audience as were encouraged to give feedback to each other's responses [34]. Third, we tried to update and localize the mobile discussion by asking students questions related to their personal lives, and so we took account of the *context* of learning [1].

Chinese food was the topic of discussion in week 2 of the online chat. This topic is found in the students' course book but it was presented in a descriptive way, that is, students were only informed about the English names of Chinese foods. It was seen as such a common topic that many teachers tended to overlook the uniqueness of describing local cuisine and the different ways people have of talking about food. Our interview data revealed that some students made use of this opportunity to review what they learnt from their course and then moved beyond their classroom learning by searching for additional information online in

order to personalize their comments. One student explained in her follow up interview that she spent a considerable amount of time reviewing the food chapter of her course book before the discussion, something she would not normally do. Meanwhile, other students in the group encountered problems in finding the right vocabulary to express themselves accurately as they had never previously tried to introduce their local food to each other. Thus, some made use of the Internet to look for new vocabulary and unfamiliar expressions, illustrating their independent learning. Below is a quotation from a year-2 student in the post-project interview:

I am deeply aware of my problem that I had hard time expressing my culture in English. I find Chinese culture is so broad and profound. (S1, year-2 student)

Thus, through the link of classroom and out-of-class learning, we attempted to provide students with more chances to reflect on their learning and possibly transform their inert knowledge acquired from class to more active knowledge by using it in real-life situations [13].

4.1.2. Collaborative learning

Online collaborative learning reduces students' cognitive load as the diverse modes of communication including texts, pictures, emoji and video clips are constructive for learning. M. J. Wang and Shen [35] argue that in an informal collaborative learning environment, "learners can acquire knowledge to make decisions and to solve problems in real situational contexts". In the current mobile learning community, learners made use of different modes enabled by WeChat, in order to convey meaning and express emotions. In week 5 students were prompted to discuss Chinese and Western fairy tales, to compare and contrast any cultural differences. Similar to other weeks of discussion, some background reading in the format of hyperlinks and discussion questions were shared with the group a few days before the discussion. Students were expected to browse through the questions and materials in order to prepare some ideas to contribute to the discussion. Figure 2 below showcases a short episode of student discussion about Cinderella, by Brothers Grimm, which was different from the Chinese version the students were used to. S6 initiated the conversation by posing a question and subsequently, the group exchanged feelings and attitudes regarding the Grimm's version of the fairy tales in Figure 2-A. In Figure 2-B, S1 and S8 confirmed the cruel version of Cinderella by stating that they read the 'dark story' before and the teacher/researcher continued to facilitate the student discussion with a follow-up question. Then, in Figure 2-C, S6 employed a WeChat sticker to visualize his feeling and strengthen his message "i am still a child" from Figure 2-B. It should be pointed out that S6 was trying to play with the English language by making a joke as the corresponding Chinese expression was widely used by youngsters on the Internet. As can be seen from the figures, five students and one teacher were involved in this short exchange. Without much teacher intervention, students were willing and able to

contribute to the topic, which is different from their accustomed role as passive learners in the class. Although their conversation seems a bit simple, one important step for learners for using WeChat in this way is to develop their fluency in using their foreign language.

In sum, apart from the multimodal way of communication, their conversations also demonstrated that the Chinese participants scaffolded and attempted to work collaboratively to construct meaning. This is similar to the findings of Hafner and Miller [34] and Miller [36] reporting on a digital storytelling project at a Hong Kong university. They found that micro-learning communities allow students to collaboratively work towards the end product, in terms of linguistic, content and technical knowledge.

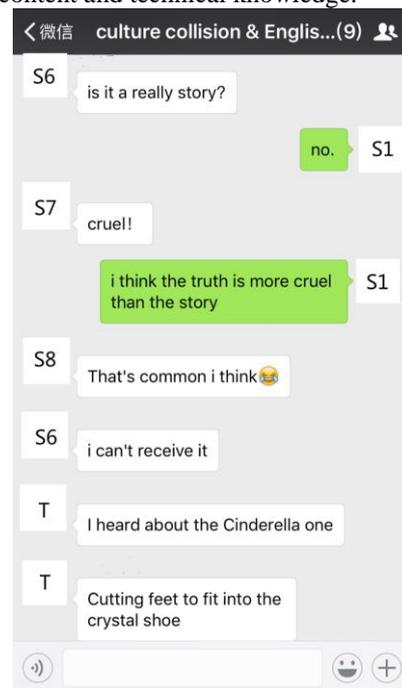


Figure 2-A. Discussion about fairy tales

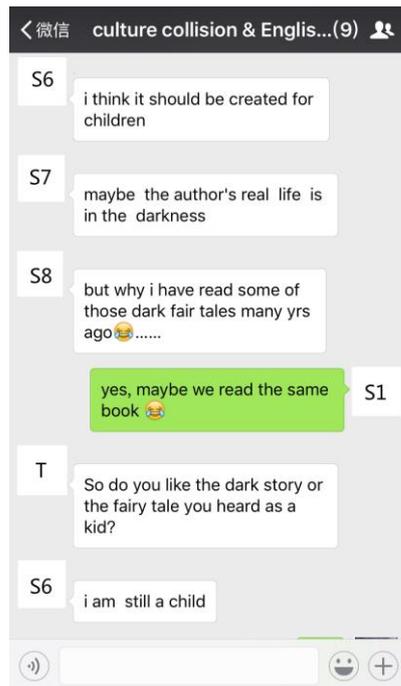


Figure 2-B. Discussion about fairy tales



Figure 2-C. Discussion about fairy tales

Different from most previous mobile learning studies, which involved student collaboration, the case study presented here included a teacher/researcher as a participant/facilitator throughout the project. The teacher/researcher, i.e. the second author, viewed himself as

a participant, friend, guide, facilitator and teacher when he reflected on his roles in the chat group [33]. Similar to the findings of M. J. Wang who investigated Chinese, Korean and American learners' perceptions [11], who were taking online courses, of their power distance with teachers, participants in this mobile community generally agreed that the teacher/researcher's participation was necessary as they needed guidance and facilitation (e.g., S2 excerpt below). However, contrary to M. J. Wang's results, our participants explained that they did not view the teacher/researcher as an authoritarian figure. Possible reasons are that 1) the teacher/researcher only recently graduated from university and shared similar interests with the participants, 2) the project was not credit-bearing, and 3) the participants gradually attuned to the teacher's presence given the longitudinal nature of the community.

The teacher played a positive role in monitoring, guiding and facilitating our discussion. (S2, year-2 students)

4.1.3. Learner autonomy

Current technologies have the potential for providing learners with authentic and communicative environments that enable them to feel empowered and thus increase their autonomy and become more active learners [37] [38]. One key component of autonomy, according to Littlewood's [39] classic autonomy model, is *willingness* (motivation and confidence).

In the post-project interviews, participants described their learning experience, which reflected the concept of learner autonomy. When asked 'how much time did you spend preparing for the weekly discussion?', S5 (year-1 student) mentioned that she usually spent over 30 minutes in preparing herself and she gave an example that she would carry out extra online learning, if the topic was appealing to her. Later, the participants were asked to rank the most important motivating factors for them to engage in such projects. Results showed that 1) interesting topics, 2) personality traits, and 3) preparation time are the three top contributing factors to student participation. 1) The choice of discussion topics seems to be essential in mobile learning communities. Recently, O'Dowd [40] argues for an inclusion of difficult or controversial topics (e.g., politics) in an online discussion, instead of traditional and safe topics (e.g., the weather) that are extensively discussed in classrooms. However, Pierson-Smith, Chik and Miller [41] found that when given clear structure and encouragement to go beyond a basic display of knowledge, students can become highly creative and critical of everyday topics: football, fashion and food, in their case. The topic is important, but the ways in which students are encouraged to talk about relevant issues related to the topic is perhaps more important. 2) Personality traits are also deemed as important in out-of-classroom learning. The current participants believed that one major obstacle to active participation is a person's laziness. In the Chinese Confucian culture, diligence is viewed as a virtue and is propagated in school education, and some students in the project commented on one student's 'laziness' in joining the

discussions [26]. 3) Offering enough preparation time to learners is necessary as in this mobile learning project students not only have to attend to the cognitive demands from unexpected conversations about the topics, but they also have to do this in a foreign language - which can take more time to process and construct a reply.

In terms of confidence, S5 mentioned that she became more confident and comfortable in using English to chat throughout the project. She depicted her previous learning experience as a vicious cycle that the more worried she was about her grammatical mistakes, the less often she would use the language. This is echoed by M. J. Wang who also points out that Asian students tend to “think it through” [11] before speaking or sending messages in their foreign languages. However, as this mobile community was not credit-bearing, S5 felt less stressed regarding her accuracy of language use. It should be noted that the Chinese examination-oriented culture has serious backwash effects on its learners [26]; and so learners are often characterized as passive consumers instead of active producers, and therefore, treated in class as such [10]. To this end, educators have been advocating for more formative assessment instead of the high-stakes summative tests. One more point about increasing confidence in learners is the role of mutual trust between teachers and students, and among students themselves [33] [42] [43]. As this case study is from a longitudinal research project, the participants, in addition to knowing each other in various offline school activities, were able to develop a certain degree of mutual trust as the mobile community developed.

5. Conclusion

This paper proposed a technology-mediated learning framework and extended learning beyond the classroom by integrating content learning, collaboration and autonomy. The students’ reactions to participating in this type of learning were mostly positive. By way of their micro-community the learners became engaged in exchanging

information about their local culture with each other, and they did this using their second language. They were also able to link their structured classroom learning with their unstructured online learning via a mediated space. This case study is one attempt to add to our knowledge about how students use technology in content learning. However, there is a bigger research agenda to be considered in this area.

In terms of future research, we suggest five possible directions for educators and researchers. First, participants in our case study mainly drew upon the textual mode of communication. Other modes of semiotic and audio communication need to be explored and promoted so that learners make use of the whole range of resources available to them [44]. Second, as we often use multiple technological tools in real life communication (WhatsApp, Facebook, email), different technologies can be combined in out-of-class learning. Presently, we still lack knowledge of how students move between different technological tools and how this could be used by educators to support self-regulated learning [13]. Third, cultural factors in mobile communication and learning are rarely reported on. How different cultural traits, both small culture and large culture, influence the learners’ perceptions and use of social media is another topic of interest and future research. Fourth, the teacher’s participation in mediated learning spaces needs to be studied in a more comprehensive manner. How teachers perceive and transform their roles and identities in informal learning projects is, as yet, mostly unknown [45]. Fifth, much more attention needs to be given to how students use strategies in their informal mobile learning: what strategies are transferred from classroom learning, and which are new and only used in a technology learning environment need to be examined.

Technology has a huge impact on our students’ social lives nowadays. Therefore, we need to develop a more extensive research agenda into how technology can best be used in our students’ educational lives also.

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