

Integrating mLearning Language Application into University Course Content

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ABSTRACT

The idea that education can be considered as design science was brought up in the 1990s in order to bring the educational research from an experimental classroom into practice (Laurillard, 2012), at the time when the computers were introduced in educational settings. After that a number of theories focusing eLearning have arisen. Technologies are constantly changing, and new more pervasive mobile technologies increasingly influence individuals' everyday lives. Among other things this influences humans' social learning practices, and becomes an even more challenging task for educators. Design is critical to the successful development of any interactive learning environment (Mor & Winters, 2007). Mobile technology, as most other IT, is not primarily an educational phenomenon. It is a social phenomenon that happens in different parts of the world and in different ways. As emerging mobile technologies afford many advantages, such as flexibility and user-friendliness, researchers are exploring how to use them to support language learning (Huang et al., 2012). This paper presents a prototype for a cross-platform mobile language learning application developed for an online language course at Dalarna University in Sweden. The prototype is developed in order to support beginner second and foreign language learners in their vocabulary, listening and grammar learning. Considering mLearning to be a product of sociotechnical construction, the study applies a Design Science approach.

Author Keywords

Mobile learning, mobile assisted language learning (MALL), language learning application, cross-platform development, design-science research (DSR), higher education

INTRODUCTION

Higher education (HE) has to adapt to the widespread adoption of popular technologies such as social media, social networking services and mobile devices (Kukulska-Hulme, 2012). Personal technologies, in particular emerging mobile technologies become a significant part of users' social and learning landscapes. Technologies and tools are "important drivers of education, though their development is rarely *driven by* education" (Laurillard, 2012, p.2). Most technical artifacts have initially been invented for business and leisure purposes.

Mobile technology, as most of the other previously created IT artifacts, is not primarily an educational invention. It is a social phenomenon that progresses in different parts of the world and in different ways. Mobile learning (mLearning) technologies include some specific characteristics. They are not confined by institutionalised spatial and temporal restrictions of formal education as the mobility of the devices makes it possible to bring learning outside the classroom. Mobile learning is distributed and related to individuals' everyday experiences occurring in both formal and informal environments, where the notions of *outside* and *inside* are not distinct. Hence, mLearning is seen as a product of sociotechnical construction, which has to take into consideration the individuals' physical and social environment, as opposed to designing and controlling it, which can be done in the classroom. This makes mLearning more than a special case of eLearning; it is rather a combination of the pervasive mobile technologies and individuals' desire and need to improve themselves by learning more, and building new skills and competences (Stead, MobiMOOC, 2012).

In response to the increasingly mobile and networked society, "higher educational institutions will need to respond by providing more online learning, online content and more effective tools to find and use this content" (Kukulska-Hulme, 2012, p. 247). Learning with mobile technologies is not just about the delivery of learning content through mobile devices, the users' focus have to be directed towards learning *about* these technologies in terms of reflecting on their use in teaching and learning (Kukulska-Hulme, 2012a). This will contribute to the understanding of the transformational nature of mobile technology that brings with it changes not only in procedures – how we do things – but also in our perceptions of what is doable or not, e.g. in terms of accessing distant materials and people (Viberg & Grönlund, 2012). Mobile technology has unexplored pedagogical possibilities and potentials, especially when it comes to language learning, as learners use language in its different forms constantly, where access to e.g. social media, e-books, online applications of various kinds etc. through mobile devices becomes an integral prevailing practice in their everyday lives. Language learning has moved to the forefront the developments in mobile learning, enhanced by the availability and profusion of free and less expensive mobile applications, as well as reinforced by a "significant worldwide demand from developing economies where learning a language is seen as a means to improve employment and trade" (Kukulska-Hulme, 2012b, p.3). Language is perceived to be a key tool of access to other subjects and jobs, as we constantly use language in its oral and written forms and even the body language when trying to adapt new information. Currently there is a growing number of mobile language learning applications available, but they often lack a clear structure and straightforward interfaces so as to efficiently integrate them into an institutionalised language course. They are also often

developed for some mobile devices and operating systems and not for others, which makes systematic integration problematic. In order to provide a pedagogically sound access to formal educational content through mobile devices, educators and mobile developers are challenged to develop new methodologies that make mLearning content accessible across between platforms and devices types, and provide solutions to various technology challenges, some of which are unique to mLearning (Stead, 2012).

CASE SETTING

Language courses at Dalarna University are often offered as online courses which allow students to study from any geographical place in the world. Such an online form of teaching and learning presupposes regular scheduled synchronous online seminars, which are held using the Adobe Connect platform. Classes are divided into smaller groups, which often meet once or twice a week, depending on the course pace. Meetings are commonly teacher-led, but sometimes student arranged without teacher presence. Furthermore student-teacher, student-student, and student-content interactions are also supported through the LMS, *Fronter*, and by e-mail and chat communication. All in all, there is extremely limited time for synchronous interaction, which makes such courses attractive for adult students, who frequently combine their studies with family life and a full-time job.

Students spend almost all their time in environments not set up for formal learning activities. They struggle to make room for their learning and try to squeeze in learning activities among other daily routines. This means that learning activities will be of very different kinds. Apart from the (few) formal meetings with teachers, students might sometimes arrange longer study sessions at home, sometimes try to use a five minute break at the office, in the bus to catch up on something, e.g. by looking up something they have forgotten, sometimes they will catch the opportunity to learn, e.g. by looking up the translation of a street sign. Integrating such impromptu learning occasions with a formal course is a challenge that has to be overcome for a course designed this way to be successful (Hall, 2009). One task for arrangers of formal education is to try to make students use all these learning opportunities by providing tools to be used at the various occasions. Several researchers (Dabbagh & Kitsantas, 2012; Johnson et al., 2011; McGloughin & Lee, 2010) discuss the notion of Personal Learning Environments (PLEs), platforms for integrating formal and informal learning. PLEs considered in several dimensions: a technology, a pedagogical approach which is student-designed in terms of the learners' aims, and a student's learning approach (Dabbagh & Kitsantas, 2012). Often research on language learning is purely placed into the frames of formal learning environment with the given instructions and within experimental settings, but what is also needed to be taken into consideration is language learning practices occurring in informal environments; how these informal contexts contribute to and influence the individual's language learning process.

THE PROPOSED PROTOTYPE

In this paper we present a prototype for a cross-platform hybrid language learning application, the *Seamless Open Language Learning (SOLL)*, which is designed to contribute to the construction of language learners' PLEs, serving as a bridge between formal and informal learning environments. The suggested prototype aims to support foreign and second students in their language learning at the beginners level. We focus on the beginners level, as this level is seen to be the cornerstone for the learners in their choice to continue to study a language or not. This is especially significant in the context discussed above, where physical and even online synchronous interactions are very limited, and students need other forms of learning support. The aim is to create an application structured so that it can be applied also for similar language courses at the beginner level, in the similar settings. The prototype is planned to be integrated into formal educational settings, at an online language course at Dalarna University during Autumn 2013. The application supports learners' individualised situated learning, rather than collaborative learning, thus supporting language learner's self-regulated learning, which is most convenient for the chosen context. In the following we describe some features of the prototype.

Student-Content Interaction

The main focus of the prototype is to support students in developing their communicative language competence. The prototype's structure emphasises vocabulary learning. It also highlights language structure/grammar learning, as well as supports the development of reading and listening skills. Listening is intertwined into vocabulary, grammar and even reading scenarios. The prototype's structure allows students to choose if they want to follow the course from the beginning by performing the proposed exercises in a systematic order, adapted to teaching curriculum (Lave and Wenger, 2009) or follow a *learning curriculum*, i.e. follow situated opportunities for improvised development of new practices (ibid, p.97). In the latter case, students have the opportunity to practice specific parts, e.g., vocabulary or structure, in the order they prefer. They can easily click on the 'back' button and come to the part they want in order to practice (concrete visual examples will be available at the conference time) without being forced to go through all the suggested scenarios. The suggested system offers reading and listening practices in the third structural part, *dialogues*. A dialogue may for example require students to first read a number of phrases and then put them into a logical order. After having placed the sentences in the correct logical order of a dialogue they can listen to the audio recording of the suggested text. The prototype offers a thematic content entrance.

Student-Content-Teacher Interaction

Student-content-teacher interaction is provided indirectly through the information available from the server for the course instructors. This information is registered as soon as the user is connected to the server. Usage statistics include results of all the passed or failed tests/quizzes, and the amount of time the application has been used per time/week/month. Such

data is collected on the end-user device and sent to the server when the device is online. There is a special PHP script on the server-side that handles this communication and stores incoming statistics data per user/per day in an SQL database.

DESIGN SCIENCE RESEARCH

The above presented prototype is developed by a Design Science Research (DSR) approach, often used in IS (Information Systems) research (Figure1). Along with the numerous approaches and frameworks to conduct DSR (Hevner et al., 2004; March & Smith, 1995 etc.), the present research is carried out based on the general methodology of DSR (Figure 1) offered by Vaishnavi and Kuechler (2008). In regard to the present research, Awareness of Problem, the first step in DSR, is considered to be an analytical step that is reflected in an earlier conducted literature review of MALL (Viberg & Grönlund, 2012) and an investigation of the students' attitudes towards the integration of mobile technology in their institutionalised language learning both in Sweden and China (Viberg & Grönlund, 2013). The results of these studies helped us to determine the problem and to narrow down the research focus in a specific context.

At the present developmental phase a tentative design of the artefact is proposed. In a next step, prototype will be tested in an online language course, to be held at the beginning of Autumn, 2013. The evaluation of the proposed prototype will include surveys, usability tests, and finally semi-structured interviews.

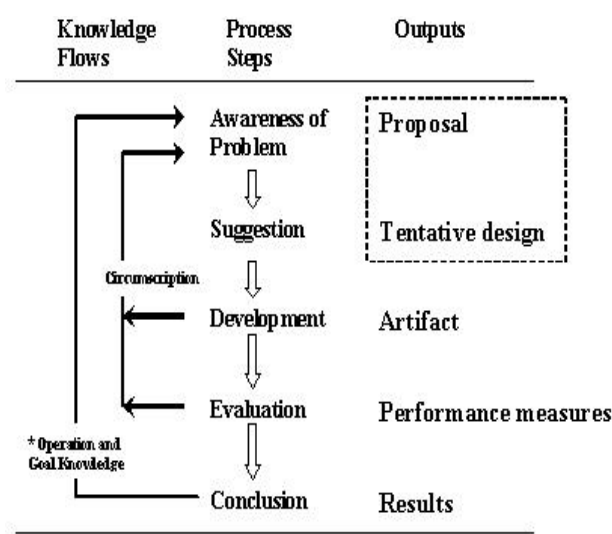


Figure 1. The General Methodology of Design Research (Vaishnavi & Kuechler, 2008)

Within DSR, researchers distinguish between Design Research and Design Science. Winter states: “while design research is aimed at creating solutions to specific classes of relevant problems by using a rigorous construction and evaluation process [...] (i.e., construction and evaluation of specific artefacts)...design science reflects the design research process and aims at creating standards of its rigour [...] (i.e., reflection and guidance of artefact construction and evaluation processes) (Winter, 2008, p.471-472). In Design Science, researchers attempt to construct frameworks and methods for conducting DSR in an affective and scientific manner; they emphasise the DSR internal process (Alturki et al., 2012, p. 320). In terms of mLearning field construction, DSR is considered to be the most suitable, as it strives not only to solve the identified problems, but moreover to create standards, patterns of DSR, which can contribute to the mLearning practice and theory building.

DSR has also recently attracted the attention of the educational researchers, who often refer to it as design-based research (DBR) or design research or design experiences (Anderson, 2005; Anderson & Shattuck, 2012; di Sessa & Cobb, 2004; Mor & Winters, 2007; Palalas, 2012). From an educational point of view, DBR is a “methodology designed by and for educators that seeks to increase impact, transfer, and translation of education research into improved practice” (Anderson & Shattuck, 2012, p. 16). Vaishnavi and Kuechler (2008) suggest that DSR in ICT fields is significantly different from the DBR in other fields as “the need for and manner of validation of research results is more emphasized in IS, human-computer interaction (HCI) [...] due to the groundings of those fields in management science, psychology [...]” (p.2). Nevertheless another IS influential researchers argue that the boundaries of DSR should be extended to include both organisational and social aspects of IS (Baskerville et al., 2007), where, among others, language learners, who make the connection to a global world possible are focused. The presented above prototype is a part of the developmental phase of DSR (Figure1). The other part of this phase, in our case, will be an integration of the prototype into formal educational settings. The most crucial and challenging part of our project and DSR in general, is evaluation (Figure1) of the designed artifact, which is planned to be implemented using both quantitative and qualitative methods in Autumn 2013.

CONCLUSIONS

We have here briefly presented a prototype designed to support and develop second and foreign beginner learners' communicative language competence in online institutionalised settings. Beyond the initial design we will follow a design science approach to test the various user tools presented here in terms of their usability and value to user-learners.

Design science is considered the most effective approach in situations where several design issues cannot be decided conclusively beforehand. This is the case concerning MALL because not only technology but also the use contexts are emerging. Users are increasingly detecting and exploring new possibilities afforded by mobile technologies and they are starting inventing new use situations and use patterns.

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