Computers in Human Behavior 59 (2016) 342–349

Contents lists available at ScienceDirect

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh

Full length article

The next generation of language labs: Can mobiles help? A case study

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ARTICLE INFO

Article history:
Received 9 July 2015
Received in revised form
7 December 2015
Accepted 9 February 2016
Available online xxx

Keywords:
Language teaching
Mobile lab
Mobile assisted language learning
Cross-platform
Usability evaluation
Think-aloud protocol

ABSTRACT

One major challenge regarding the use of today's language labs relates to teachers' and students' awareness and computer skills. Most teachers and students may not have the requisite computer skills and might soon become overwhelmed by the sophisticated functionality of today's digital lab systems. Thus, they should be provided with the appropriate training and technical support to reduce the apprehension that is usually associated with new technology. Recurrent technical problems are another shortcoming. Failure to operate the lab equipment efficiently due to hardware or software problems will inevitably cause delays and frustration for both students and instructors.

To overcome such problems in existing language labs, this paper presents a novel cross-platform mobile lab system for language learning, called Mlab. The target users of MLab are language teachers and students, and the system offers them the freedom to move around and use their own devices at any time and in any place. Therefore, this research paper presents Mlab development and evaluation through three approaches: a holistic test case scenario, think aloud and interview sessions. The results showed high usability rates and generally positive attitudes toward using the mobile lab system.

1. Introduction

Over the past decade, mobile technologies have received extensive attention within the field of language teaching and learning. This is evidenced by the increasing number of publications that discuss their potential as an educational tool, see (Ally, 2009; Duman, Orhon and Gedik 2015; Kukulska-Hulme & Traxler, 2005; Traxler, 2007; Yang, Lai and Chu, 2005).

Mobile devices are acknowledged as a delivery channel with immense potential for sustainable learning and that offers better accessibility and practicability. Although mobile technologies include tablets, MP3 players, iPods, and Personal Digital Assistants (PDAs), mobile phones are gaining momentum and are attracting increasing attention from researchers, see (Mehta, 2013) and (Burston, 2015), among many others.

Many researchers argue that the popularity of mobile phones is attributed to several factors, one of which is the relatively low cost of these devices (Crowe, 2007; Pea & Maldonado, 2006; Shin, Norris and Soloway, 2007). This indicates that there is no need for teachers or institutions to provide students with sophisticated, high-priced equipment or installations to enable the integration of Mobile-Assisted Language Learning (MALL) into their teaching environment.

Another unique feature of mobile phones is that they can be linked to what (Koole, 2009) refers to as "the psychological comfort." She suggests that "highly portable, intuitive, and transparent devices can reduce cognitive load and increase task completion rates because the learner can concentrate on the tasks rather than the tools." This feature can reduce learners' anxiety and enhance their levels of comfort and motivation.

In addition (Peters, 2007), suggests that mobile phones can enable ubiquitous learning in both formal and informal settings by reducing students' reliance on particular work and study settings. This anytime, anyplace feature cannot be found in traditional language or computer labs.

In terms of interactivity, most modern mobile phones incorporate email and short message service (SMS) capabilities. Such features provide both students and teachers with opportunities to interact easily. Browsing functionality is another advantage that

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http://dx.doi.org/10.1016/j.chb.2016.02.028
0747-5632/

allows students to access updated or specific information when needed.

According to Yang et al. 2005, the ubiquitous and multifunctional nature of today's smartphones go beyond traditional oral communication. The new technology provides users with the ability to access the Internet to search for information, exchange email messages or SMS, read or listen to books online, create and share multimedia, and even shop online. Therefore, based on the abovementioned points, the objectives of this paper are three-fold:

1) To benefit from the smartphones, which most students have at their disposal to use as a mobile language learning lab,
2) To develop a low-cost, cross-platform, user-friendly mobile language learning lab system that uses Web technologies to provide the essential functionality required by any language lab, and
3) To conduct a case study for evaluating the usability of our system using three approaches: a holistic test case scenario, think aloud and interview sessions.

Therefore, the remainder of this paper is organized as follows: Section 2 sheds the light on recent related work in three important areas of our project, namely: MALL applications, social networks and mobile language labs. Section 3 describes the development of our mobile language learning lab system using web technologies. Section 4 presents a case study that used three evaluation approaches to asses our system. Finally, section 5 concludes the paper with future research directions and suggested improvements.

2. Related work

The literature of MALL have been investigated in many recent studies, e.g (Bozdoğan, 2015); (Burston, 2015); (Duman et al., 2015). In this section, we shed the light on some of the previous research and techniques, focusing on mobile language learning. The reviewed literature describes several projects that escalated from simple to more advanced systems. Thus, we begin by presenting several ad hoc MALL applications that served particular language learning needs. Next we discuss MALL systems that employed social networks and finally we describe existing mobile language labs.

2.1. MALL applications

During our research, we found several MALL projects that were designed to fulfill the specific learning needs of language students. For instance (Huang & Sun, 2010), researchers at the National Kaohsiung Normal University in Taiwan, designed and developed an English listening exercise system that allows students to participate in English listening exercises at any time. The system consists of two subsystems: the first is a website for multimedia materials that is responsible for uploading and managing audio and video listening materials, and the second is a mobile multimedia English listening exercise subsystem that allows the students to play and complete exercises related to English listening materials. The system also offers many services, such as the provision of online listening materials, which students can download to their mobile phones and then play while they are offline. It also allows the students to organize their listening materials and discuss them with their classmates via a Q&A messaging board. Regarding system content, the listening materials are divided into five levels—very easy, easy, normal, hard, and very hard—to help the students to choose the most suitable material.

(Demouy, Eardley, Shrestha, & Kukulska-Hulme, 2011) from the Open University in the United Kingdom designed the Interactive Oral Assessment (IOA) project, which aims to evaluate the Talkback application provided by Learnosity (http://www.learnosity.com/). Talkback is a specialized tool that aims to improve listening and speaking skills; users can interact with Talkback voice response through a telephone call, iPhone application, or Skype. For the iPhone application, which is called OU Voice, the student needs to log into the application using his or her university account to view the activities. Most of the activities take the form of audio questions, to which the student can respond orally. The answer is recorded so that the student can listen to his or her answer, and this is followed by the correct sample answer, thereby enabling him or her to know whether his or her answer was appropriate. The project was evaluated by 60 students from a beginners' French course and eleven students from English for Academic Purposes course for the duration of six weeks. For data collection, the authors used a weekly online questionnaire, interviews, and the recorded feedback from the TalkBack application after each activity, forum, and email. Most of the students reported that the application was flexible, easy to access, and helped to boost their confidence in speaking.

Similarly Yang, Zhou and Ju, 2013, from EF Labs designed and developed an iOS application called Engage that helps Chinese students to practice real-time English speaking exercises. The design stage was divided into two phases. During the first—the internal test phase—the students were invited to test the system with paper prototypes in the first iteration and then to test it with usable prototypes on the iPhone. Face-to-face interviews were then conducted to gather their feedback. The second phase—the use of the external test—aimed to test the released version in the app store. The students were asked to test the application on their iPhones by logging into the system and booking a new speaking class. The main functionality of the system allowed the students to book a role-play class according to the available times. It also enabled them to download the daily topics to listen to along with synchronized text sentences and to view the associated translation for these sentences. In addition, the teacher could evaluate a student's progress by giving him or her a grade of A, B, or C and by providing suitable comments on the feedback view page. Finally, an online survey was used to explore the students' opinions regarding the use of the application.

In a recent study by Hsu 2015, he developed a video-based language learning system for handheld devices, using three levels of caption filtering adapted to student needs. The study results showed that different students require different quantities of information to balance listening comprehension and indicate that the proposed adaptive caption filtering approach may be an effective way to improve the skills required for listening proficiency. Likewise Wu 2015, developed a Basic4Android mobile app and investigated its effectiveness as a tool assist students learn English vocabulary. The app, containing 1274 English words, was designed to be installed into smartphones with Android operating system. To evaluate the app's effectiveness, two groups of students were tested: a test group using Basic4Android and a control group. Results revealed that the students using the app significantly outperformed those in the control group in acquiring new vocabulary.

2.2. Social networks

The use of social networks linked to mobile phones for language learning has gradually increased. According to a number of studies, such as those conducted by (Borau, Carsten, Jinjin, & Ruimin, 2009; Kim, Park and Baek, 2011), Twitter was classified as one of the most efficient and motivational tool for English reading, writing, and communication (Borau et al. 2009). used Twitter in a study of 98 students who were enrolled in an English course for native speakers of Chinese. The aim of the research was to evaluate the