A community-driven language app for learning maritime English vocabulary

M. D. Perea Barberá[a], Anke Berns[b]

[a]University of Cadiz. French and English Department. CASEM. 11510 Puerto Real (Cádiz), Spain
[b]University of Cadiz. French and English Department. Faculty of Arts. 11003 Cádiz, Spain

Abstract

This paper describes the adaptation of a foreign language app called *Guess it! Language Trainer*, successfully used for several years with students from a German language course at the University of Cádiz, to suit the needs of Maritime English learners. The app is based on a community-driven learning system to support students in their vocabulary learning, especially outside class. The system requires students to guess words with the help of a given context; then, to assess and, eventually, report the words and sentences they have played and later, to create and propose their own sentences for one or more words from the course syllabus. Once students have introduced their own example sentences, these become part of the learning system—hence being available to the entire learner community for peer-assessment. By promoting students to actively participate in the design of their own learning resources, the authors aimed both to pay tribute to the increasing demand of researchers and practitioners to design learner-centered environments as well as to provide a learning system that can easily be implemented and adapted to different learning contexts, taking into account students' language proficiency as well as collective learning preferences.

Keywords: MALL, learner-centered environment, community-driven learning system, peer-assessment, Maritime English6

1. Introduction

The exponential growth and development of Information and Communication Technology (ICT) around the globe, with over two-thirds of the population living in areas covered by a mobile network and ICT services becoming more affordable each day (ITU, 2016), together with the advent of handheld computer-based devices have allowed for the increasing expansion of Mobile-Assisted Language Learning (henceforth MALL). Kukulsa-Hulme and Shield (2008: 273) define MALL as "learning mediated by handheld devices", whereas Crompton (2013: 83) describes mobile learning as "learning across multiple contexts through social and content interactions, using personal electronic devices". MALL is characterized by the degree of

immediacy it offers: students can connect whenever they have some free time, according to the 'anywhere/anytime' principle, and are not constrained by desktop computers.

One of the most challenging tasks of Languages for Specific (LSP) courses is to help students learn a large number of highly specialized terms in a short period of time. This is also true of our university Maritime English courses. Students have few on-site classes and this fact narrows down the exposure to the target language and hinders vocabulary learning. To overcome the limitations of our academic setting, we started exploring the possibility of implementing a mobile learning system based on a community-driven approach to provide students with additional language practice beyond the classroom. The advantages of choosing to work with a community-driven learning system are twofold: on the one hand, mobile-enhanced vocabulary learning allows learners "to be exposed to spaced repetition of vocabulary items, which is believed to be more effective than massed repetition" (Mahdi, 2017: 4); on the other hand, following the principles of the social constructivist approach, fostered interactions among learners provide more opportunities to enrich their language by interacting and exchanging information with each other (Krashen, 1985; Long 1996; Oxford, 2004; Crompton, 2013; Palomo-Duarte et al., 2016).

In the next sections we present the potential of the mobile learning system *Guess it! Language Trainer* to support Maritime English vocabulary learning. *Guess it! Language Trainer* was originally created for the learning of German at the University of Cádiz and has been recently adapted for our purposes.

2. Implementing the mobile learning system

2.1. App design and description

A client-server architecture has been employed so that a server coordinates students' handheld devices (i.e. smartphones, tablets or laptops) while the teacher is provided with a web-based monitoring system (Palomo-Duarte et al., 2016). By connecting the server through the Internet, the system allows teachers to update learning contents and resources, to access student logs and trace back their interactions with the system and thus obtain valuable information about students' patterns of usage and engagement.

The app is not accessible from any distribution platform, as app users are to be monitored for our research objectives. Therefore, students must first download the app from the web server, then register and, after being validated by the teacher, log in. Once they have logged in, students must select the level of difficulty (being level 1 the lowest and level 4 the highest), choose one or more of the seven content-specific categories in which terms have been classified (basic, cargo-handling, navigation, radio communications, safety, ship description and shipbuilding) and then click on start playing (Figure 1). Next, a screen is shown with a sentence that needs to be completed (fill-in the gap); students are given three chances to provide the missing term. If they fail twice, they can access the hint, provided by the system, which may be an audio file (most of the times) or a photograph. Once the word has been guessed, the system automatically delivers a question to assess the sentence grammatical accuracy (e.g. "Is the word order correct?). Additionally, students are asked to report those words or sentences they consider either offensive, difficult to guess or wrong in terms of content or linguistic aspects (Figure 2).
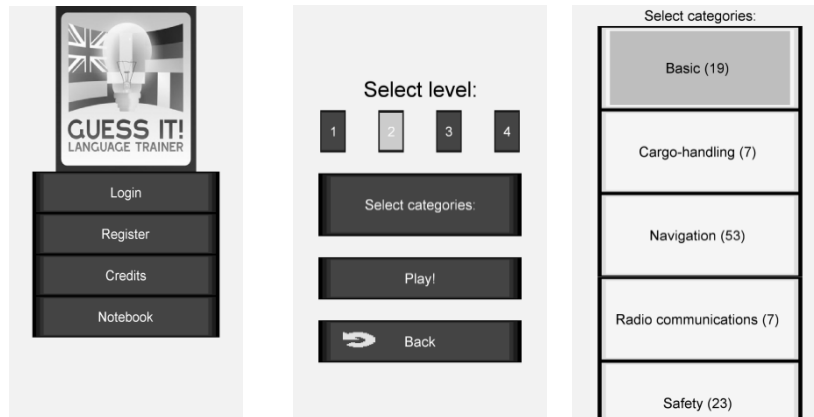
Fig. 1. Start screen (left); menu to select level (centre); menu to select category (right).
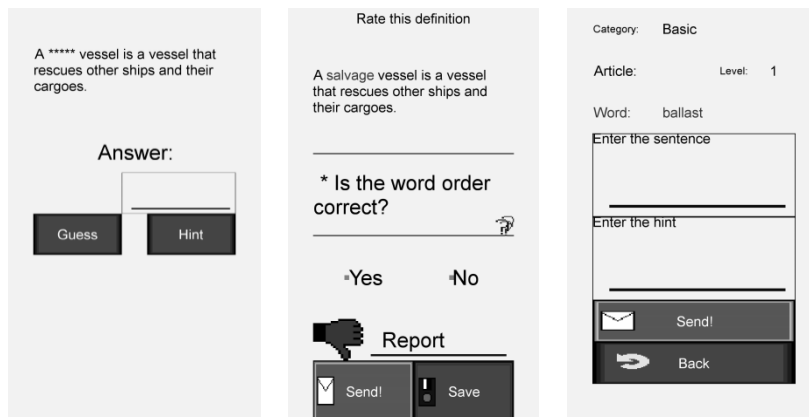

ig. 2. Fill in the gap screen (left); rate the definition and report (centre); reasons for report (right).

Once the students have worked on a certain number of words, the system automatically provides a randomly assigned word from the app database. Then, each student creates his/her own sentence containing the assigned word and enters it into the knowledge base. As a result of this process, the number of sentences to be played will constantly be increased. At the same time, each sentence introduced in the system will be assessed by means of the report function. Due to the implementation of a context sensitive intelligent and adaptive algorithm, those sentences which receive fewer reports from the students will be displayed more often and vice versa.

Nevertheless, all the sentences in the knowledge base will be displayed (more or less frequently) and constantly re-assessed by the students themselves. This way a sentence which may be unfoundedly reported and, therefore, less frequently displayed, may be shown again and become more "popular" among learners. This allows for a very dynamic game ecosystem in which students become directly involved in the development of their own learning tools, by adapting these to their learning preferences and needs (Berns et al., in press).

2.2. Monitoring students' learning process

The server program stores different kinds of data to assist teachers in monitoring the students' learning process. Examples of such data include the sentences available for each specialized term, the words each student played and guessed or failed, and the sentences that were assessed by the students. Additionally, the teacher can access different statistics; for example, on the use each student has made of the app regarding the number and type of words (according to levels and categories) played (Figure 3), the number of sentences each student added to the app and the assessment of the sentences introduced by their peers in the knowledge base.

2.3. Implementing the app

During the spring semester of the academic year 2016/2017, the app was tested with 60 students enrolled in the compulsory subject Maritime English offered in the second year of the degrees in Nautical Sciences, Marine Studies and Radioelectronics Engineering. The aim was to take advantage of mobile technologies such as smartphones and tablets to consolidate the specialized vocabulary studied in the content-based units of the course, therefore 400 maritime terms with their corresponding sentences (to show the words in context) had been previously introduced in the knowledge base. Then, the teachers provided guidance and training in class for the effective use of the app: the link to download the app into their mobile devices was posted in the Moodle platform of the course, a presentation showing the different screens and functions of the app was given and the processes of registration and log in were supervised. Once the students were familiar with the app, time was allotted to play their first words and to report any problems encountered. Finally, the students were given instructions to use the app outside the classroom and encouraged to take the responsibility of finding the appropriate time and place to play with the app every day for a period of two weeks. Each student was asked to play, at least, 2 rounds (1 round=10 words) every day and to introduce two sentences each week in the knowledge base, so he/she was expected to play around 280 words and to introduce 4 sentences in total. A discussion forum was opened in the Moodle platform course for posting questions, comments, problems, etc.
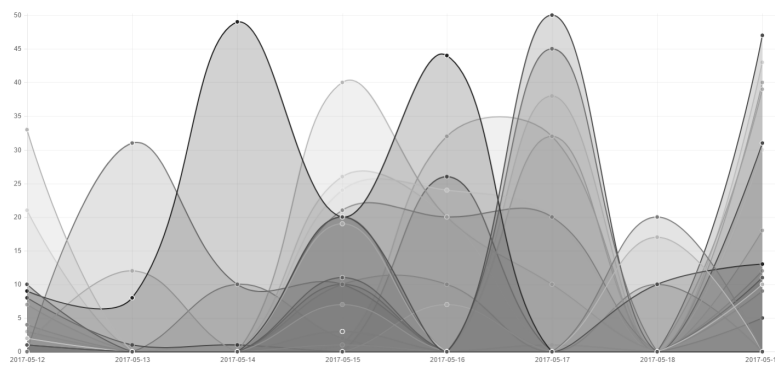

Fig. 3. Statistics showing number of words played by students.

3. Concluding remarks

Higher education institutions language courses often fail in providing students with the language practice they need to acquire the skills they are expected to have at the end of the term. As Crompton (2013: 99) highlights, "[a]lthough technology was often an expensive option in higher education, colleges found that the number of students owning devices cut or abolished additional school cost entirely". With the great majority of students having smartphones or other types of handheld devices, *Guess It! Language Trainer* was designed to support their out-of-class language learning process, particularly vocabulary learning. The system, originally created for learning German, was adapted and implemented in an English for Specific Purposes context, taking into account students' language needs and differences in terms of learning style. Some students might be more audiovisual learners and, therefore, learn better with the help of audio files or photographs; others might be more traditional learners and learn vocabulary more easily by having the translation into their mother tongue at hand, etc. By designing an app which allows students to create their own learning resources, the authors aimed to help students to adapt learning contents to their personal needs and learning preferences. In addition, the app allows teachers both to monitor and analyse students' learning process by accessing students' logs to retrieve information on learners' behaviour and interaction patterns. Hence, the added value of the app was twofold: it helped students to actively participate in their own learning process, and it supported teachers to monitor their students' learning progress.

The learning experience has been, in general, very satisfactory. On the one hand, technology-enhanced environments have proven to foster autonomous language learning (Gimeno, 2014; Perea-Barberá and Bocanegra-Valle, 2014). Students enjoyed being able to practice the course vocabulary in their mobile devices, carried around and used at will, outside the academic setting. The vocabulary content of the app was designed to meet the specific needs of our Maritime English learners, which added positive value to the experience. However, future studies should be conducted to research the effectiveness of handheld devices on vocabulary learning and, to analyse the differences in receptive and productive vocabulary learning with the help of mobile devices (Mahdi, 2017). On the other hand, students created and shared their data (sentences containing a maritime term) so as to contribute to the domain knowledge base. In this way, the community-driven software development approach allowed students to jointly build upon the existing knowledge base and, thus, become developers themselves (as well as consumers) of their learning environment. In addition, this collaborative design helped gathering valuable user feedback which helped refining the app content in line with learners' needs, etc.

Despite being a relatively new field of research, Burston's (2014, 2015) overview of the historical background of MALL applications points out the existence of nearly 600 studies related to MALL over the past 20 years. Some researchers also explore the challenges of integrating MALL in LSP contexts (Dashtestani and Stojković, 2015; Underwood, 2016). Nonetheless, still very few apps explore the real potential of mobile devices to increase users' interactions as well as to help teachers monitor the students' learning process (Stockwell and Hubbard, 2013; Burston, 2014, 2015; Palomo-Duarte et al. 2016; Berns et al., in press).

Ruiz-Ladrón and Manuel Rodríguez-Sánchez Guerra for their contribution to the software development process.

References

Berns, A., Palomo-Duarte, M., Isla-Montes, J.L., Dodero, J.M. & DelaTorre, P. (in press). Agenda colaborativa para el aprendizaje de idiomas: del papel al dispositivo móvil. *RIED. Revista Iberoamericana de Educación a Distancia*, 20.

Burston, J. (2014). The reality of MALL: Still on the fringes. *CALICO Journal*, 31, 103-125.

Burston, J. (2015). Twenty years of MALL project implementation: A meta-analysis of learning outcomes. *ReCALL*, 27, 4-20.

Crompton, H. (2013). A historical overview of mobile-learning: Toward learner-centered education. In Z.L. Berge & L.Y. Muilenburg (Eds.), *Handbook of mobile learning* (pp. 3-14). London: Routledge.

Dashtestani, R. & Stojković, N. (2015). The use of technology in English for Specific Purposes (ESP) instruction: A literature review. *The Journal of English for Specific and Academic Purposes*, 3, 435-456.

Gimeno Sanz, A. (2014). Fostering learner autonomy in technology-enhanced ESP courses. In E. Bárcena, T. Read & J. Arús (Eds.), *Languages for specific purposes in the digital era* (pp. 27-44). Berlin: Springer.

ITU (2016). *Facts and figures*. International Telecommunications Union. Retrieved from http://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2016.pdf

Krashen, S. (1985). *The input hypothesis*. New York: Longman.

Kukulska-Hulme, A. & Shield, L. (2008). An overview of mobile assisted language learning: From content delivery to supported collaboration and interaction. *ReCALL*, 20, 271-289.

Long, M.H. (1996). The role of the linguistic environment in second language acquisition. In W.C. Ritchie & T.K. Bhatia (Eds.), *Handbook of second language acquisition* (pp. 413-468). New York: Academic Press.

Mahdi, H.S. (2017). Effectiveness of mobile devices on vocabulary learning: A meta-analysis. *Journal of Educational Computing Research*, 55: 1-21.

Oxford, R.L. (2004). Cooperative learning, collaborative learning, and interaction: Three communicative strands in the language classroom. *The Modern Language Journal*, 81: 443-456.

Palomo-Duarte, M., Berns, A., Cejas, A., Dodero, J.M., Caballero, J.A. & Ruiz-Rube, I. (2016). Assessing foreign language learning through mobile game-based learning environments. *International Journal of Human Capital and Information Technology Professionals*, 7, 53-67.

Perea-Barberá, M.D. & Bocanegra-Valle, A. (2014). Promoting specialised vocabulary learning through computer-assisted instruction. In E. Bárcena, T. Read & J. Arús (Eds.), *Languages for Specific Purposes in the Digital Era* (pp.129-154). Berlin: Springer.

Stockwell, G. & Hubbard, P. (2013). Some emerging principles for mobile-assisted language learning. Monterey, CA: *The International Research Foundation for English Language Education*. Retrieved from http://www.tirfonline.org/wp-content/uploads/2013/11/TIRF_MALL_Papers_StockwellHubbard.pdf

Underwood, J.. (2016). Challenges and opportunities in enacting MALL designs for LSP. In E. Martín-Monje, I. Elorza & B. García Riaza (Eds.), *Technology-enhanced language learning for specialized domains* (pp. 151-161). London: Routledge.