LINGOBEE – CROWD-SOURCED MOBILE LANGUAGE LEARNING IN THE CLOUD

Sobah Abbas Petersen[1], Emma Procter-Legg[2] and Annamaria Cacchione[3]

[1]*Norwegian University of Science & Technology, Trondheim, Norway*
[2]*Study Group, Bellerbys College, Oxford, UK*
[3]*University of Molise - Dept. of Social Science and Linguistic Centre, Italy*

ABSTRACT

This paper describes three case studies, where language learners were invited to use "LingoBee" as a means of supporting their language learning. LingoBee is a mobile app that provides user-generated language content in a cloud-based shared repository. Assuming that today's students are mobile savvy and "Digital Natives" able to engage in language learning autonomously using technology, initial studies were conducted with little or no intervention by the language teachers. However, the support and guidance provided within a teacher-led context can impact positively on learner engagement and use of LingoBee. The case studies confirm this hypothesis. This paper answers the research question: Does the level of the support and guidance, pedagogical approach and prior learning impact on learners' engagement and use of LingoBee?

1. INTRODUCTION

Mobile learning has been perceived as learning on the go, where learners may engage in activities that enhance their knowledge as they go about their daily lives. The early views of mobile learning focused on technology that is mobile, e.g. (Quinn 2000), have evolved to learning anytime, anywhere and anyhow (Sharples 2006), fostering a new culture of thinking and learning. Mobile Learning is undergoing an evolution "from a position of where 'delivery' of learning was paramount, to current thinking which encompasses a learner-generated content perspective" (Kukulska-Hulme 2009). New technologies and technological trends continue to influence mobile learning. For example, Cloud Computing is seen as an economic solution to provide students and teachers free and low cost alternative storage and computing power (Branon, Wolfenstein et al. 2012). Clouds have been described as "a classroom without walls, instructions or curricula" (Koulopoulos). Examples of a few applications that connect Mobile Learning to the Cloud are available in the literature; Revu4u (Review for You), is designed to help students prepare for Advanced Placement (AP) tests, which enable high-school students to acquire college credit in various subjects (Branon, Wolfenstein et al. 2012). A model of Mobile Learning based on cloud computing is proposed in (Li 2010), where cloud computing is considered a "bridge between teachers and learners", teachers producing and publishing learning material. Another technological development that has been considered in the context of mobile computing is crowd-sourcing, e.g. (Satyanarayanan 2011). While these technological trends have been discussed in the literature as influences on Mobile Learning, little has been reported on approaches that were not teacher-led (Kukulska-Hulme 2009). There is little or no evidence of learner-centred mobile learning activities, particularly based on learner-generated content.

Cloudbank, a mobile (Android) app is designed to enable advanced language learners to collect and describe multimedia language and culture-related content they came across in everyday life within their target language culture (Pemberton, Winter et al. 2009). Cloudbank used crowd sourcing to collect language related content in a shared repository "in the cloud". Developed from Cloudbank, LingoBee is a crowd-sourced mobile app to support situated mobile language learning and to help the learners with linguistic and

cultural diversity (SIMOLA 2012). Ideally, technologies such as LingoBee should be complementary to the activities in formal language learning classes. We envisaged that activities around LingoBee in the informal learning arena and the content generated would bring the learners' interests into the classroom, thus bridging the formal and informal learning arenas and enhancing the learning support for the language learners. The main research question for this paper is: Does the level of the support and guidance, pedagogical approach and prior learning, impact on learners' engagement and use of LingoBee? In this paper, we describe three case studies conducted in three European countries, where language learners were invited to use "LingoBee" as a means of supporting their language learning.

This paper is organized as follows: Section 2 provides a brief description of LingoBee; Section 3 describes the three case studies; Section 4 outlines initial results of the case studies; Section 5 discusses how the teacher-led activities can motivate learners and Section 6 summarises the paper.
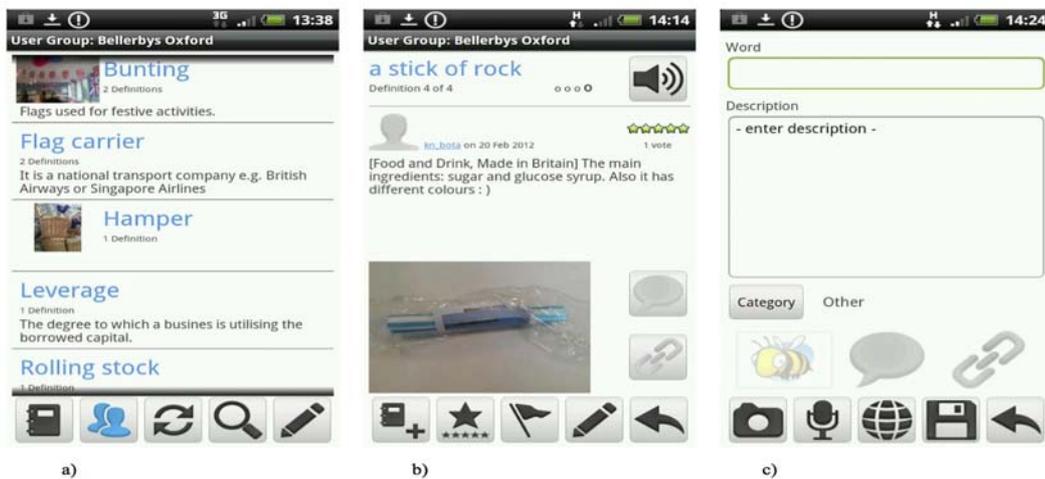
2. LINGOBEE MOBILE APP

Figure 1. LingoBee functionality. a) Crowd-sourced repository; b) An entry; c) Editor to enter a definition

LingoBee is based on the ideas of situated and contextualized learning. It is designed to capture language elements that learners come across in their everyday lives, whenever and wherever. Ideas of crowd sourcing and social networking are used to collect, share and annotate the contributions of all learners in a shared online repository as shown in Figure 1a). Language learners are able to add entries, words or phrases, to the repository which can be accessed and downloaded as favourites by other LingoBee users, see Figure 1b), which shows a description of a phrase by a language learner containing a picture, and 1c) where the user can enter new descriptions to the shared repository. Learners can add new descriptions to existing entries and rate existing descriptions; e.g. in Figure 1b) the entry "a stick of rock" had four descriptions and users have given it a five star rating. Language articles are co-constructed as students add additional photos, web links and audio as part or full entries to build meaning together.

3. CASE STUDIES

Based on findings from earlier studies of Cloudbank (Pemberton and Winter 2011) and (Petersen, Sell et al. 2011), the first studies of LingoBee looked to leverage the benefits of the technology and provide a synergy between the classroom and the learners' everyday lives. Field trials were run in a number of European countries. LingoBee was initially introduced to language learners in their language classes. The teachers' involvement beyond the introduction varied as we intended to address both the perceived lack of student-led approaches in MALL (Mobile Assisted Language Learning) trials (Kukulska-Hulme 2009) and the assumption that LingoBee would be used in the informal learning arena and would foster active situated

language learning and collaboration among the students using it. Consideration was also given to the Cloudbank trials which focused on establishing student's use of the mobile app. "Students were not provided with model entries… These were conscious decisions in the evaluation design as the design team was interested in a) how students would use and appropriate the system (independent from our own views of how the system *should* be used) and b) whether the system was easy enough to understand and use without training." (Pemberton & Winter, 2011). Kukulska-Hulmes and Sheilds noted that language learners found "uses that were not anticipated by the researchers (recording each other speaking the foreign language rather than interviewing the locals...)." (Kukulska-Hulme and Shield 2006) as quoted in (Comas-Quinn, Mardomingo et al. 2009).

The three case studies presented in the following subsections represent the outcome of iterative investigations where the second studies are informed by the first. The changes made included the manner in which LingoBee was introduced, the pedagogical approach and the level of support and guidance offered.

3.1 Case 1: International Students at Unimol

This study was conducted at the University of Molise (Unimol), Italy. The 1st trial involved 10 Erasmus undergraduate Spanish students recruited on a voluntary basis from a class of 50. At entrance, they all presented similar sociolinguistic characteristics: Spanish as L1, a little English as L2, no previous knowledge of Italian and low learning motivation. This latter feature was probably due to the crossover between the two languages and the fact that they tended to socialise with other Spanish speaking friends. They attended a 40-hours face-to-face course, with Italian as lingua franca. The 2nd trial brought together 5 Erasmus students from Turkey, 1 from Spain and 1 from Portugal (all females) from a class of 13 students from Poland (4) and Spain (2). They were recruited on the basis of their motivation and of their L1 type giving preference to those with distant languages. Their entrance characteristics were different: they had Spanish/Galician, French, Chinese and good English as L2. Only one of them had studied Italian before, but they seemed more motivated. Their course was similar to the first, but the lingua franca was English in this case.

The ten students from the first trial were each given a pay-as-you-go smartphone. When they received the phone, they were provided with only basic instructions, in order not to influence their way of using it. No further support or interventions were made. Initially they took part actively in the trials, but clearly showed their main interest was the free smartphone.

For the 2nd trial, 7 students were again each given a pay-as-you-go smartphone as before. Similarly very little information was given at the beginning of the trial, but, in contrast to the 1st trial, a support Facebook group was created and several sessions on LingoBee were incorporated into the course. This change was in response to the poor outcome of the 1st trial, especially considering that the initial students were able to write in Italian from the very start of their studies. Thus, it was decided to 1) select the 2nd group according to their motivation and the L1 type; 2) provide them with the extra support of a Facebook group, (Cacchione 2011); 3) reduce their autonomy by incorporating LingoBee use into the classroom. The outcomes of the 2nd trial seem to confirm the effectiveness of these pedagogical changes.

3.2 Case 2: International Students at Study Group

This study was conducted at Bellerbys College, Oxford, part of Study Group UK. The first trial consisted of pre-university foundation students aged 18-19, with an IELTS (International English Language Testing System) score of 5.5 who were recent arrivals in the UK. The six students chosen were a diverse cultural mix: 1 Mexican/German, 1 Libyan/American, 2 Chinese, 1 South Korean and 1 Iranian.

The group consisted of students from a range of different educational and subject backgrounds brought together for the purpose of this trial. All were internet and mobile savvy, using both extensively in their social life, however they lacked the study skills necessary to use LingoBee independently. They were enthusiastic but very unreliable, often failing to attend or do the work set. This resulted in a paternalistic approach being employed by the teacher with multiple reminders sent by email and text. Originally it was intended that the trial would last 6 months with one set of students but it was decided to end this trial early and start a new one with more reliable and able students.

The participants of the second trial were motivated, internet and mobile savvy 2nd year A level students, aged between 17 & 19. They were again a mixed nationality group: 2 Chinese, 2 Vietnamese, 1 Kazakh and 1

Iranian. However they had a mixed IELTS score profile ranging from 6.5 to 8.5. The group knew each other well and most attended the same classes. The main reason for choosing the group was that 4 students had prior experience of mlearning in formal lessons and attended Accounting lessons with the teacher/researcher.

Both trials were introduced by classroom activities designed to familiarise students with the LingoBee app. This involved behaviourist principles with students completing a scavenger hunt to add specific items into the repository, followed up with tasks that included scaffolding and modelling of good practice by the teacher/researcher, (Wood, Bruner et al. 1976). Students were each given a smartphone with a contract (including data bundle, calls and texts) and supported in both trials by a course on the Virtual Learning Environment (VLE). The first group was introduced to LingoBee and attended fortnightly lunchtime lessons in addition to their academic studies. The second group was introduced to LingoBee but this time through weekly timetabled lessons in addition to their academic studies. Both groups involved in the study were asked to attend all lessons and initially given a task to complete after each lesson.

3.3 Case 3: ERASMUS and International Students at NTNU

This study was conducted at the Department of Languages and Communication at the Norwegian University of Science and Technology (NTNU). Eighteen voluntary ERASMUS students learning Norwegian during the summer participated in the study. The participants were from two different language classes. The courses were intensive, level 1 language courses, with 80 hours of teaching during three weeks. The average age of the students was between 19-25 years and the trial was conducted over two weeks. The students were not attending other classes during that period. LingoBee was not a part of the course and the students were left to use it on a voluntary basis.

The second trial was conducted with fifteen voluntary ERASMUS and International students attending university or working in Norway. It was a level 1 course; 57 hours of teaching was offered over 10-11 weeks. The average age of the students varied between 26-30yrs. The trial was conducted over eight weeks. The teacher had intended to use time during the classes to look at content from LingoBee and make it a part of the course. However, due to the reduction in the number of students during the course, the teacher was not able to use LingoBee as initially planned.

For both trials, the basic functionalities of LingoBee were introduced by a researcher and presented as a complementary technology and as a means to capture and share your own words or phases. Participants were provided with smartphones with LingoBee installed, but no SIM cards as free wireless network was readily available across the campus and city. The teachers had access to the LingoBee repository and occasionally flagged content created by the students to indicate mistakes.

4. RESULTS

For case study 1 conducted at Unimol, both trials lasted three months. The first group produced 92 entries in the LingoBee repository. Most had pictures, but only one had a web link; no audio comments were added. Only 2 multiple entries were produced. The entries covered a wide range of topics. About 20% covered cultural topics such as festivals and food; **Figure 2**a) shows an example of an entry related to food. About 15% of entries presented aspects of the private life of the students such as study and travel. About 10% was made of "specialised" entries related to the internship some of the students were doing as nurses or trainers.

The 2nd group produced 140 entries. Most entries had pictures and 16 had audio comments. There were no multiple entries. Similar to the first group, there was no direct correlation between engagement in LingoBee use and proficiency in Italian; they all passed the exam with a good score. The entries covered a lesser range of topics. About 14% covered cultural topics such as food and religion. All the other entries were about things surrounding students in their daily life (to cook, to clean, etc.); see **Figure 2**a). An appreciable reduction in the linguistic complexity of entries was observed, due to the difficulties in managing Italian.
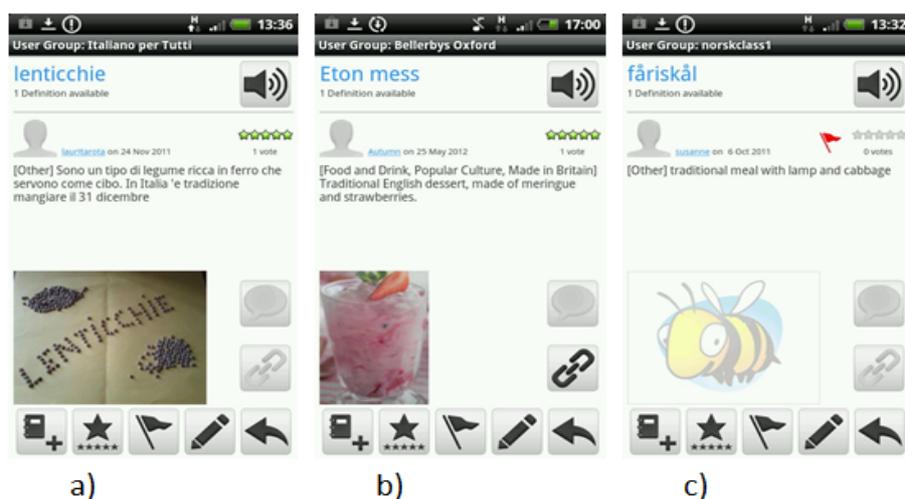
Figure 2. Examples of LingoBee entries related to food and culture

For case study 2 conducted at Study Group, both the trials lasted 14-15 weeks. The first group of students produced 207 entries in total covering a range of topics, e.g. cultural items including food and events, Figure 2b) or subject specific entries e.g. Business, Accounting or Chemistry. Almost half (115) resulted from specific teacher directed activities. The second group produced 415 entries covering a much wider range of topics than the first group; in addition to food and events, cultural items included places of interest and subject specific entries included Political and Economic terms, etc.,

For case study 3 conducted at NTNU, the first group produced 78 entries during the two weeks. The entries included simple words and expressions that appear in everyday conversation. An example that relates to Norwegian food and culture is shown in Figure 2c); note that the correct name of the dish is "fårikål". Only a couple of the entries had a picture and a few were rated by peers in the same user group. The second group produced 91 entries during eight weeks, 16 of which had pictures included in the entry. There were more entries rated than for the first group. Similar to the first group, the entries were mostly about daily life and every day things. The entries for the second group, however, appear to be more advanced and had sentences and questions consisting of 6-7 words. Some of the entries were of a communicative nature; reflecting comments and questions in normal conversations.

Table 1. Overview of the results from the case studies

	No. of entries per participant		No. of favourites per participant	
	Study 1	**Study 2**	**Study 1**	**Study 2**
Case 1: Unimol	9.2	20	1.4	0.125
Case 2: Study Group	34.5	69.2	1.67	13.5
Case 3: NTNU	4.3	6.1	1.39	3.01

In addition to the user-generated content itself, we have looked at the level of participation by the learners by analyzing the no. of contributions and the no. of times a user downloaded user-generated content from the cloud-based repository as their favourites. An overview of the three case studies in terms of the total number of entries and the number of entries per participant is provided in Table 1. The data shows that the number of entries per participant increased from the first to the second study, for each case study. Similarly, the no. of times a user downloaded user-generated content from the repository increased for cases 2 and 3, showing that the level of LingoBee related activities and participation increased in the second study cycle. For case 1, there is a decrease in the no. of entries downloaded from the repository for the second study. A possible reason is the fact that the first group was a little wider but, above all, was made of actual friends in daily life, who used LingoBee together and shared the content in real time. They produced less entries but in a more social way.

5. DISCUSSIONS

In this section, we will attempt to answer our research question based on observations from the case studies: Does the level of the support and guidance, pedagogical approach and prior learning impact on learners' engagement and use of LingoBee?

The second trial was designed to include LingoBee as an integral part of the activities of the course. Unfortunately, due to several dropouts from the NTNU study, this was not possible in all cases. Nevertheless, the results from both case studies 1 and 2 clearly illustrate that this change in pedagogical approach did increase the level of participation (see Table 1).

The first trial in case study 3 had participants from a two-week intensive language course who were not engaged in other studies so we were interested to see if this scenario created a difference in engagement and participation. An interesting observation was that the number of entries per participant per week was greater in the first trial than in the second, although the participants of the first trial were volunteers and LingoBee was not presented as a part of the course. This implies that the participants in the intensive course, not studying other subjects, were able to engage more in LingoBee activities than the participants of the second trial, who appeared to be busy with other activities, which often took priority over language learning.

The second trials in both case studies 1 and 2 had more active involvement from the teachers. "Second language acquisition is best promoted through the utilization of tasks focusing the learner on meaning" (Kiernan and Aizawa 2004), as quoted in (Chinnery 2006). Case study 2 included activities such as a scavenger hunt and a walking tour of the city using LingoBee as shown in **Figure 3**. The second group had a number of LingoBee lessons before the walking tour, they all enjoyed it very much and one commented that it helped him to understand when and where he could use LingoBee. *"Since April/May I used LingoBee more frequently for taking pictures after the lesson with the walking tour used pictures more out and about."*

Figure 3. LingoBee activities: a walking tour of the city

In case study 1, it was observed that the first group was not very motivated in learning Italian. However, the second group was selected based on their level of motivation and this may have been a factor in their increased participation. In addition, a Facebook support group was created as an additional support outside of the classroom. This was initiated by one of the Polish students to communicate with other students in the Italian L2 course (the group in fact is named "Corso di lingua italiana"). The teacher/researcher joined the group and also used to provide notices about the lessons. Only a few posts related to LingoBee, however it seems to have had a positive impact on the use of LingoBee by boosting the overall guidance and support available for the students. Figure 4 shows activities on the Facebook support where the discussion was related to LingoBee.

Figure 4. Facebook support in case study 1, LingoBee related activity

Case study 2 identified that although the participants were internet and mobile savvy and may have had prior experience of mobile learning, some needed help to adjust to mobile learning and to see the benefits of this approach. Some of the students came from more traditional educational backgrounds and have found it difficult to adjust to this new approach. It is a 'myth to expect all young learners to automatically understand new technology' (Attewell, Savill-Smith et al. 2009). Therefore, how LingoBee was introduced and the level of support provided both at the beginning and throughout the trial played a role in the level of participation of the students. Both case studies 1 and 2 had observed this and adapted their second trial accordingly. This was not considered in case study 3. Also, from pre-intervention questionnaires, it was evident that the participants used online dictionaries and Wikipedia as a means to support their language learning activities. However, looking at the results and the level of participation, it appears that LingoBee had a higher threshold to gain acceptance and regular use.

The first point at issue is if the support and guidance provided within a teacher-led context can impact positively on learner engagement and use of LingoBee. The case studies seem to confirm this hypothesis, in line with recent investigations indicating there is a close relationship between learner autonomy (and effectiveness) and the guidance students receive while learning (Reinders and White 2011). But this seems to contradict the assumption that mobile devices are the ideal enabler for learner autonomy intended as personal choice (Godwin-Jones 2011): if mobile phones are the perfect environment for autonomous learning, why is there (still) the need of a teacher-led approach? Isn't it enough for Digital Natives to be given a smartphone and special purpose software to engage in a challenging and effective learning process? As the title of the new study by Higher Education Strategy Associates suggest, 'if students are Digital Natives, why don't they like e-learning?' (Higher-Education-Strategy-Associates 2011). The question addressed is crucial: we teachers and researchers as digital immigrants (Prensky 2001), have to consider that it is indeed a 'myth to expect all young learners to automatically understand new technology' (Attewell, Savill-Smith et al. 2009), they need to be trained to understand the value of the devices, their potential and the relevance of their uses for their learning. In fact, 'autonomy is natural to human learning, but does not come naturally' (Reinders and White 2011). We need, in an outward paradoxical way, to teach them not to be taught, i.e. to become autonomous learners.

6. SUMMARY

This paper describes three case studies conducted in three European countries, where language learners were invited to use "LingoBee", a mobile app, as a means of supporting their language learning. LingoBee uses crowd-sourcing to gather user-generated language related content in a shared repository or a cloud. Today's students appear to be mobile savvy "Digital Natives" and avid users of mobile apps and other technologies to obtain the support they need for learning as well as their daily activities. Assuming that they would engage in language learning autonomously using LingoBee, studies were conducted among international students learning a language. The first cycle of studies observed that the level of engagement by the students were not as expected. Assuming that the support and guidance provided within a teacher-led context can impact positively on learner engagement and use of LingoBee, further studies were conducted where the teachers adapted their pedagogical approaches and the level of support provided to the students based on the experiences from their first studies. The case studies show that the second studies, where there was more involvement by the teachers, provided a better result. In this paper, we have included examples of activities and support that can enhance the language learning experiences of the students.

ACKNOWLEDGEMENT

REFERENCES

Attewell, J., C. Savill-Smith, et al. (2009). "The impact of mobile learning Examining what it means for teaching and learning." LSN.

Branon, R. F., M. Wolfenstein, et al. (2012) Connecting Mobile Learning To The Cloud. eLearn Magazine, Education and Technology in Perspective

Cacchione, A. (2011). Imparare l'italiano da lingue agglutinanti: apprendenti iniziali turcofoni e magiarofon. Apprendere l'italiano da lingue lontane: prospettiva linguistica. C. R. Bozzone, L. Fumagalli and A. Valentini. pragmatica, educativa. Perugia, Guerra: 135.

Chinnery, G. M. (2006). "EMERGING TECHNOLOGIES, Going to the MALL: Mobile Assisted Language Learning." Language Learning and Technology 10(1): 9-16.

Comas-Quinn, A., R. Mardomingo, et al. (2009). "Mobile blogs in language learning: making the most of informal and situated learning opportunities." ReCALL 21: 96-112.

Godwin-Jones, R. (2011). "Autonomous Language Learning." Language Learning & Technology 1-4.

Higher-Education-Strategy-Associates (2011). The state of E-Learing in Canadian Universities, 2011: If students are Digital Natives, why don't they like E-Learning? .

Kiernan, P. J. and K. Aizawa (2004). "Cell phones in task based learning: Are cell phones useful language learning tools?" ReCALL 16(1): 71-84.

Koulopoulos, T. Living in the Cloud. The 21st Century Global Megatrend.

Kukulska-Hulme, A. (2009). "Will Mobile Learning change Language Learning." ReCALL 21(2): 157-165.

Kukulska-Hulme, A. and L. Shield (2006). Researching new and emerging technologies in language education. Presentation Open University INTELLECT Research Group.

Li, J. (2010). Study on the Development of Mobile Learning Promoted by Cloud Computing. 2nd International Conference on Information Engineering and Computer Science (ICIECS): 1-4.

Pemberton, L. and M. Winter (2011). Learning from Formative Evaluation in Use: a Case Study of a Mobile Application for Language Learners. MLearn 2011. Beijing, China.

Pemberton, L., M. Winter, et al. (2009). A User Created Content Approach to Mobile Knowledge Sharing for Advanced Language Learners. mLearn 2009. Orlando, Florida, USA: 184-187.

Petersen, S. A., R. Sell, et al. (2011). Let the Students Lead the Way: an Exploratory Study of Mobile Language Learning in a Classroom. MLearn 2011. Beijing, China.

Prensky, M. (2001). "Digital Natives, Digital Immigrants." On the Horizon 9(5).

Quinn, C. (2000). "mLearning: Mobile, Wireless, in your Pocket learning." LineZine. Retrieved February 2008, from http://www.linezine.com/2.1/features/cqmmwiyp.htm.

Reinders, H. and C. White (2011). "Learner autonomy and new learning environments." Language Learning & Technology: 1-3.

Satyanarayanan, M. (2011). "Mobile Computing: the Next Decade." ACM SIGMOBILE Mobile Computing and Communications Review 15(2): 2-10.

Sharples, M. (2006). Big Issues in Mobile Learning: Report of a workshop by the Kaleidoscope Network of Excellence Mobile Learning Initiative, LSRI, University of Nottingham.

SIMOLA (2012). "Lingobee Repository." Retrieved June 2012, from http://itrg.brighton.ac.uk/simola.org/lingobee/index.php.

Wood, D. J., J. S. Bruner, et al. (1976). "The role of tutoring in problem solving." Journal of Child Psychiatry and Psychology 17(2): 89-100.