

Research on Mobile Learning in the English Classroom: Pedagogies, Computer developments and Teachers' Reactions

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Abstract

The aim of this work is to explore the latest research developments related to the integration of mobile learning into the teaching of English as a foreign language. This research is basically organized into four different categories: (1) research on the use of different mobile devices in the English classes including apps and links; (2) the preparation of English teachers including professionals updating and their general reactions toward mobile learning; (3) the engineering of more sophisticated computer solutions for appropriate integrated mobile learning platforms for the teaching and learning of English; and (4) the different pedagogical strategies developed for mobile learning. It is suggested that, the development of appropriate mobile learning strategies should take into account all the results derived from these four levels of research.

Keywords: e-learning, information and communication technologies, English as a Foreign Language, mobile learning

Resumen

Este trabajo hace una exploración de los últimos desarrollos en investigación relacionada con la integración del aprendizaje móvil en la enseñanza del inglés como lengua extranjera. La investigación sobre este tema se ha organizado en cuatro categorías diferentes: 1. el uso de diferentes dispositivos móviles en las clases de inglés, incluyendo *apps* y enlaces; 2. el entrenamiento de profesores de inglés, incluyendo actualización profesional

y actitud general hacia el aprendizaje móvil; 3. la ingeniería de soluciones computacionales sofisticadas para la apropiada integración de plataformas de aprendizaje móvil para la enseñanza y aprendizaje del inglés; y 4. las diferentes estrategias pedagógicas desarrolladas para el aprendizaje móvil. Se sugiere que el desarrollo de estrategias apropiadas de aprendizaje móvil debe tomar en cuenta todos los resultados de estos cuatro niveles de investigación.

Palabras clave: aprendizaje electrónico, tecnologías de la información y la comunicación, inglés como lengua extranjera, aprendizaje móvil

Introduction

The aim of this project is to explore the latest research developments related to the integration of Mobile Learning into the English classroom, so that language learning can be enhanced (Alkhezzi & Al-Dousari, 2016). The popularity of mobile technologies and of mobile learning has increased in the last decades, and their use into the English class has gained momentum (Bezircilioğlu, 2016); therefore, it is time to have a look at researchers' results and learned lessons, and to start making sustainable efforts to include mobile learning in Costa Rica's high schools and educational systems as a whole. Statistics show that the use of mobile technology in Costa Rica among young students is on the rise; a fourfold increase during the last year (Vargas, 2016), a situation that can be considered a turning point for Costa Rican educational system and for the enhancement of students' language learning experience.

This work will be based on the latest approaches and findings in relation to the used of Information and Communication Technologies (ICT) on education and, most important of everything, to the impact of mobile

technologies on the teaching and learning of English as a foreign language. It is no secret that education has been highly shaped by technological changes and that, now more than ever, technological revolutions and advances have bigger, faster and more permanent effects on knowledge, learning and teaching (Abbott, 2001). For Abbott, writing at the beginning of the 21st Century, it was "abundantly clear" that "[s]chooling and teaching will be forced to change in a variety of ways" (2001, p. xi), due to the development of technology. More than 15 years later, it has been proved the way technology and the development of technological skills have influenced the relations between teachers and students inside and outside the classroom by establishing different levels of social interactions.

Learning English as a foreign language is no exception. As a field of study or as an academic high school subject, English has also been affected by the irruption of ICT applied to educational environments and by the development of different apps, language learning programs, Internet and mobile technologies. This has been an international phenomenon as the teaching of English has become a must thanks to its position as an international *lingua*

franca; therefore, when we think about the English language, we must think about teaching English as an international language (Pennycook, 2017).

In the context of globalization and geopolitics, English surged as the *lingua franca*, English speakers multiplied internationally, and the language became a “contact language” among people all around the world. Thus,

In recent years, the term ‘English as a *lingua franca*’ (ELF) has emerged as a way of referring to communication in English between speakers with different first languages. Although this does not preclude the participation of English native speakers in ELF interaction, what is distinctive about ELF is that, in most cases, it is ‘a ‘contact language’ between persons who share neither a common native tongue nor a common (national) culture, and for whom English is the chosen foreign language of communication’ (Seidlhofer, 2005, p. 339).

For Young (2003), “The popularity of information communication technology over the past decade has brought about the innovative use of the Internet in second language learning and teaching, particularly in the area of English as a second language” (p. 447). This innovations are more pressing as the access to Internet is guaranteed by investment done by different countries and institutions on high schools facilities and by the reduction of costs. Young has explained that:

Obviously, information communication technology (ICT) has changed the language learning and literacy

acquisition environment as well as the dynamics of the language learning settings. The paradigm shift of computer-assisted language learning (CALL) from the cognitive approach to the socio-cognitive paradigm and the use of computer-mediated communication, make language learning settings more socially interactive, collaborative, communicative and student-centred (pp. 447-448).

In Costa Rica, this shift of paradigm is happening at a faster pace as time passes, so it is quite the correct time to start investing research and academic efforts to introduce more technology and resources into high schools and, more specifically, into the English classroom.

Mobile Learning

Mobile learning is part of the last developments of e-learning due to the popularization of the use of cell phones, tablets, and other mobile technologies. For Pachler, Bachmair, & Cook (2009) mobile learning rise is due, not only to the introduction and development of mobile devices and associated technologies, but also to the way in which individuals relate to each other, and the way they understand and want to modify their social contexts and interactions, and the new conditions of information transactions and knowledge production. The mobile learning and educational revolution is both a technological change but also a sociological phenomenon in which individuals develop new rules for social exchanges. For these authors, it is important to understand the main characteristics

associated to mobile learning and the main characteristics of mobile devices.

For Winters (2007), mobile learning is better described as:

- Technocentric, that is, based on technological developments
- Relational to e-learning, so it adopts all concepts and methodologies coming from e-learning
- Augmenting formal education; that means that it improves the pedagogical limits of formal education opening the space for continuous and lifelong education, and
- Learner-centered, a concept already adopted from constructivism.

Besides these basic characteristics of mobile learning, it is important to be able to identify what mobile devices are and how they are introduced into the educational ecosystems.

Broadly speaking, mobile technologies include:

Among other things increasing portability, functional, multimedia convergence, ubiquity, personal ownership, social interactivity, context sensitivity, location awareness, connectivity and personalization (Pachler, Bachmair, & Cook, 2009, p. 7).

As many more devices are developed with all these capabilities, mobile learning is not restrictedly related to cell phone and tablets, but also to all those devices—like wearables, electronics, micro-computers, among others—relating, thus, mobile learning to Internet of things (IoT) or Internet of everything (IoE). El-Hussein & Cronje (2010) have explained the way mobile learning depend on a series of

technologies and devices and how the educational ecosystems are still to take advantage of the whole mobile learning movement. The first element is the evolution of mobile devices itself:

The evolution of handheld portable devices and wireless technology has resulted in radical changes in the social and economic lifestyles of modern people. Today, many technological devices are produced in portable form and people have become accustomed to them. These devices are reshaping users' daily lives in different ways (El-Hussein, Cronje, 2010, p.12).

However, for these authors, despite such evolution, mobile devices are still quite excluded from educational ecosystems, and their integration still faces enormous challenges.

But the development of digital technologies has so far been limited to social communication and few people have regarded mobile learning as a core pedagogical activity in higher institutions of learning. Although this model has been used as a minor adjunct to learning activities such as lectures and assignments, it is still not the primary mode of delivery (El-Hussein, Cronje, 2010, p. 12).

The second element, in regards to mobile devices and their role in education, has to do with the rise in their popularity among young people, which makes them useful for teachers.

Advanced mobile devices such as “smart” cellular telephones are very popular among people primarily

because they are wireless and portable. These functionalities enable users to communicate while on the move. The popularity of these devices is therefore a consequent of their ability to function at multiple levels. Moreover, the intense commercial competitiveness in the mobile device industry is forcing manufacturers to be very innovative, constantly striving to introduce new features that can give them a competitive edge (El-Hussein, Cronje, 2010, p.12).

The third element refers to the challenge faced by teachers in relation to how and to what extent to introduce mobile devices into their classrooms and as part of their learning strategies.

Against this backdrop, visionary educators, designers and developers should begin to consider the implications of these devices for the modern teaching and learning environment [...] This will add another layer to the personal computer-based model of teaching and learning. This also means e-learning will take place in conditions that will be radically different from those educators and learners are familiar with (El-Hussein, Cronje, 2010, p. 12).

The movement to include mobile devices into educational ecosystems has already begun and it seems irreversible. Therefore, their uses should be encouraged in all subjects and in all the levels of the educational scope. English programs in secondary institutions are no exceptions.

Mobile learning in English teaching.

In the past, teachers and institutions did not let students use cellphones and technology in classes because this was not contemplated in their programs. Now, this situation has changed; institutions and teachers are trying to incorporate mobile devices and internet in their subjects to improve their teaching strategies. Teachers may include information, speed reproduction, different means of communications used simultaneously, images, sounds, and so on. Internet has obliged learners to modify basic concepts as time and place for learning have been modified. Now, learners do not need a specific place or time to establish a conversation; reality can be represented in virtual environments and all this has altered how teachers plan their classes. English teachers have now introduced breaking technologies, such as tablets, IPods, podcast, DVD, and smart TV and screens, and have added a multitude of apps and links into their class planning and everyday teaching practice.

All around the world, there have been reports of various experiences of teachers who have integrated mobile technologies into their English classes and how this technological irruption has consistently updated their pedagogies. As this tendency becomes an intrinsic part of the English teaching environments, teaching techniques and frameworks taking into account mobile learning have been developed. There is evidence of the development of mobile learning in the English classroom at least in four experimental levels:

1. English teaching pedagogies in relation to mobile learning. Several researchers and organizations are concerned about the impact that mobile

technologies are having on the way teachers actually plan and execute their teaching practices. How these technologies have altered teachers' pedagogical knowledge and approaches have resulted in the development of guides, frameworks and general pedagogical inquiries. That is the case of the Mobile pedagogy for English language teaching: a guide for teachers, a framework published in 2015 by the British Council in collaboration with the British Open University as a way to "[respond] to an identified desire among English language teachers to make sense of the rising tide of possibilities created by mobile language learning (also known as mobile assisted language learning or MALL)" (p. 2).

2. The definition of the technological platforms and general infrastructure needed to conduct mobile learning effectively in specific institutions or learning ecosystems (Huang, Huang, Huang & Lin, 2012; Chang, Chiu, & Huang, 2018). For instance, systems communication, systems for positioning and, of course, WiFi Multimedia connections are often described as essential elements of such platforms (<http://lc.nccu.edu.tw/Conference/2nd/008.pdf>). Other more sophisticated systems have also been experimented with in different countries that include personalized software development. That is the case of Chen & Hsu's (2008).

Personalized intelligent mobile learning system (PIMS) supported by the personalized vocabulary learning system, which includes a remote courseware server, a client mobile learning system, and a data synchronized agent [...] The client mobile

learning system which consists of four intelligent agents and four databases can appropriately recommend English news articles for individual learners to enhance their reading abilities as well as vocabulary abilities for individual learners based on the proposed fuzzy Item Response Theory (FIRT) (Chen, Hsu, 2008, p. 155).

3. Description of mobile technological devices and the development of special apps and Internet based services and program links to be used in mobile learning teaching environments (Aamri & Suleiman, 2011). It is important to specify which devices are to be considered "mobile" and how each one of those devices or developments are appropriate to what teaching strategy activity. In the case of devices, Nalliveetil & Alenazi (2016) state how cell phones are preferable gadgets:

Researchers across the world are examining the educational value and effectiveness of integrating the latest electronic gadgets with teaching-learning activities in the classroom. In spite of the availability of latest electronic gadgets like iPods, tablets, and smartwatches, researchers are more interested in the educational value of the mobile phones for the teaching-learning of English" (p. 264). In terms of apps, Zou & Li (2015) have suggested, for instance, how their research "results indicated that the majority of the subjects enjoyed mobile learning, which can be revealed by their significantly high motivation in carrying out the relevant activities on the apps (Nalliveetil, Alenazi, 2016. p. 567).

4. Finally, the fourth level of worldwide research refers to how teachers have adapted and responded to the introduction of mobile learning into their teaching practices. For instance, UNESCO has identified teachers' training on mobile learning as one of the most important challenges for the future of mobile learning and that includes, of course, English teachers. For UNESCO (2013): "Realizing the potential of mobile learning will require new roles for teachers and superior capacity for teacher training" (p. 33); UNESCO adds that

One of the strongest barriers to the development of mobile learning is the lack of trained practitioners who can effectively incorporate mobile technologies into their classroom practice. Current teachers, as well as those entering the profession, need training and professional development in the innovative design of mobile learning interventions (UNESCO, 2013, p. 33).

In general terms, research about mobile learning has been based on those four levels as concerns have been escalating around the use of different mobile devices into the English classes including apps and links, the preparation of English teachers including professionals updating, the engineering of more sophisticated computer solutions for appropriate integrated mobile learning platforms and the most pedagogical areas of mobile development.

Gautam (2014) described the impact of language learning based on mobile learning in relation to language skill development and acquisition and in terms of its main advantages and

disadvantages. For Gautam (2014), there are several applications for mobile technologies in reading comprehension, listening comprehension, pronunciation and vocabulary and lists as the most important advantages the following:

- The use of mobile technologies as powerful educational tools.
- Their impact on the development of communication skills.
- Their use on knowledge management.
- A large reach since the use of mobile technologies is not limited to a specific place (the classroom) or schedule.
- The development of new ways of teaching and new teaching techniques.

However, Gautam points out some disadvantages or challenges for mobile learning:

- High cost of devices and internet access.
- Vandalism since mobile devices can easily be stolen.
- Health problems associated to mobile devices.
- Energy-related problems of mobile devices.

Despite these challenges, mobile learning is growing and its integration into the English classroom seems unstoppable. It becomes essential to start developing different teaching strategies for English teachers at all levels in Costa Rica's educational environments.

The use of mobile learning in the teaching of English: Some examples.

As stated before, we can positively classify the academic work on the use

of mobile learning in the English classroom in four areas of development:

1. The development of pedagogical models for mobile learning.
2. Computer solutions for appropriate integration of mobile learning.
3. Mobile devices, apps and links.
4. Training and reactions of English teachers.

Pedagogical Frameworks for Mobile Learning in the English Class.

Any attempt to introduce a set of teaching strategies that would integrate mobile learning concepts, devices, resources and technology in general should be based on a series of theoretical concepts that will regulate, in a way, such introduction. The place to start is, obviously, a general model for mobile learning, and then to move towards a framework for mobile learning in English teaching. A good place to start will, then, be Sharples, Taylor & Vavoula's mobile learning model (2010) introduced in 2005 and that has been used in different research on mobile learning in the English class. These authors' idea is to create a model that can take into account the complex relations resulted by the interactions between individual and technology. Essentially, they "have attempted to address this paradox by describing the activity system of mobile learning in

a way that problematizes the dialectical relationship between people and technology" (Sharples, Taylor, Vavoula 2010, p. 10).

By adapting the work of Engeström among others, Sharples, Taylor & Vavoula (2010) conceived mobile learning as an intricate distributed system between the following elements:

- Individuals.
- A set of rules.
- A specific community.
- A determined division of labor.
- Objects that are modified and
- A mediating technology.

Their basic model includes mobile technology as the main mediating artifacts, technology that is, then, used by individuals who basically act on information that is available through mobile technologies, and that they will use to modify objects to complete tasks or to develop specific skills; these users' actions are controlled by specific human-computer interactions facilitated by mobile technologies and resources that are contextualized according to the learning, cognitive and social conditions of the community of users (Sharples, Taylor & Vavoula 2010).

Sharples, Taylor & Vavoula's model has been further simplified by other authors as shown in figure 1:

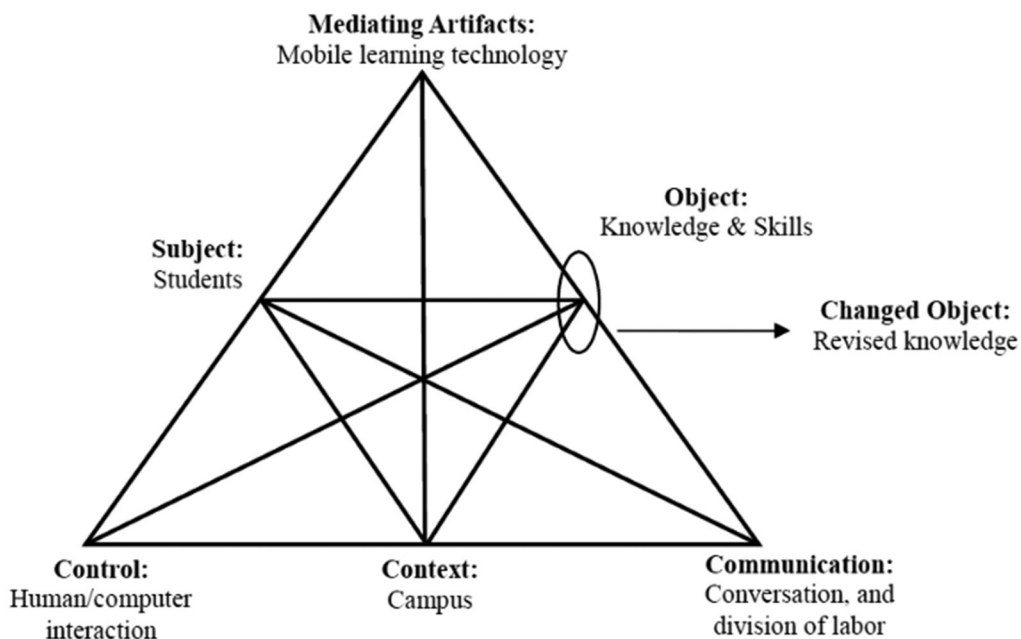


Figure 1. Modified Sharples *et al.* (2010)' activity theory model of mobile learning.

According to this framework, a set of teaching strategies that effectively include mobile learning into the development of specific English skills should take into account the special features and characteristics of the technology and resources that will be integrated, what specific skills will be developed, the kind of precise knowledge that will be revised to achieve those skills at a determined level, the different rules that limit the enhance of the interactions between individuals and technology (like Internet-based or mobile devices), and the communication stratagems used by a specific group of a specific community.

Other models and frameworks have emerged that correspond to Sharples, Taylor & Vavoula's components one way or the other. One of such models have

been proposed by Kukulska-Hulme, Norris & Donohu (2015) with the sponsorship of the British Council, the Open University and Erasmus+. This model has been specifically designed for the teaching of English with the use of mobile technology and learning and has been designed with the intention of serving as a planning tool for teachers' effective mobile-based classes.

Similar to Sharples, Taylor & Vavoula's model, this recent effort also includes elements such as community historical contexts and potential, access to effective information, the development of specific tasks and skills, and the mediation of mobile devices. However, it includes extra elements that are more related to the nature of languages learning and, as is the case

of English, the international contexts in which the language is being learned. The scheme suggested by Kukulska-Hulme, Norris & Donohu, however, do not focus on the basic interactions of mobile learning, but on the development of effective teaching activities. In other words, it acts as a pedagogical framework for planning and executing tasks and activities. As they put it, their model:

Is intended to help teachers think about how any new language learning activities they might design for their

mobile learners will be different from activities they may have planned or designed before (Kukulska-Hulme, Norris, Donohu, 2015, p. 8).

Their model help develop learning activities that will include four aspects: outcomes, inquiry, rehearsal and reflection (Kukulska-Hulme, Norris, Donohu, 2015).

The following figure shows such model:

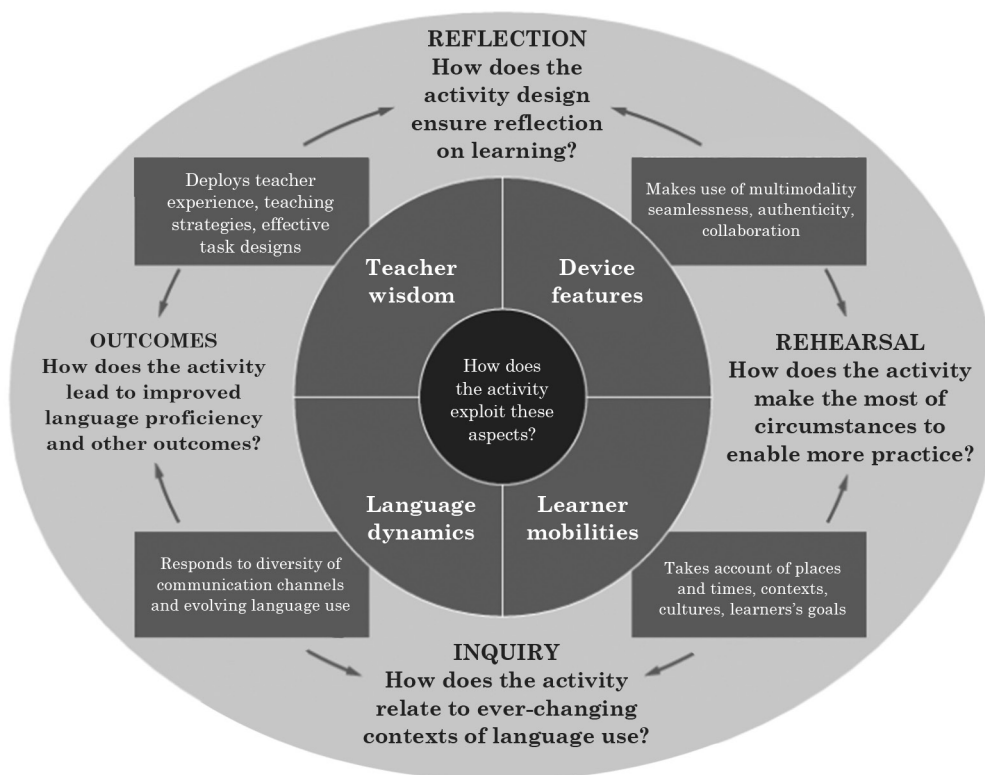


Figure 2. Kukulska-Hulme, Norris & Donohu's Pedagogical Model for Teaching English Based on Mobile Technology.

These authors suggest that the application of the concepts derived from their model will help teachers develop successful English classes mediated by mobile technologies.

Computer development to complement mobile learning in the English Classroom. For some researches, mobile technologies are not sufficient and other computer-based resources should be considered to appropriately include mobile devices into the English classroom.

Such is the case of the work developed in Taiwan by Chen & Hsu (2008) who developed a complex personalized intelligent mobile learning system for supporting effective English learning and that is able to recommend “English news articles to learners based on the learners’ reading abilities” (p. 153).

This system consists of:

A personalized intelligent mobile learning system (PIMS) supported by the personalized vocabulary learning system (Chen & Chung, 2006), which includes a remote courseware server, client mobile learning system, and data synchronized agent, is presented herein. The client mobile learning system which consists of four intelligent agents and four databases can appropriately recommend English news articles for individual learners to enhance their reading abilities as well as vocabulary abilities for individual learners based on the proposed fuzzy Item Response Theory (FIRT). The remote courseware server containing three intelligent agents and one database aims at automatically collecting English news articles from the Internet by an intelligent crawler for the remote

courseware & user portfolio database and evaluating the difficulty parameters of English news articles by the proposed scheme of measuring difficulty of English news articles. Moreover, to support the off-line learning mode, the data synchronized agent is in charge of keeping data consistency between the client databases with the server databases after the wireless network recovers on-line connection (Chen, Hsu, 2008, p. 155).

The aim of the authors of this system is to promote reading comprehension and learners’ reading abilities and their experiment did not satisfy itself with the simple integration of mobile devices into the classroom as can be easily appreciated.

After implementing their computer-assisted system integrated to mobile learning, the authors conclude that their system codenamed as PIMS can effectively help students to:

1. Estimate learner’s ability via the revised estimating function of learner’s ability.
2. Determine difficulty parameters of English news articles according to students levels.
3. Enhance vocabulary learning while reading English news articles.
4. Discover and automatically retrieve unknown or unfamiliar vocabularies of individual learners from the reading English news articles according to the English vocabulary abilities of individual learners.
5. Provide benefits in terms of reducing learner cognitive overload during learning processes, thus promoting learning effects and interests.

6. Enable a seamless ubiquitous learning environment for English learning at any time from any place by mobile devices (Chen, Hsu 2008, pp. 177-178).

For these author mobile learning concepts and practices can effectively be enhanced by creating more complex computer-based systems as PIMS and, therefore, to improve students' learning.

The use of Apps and other Mobile Resources. General literature on mobile learning is full of examples on how to use available mobile applications and other multiple mobile resources without using other computer-based developments.

Just to mentions some examples, Mohamad (2012) presented a strategy for integrating the use of mobile phones into English classes in secondary institutions in Malaysia. More specifically, Mohamad (2012) has suggested a set of activities to improve students' English vocabulary acquisition through their mobile phones and some mobile applications. His proposal includes two phases:

Part 1: Mobile technology integration into the curriculum. It consists of an overview of suggested mobile lessons and infrastructure.

Part 2: Policy & procedures of mobile learning implementation at schools (p. iii).

Mohamad (2012) has suggested that, through mobile learning, Malaysians schools will more easily open doors for the use of ICTs in general. He said that "Mobile learning is suitable to be implemented at smart schools,

parallel to the vision of the smart schools which encouraged the use of ICT in teaching and learning" (Mohamad, 2012, p. iv).

Similarly, Liu, Navarrete, Maradiegue & Wivagg (2014) applied specific mobile technologies without having to develop extra systems by focusing on the use of iPod Touch as a teaching and learning tool. According to their study, the introduction of iPod touch help teachers with homework assignments, create several teaching activities such as audio readings and voice recordings, as well as provide students and their families with extensive practice materials.

In conclusion, the authors has suggested that:

In spite of the challenges teachers faced when integrating the iPod touch in their teaching, the wide-ranging, diverse set of resources and capabilities to support English language education made available by mobile devices such as iPod touch, has led to an overall positive outlook towards the use of mobile devices in a traditional school environment. The convenience, individual guidance, and educational play made available through the device encouraged ELL students and teachers to access information for educational purposes. These findings indicate that mobile learning brings unique affordances for ELL students. (Liu, Navarrete, Maradiegue & Wivagg, 2014).

Other examples of how to integrate mobile technologies and applications into the English class are reviewed by Darmi & Albion (2014) who present a comprehensive analysis of the use of mobile

technologies in ten years (2004 to 2013). According to the authors, the acceptance of the integration of mobile phones in education is widely recognizable.

Their study reviews research on mobile implementations in several countries around the world including Australia, Japan, Turkey and the United Kingdom.

Well-designed tasks are depended on the use of pedagogical models that should guide teachers with the integration of mobile technologies into their English classes. Therefore, the acceptance and openness of teachers toward mobile learning is essential for its definite integration.

Teachers' attitudes and sympathy toward mobile learning. Finally, the integration of mobile learning cannot be possible if teachers do not feel comfortable with the new technologies and with the set of pedagogical strategies that are usually designed for such successful integration.

That is why many researchers in the field of mobile learning are concerned about the adaptations and response of teachers toward mobiles technologies in the classroom. Teachers' resistances to new methodologies is usually mentioned as one of the major challenges in educational changes mediated by new technologies.

Age ranges among teachers is usually one of the issues mentioned by researchers who have analyzed the response of teachers to new technologies. Shuler, Winters & West (2013) have suggested that training teachers in new technologies and, specially, on mobile learning is essential to the success of education in the future and one of the major challenges:

Realizing the potential of mobile learning will require new roles for teachers and superior capacity for teacher training (Deriquito and Domingo, 2012; Dykes and Knight, 2012; Fritschi and Wolf, 2012a; Isaacs, 2012a; Jara et al., 2012; West, 2012a). One of the strongest barriers to the development of mobile learning is the lack of trained practitioners who can effectively incorporate mobile technologies into their classroom practice. Current teachers, as well as those entering the profession, need training and professional development in the innovative design of mobile learning interventions (Shuler, Winters & West, 2013, p. 33).

Shuler, Winters & West (2013) have also suggested the importance of new policies and incentives for teachers and the need of new academic curricula.

Policy-makers should develop strategies to support teachers in deepening their understandings of the complex relationships between mobile technology, pedagogy, design and implementation. UNESCO and Nokia have recently taken steps in this direction with the Teacher Development with Mobile Technologies Project, which investigates how mobile technologies can be integrated with national teacher training systems in ways that improve the quality of teaching practices on a large scale (UNESCO, 2012b). Similar projects will be required in the coming years if educators are to truly embrace mobile technologies as a means of advancing student learning. (Shuler, Winters & West, 2013, p. 33).

Teachers' responses and adaptation to mobile technologies will be central to the successful integration of mobile learning into the English classroom.

Conclusion

Mobile learning has become popular thanks to the development of easy-to-use easy-to-get mobile technologies and the improvement of Internet-based platforms and Internet access. Schools have become aware of this and have started to find different ways to include mobile technology into their classrooms. The English classroom is no exception since teaching and learning English has always been associated to technological changes and have been susceptible to technology-based pedagogical innovations.

The challenge now for English teachers and school administrators is to be able to create a wider portfolio of effective teaching strategies that could easily and appropriately integrate mobile technologies into the English classrooms, and, at the same time, improve the development of communicative English skills in students.

Under the current conditions of public secondary education institutions in Costa Rica, and the importance of English learning as a national goal and political concern, the challenge of integrating mobile learning into the teaching strategies and pedagogical frameworks of English teachers becomes even more complex. That is why it is considered essential to start evaluating the possible ways to achieve a positive and realistic integrating of mobile learning into the English class. In order to face this challenge,

attention should be paid to at least the four tendency levels that have been reviewed in recent research.

The following further research questions should be explored.

1. What are the general conditions of high schools in Costa Rica that may allow the introduction of mobile learning into the classroom?
2. Is it possible to introduce mobile learning into the English classrooms of Costa Rican public secondary institutions?
3. What kind of mobile devices can be used to enhance English learning Costa Rican public secondary institutions?
4. What kind of teaching strategies can be proposed to help the integration of mobile devices into the English classroom?
5. What general framework can be used to develop those strategies?
6. What English communicative skills are more susceptible to the integration of mobile technologies so their learning and development can be enhanced?

The answers to these questions will help us understand the magnitude of the challenge faced by public secondary educational institutions, in general, and by English teachers, in particular, to be able to integrate current mobile learning technologies and devices into their classrooms through the development of appropriate and effective teaching strategies, and how these strategies can help students develop their specific communicative language skills in a better way.

Bibliography

- Abbott, C. (2001). *ICT: Changing education*. New York: RoutledgeFalmer.
- Alkhezzi, F., & Al-Dousari, W. (2016). The Impact of Mobile Learning on ESP Learners' Performance. *Journal Of Educators Online*, 13(2), pp. 73-101.
- Aamri, A., & Suleiman, K. (2011). The use of mobile phones in learning English language by Sultan Qaboos University students: Practices, attitudes and challenges. *Canadian Journal on Scientific & Industrial Research*, 2(3), pp. 143-152.
- Bezircilioğlu, S. (2016). Mobile Assisted Language Learning. *Journal Of Educational & Instructional Studies In The World*, 6(S1), pp. 9-12.
- Chang, J. H., Chiu, P. S., & Huang, Y. M. (2018). A Sharing Mind Map-oriented Approach to Enhance Collaborative Mobile Learning With Digital Archiving Systems. *The International Review of Research in Open and Distributed Learning*, 19(1), pp. 1-24.
- Chen, C. M., & Chung, C. J. (2008). Personalized mobile English vocabulary learning system based on item response theory and learning memory cycle. *Computers & Education*, 51(2), pp. 624-645.
- Chen, C. M., & Hsu, S. H. (2008). Personalized Intelligent Mobile Learning System for Supporting Effective English Learning. *Educational Technology & Society*, 11(3), pp. 153-180.
- Darmi, R., & Albion, P. (2014, Feb. 28-Mar. 2). *A Review of Integrating Mobile Phones for Language Learning*. International Association for Development of the Information Society, paper presented at 10th International Conference Mobile Learning, Madrid, Spain.
- El-Hussein, M. O. M., & Cronje, J. C. (2010). Defining mobile learning in the higher education landscape. *Educational Technology & Society*, 13(3), pp. 12-21.
- Gautam, A. (2014). Mobile Learning; an Effective Way of Teaching and Learning English Language. *International Journal on Studies in English Language and Literature (IJSELL) Volume 2*, Issue 5, pp. 50-52.
- Huang, Y. M., Huang, Y. M., Huang, S. H., & Lin, Y. T. (2012). A ubiquitous English vocabulary learning system: Evidence of active/passive attitudes vs. usefulness/ease-of-use. *Computers & Education*, 58(1), pp. 273-282.
- Kukulska-Hulme, A., Norris, L., & Donohue, J. (2015). *Mobile pedagogy for English language teaching: a guide for teachers*. British Council 2015, London.
- Liu, M. Navarrete, C. C., Maradiegue, E., & Wivagg, J. (2014). Mobile Learning and English Language Learners: A Case Study of Using iPod Touch As a Teaching and Learning Tool. *Journal of Interactive Learning Research*, 25(3), pp. 373-403.
- Mohamad, M. (2012). *Mobile learning in English Language learning: An implementation strategy for secondary schools in Malaysia*. School of Education, University of Southampton.
- Nalliveettil, G. M., & Alenazi, T. H. K. (2016). The impact of mobile phones on English language learning: Perceptions of EFL undergraduates. *Journal of Language Teaching and Research*, 7(2), pp. 264-272.

- Pachler, N., Bachmair, B., & Cook, J. (2009). *Mobile learning: structures, agency, practices*. London: Springer Science & Business Media.
- Pennycook, A. (2017). The cultural politics of English as an international language. Taylor & Francis.
- Seidlhofer, B. (2005). English as a lingua franca. *ELT journal*, 59(4), pp. 339-341.
- Sharples, M., Taylor, J., & Vavoula, G. (2010). A theory of learning for the mobile age. In *Medienbildung in neuen Kulturräumen* (pp. 87-99). VS Verlag für Sozialwissenschaften.
- Shuler, C., Winters, N., & West, M. (2013). The future of mobile learning: Implications for policy makers and planners. *United Nations Educational, Scientific and Cultural Organization* (UNESCO), pp. 7-35.
- The Design and Implementation of an English Mobile Learning Activity (2008). *College English: Issues and Trends Volume 2*. Retrieved from <http://lc.nccu.edu.tw/Conference/2nd/008.pdf>
- UNESCO. ICT in Education. Retrieved from <http://en.unesco.org/themes/ict-education>
- Vargas, Monserrath L. (2016, March 16). Uso de Internet celular se cuadruplicó en Costa Rica. *La Nación*. Retrieved from <https://www.nacion.com/tecnologia/moviles/uso-de-internet-celular-se-cuadruplico-en-costa-rica/SMNY3D7AOBDL-VIIT43MOMZZZ2Q/story/>
- Winters, N. (2007). What is mobile learning? In M. Sharples (Ed.), *Big issues in mobile learning* (pp. 7-11). Learning Sciences Research Institute: University of Nottingham.
- Young, S. S. C. (2003). Integrating ICT into second language education in a vocational high school. *Journal of Computer Assisted Learning*, 19(4), pp. 447-461.
- Zou, B., & Li, J. (2015). Exploring Mobile Apps for English Language Teaching and Learning. *Research-publishing.net*.