Language learning in **Tourism** through **mobile devices** in higher education[1]

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Abstract | In the digital age, millions of people use mobile phones to communicate. However, these devices are also being used for educational purposes. This paper attempts to show an overview of the use of mobile devices in the process of learning English as a second language by a class of higher education Tourism students, in Portugal. The paper refers to an initial research study that explores the overt and covert uses the students give to mobile devices and their attitude towards their use in an educational setting.
A survey was conducted to glean this information and we present the results which show that this technology is not used by most of the students in educational settings and that they are very aware of their teachers' penalising attitudes towards it. After the survey was conducted, a few language learning activities were tried out within and outside the classroom and, in general, students appreciated these and wish for more such activities in the future.

Keywords | Tourism, Mobile learning, Language learning, Mobile devices.

Resumo | Na era digital, milhões de pessoas usam telemóveis para comunicar. No entanto, estes dispositivos também estão a ser usados para fins educativos. Este texto apresenta possibilidades de utilização de dispositivos móveis no processo de aprendizagem de Inglês, como língua não materna, através do trabalho desenvolvido com uma turma de alunos de Turismo do ensino superior, em Portugal. O artigo reporta-se a um estudo em fase inicial que explora a utilização de dispositivos móveis pelos alunos e a sua atitude perante a mesma, num ambiente de aprendizagem.
Os alunos foram inquiridos acerca do uso da tecnologia móvel em contexto de sala de aula e os resultados mostram que esta não é usada pela maioria dos alunos em contextos educativos. Para além disso, observou-se que os alunos estranham a utilização de dispositivos móveis, em contexto de aprendizagem, pelo seu uso estar proibido noutros níveis de ensino. Depois de aplicado o inquérito, foram desenvolvidas algumas atividades de aprendizagem de língua, dentro e fora da sala de aula que, em geral, foram apreciadas. Para além disso, foi demonstrado, por parte destes alunos, o desejo de continuar a desenvolver atividades com dispositivos móveis, em particular o telemóvel.

Palavras-chave | Turismo, *Mobile learning*, Aprendizagem de língua, Dispositivos móveis.

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1. Introduction

John Dewey (1944) stated that "If we teach today as we taught yesterday, we rob our children of tomorrow". Language teaching methodologies have evolved over the centuries. Nowadays, technology has proved essential to teaching effectively, with a view to promoting professional integration in an increasingly digital world. Technology is a key element of modern society. In the global economy extreme importance is given to a highly skilled labour force. Therefore, teaching strategies should not ignore the contemporary needs or predilections of learners or the contributions of an array of potentially useful teaching devices.

Computers are used as study companions of students, either at home or at school. Language learning has also used them to improve students' language performance (Moura, 2010; Valarmathi, 2011).

Computer-assisted language learning (CALL) is an approach to teaching that has been widely used. However, over the past few years a new concept has emerged: Mobile-assisted language learning – MALL (Kukulska-Hulme and Shield, 2008). Mobile learning (m-learning) tools are being adopted by some teachers all over the world and at different school levels, from kindergarten to higher education institutions (Belanger, 2005; Brett, 2011; Chen and Li, 2009).

Mobile learning is an emergent paradigm in a state of intense development and Portuguese higher education institutions cannot neglect this trend; the evolution of mobile technologies and they need to be aware of their learners' needs. This article focuses on the importance of mobile learning strategies used with tourism students to help improve their language skills.

2. Literature review

In the past, distance education sought to respond to learner needs, managing to abolish geographical barriers to learning. Nowadays, in the digital era, other e-Learning solutions are needed in order to make access to information and to learning resources more flexible. It is important to implement teaching strategies which are conducive to better learning. It is also vital to allow learners to experience reality allowing it to permeate their learning. E-Learning has a remarkable influence on learners' education. However, this is considered a "tethered" learning solution (Kukulska-Hulme *et al.*, 2007); therefore it conditions learners' access to activities. Over the past years mobile technology has emerged, through the use of devices such as the Personal Digital Assistant (PDA), Tablet PC, e-book, and mobile phones.

These devices and their widespread ownership have allowed the emergence of a learning paradigm – Mobile learning – "which is in intense development powered by the convergence of three technological streams: ambient computing power, ambient communication and development of intelligent user interfaces" (Vavoula *et al.*, 2004: 173).

In *2007,* Kukulska-Hulme *et al.*,argued that "mobile learning is different from other kinds of technology-supported learning… Mobile learning is a far more seamless and integral part of learners' lives than classroom or institutional learning and it uses technologies and devices that are far more part of their lives." By 2007, the authors believed that "much of the potential of mobile learning is only becoming apparent as technological and pedagogical expertise builds up".

Technology evolved over the past few years and when Apple announced the release of its iPad tablet in late January 2010, the Reed College conducted an iPad study to get a clear sense of advantages and disadvantages of using the first-generation iPad in an academic context (Marmarelli and Ringle, 2011). At Reed College they identified the following as strengths of the iPad: its LCD screen; the quick response time of the touch screen; iPad's size and weight which made it very portable; battery life was at least twice as long as that of the students' laptop computers; using the iPad allowed students to avoid

printing thousands of pages during the semester; it also allowed students and faculty to refer to texts during in-class discussion. Some of the drawbacks were PDF distribution and syncing and its soft keyboard which was awkward to use. After this iPad study, Marmarelli and Ringle (2011) argued that the adoption and use of iPads and similar devices would grow rapidly, both at Reed College and throughout higher education.

The introduction of the iPad caused a problem with the definition of mobile learning, because it do not fit within a pocket or purse, but is often considered a mobile learning device. To overcome definition problems, Quinn (2011) suggests that mobile learning devices are "optimized to run applications for mobile use".

In 2011, Quinn also addresses the "why mobile learning?" question by saying that mobile learning is about performance. It is not about being able to do mobile learning; it is about enabling people to perform in their job more effectively.

Through their studies, these authors show how fast m-learning is evolving.

As you can see, in the diagrams (Figures 1, 2), there is a shift in on-the-move learning strategies:

Whatever device is used, mobile learning has rapidly entered learners' and teachers' routines and,

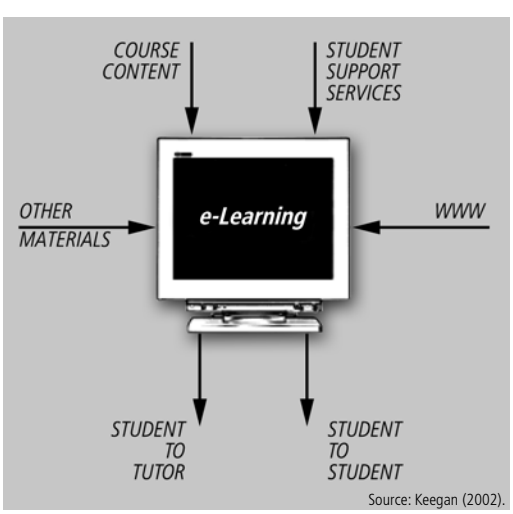

Figure 1 | Wired Virtual Learning Environment of Today.

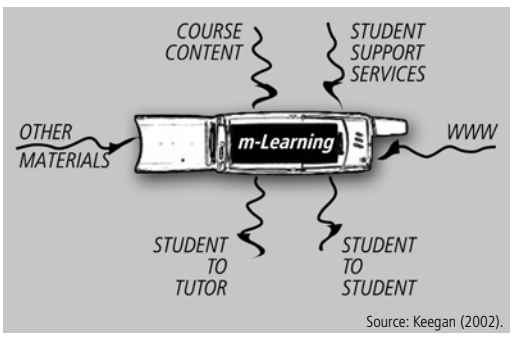

Figure 2 | Wireless Virtual Learning Environment of Tomorrow.

nowadays, both teachers and learners engage in mobile content production (Kukulska-Hulme *et al.*, 2007).

Where the use of mobile phones in language classes is concerned, many authors refer to its benefits (Trifonova *et al.*, 2004; Pincas, 2004; Levy and Kennedy, 2005; Thornton and Houser, 2005; Kukulska-Hulme and Shield, 2007; Cavus and Ibrahim, 2009; Moura, 2010; Aamri and Suleiman, 2011).

Learning through mobile devices allows learning to take place in real contexts and makes the learning experience more appealing, motivating and interesting as students learn on the move, everywhere, anytime (Vinci and Cucchi, 2007).

In 2012, Quinn demonstrates just how powerful mobile devices have become and the benefits that mobile devices offer to higher education. Besides, he argues that

> "Mobile has matured and stabilized to the point where it now makes sense to understand, plan and start developing mobile solutions. […] What we have on tap is the opportunity to revisit the fundamentals of the learning experience and use technology to come closer to the ideals we would like to achieve" (Quinn, 2012: 2-3).

However, in order to implement mobile learning with students it is necessary to be aware of both technical possibilities and student's acceptance of technology.

In order to become aware of these aspects, surveys are a good tool to help teachers. The Uni-

fied Theory of Acceptance and Use of Technology (UTAUT), by Venkatesh *et al.* (2003), formulate a unified theory that integrates elements across eight models of information technology acceptance models and empirically validates the unified model. The eight models reviewed by Venkatesh *et al.* (2003) are the theory of reasoned action, the technology acceptance model, the motivational model, the theory of planned behaviour, a model combining the technology acceptance model and the theory of planned behaviour, the model of PC utilization, the innovation diffusion theory, and the social cognitive theory. UTAUT aims to explain user intentions to use an information system and subsequent usage behaviour according to the following items (Figure 3):

There have been several studies of information technology acceptance which adopted this model, namely Donaldson (2011) who adjusted the items used in UTAUT to school setting.

Performance expectancy
- U6: I would find the system useful in my job.
- RA1: Using the system enables me to accomplish tasks more quickly.
- RA5: Using the system increases my productivity.
- OE7: If I use the system, I will increase my changes of getting a raise.

Effort expectancy
- EOU3: My interaction with the system would be clear and understandable.
- EOU5: It would be easy for me to become skillful at using the system.
- EOU6: I would find the system easy to use.
- EU4: Learning to operate the system is easy for me.

Attitude toward using technology
- A1: Using the system is a bad/good idea.
- AF1: The system makes work more interesting.
- AF2: Working with the system is fun.
- Affect1: I like working with the system.

Social influence
- SN1: People who influence my behavior think that I should use the system.
- SN2: People who are important to me think that I should use the system.
- SF2: The senior management of this business has been helpful in the use of the system.
- SF4: In general, the organization has supported the use of the system.

Facilitating conditions
- PBC2: I have the resources necessary to use the system.
- PBC3: I have the knowledge necessary to use the system.
- PBC5: The system is not compatible with other systems I use.
- FC3: A specific person (or group) is available for assistance with system difficulties.

Self-efficacy

I could complete a job or task using the system…
- SE1: If there was no one around to tell me what to do as I go.
- SE4: If I could call someone for help if I got stuck.
- SE6: If I had a lot of time to complete the job for which the software was provided.
- SE7: If I had just the built-in help facility for assistance.

Anxiety
- ANX1: I feel apprehensive about using the system.
- ANX2: It scares me to think that I could lose a lot of information using the system by hitting the wrong key.
- ANX3: I hesitate to use the system for fear of making mistakes I cannot correct.
- ANX4: The system is somewhat intimidating to me.

Behavioral intention to use the system
- BI1: I intend to use the system in the next <n> months.
- BI2: I predict I would use the system in the next <n> months.
- BI3: I plan to use the system in the next <n> months.

Source: Venkatesh *et al.* (2003).

Figure 3 | Items used in estimating UTAUT.

Concerning mobile technology use in higher education, in the Tourism sector, there are some studies taking place. For example, TravEd Research project (Vuojärvi *et al.*, 2011) which is a transdisciplinary and international research project where the main objective is to develop a pedagogical model, exploiting mobile technologies and electronic learning environments, applied especially to develop travelling education and educational services in tourist centres.

3. Methodology

In this study, qualitative data collection methods were used to collect data to describe the process of Mobile Assisted Language Learning which we developed with higher education Tourism students.

This year, at the beginning of the first semester, a survey was conducted to better understand which mobile devices students had access to and to be aware of mobile internet access possibilities. The class had 20 students who studied Tourism.

We have divided the survey into 3 parts. First, personal data; second, students and their mobile devices; and third, students' acceptance of technology, following some of the UTAUT constructs.

In the first part we wanted to know students' age and sex, in order to know if there was a difference between age and sex groups in the class.

In the second part, we asked which mobile devices they used to have access to the internet and their characteristics. In case they mentioned mobile phones we asked for their model, mobile service provider(s) and operative system(s). With these questions we wanted to know the range of mobile devices available. Furthermore, in case they had mobile phones, to know if the models had internet access capacity. Besides, we also wished to identify the mobile service providers, so that the teacher would acquire a compatible mobile phone card, allowing students to send her free messages (when these mobile learning exercises would be used). Finally, we wished to inquire about the operative system of the students' mobile phones to know if they had compatible systems to solve the foreseen exercises.

Finally, we asked the students a few questions on their expectations to use mobile devices for language learning purposes. The selected questions were based on an adaptation of some of UTAUT's constructs to school settings made by Donaldson (2011).

With these questions, we wished to know if students were aware of mobile technology usefulness and if they were willing to work with it for learning purposes. There were also some questions on the type of exercises they would like to have access to, as well as the time they would be willing to spend doing them.

After verifying that mobile learning through the students' devices would be possible, several m-learning activities were implemented for in and outside class learning.

Throughout the semester, the teacher also made notes on students' remarks regarding m-learning technical limitations, and adaptation and, by the end of the semester, an interview was conducted to ask for students' opinion regarding their language m-learning experiences.

4. Results and discussion

After conducting the class survey on mobile devices, we realised that there were only women in class and that their age average is 21 years old.

In what the second part of the survey is concerned (Students and their mobile devices) the following results were obtained (Table 1):

Table 1 | Mobile devices per student in a class of 20 students

Students' mobile devices	Number of students	Percentage of students
Devices with internet access (mobile phone)	16	80%
Devices without internet access (mobile phone)	4	20%

Source: own elaboration.

From the survey analysis regarding mobile phone model we realised that most of the students had internet access on their mobile devices (80%). However, only 2 students accessed the internet regularly. The remaining students stated that they had never used the internet on their devices because they thought it was a paid service; they had never felt its need in other classes and they were not even aware that, on campus, Wi-Fi connection allowed free of charge internet access. The collaboration of the school technicians was solicited in order to configure Wi-Fi credentials on the students' devices and from then onwards it was possible to develop language learning activities.

Besides, the survey allowed us to conclude that there were different operative systems therefore we adopted the exercises to the existing software.

Regarding the mobile service provider all students shared the same provider, therefore there was no need for the teacher to use cards from different service providers for mobile learning exercises.

In where the third point of the survey is concerned (Students' acceptance of technology), all the students were willing to use mobile devices in class for learning purposes, though they mentioned that they found it awkward as they were used to being admonished, throughout their schooling, especially for using mobile phones in class even for research purposes.

Concerning the type of exercises wished the students mostly referred audio and video. This helped the teacher customise exercises.

The final survey topic concerned time students would be willing to spend doing mobile learning exercises. In this respect the following results were obtained (Table 2):

Table 2 | Time to use m-learning activities

Time to use m-learning activities	Number of students	Percentage of students
None	0	0%
05-15 minutes	0	0%
15-30 minutes	8	40%
30-45 minutes	10	50%
45-60 minutes	2	10%
More (mention how long)	0	0%

Source: own elaboration.

Most students had the intention to spend about 30 minutes with m-learning activities. This shows that students are enthusiastic to use technology regardless never having had contact with this learning approach.

After a week of in-class mobile learning activities, 20% of the students who had no mobile access to the internet resorted to two different ways of internet access: 10% used the teacher's devices (mobile phones and iPad) and the other 10% borrowed mobile devices from some colleagues to take to the English class. When asked about the reason why they had asked for borrowed devices, students mentioned that they felt the need to have their own material to work because they felt curious about using mobile devices in class and because they realized that all their fellow-students were using them as well. This goes in line with what Venkatesh *et al.* (2003) state in their study, that motivation to use technology is a key factor for its acceptance.

During the whole semester students used mobile devices and wireless networks to have access to exercises.

The mobility of the learning means is particularly pertinent for tourism students, as they have on-the-site sessions at monuments, museums and other outdoor locations. In this way, they can integrate information they have acquired or to which they have mobile access in real contexts.

After a semester using mobile learning strategies with higher education tourism students, some materials were produced by the teacher and the students either in podcast, video and written formats. Text to speech software was also used. This software was developed with one of the institution professors to improve language learning (Lousado *et al.*, 2011). This software allowed students to listen to written texts being read by the system's voices and to record the voices as well. This allowed students to have access to pronunciation models. In the case where students' recorded texts were read they could listen to them anytime, anywhere as long as they transferred the recordings to their mobile devices.

By the end of the semester we conducted a new survey to check the students' opinions regarding the use of mobile devices in their learning activities.

To sum up, the results were positive regarding mobile technology use. Most of the students stated that they had never thought of using their mobile phones, for example, to learn in class without being admonished. Few students mentioned that they had accessed the internet, for learning purposes, through their mobiles covertly, without their teachers' knowledge. However, after becoming used to using mobile devices in the English classes they referred that they started asking for permission from other teachers to search for information on their mobiles during those classes. Besides, as the study was conducted during the first academic semester there were two students who contrived to obtain a new and more apt mobile device because they felt the need to have internet access not only in class but outside as well, to be able to perform tasks and to revise material during their free time. By free time they mostly referred to time spent on public transport, as these students had to travel for an hour and a half to get home at the weekend.

On the whole, students were pleased that their ubiquitous devices could be useful for learning purposes and without constraints or reprimand from the teacher. Besides, they produced online materials that were tested by themselves and some friends who made online comments on their work. One of the students even mentioned that one of the exercises developed in class could be a good business opportunity after finishing her studies which shows how technology is widely accepted and envisaged as a future career supplement.

5. Conclusions

The relation between mobile learning and language learning has been tested by several teachers all over the world, instead of resorting solely to computer aided language learning.

The use of ubiquitous mobile devices has proved to be beneficial for language learning as there is full access to information anywhere and anytime, as long as there are the necessary technical conditions. Mobile devices enable access to learning in a more active and effective way than tethered devices. Therefore, a new teaching and learning "paradigm" is breaking through in schools. For the stated reasons, it is urgent that teachers, in Tourism also, consider the possibility of adopting mobile learning in their classes as mobile devices may be an excellent support tool to motivate students for language learning and learning other subjects. Nowadays, society is going mobile therefore, higher education institutions can try to adapt to the interests of their various publics by gradually adopting mobile strategies.

Higher education institutions can, for example, take advantage of the students' commuting time to help them learn by using mobile devices during their free time. Besides, as mobile devices are usually forbidden in class throughout schooling, using mobile learning strategies might create more student motivation.

Regarding Tourism students using Mobile Assisted Learning, we believe that this is beneficial for both in and outside class learning purposes because first, students can take advantage of their own resources to learn whenever and wherever they wish. Second, they can use these to have access to updated exercises; to record learning experiences/difficulties. Besides, m-learning allows 'to optimize the learner experience' (Quinn, 2012) and, as future professionals, mobile learning can help students perform in their professional callings more effectively as they stated in the conducted survey.

In conclusion, although, at first, students felt reluctant to use their mobile phones in class, due to their previous forbidding experiences, we realised that they were willing to use them. Through these customised English for Tourism activities we understood that motivation increased proportionally to the activities developed. We believe that if m-learn-

ing was not motivating for these higher education students, they would not make efforts to surpass the limitations of their devices. As higher education students have a very specific aim for studying – to become graduated – they are highly motivated to learn. After these experiments and evidence from literature from all over the world, that reinforce the importance of m-learning in higher education, we are going to further develop this study on the subject-specific area of Tourism.

6. Limitations

There are a few limitations for using mobile learning in class. First of all, the students might not have compatible devices and not many schools have wireless internet access. However, if students have a high technology importance awareness they will try to find ways to overcome their own technological limitations.

Another limitation is the usual interdiction of mobile devices in schools which may make students reluctant to use technology. However, as students feel motivated to use technology, reluctance gradually fades away.

As nowadays there are numerous mobile devices it requires an in depth awareness of the class devices and this might require some extra effort on the teacher's part. However, when this work is completed, mobile strategies can be customised according to the students' needs.

Although there were, sometimes, consuming moments at the beginning of this pilot study, the on-going and final results wore worth every minute, especially because it attracts students' curiosity and commitment. This study is part of an on-going research project which will be further developed with other classes. Further survey and interview adaptations will be made according to the pre-mentioned models as the primary results were satisfactory.

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