

History at the Fingertips

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Abstract

Today it is almost impossible to talk about teaching without technology. Educators are generally aware that today's students have been growing up surrounded by technology that keeps them in touch with the world as well as constantly accessing all kinds of information. Therefore, it seems, now more than ever, that it is fundamental to guide students in understanding the different ways they can use the information they receive and, especially, how to filter that same information in order to improve their knowledge and skills.

Based on these ideas we developed a study that will use a mobile technology (the *iPad*) in History classes, seeking to stimulate and develop critical thinking and complex reasoning, based on connectivism and constructivist theories.

Keywords

history, mobile technologies, critical thinking, iPad

INTRODUCTION

Today's youth is surrounded by all kinds of devices that keep them permanently online and wired. Prensky has stated that "today's students [...] represent the first generations to grow up with this new technology" (2001, p. 1). This fact has also motivated other authors to call them the Generation Digital (Montgomery, 2007) or iGeneration (Rosen, 2010). On the other hand, with all the digital tools we have, the amount of knowledge that we can access is far too extensive to be stored only in our brains. So today the ability to filter and tailor the information we need becomes far more important than what we have archived in our brains (Siemens, 2004). In that sense, knowledge is spread over more than one individual and, therefore, the more networks we form, the greater the possibility to access vast amounts of information (Downes, 2007).

In a pluralistic and constructivist school, it is necessary for learners to explore, to clarify errors or contradictions, and to engage in dialogue. It is "an interpretive, recursive, building process by active learners interacting with the physical and social world" (Fosnot, 1996, p. 30).

Additionally, competences associated with "history thinking" can contribute to an informed and alert participation in the contemporary information society, as it "has moved towards collective learning, collaborative, and constructive criticism, which enables the development of autonomy in students and has dynamic content, based

on the environment and questions experienced as authentic" (Matta, 2001, p. 31-32). Therefore, it has been accepted that the use of ICT in History classes can in fact improve students' historical thinking and lead them to a better understanding of History.

LITERATURE REVIEW

It is not enough to have wisdom; you need to know how to use it. (Cicero)

The technological evolution we have seen in the last few years has made possible the use of mobile devices in education. In fact, the new millennium students, permanently surrounded by technology, are used to accessing vast amounts of information not only in a quick and easy way but also virtually anywhere, and are thereby "formatted" to think in a very different way than previous generations. Accordingly, Prensky (2001) referred that "our students today are all "native speakers" of the digital language of computers, video games and the Internet" (p. 1).

Rosen (2010), a few years later, went further with this definition, by adopting the term iGeneration.

"with the "i" representing both the types of mobile technologies being heralded by children and adolescents (iPhone, iPod, Wii, iTunes) plus the fact that these technologies are mostly "individualized" in the way they are used. My colleagues and I feel that this new generation encompasses those children and teens born in the new millennium and are defined by their technology and media use, their love of electronic communication, and their need to multitask" (Rosen, 2010, paragraph. 4).

It is then very important to realize that schools are faced with students that "prefer their graphics before their text rather than the opposite. They prefer random access (like hypertext). They function best when networked. They thrive on instant gratification and frequent rewards. They prefer games to serious work" (Prensky, 2001).

The impossibility of using, when at school, the usual mobile devices (ipod, smartphone, mp3 or other) that nowadays students "wear" (for them it is as fundamental as a pair of shoes or a sweater) and which makes them carry the world in their pocket, often causes demotivation. Hearing a teacher talking for an hour seems to them infinitely less interesting than the blog they read or the songs they heard in the previous class break.

Due to this, it is now irrefutable that schools not only have to adapt themselves to a new educational age but also should develop digital skills that can prepare students for the digital world:

On leaving school, students should have learned to use digital technology, communication tools, social networks, as well as manage, integrate, evaluate and create information that allows them to live in a highly computerized and connected society (Moura, 2012, p. 127).

LEARNING WITH MOBILE DEVICES

Different studies have shown that the use of laptops in schools (by students) was not massively adopted but, on the other hand, we recognize with some ease that students come to the classroom carrying among books and notebooks, mobile devices that are increasingly "smaller, lighter, with more storage capacity, more intuitive functionalities and with Internet access" (Carvalho, 2012, p. 7).

In the 2012 Edition of the Horizon Report (which features the six emerging technologies or practices that are expected to have strong impact on education systems over the next five years), "mobile devices & apps" and "tablet computing" appear as the technologies that will have significant impact on education during the next twelve months. The other four technologies are game based learning, personal learning environments, augmented reality and natural user interfaces.

As far as the first technology is concerned (mobile devices & apps), the Report states that:

the potential applications of mobiles are vast, and range from graphing complex mathematical equations to storing and sharing notes and e-book annotations. Apps in particular are the fastest growing dimension of the mobile space in the K-12 sector right now, with impacts on virtually every aspect of informal life, and increasingly, potential in almost every academic discipline. (Johnson et al., 2012, p. 4)

It is therefore necessary to take advantage of these new devices, so appealing to young people, and capitalize their use in education. The concept BYOD - bring your own device - stresses this idea in various professional contexts (Carvalho, 2012) and the development of mobile learning is becoming mainstream these days.

'Bring Your Own Device' becomes more and more attractive. It allows all students to take their own technological equipment into the classroom, enhancing the desired level of entrance of technology in education, with one device per student (Moura, 2012).

The mobile phone, which is considered to be the technology that has had the quickest expansion throughout the history of mankind, has wide receptivity among younger people. If initially they used it to keep in touch with their friends, they are beginning to use them as a learning tool (Moura, 2010).

The development of smartphone technology enabled mobile phones to widen their potential, allowing the user to access numerous applications, exploiting all its hardware (GPS, camera, microphone,...), meeting a huge variety of goals and transforming smartphones into true mini-computers that fit in the palm of a hand. At the same time, this equipment came to promote a more student-centred learning. In this sense, Moura (2010) refers that:

it appears that students have found in their personal mobile phone another possibility to their individual learning. We find the appreciation of an individual and autonomous learning, cut to the measure, very much in the sense of the "do it yourself" (p. 472).

Through mobile learning, the student has knowledge at clicking, whenever he wants, wherever he wants. Ally (2009) even states that "educators and trainees are empowered since they can use the mobile technology to communicate with learners from anywhere and at anytime" (p. 1).

A study, reported by Johnson et al. (2011), states that soon 80% of people who access the Internet will be doing so through a mobile device. Mobile and wired technology allow multiple resources, options and strategies, which can revive students' interest for what school can teach them, allowing also their "technological world" to cross with the "educational world" and, this way, reviving the Digital Natives' empathy for what school has to offer. Despite the dispute that still exists when it comes to allowing different mobile devices to be used in the classroom, we agree with Moura (2012) when she states that "this methodology is appropriate to learn problem-solving skills, facilitate experimentation and research" (p. 132).

Important in this context are also the words of Lencastre & Araújo (2007)

Those who deal with young people or are usually aware of their interests know how mobile phones, computers, iPods, game consoles, etc., are to their liking. The ease with which students adhere to these devices and how they deal with them is a field of possibilities so rich and full of potential for multiple learning that is totally absurd that the school does not use it to achieve its educational objectives (p. 625).

Moura (2012) says that, more recently, the rise of tablets and the iPad overcame the so-called "laptops" because they are more portable, being lighter, with more

powerful batteries and also because of their tactile interaction, contributing to the renewal of the educational environment. With larger screens than phones but lighter than laptops, they bring together almost the best of their closest relatives, gathering almost all the advantages and few limitations. Accordingly, among the tools most likely to impact on education in the near future, we return to the Horizon Report which states on tablets that:

high-resolution screens allow users of tablets, such as the iPad and Galaxy, to easily share content, images, and video. They are engaging and viewed as less disruptive than other hand-held devices (no phone ringing and no incoming text messages). Because tablets are able to tap into all the advantages that mobile apps bring to smaller devices but in a larger format, schools are seeing them not just as affordable solutions for one-to-one learning, but also as feature-rich tools for all sorts of assignments as well, often replacing far more expensive and cumbersome devices and equipment. (Johnson *et al.*, 2012, p. 4)

At the speed of a click, the interactivity provided by tablets reproduces a science lab, a historical recreation, a music studio, or virtually transports the user to a library, to a museum or to almost any place on earth. That way, some studies have been done seeking to identify the major potential of this new equipment, which generally reinforce the idea that, they can make a beneficial contribution to both teaching and learning. For example, according to a study conducted in the United States in January 2012, the number of students with a tablet more than tripled in the space of a year. Also, both students and teachers understood that this equipment was as valid for education as for entertainment, students agreed that this equipment would transform the way one learns and increasingly more students read digital books instead of paper books (Pearson Foundation, 2012).

Moura (2012) states that existing educational applications for mobile devices provide more interactive classes and that most of them are suitable for different curriculum areas.

Some of the features that we believe to be important in the use of mobile devices are that they allow the interaction between text, video and sound, which may be prepared for various educational levels. Also, it facilitates access to a variety of new and free content that is beginning to appear on the Internet.

It is also important that, when using mobile devices in learning strategies, students are provided with challenges or obstacles that they can overcome through the use of their creativity and different cognitive domains, so that we encourage learning through discovery and individual construction of knowledge of each student involved (Bottentuit Junior, 2012).

In general, the iPad seems to be, both for students and teachers, a device that provides attractive learning environments and encourages exploration. It is a reliable device and can go beyond the expected but it is not, however, perfect. When asked, the majority states that they recommend its use in teaching. In the Trinity's College report we found a comment mentioned by one student in a survey, which we thought it was worth to highlight:

I feel very lucky to have such a rare chance studying in a brand new way with the iPad and I'm moved by this surprising piece of new high-tech. If it is possible I really want to keep it with me and I would like to recommend to my mum cause iPad is also very helpful in our daily life. Finally, I'm looking forward that this project will be well developed in the future. (Jennings *et. al.*, 2012, para. 16)

THE PROJECT: HISTORY AT THE FINGERTIPS

In this paper, we focus our attention on studies related to the educational use of the *iPad*, as it is the chosen mobile device for our own project.

In the introduction of this paper we referred that we have to consider that, due to the vast amounts of information that are available to any of us with just one click, it becomes more important to know how to use information than to store it in our brains. Siemens (2004) states that

including technology and connection making as learning activities begins to move learning theories into a digital age. We can no longer personally experience and acquire learning that we need to act. We derive our competence from forming connections.

Linking this with the constructivist pedagogical theory that we also referred in the introduction, and as Fosnot (1996) argues, it is intended that students must explore in order to know, we think that a project that introduces a mobile technology into the classroom could represent a practical interaction of both connectivist and constructivist ideas.

In addition, we believe that the mere fact that we have access to a whole new way of presenting historical information is, in itself, a compelling benefit. In fact, History is a complex subject. It often compares different and varied sources. The use of multimedia tools in history classes just seems, for us, indispensable. Moreover, it is essential that students learn to interpret, analyse and select the information they access through technology, also taking a bit of the historian's own work into the field of ICT skills.

Taking all these issues into perspective led us to prepare this project, which is based on the use of an iPad for the teaching and learning of a History lesson.

The theme

We prepared a project based on a part of the History program of the final year of high school, one that usually students had more difficulty to understand and usually fail the most when asked about it in exams: the Portuguese Revolution of April 1974. This is a complex issue, since it deals with different perspectives, in a relatively short timeframe, and combines a series of circumstances that led to the Revolution itself and to its outcome, as well as to the events that followed.

The resources

The theme was organized and prepared with iTunesU app, which provides a digital course book that gives students information regarding what they are supposed to learn and what they should do to fully understand that particular subject (Figure 1). This project was then prepared with one thing in mind: get students to, while viewing the documents, put into practice their skills at the level of analysis and systematization of the information received.



Figure 1: The iTunesU course

The main theme was divided into chapters (Table 1), each one with a few questions to guide students through a list of varied types of resources and web pages (Figures 2 and 3). After viewing them they have to complete an assignment. Some of the chapters' tasks were solved individually, and others in groups, improving collaborative learning

Table 1: Resources and tasks per chapter

Chapter	Resources				Tasks
	Videos	Photos	Documents	Webpages	
1	8	4	2	2	Individual - answer a multiple choice questionnaire online
2	8	5	4	3	In Group - write a chronology
3	1	6	5	0	In Group - write an essay
4	1	8	2	1	In Group - write a news article
5	0	3	2	1	Individual - answer a multiple choice questionnaire online

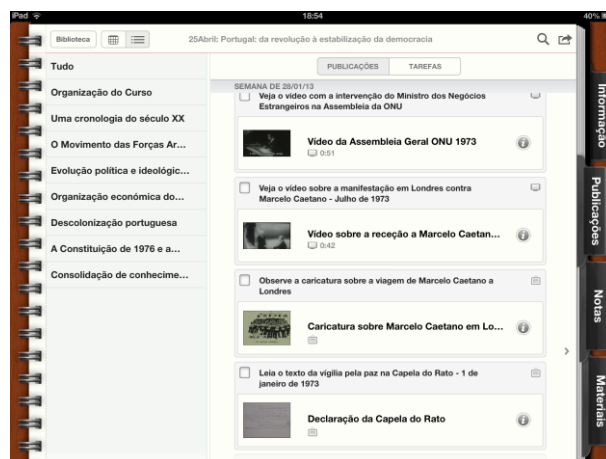


Figure 2: One of the course chapters (partial)

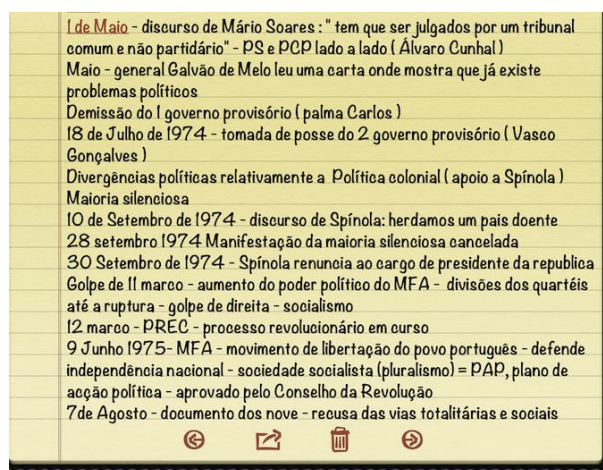


Figure 3: A task example: taking notes to elaborate a chronology

The students watched three videos that were prepared (each one was about 15 minutes depicting the events before, during and after that Portuguese revolutionary period) and organized according to the curriculum syllabus.

The study

Before the implementation of the study students answered a questionnaire about digital literacy and also about what they feel regarding the study of History. They also answered a questionnaire about the topic (Pre-test), which includes questions of factual knowledge and of near and far transfer. This test (post-test) was answered again at the end of the study.

After the completion and presentation of this work, they answered to the post-test. Then, they answered a second questionnaire, about their opinion in relation to the work developed.

With this study we expect to answer the following questions:

- Will students be more critical towards the historical events portrayed?
- Is it possible to identify a positive outcome of the use of mobile technology in the classroom?

More than verifying if the test results improve after the completion of this project, we find more relevant to identify the interest students put in their work, their critical attitude towards the events depicted, their capacity for analysis and synthesis, as well as the use of a connectivist approach for the compliance of the work guidelines.

Preliminary outcomes

The study was carried out in two different classes (one from a public school and one from a private one) 12th grade. One class had 19 students and the other just 3. Their age ranged from 16 to 19 years old (the mean was 18) and 2/3 of the students were females. Students found it very easy to learn how to work with the iPad and they liked learning with this technology (Table 2).

Table 2: Reaction to the use of the *iPad* in History classes

Reaction the use of the <i>iPad</i> Class	I didn't like		I liked		I liked a lot	
	f	%	f	%	f	%
Class A (19 students)	0	0.0	10	52.6	9	47.4
Class B (3 students)	0	0.0	0	0.0	3	100.0

When asked if they considered to have learned better in these classes than in regular ones most of them answered that they had learned better (Table 3).

Table 3: Learning with *iPad*

Learning with <i>iPad</i> was ... Class	the same as in other classes		better than in other classes		worst than in oth- er classes	
	f	%	f	%	f	%
Class A (19 students)	9	47.4	8	42.1	2	10.5
Class B (3 students)	0	0	3	100.0	0	0

Students revealed, during this study, that they enjoyed what they were doing and this enjoyment led them to be more interested in the subject (Table 4). There was also a common understanding among these students that this new motivation would later affect (in a positive way) their results.

Table 4: Empathy towards the project

The proposed activities in- creased your interest in the subject? Class	Yes		More or less		No	
	f	%	f	%	f	%
Class A (19 students)	9	47.4%	10	52.6%	0	0%
Class B (3 students)	3	100%	0	0%	0	0%

In general, students tend to admit that the digital book cannot replace the teacher but it presents the information in a more attractive way and the ability to organise it

according to their needs is an advantage that most of them also recognise (Figures 4 and 5).

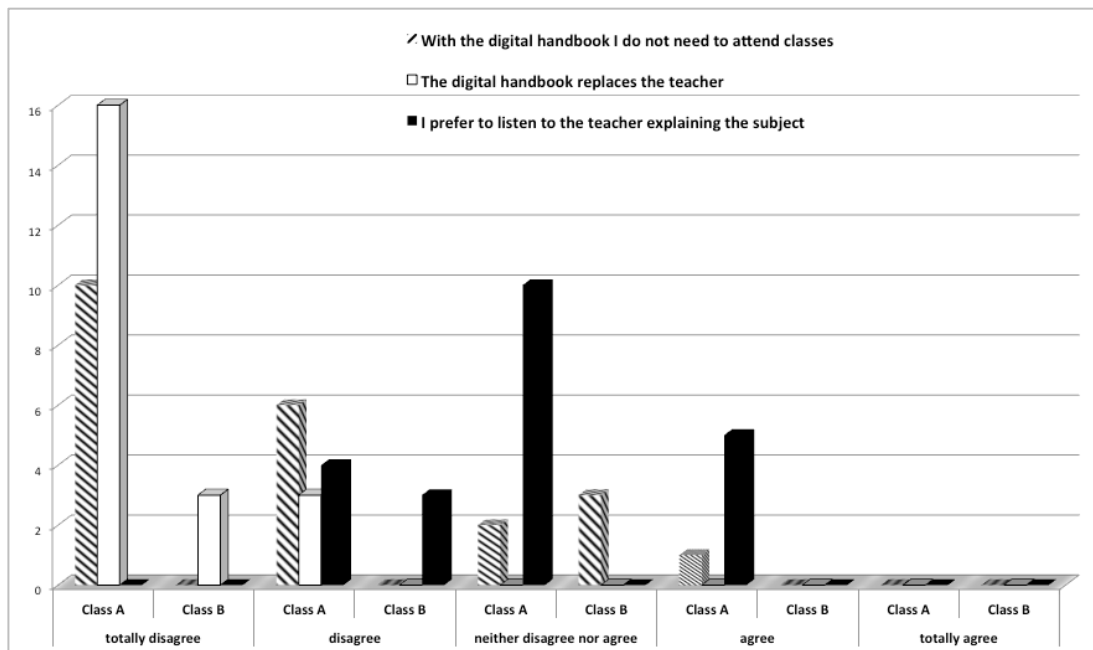


Figure 4: Perceptions regarding the use of the digital book versus the teacher

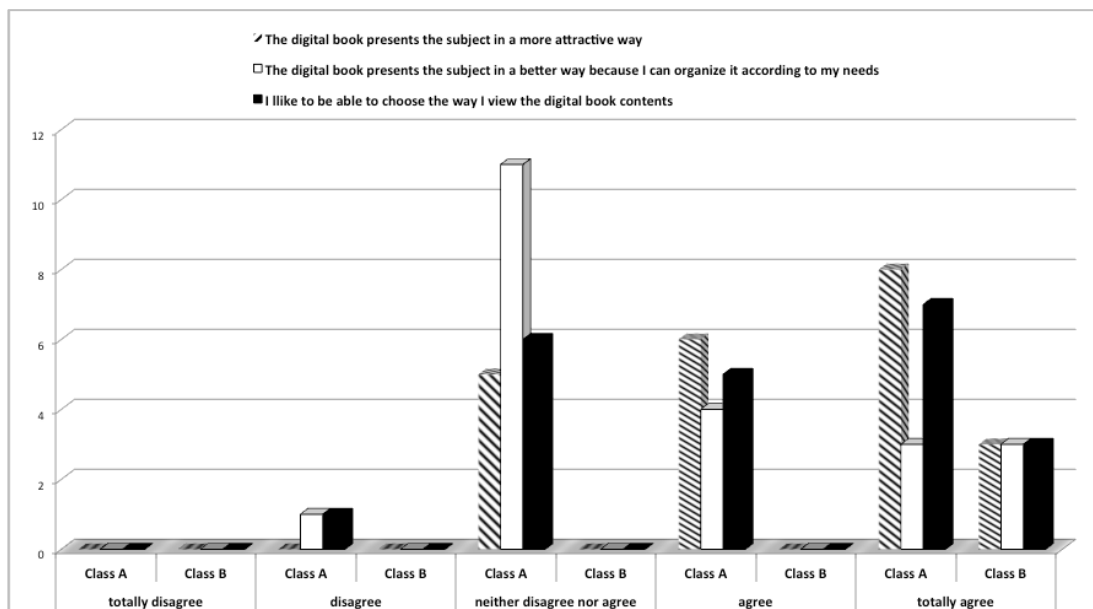


Figure 5: Perceptions regarding the advantages of the digital book

CONCLUSION

The integration of mobile technologies in education has generated much debate in recent times. We are aware that these technologies are not a panacea for the problems in education but we feel that, if properly used, they can contribute, in one way or another, to improve teaching and learning. In fact, it is important to realize that technology should not be used just because it seems attractive. It must be properly chosen.

The use of mobile technology may contribute to developing connectivist and constructivist pedagogies in the classroom, providing a more attractive environment for a generation of students that live with technology every second of their lives.

Do students know how to interact with it in an educational way? They will surely need some help with that. They must be accompanied while using technology to learn.

Our project intends to improve the relationship of students with History classes, through the use of technology, leading them to understand how to interact with the resources and learn from them as well as with each other, putting into practice both constructivist and connectivist theories. At the same time, we want to find out if through technology we get students to feel more empathic with History and to be more critical towards information.

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Biographies



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