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New educative methods in the usage of audiovisual content in mobiles

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Abstract

The paper proposes new paradigms in education regarding usage of audiovisual contents adapted to mobile devices, under the perspective of changes in the conventional learning process through the web from student side. The knowledge of the educational design processes by professors, a concept known as m-learning, will allow to demonstrate the advantages and disadvantages under the student's perspective. These constraints are focused, firstly on adapting contents and, more specifically, on the real technical implementation of audiovisual contents and the mechanism and interaction processes. On the other hand, it is important to emphasize advances in new digital formats relating to the new generation mobile phones, which allow to integrate contents in the learning process, ubiquitous learning. Finally, considerations and conclusions addressed to the educators who would like to adapt traditional contents to the new tools and formats will be established.

Keywords: Mobile learning, audiovisual contents, ubiquitous learning, interface focused on the user.

1. Introduction

According to Sharples, the concept of m-learning is based on the use of wireless devices that allow to have a control both over time and the learning environment thanks to the level of autonomy provided (Sharples, 2005). So far, the trend has been using already existing pedagogical methods, methods which have been adapted to online digital environments, though nowadays there are specific research projects as an attempt to know more about the social impact and its innovative contribution to the learning process (Kukulska-Hulme, 2005). This is seen as a pedagogical challenge because of the difficulties found when trying to adapt content to the particular constraints of technology (Avellis, 2003).

These constraints are mainly visual (reduced size of screens, levels of colour, etc.), but also technological (capacity of memory, variety and compatibility among distinct models, etc.) and social (costs of delivery and

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reception of text messages, level of acquisition, access to devices, appropriate use, etc.). These issues have been addressed to in several research papers which have tried to find out what the impact of wireless devices and/or "small devices" have been on our social context (Traxler & Kukulska-Hulme, 2006). M-learning leads to the use of a new learning concept and also of adapted content, which would allow to acquire basic cognitive knowledge and select data according to real needs (Sharples, 2005).

Therefore, there are several differences between digital content created for mobile devices and the digital content which have been previously adapted to e-learning environments. The main differences can be found in technical validation, creation, development and analysis of students' results, as part of an autonomous learning process.

The acquisition of cognitive knowledge is focused on Vigotsky's theories (Vigotsky, 1978). Two learning spaces are fixed; semantic and technological. When we focus on the semantic space, the creation of theoretical content and the development of skills are seen as the result of personal motivation and the monitored acquisition of content through a means which can be autonomously managed by the user. This would make acquisition of specific knowledge and the learning process more autonomous. Taylor (Taylor et al., 2005) has followed the Vygotsky' model and has developed a model which would allow to learn through autonomous devices such as the mobile phone. Taylor takes into account both spaces mentioned earlier and pays special attention to the semantic one. The main features of this semantic space are: control, context and communication. They all depend on the transmited data and on the level of seizure of contents by students, bearing in mind that units of content have to be minimal, comprehensible, and adapted to particular and specific needs.

Some of the features that define the technological episode through autonomous wireless devices, proposed by organizations such as MOBILearn, or the British Educational Communications and Technology Agency, BECTA are the non-location of knowledge, a clear and effective transmission of contents and the specificity of tasks. Thefore, the minimal units of content implemented through wireless devices do not only require standardization, but a previous analysis to check efficiency from a cognitive point of view. This would allow to determine the learning object, with no need to fix what the method or the organisation process are.

There are nowadays several standard examples such as the SCORM (Shareable Content Object Reference model) and the IMS (Learning Design) which would allow to make an internal categorisation of data by using metadata based on IEEE LOM and IMS Content Packaging respectivily.

Internal categorisations through metadata, such as IEEE LOM and IMS Content Packaging, do not include, among the different categories established, the consideration of effective acquisition of knowledge in advance, which means that some parts of the specific content could be more easily acquired than others.

Those standards allow to classify data coming from the minimal units of content according to several points of view; lexical, technological, functional, etc. But there is not a phase of previous validation of the minimal units of content when considering the cognitive point of view and its likely impact as a required factor within the process of transmission of high level knowledge.

In the field of cognitive psychology, there are several taxonomic theories, as it is the case of Gordon's theory (Gordon R. y McPhillimy, 1978). According to it, there are three basic features for classification, which are knowledge, comprehension, and implementation in specific contexts and with specific users.

Searching and implementing a cognitive category when classifying content as an attempt to reuse it have taken place in consolidated educative environments, as it is the case of e-learning contexts (Laorden, 2005), though it has not been proved in autonomous wireless environments.

There is a need of assessing and quantifying the minimal units of content from a cognitive point of view, which would allow to adapt autonomous learning methods in a more concise and centralised way, as the wireless means presents several constraints dealing with format. These constraints lead to delimiting and adapting content and knowledge.

Current research projects deal with wireless communication in education environments, by taking into consideration previous cases of adaptation in other environments (Trifonova, 2003). The general trend is using conventional minimal units of content without previously considering likely restrictions. This fact proves that there is neither true or solid research in this particular field, nor the adaptation of minimal units of content from an adequate perspective.

2. Types of digital content used in m-learning contexts.

Currently, digital data can be delivered through any device thanks to the progress in the field of computing language and programming. However, visual and audio formats and solutions for mobile phones are usually limited adaptations such as text messages, low-resolution images, recordings for Ipods, etc… or a combination of them (Tiong, 2004).

For instance, this type of digital formats are currently used within the categories of autonomous training, which are focused on quick and concise learning, i.e. clear and well-based content. The high costs of transmission of data is one of the key factors relating to this technology, what also affects the communication process between teachers and their students. Among the types of educative content delivered through mobile devices, we can find:

- Casual content dealing with Communications.
- Content about protocol and courtesy.
- Content about social, relational or communicative messages.
- Specific content according to particular devices.
- Content about monitoring.
- Content about compressed learning.

In fact, the transmission of general information through mobile devices is more and more frequent at universities, as it is the case of dates of registration, dates of exams, messages sent by teachers or among students, etc.

Some premises must be established as content for learning would not be effective in those cases in which the feedback provided would be complex. Concepts and parameters for acquiring information in a different and concise way must also be fixed. An example of this kind of adapted learning is the driving license preparatory test in England, which has been developed by the BSM Company (BSM Service, 2009) together with the Cambridge Training and Development Company. The course consists of 10 modules, and each of them is focused on a different area relating to the Driving license legislation. It also includes a "mock test"; a group of short questions that have to be answered by the student as simulating the official test. Tests are simple, concise and with a reduced number of screens for the user to navigate and answer the questions. This is one of the main reasons why either scalability or fragmentation are required in order to guide students during their learning process when using this kind of devices (Pehkonen, 2003).

Navigation or interaction monitored by the user (Lindholm, 2003) can explain why learning and the acquisition of knowledge is possible, as the learner is able to monitor and recognise the learning route which would lead them, for example, to repeat a particular exercise, go on doing the following activity, or to stop or postpone training, study or practice.

Scalalability in learning can be limited by sequential navigation in the case of mobile phones through the move forward key, enter key or delete key. The student can record intrinsically the situation and content which have been learnt in order to be able to recover or remind data in the future. This is another difficult issue dealing with navigation an interaction between the student and the device, what is essential in order to understand limitations and constraints. The student has to memorise several steps and the location of several issues, which represents a conceptual and individual mental map for each student. When there are several screens of content showing, for example, a text, the human mind reads automatically the whole document in an attempt to determine and fix what the beginning and the end of the text are.

The conceptual map developed by each person when acquiring knowledge through m-learning devices can stop working and affect long-term learning. This fact makes this process different from the one which takes place in e-learning enviroments, in which a huge variety of content is available, and the only limitations are mainly related to the use of the Internet and the conventional computer screen.

The e-learning formats allow to develop and use many communicative strategies in which fragmented content allow unlimited combined-learning strategies, and a much wider level of non-sequential navigability. The learning process does not have to be concise or direct, as students get also feedback from their environment, what helps them to manage what they learn and the way they learn. These conceptual maps developed by students allow to have a general and faster view of content thanks to the multiple and varied interactive relations that stimulate cognitive diagrams and structures for long-term learning.

The technology used in these wireless devices also affects and changes the criteria of communication which are used when delivering or receiving data during the learning process. The most widespread technology is the one used for delivering monitoring messages, messages of courtesy, advertising, etc. The biunivocal communication through mobile devices takes place when the messages are sent between the teacher, as the transmitter, and the student, as the receiver. Direct exchange and verification take place through phone calls.

3. Conclusion

Methods of transmission and acquisition of knowledge through wireless devices, m-learning, have to be developed taking into consideration initial conditions about the distinct units of information that will be part of the learning content. The validation of the cognitive features and the implementation of the technological standards of the minimal units of content is an essential requirement in order to adapt and improve future results coming from the autonomous and non-locatable knowledge which takes place in wireless environments.

The development of new methodologies is mainly based on mobile devices. In most of the cases, it requests a combination of innovative learning methods. The aim would be boosting the best options in each digital scenary. This process is known as b-learning. The current trend is that other pedagogical computer assisted methods support the m-learning process, what makes this m-learning process be considered as a b-learning process too.

In spite of the fact that complete and elaborate training through conventional mobile devices is not an easy task, as learning is constrained by the reduced size of the screen, it presents an important advantage, as it allows to receive information in any given point at any given time.

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