The Motfal Project - Mobile Technologies for Ad-hoc learning

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Abstract
The Mobile Technologies For Ad-hoc Learning (\textit{MoTFAL}) project is a joint initiative of pedagogical, cognitive science and technological experts, educators, and psychologists to research the possibilities of using mobile platforms – mobile phones and PDA devices- with Internet access for educational purposes at school level. The project designs, develops, tests and evaluates a handheld learning environment based on emerging technology that facilitates in situ learning and maximize the impact of information that is provided when the motivation of the learner is highest. The goal is to shift away from classroom learning to “daylong” learning and to use the mobile technology to facilitate that shift. This paper presents the basic principles of the \textit{MoTFAL} project, the theoretical background of its development as well as the possibilities for its educational exploitation.

1. Introduction

The project \textit{MoTFAL} is a joint initiative of pedagogical, technological experts, educators, and psychologists to research the possibilities of using mobile platforms with Internet access for educational purposes at school level. The partnership aims to develop, test and evaluate learning schemes that is implemented on a handheld learning environment based on emerging technology that facilitates in situ learning maximizing the impact of information that is provided when the motivation of the student is highest.

2. The project’s background

Over the last two decades, instructional computing introduced algorithmically based procedures and information-processing tools such as word processing and spreadsheets to enhance learning. The Internet added communication, connectivity and collaboration. Education is no longer bound by a specific location. Internet applications change the core relationship between teacher, learner and material, making guided and self-directed distance learning fully actualized. It is clear that ICT opens the door to “virtual schooling”. The web through conventional PC’s is combined with a major disadvantage: It fails in mobility. Students can only access the web at school or at home. Modern educational theories though have proved the significance of informal learning in situ.

3. In situ learning and learning through mobile technology

Classrooms, textbooks, lectures, and training sessions have at least one thing in common. As characteristic of learning opportunities, they take the learners out of the context of their everyday tasks and other activities and situations and put them into specialized learning contexts. Traditionally, this is the way people learned. But there is another idea, one that promises to complement traditional dedicated learning situations with "contextual learning," in which learning is a dimension of those everyday tasks, activities, and situations. And this alternative approach is becoming all the more attractive in the light of current trends in work and learning, emphasizing \textit{continuous and just-in-time learning}. Learning happens in various ways. Students learn in classrooms, but they also learn by exploring streams and parks, trying and failing to perform tasks, talking to friends etc. Adults learn in many of the same ways, by experience, by involvement, by talking with peers and experts, or by delving into a practical problem. All of these can be legitimate learning activities. Virtually \textit{any experience can be a learning opportunity, but often the resources to make it so are lacking}. We are used to thinking of knowledge as something "stored," "held," or contained in a "body of knowledge." That conception lends itself very easily to conceptions of learning as "acquiring knowledge," collecting it from books, lectures, and other media. We are following a different, complementary insight here, that \textit{knowledge is something active in situations and contextual in its very nature}. 
4. Educational point of view

Educational Scenarios for learning through mobile devices: History Education, an example

The educational approach, which is adopted in the framework of the MoTFAL project, is to use scenario-based design method as a means of defining suitable educational applications of the mobile technology. Scenario building is one main design techniques to explore new forms of interaction in which the physical environment is able to react to human behaviour, using handheld devices as a mediator. The project includes an extended period of school-centred work. The aim is to help both teachers and students to actively participate in the development of the MoTFAL platform by giving their input and contributions. Furthermore the project is sing a student-centred approach in order to assure the maximal usability of the new tools as well as a realistic evaluation of the pedagogical effects. In the framework of the MoTFAL project a series of scenarios as well as the relevant educational material are being designed and developed in order to be used during the implementation phase of the project. An example of a learning scenario is presented above.

The teacher of a high school class takes the students to a field trip to Parthenon. As they are visiting the monument the students are requested to connect to the specific area of the platform where the teacher has already uploaded the selected material concerning the history of the monument. Students are able to see pictures of the monument during the time, to see drawings of the monument enriched by animations. They can also have access to a video presenting how the monument was and how it was related to the everyday life of the people living at that time. They can even find sound and video recordings of remarkable events of this specific period. Furthermore students are able to capture moments of their visit with the camera of the device and upload them to the server for future reference and also to add their comments and to continue their research by accessing relevant websites.

5. Technological Point of view

A true m-learning environment resembles in principle a sophisticated content and data management system, with development, delivery and control of the content and the learning progress. Its main objective is the learning of the material. Based on this definition, m-learning should be described as part of an integrated global learning strategy, encompassing a variety of instructional methods, learning content management and services that supply the learner with electronic information and educational content regardless of space and time.

6. Usability Issues and the project’s technological requirements

Learning through mobile technology has been slow to grow because most wireless devices up today have small screens, low resolution, slow processing, and limited storage capabilities. Likewise, difficulty connecting various types of devices to the same network is a real limitation. Given these limitations, "mobilizing" existing learning applications can result in a frustrating or nearly unusable mobile service. The solution exists in taking a different approach to how the information is streamlined and targeted to the user. The first step toward this solution is to integrate a user centered investigation into the m-learning system’s development cycle. There comes a time when the design of a system is no longer driven by technological advances, but instead drawn forward by the users who have expectations of usability and take for granted the basic performance. The methodological approach of the MoTFAL project plays a fundamental role for the development of such a system: user-centered design and scenario based design are means for assuring that the final system is appropriate to the user and to the context of use.

7. Conclusions – future work

The MoTFAL partnership considers that the challenge for the future generation of educational systems at the dawn of the third millennium is to develop didactic environments for mobile phones and mobile devices as the availability of mobile devices spreads to a billion of users. The mobile telephone is becoming a trusted, personal device with Internet access, smart card usage, and a range of possibilities for keeping the learner in touch with the institution’s student support services, in contact with learning materials and fellow students, while at home, at work or travelling.

References

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