UBI-LEARN: Distributed Learning platform with Nomads Objects

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Introduction

The continuing proliferation of handheld computing devices hold out the promise for a new generation of computing applications that could enrich our experience of the world around us.

What applications will enrich our lives? What kind of interactions will make them usable in learning environment?

Mobile learning or mobile education is a "new" way of using wireless and mobile technologies for education.

Handheld are rapidly becoming a common technology at work, school, and play. An increasing number of applications are being developed for educational administrators, teachers, and students. Because they are inexpensive compared to laptop computers, many schools are finding that a mixture of desktop, laptop, and handheld devices can be used to meet a variety of educational needs [LAR 02].

In which educational processes can we use those tools? What are the specificities to the development of mobile and distributed applications of learning? We try through Ubi-learn project to answer such questions and to conceive and develop useful mobile educational applications.

Ubi-learn

Presentation

The general objective of the project Ubi-Learn is to design a complex learning "dispositif"[PER 99] taking into account the dimensions of ubiquity and mobility.

Ubi-Learn leans on the emergence of a new shape of computer systems called Ubiquitous Computing [WEI 91] or ambient Computing.

The miniaturization of components and elements of Human-computer Interfaces, associated to the development of the connectivity (networks wireless telegraphy, network P2P, etc.) allows to think to interactive environments where the interaction is completely distributed in a big quantity of communicating objects

In the field of the education, we think that effectively the development of the advanced mobile telephony (GPRS or UMTS) and local networks wireless telegraphy (Wifi-802/11 or Bluetooth), have already begun to transform ways of learning, and bring to the creation of adapted info structures.

If several scientific works have already allowed the investigation of these technological fields, it's necessary to notice that they have not yet allowed find out new educational modalities, which would really taking advantage of the mobility.

Research issues

We try through this study and this project to answer certain research questions, which are the following ones:

- How can we make interface for mobile learning more opened and powerful [DER 02]?
- How can we conceive resources adapted to the mobile learning?
- What are pedagogical paradigms that can benefit from ubiquity and mobility?
- How can we conceive distributed cognitive system by using nomads' objects?
- What is the role of mobile devices in a learning environment?
- What is the role of mobile devices in a collaborative environment?
- Language of description for a mobile and interactive learning (Scorm, EML, etc.)
- How should wireless technologies be designed to ensure that the needs of learners are met?
- What are some learner-centered design methodologies?

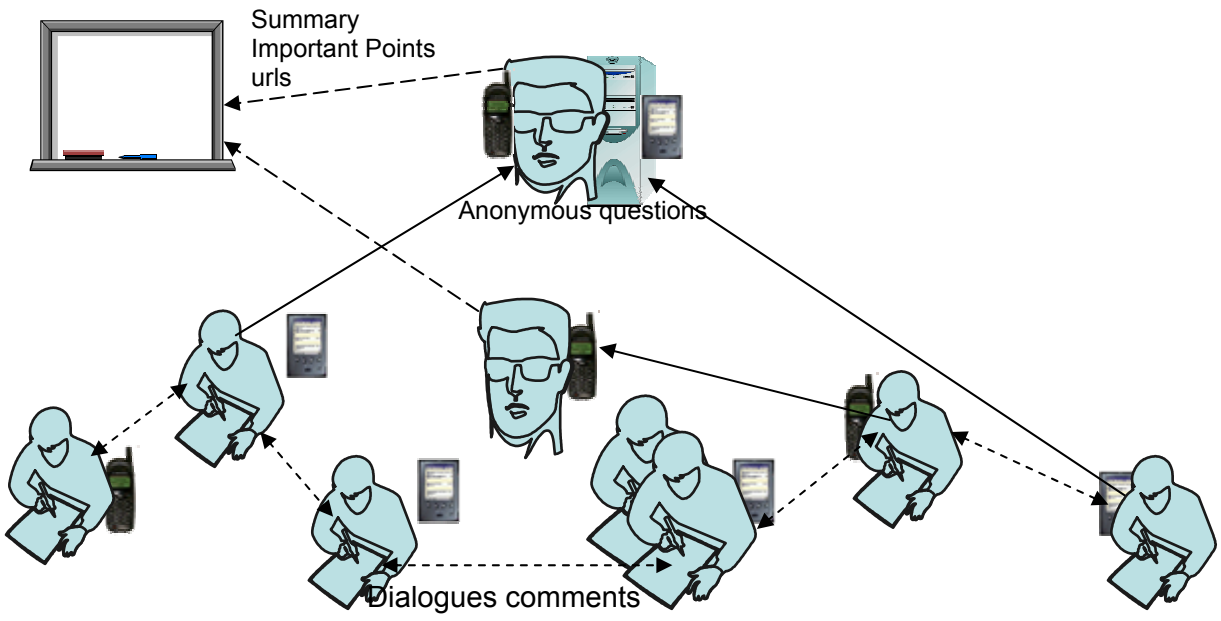
Methods

• Conduct several pilot studies using existing portable technologies

• Measure impact on learning and teaching

• Refine learner-centered design methodologies

Scenario



In our research project, we are in an augmented virtual class; the students can be inside or outside of the virtual class, they are equipped with a computer or with any mobile device; and can interact and have a dialogue with their colleagues, their professors or another professor.

Let us take an example of a language course material; generally in learning a foreign language we inherit all the accent of our professors. With such "dispositif" we can have access instantly to all word pronunciations.

In such a classroom, teacher can display adaptively and interactively his/her course slides.

In a classical classroom students can interrupt him/her to ask questions. A white board can be used to display course and pertinent answers.

In our augmented class, supplementary devices appear: a WI-FI network, a management application for PDA and for the students. New possibilities appear

- **Differed learning of courses**: When a slide is displayed, all PDA receive a text corresponding to the slide. This text, written by the teacher, maybe a summary, a list of the important points and/or the urls. Student can return back to a specific slide on their PDA during the classroom if they don't understand a term or a signification.
- **Dialogue/Annotation:** During a course, a discussion between students about one concept of the course can be useful. The problem that this kind of consumes lot of attention and can generate a misunderstanding of the course material. The PDA can allow an asynchronous writing discussion; this asks less attention. Furthermore, the students can annotate the text accompanying each slide. These comments can be sent to colleagues (so avoiding a discussion).
- **Cooperative and distributed course:** Certain students' questions can exceed the teacher's competencies. If a question seems interesting, the teacher can ask the help of another teacher expert in the domain. The system can determine the adequate teacher connected at this time.

Result

This work should allow developing a methodological approach, based on the learning and social sciences contributions, for analysis and the conception of ubiquitous and mobile environments of learning.

A prototype should allow technical and educational validation of the legitimacy and the efficiency of such learning environments.

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