Chapter 24
Monitoring the Learning Process through the use of Mobile Devices

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ABSTRACT

Many studies defend the use of New Technologies in classrooms. It has been substantially proven that computer operation can be learnt at an early age, and that the use of new technologies can improve a child's learning process. However, the main problem for the teacher continues to be that he/she cannot pay attention to all children at the same time. Sometimes it is necessary to decide which child must be first attended to. It is in this context that we believe our system has the ability to greatly help teachers: we have developed a learning process control system that allows teachers to determine which students have problems, how many times a child has failed, which activities they are working on and other such useful information, in order to decide how to distribute his/her time. Furthermore, bearing in mind the attention required by kindergarten students, we propose the provision of mobile devices (PDA - Personal Digital Assistant) for teachers, permitting free movement in the classroom and allowing the teacher to continue to help children while information about other students is being received. Therefore if a new problem arises the teacher is immediately notified and can act accordingly.

INTRODUCTION

New Technologies have become an essential part of our lifestyle. This can be evidenced in many different areas of our daily life: we can no longer work without our PC's or laptops, we connect from home to office to work on-line, e-mail is the most common form of information exchange, our opinions are made public on internet forums, maps have converted into GPSs, PDAs have replaced

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agendas, etc. Older generations have been witness to the origin and standardization of PC's, laptops, PDAs, videogames, etc. and while children nowadays are completely familiar with these resources, they are often not permitted to use them. As result of this, new technologies have become an attractive field for children. Incorporating New Technologies into educational development can improve cognitive skills, the quality of time dedicated to learning, and the motivation, concentration and attention of children [NUS99, MCF02].

The learning/teaching process is interactive and both students and teachers require mutual feedback: students and teachers need to know how well progress is continuing in order to adapt the learning process to the particular needs of each student. On the one hand, students wish to know their mistakes as soon as possible, while on the other, teachers wish to know whether or not students understand the lessons. One of the most common complaints is that this feedback is usually delayed and ineffective. Although qualitative information, such as facial expressions and body language, can reveal students' level of understanding, a more formal feedback based on quantitative measures is a better option.

Our proposal aims to facilitate the work of teachers with regards to three main ideas: introducing new technologies into classrooms, providing prompt and effective feedback, and evaluating the learning process. Our system notifies the teacher of the most important events in order to reduce the time spent checking students' activities and to increase time spent with each student. In addition, the control system we have developed focuses on assessing student performance within the application, allowing the teacher to pay more attention to student learning. It also allows the teacher a great degree of mobility thanks to the implementation of the control system via a mobile device.

The remainder of this chapter is organized as follows: in the section "Background", we discuss software tools related to that which we present in this paper; in the following section, entitled "A system of classroom control", we explain in detail the different elements of our system's architecture and functioning, aspects related to the physical implementation of the system are detailed in the section "Technology", after which we highlight our future research directions and conclusions. Finally, we have included a glossary of key terms contained in this work.

BACKGROUND

There are many tools available on the market for content management and the administration of training activities within an organization.

Two categories of system can be classified with regards to the physical location of students:

- LMS-LCMS. Learning Management Systems (LMS) are software applications that automate the administration, documentation, tracking, and reporting of training events. Meanwhile Learning Content Management Systems (LCMS) are multiuser environments where developers may create, store, reuse, manage, and deliver digital learning content from a central object repository. The LMS cannot create and manipulate courses; that it is to say, it cannot reuse the content of one course to build another.

These systems are designed for on-line learning, distributing courses over the Internet and offering features for on-line collaboration.

The JOIN project [JOIN], dedicated to providing support to the user community of Open Source Learning platforms, can locate a compilation of available systems and their evaluation, as well as a comprehensive glossary of terms.

Compared with commercial tools such as WebCT/Blackboard [WEBC], which offer a more compact and robust environment, open source