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Education System In The Cloud To Improve Student Communication In The Institutes Of: C-LearniXML++

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Abstract

This paper presents the evolution of the eLearniXML platform by carrying it into the cloud with "C-LearniXML++". At the same time, we make use of the extensive communication between students in social networks, and capture their attention to insert this communication processes into an educational scope. In this situation, students of all high schools, of an autonomous region, once registered in the system can communicate and perform the learning process in a collaborative way. Students can access and display the common educational content of the various high schools. This relationship gives rise to the students of various high schools to work in a collaborative way and support their peers.

Keywords: : iCloud, Educational Systems, e-Learning, eLearniXML,Social Network;

1. Introduction

The evolution of the educational process is being faster every day as new technologies puts more and more tools at its disposal. These technological systems do not use education as a key element; instead, they are based on the advantages that teachers and students can find in management models through online and distance education. The student is always the primary user, who revolves around the possible improvements of such education systems. By looking at the students' environment, we can see that it is not limited to their classmates. Using the technology found in the cloud (Google+, Messenger, Facebook, Twitter, Youtube, WordPress, Second Life ...), students can send information, communicate, exchange data through an environment increasingly expanding. Before, miles were a measure of distance. Now, it's clicks.

In the last 4 years, the research department at the University of Castilla-La Mancha (Spain) has presented a new online training platform called: eLearniXML (Fardoun, et. al, 2008; Fardoun, et. al, 2009; Fardoun, 2010). This learning platform makes use of tools such as communication, collaboration, cooperation and evaluation (Agenda, discussions, email, exercise, libraries, forum, chat, test, etc.) as well as Classroom Assessment Techniques (CAT), (Angelo & Cross, 1993) to create a comprehensive education environment in the classroom between students, peers and teachers. This tool has been developed to manage the students of a school or a particular class. The idea of this paper is to present the evolution of the cloud eLearniXML tool and convert it to C-LearniXML++ using the extensive communication between students in social networks and capturing their attention to bring this communication into an educational scope. In this way, high school students of a given region, once registered in the

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system, can communicate among them, access and display the common educational content of the various institutes. This relationship gives rise to the students of various institutes to work in a collaborative way and support their peers. For example, if a student comes up with a specific question, this can be resolved by another student from another school. This process is supervised by the system which displays this information to the tutors who can assess the resolution of doubts between students to avoid possible conflicts that may arise among adolescents.

This article consists of 7 sections: First, a brief introduction is given. Second, we discuss social networks and their use by students. Third, we go through eLearniXML tool and its teaching / learning methods applied in secondary schools and the role of students as part of this educational process. Fourth, we review the concept of cloud computing and the advantages of making use of it in the educational environment. Fifth, we describe the functionality of this new educational platform in the cloud and the implementation of it in secondary schools. Sixth, we present a case study of the application in a regional school and present the results. And lastly, we end the article with the conclusions and future work.

2. Social networks

According to Danah Boyd (Danah, et. al, 2007), social networks are Websites that give users a range of services based on Web technologies that allow individuals to: build a public or semi-public profile with relationships system, to have a list of other users with whom they share a connection, and finally, view and navigate through the list of users' connections with those who share a connection in the system. The shape and nomenclature of the connections listed above vary from one social network to another.

What makes the social networks unique, not because they allow users to meet others in the network, but because they make possible for users to manage and make visible their own social network. Normally connections on social networks are between individuals who have “latent ties”, Haythornthwaite (Haythornthwaite, 2002), and that have some offline connection. In many social networks, users are not looking to expand their network of contacts (such as LinkedIn (LinkedIn), but they communicate with people they already knew prior to their entry into this social networks.

2.1. Platforms for learning support

Arguably, the first steps of social networks in education correspond to Moodle (Moodle), at least in terms of the widespread use of the platform. Moodle is a project designed to support a social constructionist framework of education. It is distributed as free software (GNU). Moodle is copyrighted, but user can copy, use and modify Moodle if they agree to distribute the source code to others, without removing the original license and copyrights. The design and development of Moodle is based on an educational philosophy called "social constructionist pedagogy". Moodle can be considered as one of the first social network focused on education, because it has one of the social network main features.

Some basic questions that the Web Systems share with education are: Who are the students? What student's intentions and behaviours will be supported by the system? And, what devices will be used by students? E-Learning platforms solve these questions based on five different aspects: purpose, use, content, functionality and presentation.

Moreover, in (Fardoun, 2011) we found comparison of the educational and technical aspects of the main electronic learning platforms: Blackboard Academic Suite 8.0, Claroline 1.8.1, Ecollege, WebStudy Course Management System, Atutor 1.5.4, Moodle 1.9, and JoomlaLMS. They compare various aspects like: productivity, communication, participation of students, administration, content development, licensing, and the required hardware and software. Highlighting after such detailed analysis the communication and motivation as key factors in the student learning process, therefore the student should not be or feel isolated. Finally the authors sort the platforms in two types:

- Those that are not attractive for most users, but at the same time they are fully developed and have most of the functionality needed by teachers and students.
- Those that are highly attractive, but do not provide a variety of services.

2.2. Social networks in secondary schools

In education, the ability to keep in touch a large group of people is the first characteristic which institutes should take advantage of. When teachers make use of Internet technologies in his teaching process, and by having a large number of students, this variety in the sources of information for teachers and students can raise the effectiveness of the educational task, since both groups are forced to visit a large number of resources (blogs, wikis, etc..) that contain all needed information and at the same time cross students data. This is the perfect medium, for teaching / learning environment, which push these blogs to be widely used in education, and because of the multiplicity of subjects, teachers and students who live together in one or several schools.

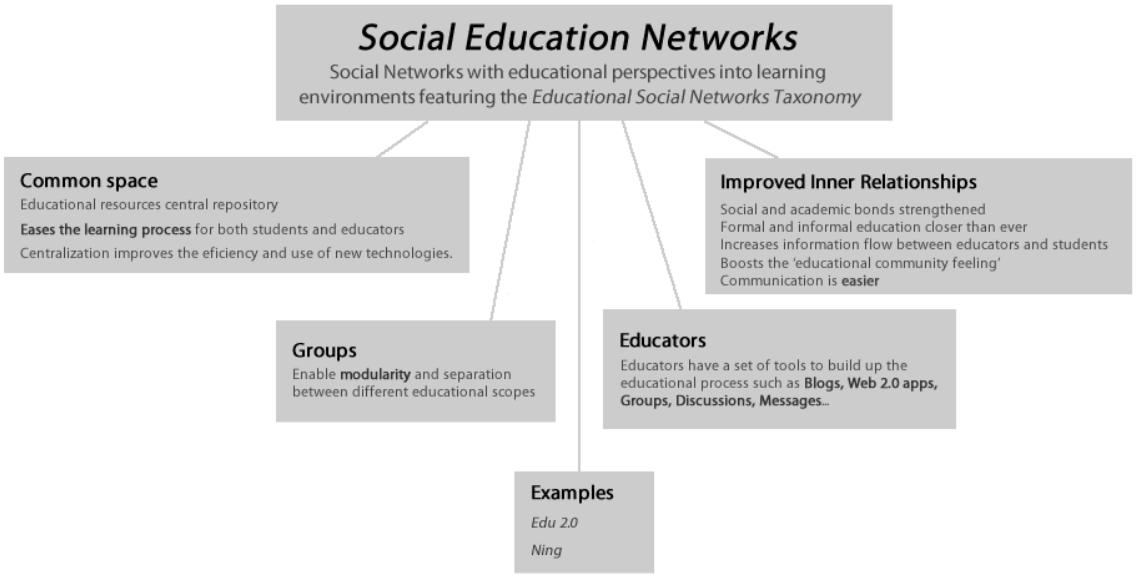

Figure 1 - Social Education Networks

Social networks can have an undeniable usefulness among teachers themselves (creating the separate network) to work between the departments, teachers of a subject at a given level, to deliver information from the school management, coordination and so on. What certainly can facilitate internal communications and the effectiveness in coordinating the work between teachers and the bonds between them? And the most important point is to monitor the students communication and collaboration in performing there learning work.

3. ELearniXML Platform

ELearniXML (Fardoun, 2011), see Figure 2, is a quality e-Learning System that satisfies all the learning / teaching needs required for the effective acquisition of a wide range of skills, abilities and knowledge from a group of students to develop the appropriate learning content. Besides, this platform content is delivered through a Web or Desktop application supported by a set of networked services in an efficient way. This process embraces from the content development and the skill acquisition, to the analysis of the learning session as a whole. This process is also guaranteed by a comprehensive and personalized evaluation and certification process, monitored by a team that has a comprehensive tutorial work throughout the teaching / learning process.

This platform applies the classroom assessment techniques (CATs) adapted to the e-Learning process, developed by a methodology that allows achieving excellent e-Learning systems, teaching techniques, model-based

development, instructional design, user interface specification and student / teacher centred design. ElearniXML Platform is a Model-Based Teacher/Student-Centred Design Instructional e-Learning System, following the eLearniXML notation by the means of interaction patterns resource elements in education, this notation describes how to create e-Learning systems by using a graphical representation of an existing spatiotemporal notation to model the tasks derived from an e-Learning process.

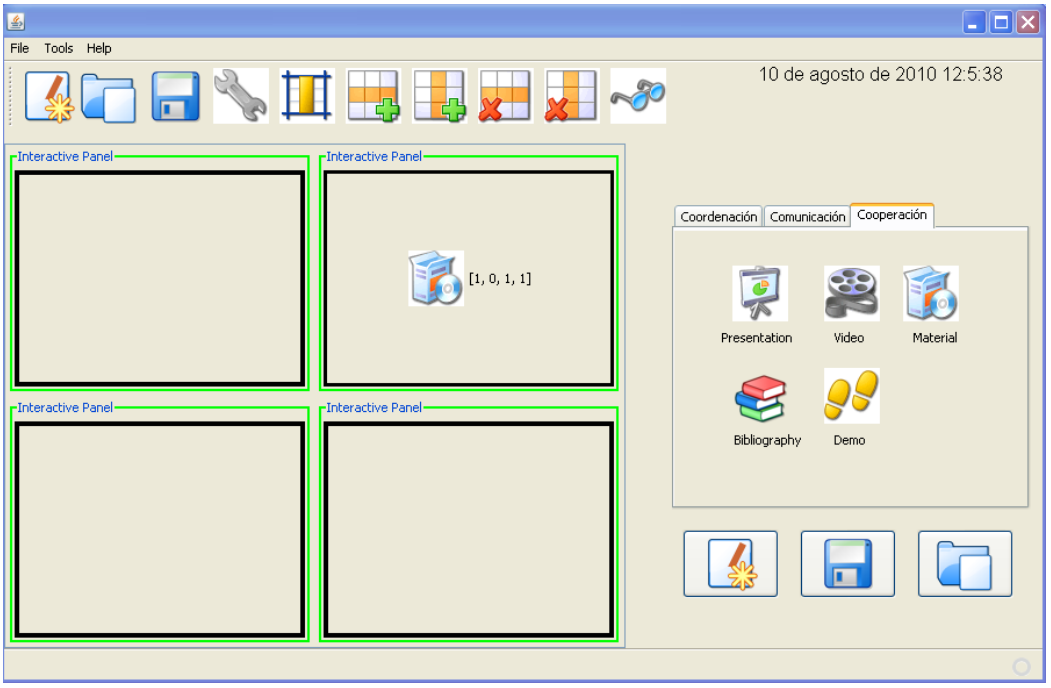

Figure 2 – eLearniXML Teacher Tool

And finally this platform, involves an easy to read planning tool that allows teachers to model those tasks needed to organize the teaching/learning process. The platform also presents the students to work in a collaborative environment, Figure 3, but it is limited to a single classroom, the idea is to take it to be a communication tool for several schools to create a huge collaborative environment for better use. This is carried out employing cloud-computing approaches.

4. Cloud computing

The term cloud computing is a new phenomenon that appears to be linked to Web 2.0. The origin of the term refers to the collection of different services stored on servers that users access only through Internet. That is, the user has access to a number of files and programs stored in different, undefined, or virtual places (this is the reason why the term cloud is used), which are permanently available to us wherever we are (Gens, 2008). Our documents are not physically hosted on our computer and we can have them from anywhere with just an Internet connection. Working in the cloud means that uses don't have the need to depend on a particular program or even an operating system any more. The only need to start working in the cloud is a device with Internet connection.

4.1. Cloud computing applied for education

According to Nicholas Negroponte, "When children are more motivated to explore, they can create and build more, I was disappointed when I see that schools teach 'PowerPoint' or 'Excel' applications. These are applications

and students should not be experts in computers, they should be taught to learn, and the computer is the best way to do it." One of the great myths in the world of educational computing is that it is best that students work with computers in pairs rather than individually. In this case, if students have questions they can ask each other whether by sharing documents, by resolving problems in real time (chat), or uploading information (data, images, videos, etc.) as FAQ in the network.

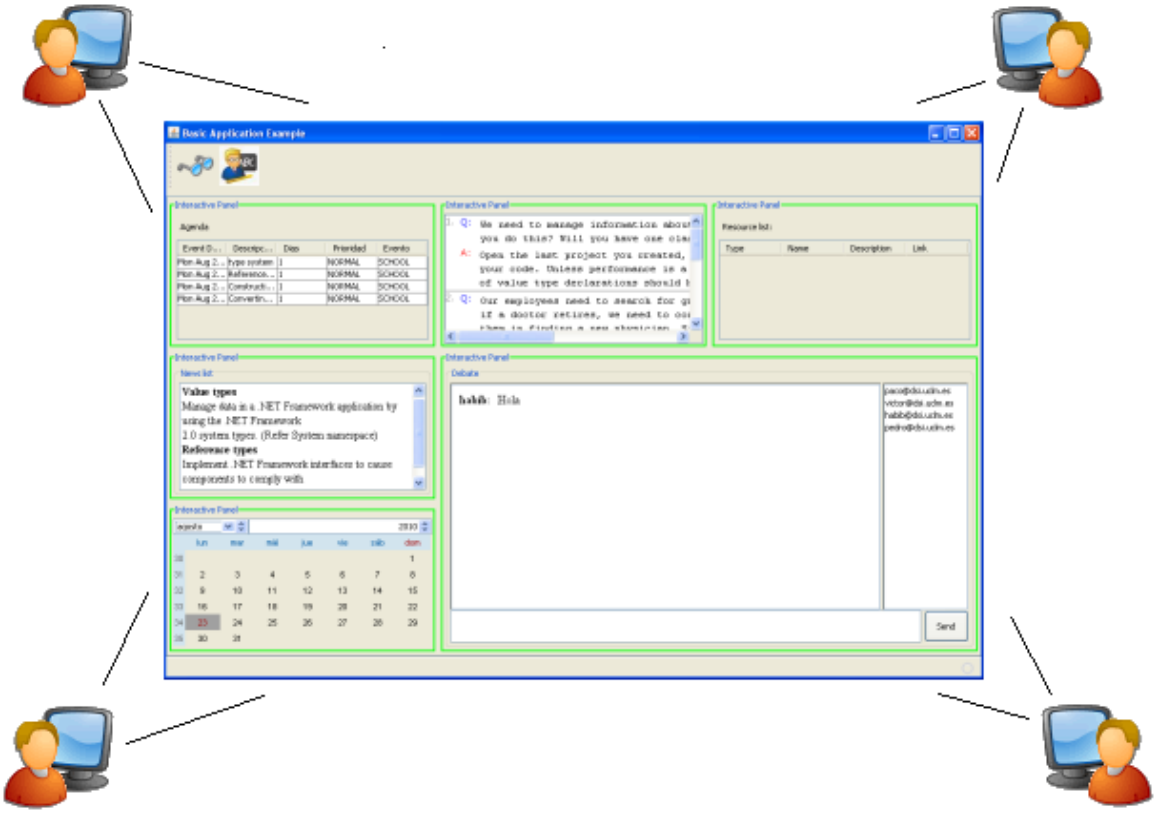

Figure 3- eLearniXML Student Tool

The great advantage of "the cloud" is information sharing, in a real way. With a local area network multiple users can use the same file, but it gets more interactive with, for example, a document shared online by several students. Similarly, they can simultaneously view a picture album, view and edit videos on the web and organize all the information shared in a presentation, using data from different sources. All this based on collaborative and communicative environments. Our educational cloud is composed of information, academic process data; those are linked together with other Web 2.0 applications that support the students' interaction with each others, managing by this, their own academic process. In our research group, ISE Research group (Spain, Saudi Arabia) we are building a new platform that make use of all these resources to create an adequate educative environment to students and teachers to improve the teaching / learning process in the secondary schools.

5. C-LearniXML++ system

The idea of the new platform, C-LearniXML++, is that each student who works in this environment, can access the network to locate relevant information and thus develop the tasks assigned by the teacher, in a model in which the student plays a main role in constructing his own learning. In this system, the figure of the teacher is also very

important, not just as a mere role to transmit the information, but as the entity who will serve as a mediator between students in the information sharing process, and a controller for content use and exchange.

In education terms, the difference this new platform offers in comparison with the current one is that the teacher and classmates do not continue being the only human-being source of knowledge for students; the new source is in the cloud, which far exceeds all the power transmission that has the local classroom. Also, the cloud offers many kinds of information and collaboration and, in most cases; the student is not able to discern what information is really useful or correct. Therefore the teacher should switch roles, the platform gives him the possibility to become a mediator who helps the student to collect important information, and control the collaboration among students, and with it to get an apprenticeship in which the student is the true protagonist of the educative process.

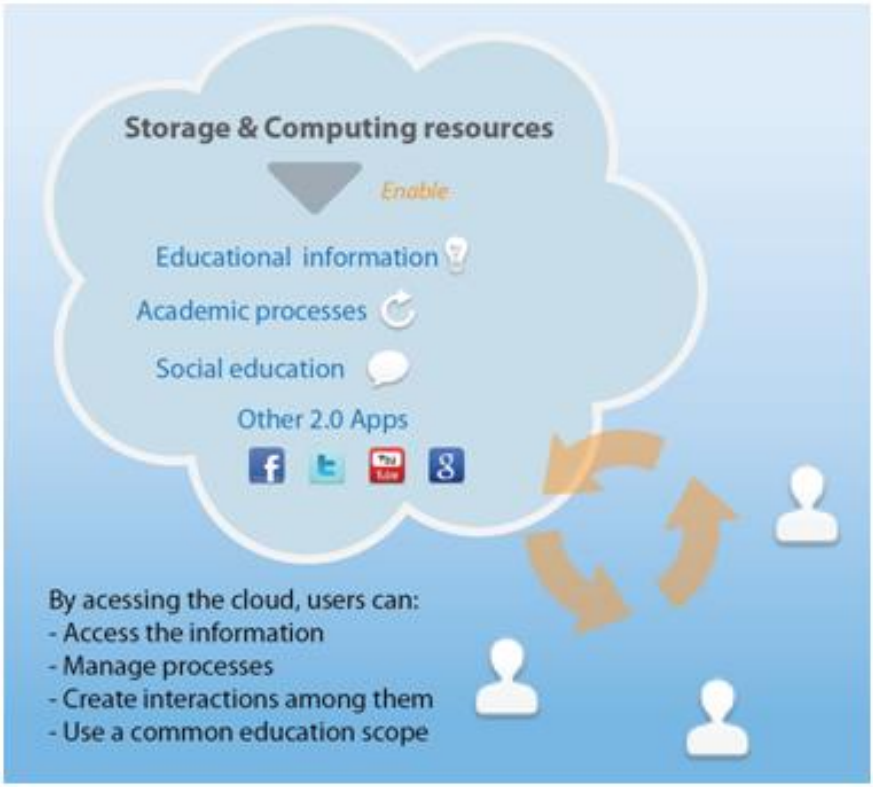

Figure 4- Educational Cloud

5.1. C-LearniXML++ Server

C-LearniXML features client-server architecture to enable the cloud and social capabilities. The main business logic module functions as a web server which includes the features that were include in the previous ELearniXML and the new social layer that will provide students and teachers with the benefits that have been discussed in previous sections. In addition, the server acts as a resource broker to manage the cloud educational resources, Figure 5. The broker when and how the resources and the processes are executed, read, stored, edited or managed. Naturally, this task is transparent to higher layer and shall be conducted automatically by the Broker.

Several user interface client specializations are considered. Web and Mobile interface have been lately adquired great success and are the easiest to use from the user point of view. However, desktop or even console clients should be also taken into account for other kind of tasks, be it administration, monitoring, or support, among others.

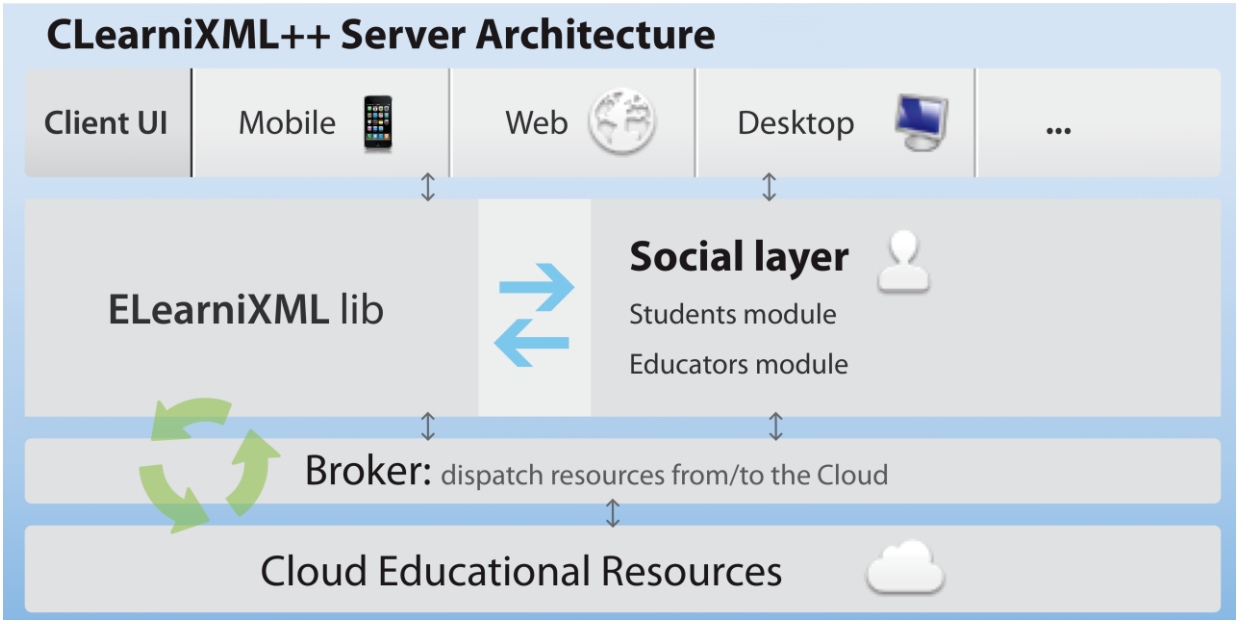

Figure 5 – CLearniXML++ Server

6. Case study

Three secondary schools, along with our own research group, have participated in the case of study. First of all the main server was prepared and the platform software was installed at the school computers. During the process students have published questions regarding some subject, and other students (from its school or other school) have given answers or have participated in the debate. Meanwhile, teachers responsible for students that take part in a debate or event should have received notifications to keep track of their students, support the debate if necessary, and tutor their student's behavior within the network.

C-LearniXML++ as a tool for teacher communication and brainstorming was also included in the case of study, teachers have used the communication features of the tools to debate among them, propose and have created new events that should involve different schools so that they can assess not only the level of their students in the main subjects, but also the communication and collaboration skills of the students. The tool also has allowed teachers and tutors to set access levels for any entity which in published. These access levels have covered user, class, subject and school. Thus, information remains in the scopes it is intended for. This is especially useful when a teacher wants to share some information at the subject level. Let's say a teacher wants to share some chemistry. When the teacher shares the document and specifies that its access level is chemistry, then every chemistry student, regardless of their school, would be able to view the document.

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