Social Networks as Learning Environments for Higher Education

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***Abstract* — Learning is considered as a social activity, a student does not learn only of the teacher and the textbook or only in the classroom, learn also from many other agents related to the media, peers and society in general. And since the explosion of the Internet, the information is within the reach of everyone, is there where the main area of opportunity in new technologies applied to education, as well as taking advantage of recent socialization trends that can be leveraged to improve not only informing of their daily practices, but rather as a tool that explore different branches of education research. One can foresee the future of higher education as a social learning environment, open and collaborative, where people construct knowledge in interaction with others, in a comprehensive manner. The mobility and ubiquity that provide mobile devices enable the connection from anywhere and at any time. In modern educational environments can be expected to facilitate mobile devices in the classroom expansion in digital environments, so that students and teachers can build the teaching-learning process collectively, this partial derivative results in the development of draft research approved by the CONADI in "Universidad Cooperativa de Colombia", "Social Networks: A teaching strategy in learning environments in higher education."**

***Keywords* — Collaborative learning; Digital Environments; mobile devices; Social Networks.**

I. Introduction

EDUCATIONAL environments, are immersed in the processes of innovation, which are framed in a set of social and technological transformations. These are given by the changes in information and communication, this is why the social relations and a new conception of relations technology-society identified trends in society. Communication networks introduced a technological configuration that enhances learning more flexible and, at the same time, the existence of new learning scenarios in particular as regards the use of social media in education.

Castells [3] defines Technology as "the use of scientific knowledge to specify ways of doing things in a reproducible manner." This technology has caused a profound revolution in all fields including Education, especially characterized by the appearance of multimedia devices and a dramatic expansion of such as Telecommunications networks. The speed of information processing grows constantly and almost unlimited storage capacity.

Currently, there are terms such as e- Learning, e-Commerce, e -Business, etc., extending the terms m -Learning, m - Commerce related to mobile environments and finally comes to personal atmosphere defined as PLE (Personal Learning Enviroment); these are the different ways to characterize the population living with technology and are the further evolution of structures and components thereof whenever required. These generations and environments that have been incorporated into their lifestyles will be located in the third wave posed Toffler [19] as the " Information Society " supported by advances in information technology and telematics. With the advancement of telecommunications is expected to be greater participation of individuals in the production of information; production with concern Cartier [2] investigated and called the term media, whose object of study is the content traveling the net and how they can be interpreted in a more meaningful way to integrate various means of expression such as text, sound, images defined as static and dynamic Multimedia. These changes and concepts are reflected in the concept of service integration and favorable to smart growth "smart" communications devices that are being used throughout the Knowledge Society and Information Technologies.

A. Research Problem

Social networks are structures composed of groups of people, which are connected by one or more types of relationships, such as friendship, kinship, common interest or shared knowledge.

Today, virtual learning environments (VLE), provides a space for academic interaction mediated by information technology and telecommunications (ICT's), which offer many features, resources and tools for collaborative work, making it a good tool for development of formative research, as frequent interaction among members generates diversity of ideas, approaches and insights that lead to the achievement of a joint and meaningful learning.

Within virtual learning environments, are several services that enable you to perform the educational process by encouraging the learning of students or users. These development platforms have allowed adapt educational environments such as LMS (Learning Management System) or learning system manager. Currently exist various digital platforms which are used massively in educational environments due to its low cost ; the use of software platforms such as Blackboard or Moodle, to allow virtual support the academic, automating these processes together have enabled the emergence of new models of teaching and learning; these models have allowed each student to have

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personal computers available for exclusive use in any environment, in addition to the resources of the institution Hunt [9], as their own . These new scenarios in which students interact with information networks creating interactive generation where the use of " Netpods " and social networks , however not taken into account the institutions for their educational processes, is common that the students and executives continue to consume Blackberries, SmartPhones and Tablets in their daily work , while schools and other educational institutions remain in a primitive "pre- digital " state, due to disuse of distributed equipment Gagné [5].

Understanding technology as a support to improve educational processes, means that institutions regularly do a review of their learning environments (data centers, licenses, software, broadband, electronic library, laboratories, etc.). What it is to take stock: what is, what is obsolete, what needs to be renewed or updated? This knowledge, ultimately, will allow institutions to have a true picture of their technological capacity and act promptly without incurring higher costs.

This project aims to define models that have access to the virtual learning environments (VLE) through social networks, in order to extend the benefits of the students in the Cooperative University of Colombia, these settings allow you to manage learning through online courses generated by teachers, where students have greater access to courses and information, these computing resources are expected to generate new knowledge

The information society produces spaces of flows such as technology, places and people called by Castells real virtuality: time without time and without space [3]. These concepts described in "The global village of McLuhan," McLuhan [11] where the presence and incorporation of these technologies into educational models allow us to reduce the time and distance in communication processes. Valuable contributions on these concepts arise and emerge new features such as the cyber society, Joyanes [10] (Formation of social networks) cyberculture (Knowledge of the culture of the society in Red) and cyberspace (feeling in the same spaces in different places).

The development of virtual courses is known in various ways and with varying purposes such as Virtual Education, e - learning, e- trainning, among others, but still varied views about the issue persists; Institutions prefer to acquire technological platforms such as WebCT, Learning Space, Blackboard, Moodle among others, and the institutions are counted starting from scratch development to support the development of courses on NET, Driscoll [4]. It seems that the constant was no longer invest in developing a technology platform but rather lead them to those efforts that teachers begin their process of building materials and can locate trouble on the platform , initiating a "virtual dialogue" with Barabasi [1] , Driscoll [4] students .

In this context the question arises on which this study will answer:

What would be the Mediations supported in Connectivism and social networks, which could be appropriated as differentiators in today's learning environments in higher education?

II. METHODOLOGY(MATERIALS AND METHODS)

A. Hypothesis

The hypothesis proposed research is: Current developments and likewise investigations have relied on traditional pedagogical schools that have been oriented logography , however latest studies and research in virtual learning environments have concluded the iconography and connectivist environments are aspects that due to technological development , are impacting today's learning environments. We believe in this concept, it is necessary to investigate how new developments on the Internet, in particular how social networks are impacting the people and in particular in education, in order to define new educational models that reinforce learning in Higher Education.

Methodology

This research is descriptive qualitative ethnographic court, as it seeks to establish as new generations of students entering higher education using new technologies; where the proposed development is constructed with the use of tools and technologies used by students and described in the background such as forms of connectivity to new Internet services , web development service through LMS and application semantic Web and Social Networks as primary implementation tools for the implementation of effective and efficient services in academic consultations.

For Valles [20], qualitative research is one where the quality`s study of the activities, relationships, business, media, materials or instruments in a given situation or problem is studied. The emphasis is to document all information that is given daily in a given situation or scenario, observe and carry out full and continuous interviews, trying to get the minimum of detail being investigated.

The analyzed population were different semesters of the Faculty of engineering students, and area teachers, different instruments were used in gathering information, in the same way as it is a research of qualitative cutting, were used statistical evaluation tools such as Atlas TI (evaluation in qualitative analysis Software).

The sample was taken on about 35 students and 20 teachers from different semesters of the Faculty of Engineering was applied to a survey; 30 teachers from different educational institutions working in different educational levels underwent a group interview.

Phase 1: Information Gathering and dissemination activities

After selecting the appropriate research design and adequate sample, data on the variables involved in the research were collected, the data is classified and the variables involved in the process were determined, observations were recorded and the data were coded with order to have grounds to establish the instruments. It was very important to find support teachers who formed for this purpose a team of teachers, and helped both of these tasks in preparation , as well as propaganda of the activities in the student community which had incidence direct or indirect.

Techniques and instruments for data collection.

In this phase was designed each one of the instruments used for gathering information such as: the development of surveys, design group interviews and activities that had to do with the proper format of the behavior of individuals who participated in the process, just as processes were determined application of tools and means of collecting training. To carry out the study and information gathering used instruments listed below:

- Surveys
- Semi-structured individual and group interview

Methods and Procedures

In order to discover the concepts and relationships of data (interviews, observations) found, then organize and carry out the analysis to the following:

1. To identify and characterize the categories from sociology and psychology allow linking learning, learning styles and technologies used by students in the new learning environments, we use a theoretical review, supported on different texts authors consulted experts on the subject.
2. Selection and constitution of the group from a survey conducted in the Cooperative University , as a result it was decided to work with students from different semesters and teachers from both the University and faculty who work in Educational Institutions Secondary level facilities the study, which students completed their informed consent.
3. With the purpose of identifying emerging categories in particular learning styles and technologies of communication and used social networks, as well as the environments of learning in different educational institutions, applied surveys and group interviews.
4. The identification of categories of styles of learning and different learning environments, as well as technologies, was based on data from surveys and interviews, which were supported by arrays of relationship. The interpretation of the data was made at a later stage with Atlas TI.

Phase 2: Adaptation of Tools and Implementation

Theoretical review

The study of learning environments supported by technologies, requires that the methodology should be consistent with the theoretical framework, thus establishing the foundations of learning and learning styles and the use of technologies supported by different authors as Papert [14] and Siemens [16] selected by the researchers, we find that the patterns we detect and how we do it in the research on learning with the support of the mass media and connectivism.

Ethnographic method that sets a reflective process and allows approach and establish a trust relationship with the student group allowing inquiry through communication was considered. Authors such as Taylor & Bogdan[18], reflexive ethnography Hammersley & Atkinson[8], is very important for the group of researchers, understand and assess this methodology should be dynamic, and each instrument is considered as a prototype arrangement changes were reviewed that establish the objectives of the research.

The Survey

We consider the use of the survey to do a scan on the stakeholders of the University Cooperative Researchers case Bogotá. This investigation aimed to consider the profile of the groups, the relationship could be established with them to do the work and an exploration of the means used to access knowledge through learning. Was performed in 2 groups of 35 students each and two groups of 30 teachers. Knowledge and use of social networks, virtual learning environments and networks: The question and explores three areas of information questionnaire.

This instrument is applied in physical and the student fills out the form printed in the same format giving the option to fill in the digital format also provided and these were sent to a digital mailbox researcher. The information obtained was tabulated in Excel and recurring topics were entered in the answers.

Group interview

Valles [20] said that the group interview is to expose a group of people to a semi -structured interview guideline, not addressed to an individual but to a group where some free stimuli and sometimes structured to allow established as a structured and free response questions through this structure.

It is in the group interview the possibility of approaching the group of teachers, this strategy allows to inform aspects of research actors, their interests, as well as allowing an everyday space group is allowed to explore the opinions, beliefs, representations on the topics of study.

Two groups of 30 teachers of Informatics Master of Education, for a conversation which was set for an hour and a half where they felt about the concepts of teaching and learning, Knowledge, Intelligence and Virtual Learning Environments were selected. The dialogue was developing with driving interviewer, allowing diverse opinions that were recorded and then applied a survey where personal concepts of each of the participants were embodied.

Phase 3: Data analysis and presentation of results

At this stage there was an emphasis on understanding and interpretation of quantitative and qualitative methods of analysis, the proper interpretation of the data, coding the data, defining research categories and their relationships, generation diaries field, the use of statistical tools and the definition of an appropriate methodology for this research. This step was essential to use a number of techniques and statistical procedures for the collection of information by researchers, was the basis for the evaluation and validation of the effectiveness of strategies designed and necessary process feedback.

Phase 4: Defining Models in social learning environments

As a result of analysis, the results were validated in order to determine standard and suitable for use in environments learning strategies, which required the collaboration of teachers and policy programs, in order to validate the proposed adequate to different teaching practices and the use of technology in educational process

III. RESULTS

The results that are part of this investigation and to allow a methodological proposal to consolidate ICT mediated, social networking and multimedia tools in structuring a virtual learning environment, in accordance with the present trends. In this approach we analyze how the structure should be in virtual courses, detailing each of its parts, especially the theories of David Merrill[12] and Robert Gagné[5] precursors of instructional design; how should be learning in environments connectivist, what should be the new styles of teaching - learning and how educational models should be used in these new environments.

A. Connectivist Learning Environments.

The Horizon Report [6] has raised the technology adoption trends in learning environments for the next years, which are summarized as follows:

1. Knowledge is decentralized, the amount of resources that are available online that allow the production and distribution of content in multiple ways to facilitate the acquisition of knowledge both teachers and students.
2. Technology continues to affect our way of life in all environments, the digital divide is diversified with more products related to access and digital literacy skills, informational, media literacy, creating new environments inequality gaps
3. Technology is not only a medium that has been used to train students, but has become a means of communication and relationships, and a ubiquitous, transparent part of their lives. Social relations is one that has been felt more impact, especially in education. Communication between all stakeholders in education has become more open, multidisciplinary, and multisensory and becomes integrated gradually into all our activities.
4. Teachers and educational institutions are gradually making inroads into digital technologies. So, are increasingly beginning teachers to use in their educational practices different technological resources, from email to those provided in the web such as social networks.
5. How we think about learning environments is changing. In traditional education, learning environments are associated with physical spaces and presentiality. Today, however, the "spaces" where students learn are becoming more community and interdisciplinary time and are supported by technologies associated with communication and virtual collaboration. The time and space are transformed to combine the classroom with the virtual, blurring the boundaries between the two worlds, which are experienced by students as one.
6. Current technologies rely increasingly on cloud computing structures , supporting the information technology tends to be decentralized , deployment of cloud applications and services are changing not only the way you configure and use the software and data storage , but also how to conceptualize these functions. No matter where we store our work; what matters is that our information is accessible no matter where we are or what device they have chosen.

B. Teaching Styles.

The proposal of a new distance education model emphasizes mostly on employment of connectivism and ITC in this type of education. Today is orienting the educational process to the use of technology and new learning models. That according to Siemens [16] in his lecture “Connectivism: Creativity and innovation in a complex world”, emphasized that education should aim to promote the development of creativity and innovation in students. This suggested that students should be involved in creating learning content constantly looking to learn creating something new. The current education system reduces the listed capacity, according to the expert, who noted that technology in the classroom allows students to be co-creator and an active participant in their learning.

Teaching styles are linked to the peculiar way that each educator to implement and lead teaching their students. The concept of teaching style or style of education focuses not only on learning, but also in the way of how the individual undertakes, aims or combine various educational experiences. Therefore, the teaching style must be a social environment.

C. Connectivism as way Learning Network

If knowledge is changing so quickly and if such important challenges such as climate change or global warming are tackled , if the technology is changing every day , ¿how can we prepare our students today to take on the challenges of tomorrow? . Today we are moving from a model where education systems and the types of courses we teach are created in advance in the institutions and the student comes to the classroom after we have already created textbooks, materials and resources.

One of the things we have to do, is stop treating intelligence as something that exists inside a person 's head, but rather realize that intelligence exists as a result of contextual knowledge of our environment and relations , social media and technology for our students and ourselves are participants and which are collaborative members. The very structure of learning creates connections in neural networks can be found in the form of linking ideas and ways in which we connect with people and information sources. Our expertise lies in the connections we form, either with others or with information sources such as databases and information systems available on the Web. This appears as a connectivism learning theory for the digital age

In his article “Connectivism: A learning theory for digital age”, Siemens [17] summarizes his theory on the following principles: among which can be highlighted which have to do with learning and its relationship with the networks, the taking of decisions and connections among ideas and concepts.

D. Designing Courses

Structure of virtual courses

To design the Courseware or supported in Virtual environments, now called VLO (Virtual Learning Objects) courses we rely on theories of Instructional Design. The teaching and learning processes are possible because, through an appropriate instructional design, media are used to facilitate students in rich learning situations. Technology is the means, not the end. Unable to assess the usefulness of a specific technology without verifying instructional design.

For proper operation of a virtual course should include the following parameters:

- Building a theoretical model of instructional design that supports the development of the course
- Establish activities that enable online interaction
- Designing the navigation tools
- Structure course information such that the user quickly place
- Design a suitable user interface

The development of the course was considered the following: design course, design of instruction, characterization of the instructor, characterization of the student, the platform components.

E. Design Platform

To build the platform the XP methodology was used, this is an agile methodology focused on enhancing interpersonal relationships as a key to success in software development, promoting teamwork, worrying about learning developers, and fostering a good working environment. XP is based on continuous feedback between the customer and the development team, communication between all participants in the solutions implemented simplicity and courage to face the changes. XP is defined as particularly suitable for projects with very vague and changing requirements, and where there is a high technical risk.

Step 1. Research or planning

Gather all the information regarding the project requirements in order to get to know the specifications of the problem. For this stage theoretical information of each of the key elements of the research, which correspond to Student Virtual Learning Environment and Social Media, was collected. This information was used to design the best way to know that teachers present concepts of the Cooperative University of Colombia on the subject, so propose a solution to the problem recorded in chapter 1 and allows interaction thereof.

Step 2. Analysis

Validate the information gathered above to specify the problem to be solved. Once the survey asks the following analysis and conclusion in general that allowed validating the trend in social networks and knowledge of virtual learning environments were generated.

Step 3. Design and Build

The conceptualization of the information gathered in the investigation phase was conducted.

- Design of the images used in the software.
- GUI design.
- Development of prototype software programming on Moodle.
- List of use cases.

Step 4. Simulation

At this stage all the necessary components were integrated to operate the project. Were designed and set up the courses, the interface was done with social networks and the tests were performed in order to test its operation. Simulation software in the emulator which is located in www.jairolozano.com/ uccvirtual.

Fig1. Configuration and integration of Moodle with social networks.
Source: Authors

IV. CONCLUSION

This paper presents the results of research by determining an appropriate structure to develop and integrate virtual learning environments in network. With advances in technology and its foray into the information society and knowledge, it is undeniable that online education is expanding its worldwide coverage , so you cannot be oblivious to its structure and consolidation that allow not only ownership its architecture, but of teaching and learning strategies that flow from them . Productivity Internet, where you see a preview is from 2010, from the semantic web concepts to the detriment of conceptualizations of web 2.0 for this purpose the following activities were performed:

- A proposal for a course mediated by the use of multimedia technologies, Software and Connectivity Social Networking was designed to improve learning environments in higher education
- Some appropriate strategies for using social media in learning environments were defined
- A learning environment where multimedia technologies and social networks such as mediation in the teaching-learning process used was structured.
- Measuring instruments defined methodological spaces in social networks supported in connectivism, which will enable teachers and students to improve the quality of teaching and learning processes.

- Of the above, and as a result of the interviews, are evident new roles, methods, trends and architectures in different Virtual Learning Environments (VLE), these are:

Trends in digital learning environments.

- Teacher training for using digital media in teaching and learning remains a challenge. Know and understand the educational potential of these technologies promote their use in the classroom. The training of teachers from a holistic perspective that incorporates the use of technology resources as an inseparable part of the practice of teaching and learning is the first condition for significant incorporation of digital media in all educational levels.
- Comprehensive change management in higher education must be understood from a systemic and transformative approach that contributes to economic growth, human development and social cohesion. While educational policies cannot be imposed, it is the responsibility of those who have been chosen for this consider, reflect and make decisions to promote the necessary changes; otherwise, we risk that they never occur. This includes a change of role in forcing educational institutions to avoid reflections that everything remains the same, allowing shoot tangible and sustained changes. A redefinition of the educational model that includes new ways to generate, manage and transmit knowledge is required.
- Digital literacy must become an essential skill of the teaching profession. Although there is general agreement on its importance, training in techniques and skills related to the digital realm remains an exception in teacher education programs. The based tools and platforms skills and standards have proven to be something ephemeral, given that digital literacy has less to do with tools like the thought: digital skills have multiple faces (technology, information, multimedia content, and digital identity) and require a comprehensive way to be faced.
- The training of students in the use of new media and audiovisual communication languages is critical. Students need new knowledge and skills in the field of writing and communication, other than those that were needed a few years ago only. Increasingly it is necessary to possess technological expertise to collaborate globally and be able to understand the content and design of new media. For this reason, must be integrated into the curriculum new literacies, and their evaluation, which requires understanding, in its entirety, the meaning and scope of these new skills and competencies.
- Using technology to appropriate treatment of information and knowledge building is still too rare. A key challenge is to not only reflect on the use of emerging technologies by themselves, but put them in the dialectic of information processing to solve complex problems of society, being one of the challenges of higher education. It is not only incorporate technologies or not, but to put forward the needs of student understanding and thinking new ways of working with complex reality we face , to be able to build knowledge about the same .
- Adapting teaching practices to the requirements of the digital society and knowledge is required. Technologies place the student as the protagonist and author in different spaces, but their role is still predominantly receptor in the contexts of formal education. The underlying this phenomenon is that it cannot reduce the proliferation of the use of technology, since many other sociocultural aspects are driving change in existing education and labor practices. The low velocity in the appropriation of technology by the education sector may be due, among other causes, to which teachers are trained as users and not as leaders in the design and implementation of the use of technology for educational purposes. These trends and challenges have a profound effect on the way we experience with emerging technologies and how they implement and use in the educational world.

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