PERSONAL SOCIAL NETWORK AS A FACILITATING TOOL FOR COLLABORATIVE KNOWLEDGE CONSTRUCTION

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ABSTRACT

This study addresses the way in which personal social networks could facilitate the collaborative construction of knowledge considering the potential of Collaborative Computer Assisted Learning (CSCL) as a resource. The state of the art of social networks in educational contexts is shown and methodological proposals to analyze interactions highlighting models used to identify both the way that knowledge is socially constructed as observable behavioral profile interactions, are mentioned. Objectives and the proposed research methodology are detailed. Likewise, the expected results and the possible contribution to the scientific world are stated.

Concepts Categories and Subject Descriptors

· Human-centered computing → Social networks. · Human-centered computing → Empirical studies in collaborative and social computing. · Applied computing → Collaborative learning

General Terms

Documentation, Theory

Keywords

Social networks; computer- assisted collaborative learning (CSCL); Garrison, Anderson & Archer model, Classroom Interaction Observation Protocol.

1. CONTEXT AND MOTIVATION

There is no doubt that the spread of Web 2.0 tools enhances collaborative work, an essential competence to successfully interact in the knowledge society, and therefore cross curricular at all educational levels. Collaborative work can be supported using personal social networks as synchronous or asynchronous meetings between team members are likely to happen.

There are several investigations that have arisen around the use of these media in learning processes. In some, lack of knowledge on the subject is mentioned. For example, [5; 13; 42; 43; 16; 41; 49] suggest that attention should be paid to the emergence of social networks and future research on its academic use should focus on knowing the quality of interpersonal communication as well as on improving the learning process by identifying which tasks, activities, resources, services and interactions are carried out on social networks. Moreover, [52] share a study of 21 journal articles that have used Facebook in higher education and conclude that the use of this network shows an affective result on students that can be used to improve their performance.

Similarly, Collaborative Computer Assisted Learning (CSCL) has been investigated by several authors, including: [51; 21; 28; 53; 9; 27; 39; 23; 8; 45] who stress that research is needed to explore underlying theoretical issues of CSCL. For example, to gain a deeper understanding of CSCL, the context of learning and the process of psychological learning should be considered; likewise, understanding how students plan, monitor (forward and backward) and evaluate (achievements and results) their own activity both at cognitive, social and motivational levels considering the adjustment between technology features, the learning task and learning objectives as well as the organizational form of the participants of the joint activity; as a result a visualization of the interactions in a holistic manner is needed.

2. STATE OF ART

In a society characterized by the development of information and communication through new technologies, the Internet is undoubtedly the major technological phenomenon, so that its use (information and connectivity) is part of the daily actions of some human beings. One of the applications whose demand has undoubtedly increased in academic, organizational and business environments is social networks. A lot of educational research has been done on the field showing that its use can help boost different types of skills such as reading skills, the construction and dissemination of knowledge and sharing resources and activities [7; 16; 17; 25; 34; 37].

By making use of social networks in academic settings, it is shown that learning is a social activity: one learns from each other and by interacting with each other. Each person can form one or more learning communities to learn among peers (apprentices), with experts and/or professionals, establishing a horizontal communication, facilitating, in this way, collaboration and/or cooperation. In these environments, the ability to be empathetic becomes a substantial element for the educational quality [1] .

It should be mentioned that the special report [12] (Global digital statistics, 2016) shows the presence of social networks in more than 240 countries and the 30 largest economies in the world. It indicates that Facebook is the preferred social network having 1.366 million active users in January 2015. Furthermore, there are several studies [48] that report Facebook as the personal social network most used by academics to facilitate the learning process and create communities of practice; hence it has become essential to know the way these resources can stimulate the successful execution of a CSCL.

One way to investigate what happens in social networks is making the analysis of interactions. Several methodological approaches have been proposed using different processes such as, for example, the model of interaction analysis for the Evaluation of Social Construction of Knowledge in Computer Mediated Communication, proposed by [19]. The model to analyze asynchronous communication in virtual communities is suggested by [14]; while [50] propose a model to consider the convergence of knowledge.

There are models in which the argument is the essential part of the construction of knowledge, where attention to interaction patterns, sequences of argument and the quality of content [40] is set. Likewise, [23] consider reciprocity and shared knowledge to analyze the level and quality of interactions making use of the perspective taking theory in doing so. Another line of research considers different interaction processes that relate to the creation of knowledge among participants. Several researchers have contributed to its consolidation; however, [30] are the ones who could be considered as the model promoters due to their interest to try and adapt it empirically.

In order to get to establish the way in which knowledge is socially constructed, the analysis of the nature of the interactions will be carried out in the personal social network. To this end, the model proposed by [14] will be adopted since it is a model having as its main element the "metaphor of participation as an explanation of learning model, whereby individual learning depends on and is rooted in learning group or community and develops through social and educational interaction among its members"(p. 460) [4]. Likewise, the observable behavioral profiles are established in the interactions of social networking among students-students and/or student-teachers as a collaborative work runs. In fulfilling this task, the study used the Classroom Interaction Observation Protocol which was applied in a program of children with high capacities and proposed by a group of Spanish researchers from the University of Oviedo and La Laguna [36].

The research is complemented by the analysis of social network [11]. To meet and represent the interactions, indicators of centrality will be used to determine the degree of connectivity and closeness between people through their interactions.

2.1 International context

In Spain, Web 2.0 tools have been used in training processes of higher education and social networks (Facebook, MySpace, Twitter, Ning, Bebo, LinkedIn) with them. There are investigations in which it is stated that students become excited about the educational use of personal social networks which increases their levels of motivation and comfort and that teachers are responsible for the teaching strategy they choose to keep interest in interacting and socially building knowledge [3; 15; 21; 49]. Additionally, there are studies reporting the use of Facebook as virtual classroom coming to define that it is the right time to make changes in the pedagogical models and models of content production [34]. On the other hand, several studies where social networks are used as context of the learning process are shared, [15; 20; 35] . In the Spanish context there is confidence that technologies could change the education system; but despite that there is enthusiasm in the use of social network on the part of students there is still a lack of commitment from teachers to regularly use them in the teaching-learning processes.

Also, special interest is paid in observing how the use of social networks can boost the performance of collaborative work, revealing a constructivist view of learning in which each of the members of the collaborative work are responsible for their actions within the group they belong to [33; 35; 38; 44]. In Latin America studies on the use of social networks in higher education have been carried out. In Mexico [18] show how learning a second language -mediated by social network Facebook encourages communication and socialization of knowledge. In Panama they have made inquiries to find out the level of acceptance and participation in social networks by the university community, coming to identify the disposition toward its use and participation [17]. A study by [6] university students from Argentina, Spain, Dominican Republic and Venezuela aiming at exploring the use of social networks and perception of teamwork show that there is the will to use this educational practice with peers who are physically scattered.

Another interesting study was conducted in Argentina by [26], in which the possibility to use social media and collaborative Internet learning environments in teaching and learning processes is analyzed through face and blended learning courses. It concludes that in order to use these tools it is important to rethink everyday teaching practices.

In the same way, [2] present an investigation carried out in Argentina with the purpose of identifying the way in which Facebook is used in collaborative learning, reaching the conclusion that this is a family room for interaction which has generated well-timed feedback, the more

secure the student feels the higher level of participation increases in quantity and quality participation" (p.11). Also, they mention that the collaborative construction of knowledge takes place when the teacher invites students to respond to the proposed questions.
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2.2 National context

According to Digital Coverage there are eight million users of Facebook in Ecuador; however, very few investigations that have been made about its use and impact on the educational field. [31] Performed a study of the use of social networks in learning in higher education, arriving to the conclusion that the success of a social network is to meet the expectations of each of the members of the social network. [46] Share a learning model using social networks embedded in the Moodle platform, the model allows the entry of two types of comments, they can be made from the teaching guidelines and / or can be formulated deliberately. [47] In the Interactive Collaborative Learning Conference, presented an article called Social Learning Environments in which they reveal a training model that uses social networks integrated into the Moodle environment through a plug-in with possibilities of entering comments in a Facebook-like approach. It is been signaled that this feature can cause the evolution of virtual learning environments into social learning networks, a change that involves several methodological considerations. On the other hand, several studies make reference of the different types of interactions that can occur between members of a social network when it is part of the learning process.

3. RESEARCH OBJETIVES

The purpose of the study is to analyze the interactions of students in social networks when running collaborative work with the intention of proposing an instructional model that allows determining when interpersonal interactions provide added value in collaborative knowledge construction.

3.1 Specific Research Objectives

- Identify the type of interactions between students - students and/or students-teachers in social networks that produce a better social, cognitive and teaching presence when collaborative work is executed.
- Establish behavioral profiles observed in the interactions of social networks between students and/or students and/or teachers when a collaborative job is carried out.

4. METHODOLOGY

To address the research method we started from the problem statement and specifically the research question which in this case is: how interactions between students in social networks during the execution of a group work, influence in the collaborative construction of knowledge with cognitive, social and educational presence? Thus a method to give as approximate reality response to whichever is the quasi-experimental research mixed method which according [24] combines the techniques of quantitative and qualitative research. As [32] mentions the use of a single research method for conducting a study may produce distorted results. The design is quantitative research with emphasis on the qualitative (How-IS), since in the first stage will collect and analyze qualitative data and the second phase will collect and analyze quantitative data. At each stage, the population and sample, data collection techniques and application of instruments as well as the analysis of results and discussion of each of the approaches to reach the metainferences, is presented, which will establish findings

In order to visualize the collaborative construction of knowledge the [14] model, consisting of three elements: social presence, cognitive presence and teaching presence will be used.
The Classroom Interaction Observation Protocol (PIA) as proposed by [36] will be used in detecting observable behavioral profiles on social networking interactions between students-students and/or students-teachers when the CSCL is accomplished. To perform the triangulation of information an analysis of the social network with the help of Ucinet software will be done to visualize the density, centrality and homophily of the social network.

4.1 Population and sample

The study will be carried out at the Technical University of Loja (UTPL), whose headquarters are located in the city of Loja, south of Ecuador. It is a private institution which is partially financed by the central government. It has two modes of study: a) on-campus and b) open and distance studies. It offers undergraduate and post-graduate programs in both educational settings. In the current academic period, April to August 2016, undergraduate programs take in 5.700 on-campus students and 29.830 students in the open and distant system of studies while 3,800 students are enrolled in post-graduate programs. The faculty consists of 370 full-time teachers with studies of third and fourth level, 22% have Ph.D. degree and are full- time devoted to teaching and research.

The participants belong to the undergraduate program at the open and distance modes who are currently taking four different subjects: two core subjects (provide specific contents through which specific skills will be achieved" [29] and two subjects of general nature training ("materials with fundamental themes that reflect the dynamics of our university. They must be approved by all students at the UTPL" [29].

4.2 Study variables and instruments

Dependent variable: processes of collaborative knowledge construction.
Independent variable: personal interaction in social networks.
These variables will be analyzed using the following tools and techniques:

Quantitative analysis:

- Likert scale- based questionnaires, which will be applied to students to know their perceptions on how they say they use, how they say they interact, how they say they learn and how they say they unlearn when using a personal social network in completing a collaborative work.
- Interview aimed at teachers of the subjects selected for knowing the perception of the use of social networks in the implementation of collaborative work and its influence on the process of collaborative construction of learning.

Qualitative analysis:
- Analysis of interaction chains to identify the collaborative construction of knowledge.
- Analysis of interaction chains to identify the types of behaviors of the members of the social learning network.
- Analysis of the social network for meeting and represent interactions. Centrality indicators will be used to identify the degree of connectivity and closeness between people through their interactions.

Data collection instruments:

1. Open format questionnaires directed at teachers applied through an interview (influence on the process of collaborative knowledge construction).
2. Likert- type scale survey aimed at students to identify how interactions influence in the social construction of knowledge.

5. RESULTS
With the implementation of this research it is intended to get to know what kind of behaviors are displayed in social networks interaction when these are used in the execution of a collaborative work and allow collaboratively build knowledge. Although the protocol that will be used to identify interaction behavior is observational and applied to a system of classroom studies, this time it will be used in a system of distance learning and virtual classrooms.

6. CURRENT AND EXPECTED CONTRIBUTIONS
After the completion of the research an instructional model that allows to identify when interpersonal interactions provide added value in collaborative knowledge construction will be proposed.

7. ACKNOWLEDGMENTS

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