



Management of social networks in the educational process



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ABSTRACT

The research developed in this work consists in proposing a set of techniques for management of social networks and their integration into the educational process. The proposals made are based on assumptions that have been proven with simple examples in a real scenario of university teaching.

The results show that social networks have more capacity to spread information than educational web platforms. Moreover, educational social networks are developed in a context of freedom of expression intrinsically linked to Internet freedom. In that context, users can write opinions or comments which are not liked by the staff of schools. However, this feature can be exploited to enrich the educational process and improve the quality of their achievement.

The network has covered needs and created new ones. So, the figure of the Community Manager is proposed as agent in educational context for monitoring network and aims to channel the opinions and to provide a rapid response to an academic problem.

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1. Introduction

Internet and new information and communications technologies have revolutionized all sectors of society in many areas. The advent of internet our society has brought a revolution comparable to the invention of the printing press or the industrial revolution. In addition, Internet is an extraordinary platform for innovation and social communication on which to build value-added services to generate economic growth and increase overall competitiveness (Kuo, Wub, & Dengc, 2009; Drigas & Leliopoulos, 2013). The improvement of efficiency and security of communications provides undeniable competitive advantages to organizations and their business process (Helander, Jussila, & Kärkkäinen, 2013).

But perhaps, social relations is the area more affected, due to one of the greatest advances of technology has been the ubiquity of communications that keeps people in touch with each other. The technology and software advances have overcome the obstacles of time and space and allow communicate effectively with others, meet people all over the world and maintain and strengthen familial relationships (Lytras & Ordóñez de Pablos, 2011).

Social interaction is the process by which we act and react to those around us (Baym & Jones, 1995). To perform this function,

social networks and the internet have been ideally designed. Accepted definition of social network is: *a network of social interactions and personal relationships* (Oxford Dictionary, 2014). Therefore, social networks are explicit representations of the relationships between individuals and groups in a community (Finin, Ding, & Zou, 2005). It is implemented with a dedicated website or other application that enables users to communicate with each other by posting information, comments, messages, images, etc. (Oxford Dictionary, 2014).

In this sense, social media has been a major revolution in human relations. This new concept has brought platforms, tools and applications to provide opportunities for people to develop socially. Personal relationships have adapted remarkably fast to new technologies in many areas: emotional relationships (Facebook, 2014); job searching (Jobster, 2014), (VisualCV, 2014); friendship (Facebook, 2014); sports (Sportlobster, 2014); professional relationships (LinkedIn, 2014), communications (Twitter, 2014), etc. This evolution is evident especially among the younger population. All people under 20 were born with the Internet, and today they live it as natural, just as we see electricity in our homes without being aware that, not long ago, were part of the science fiction. The development of a technological culture not only includes the knowledge of technology but also the skills to interact socially and get in touch with other persons.

Social network analysis is an interdisciplinary topic where many researchers work. In recent years, it has been growing importance in sociology and economics disciplines due to implications in

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business applications (Bonchi, Castillo, Gionis, & Jaimes, 2011; GarcíaGavilanes, 2013; Verbeke, Martens, & Baesens, 2014). The development of semantic webs and ontologies has helped the development of many fields of knowledge, especially in those where there is a lot of data that must be taken into account in making decisions (Lytras, Sakkopoulos, & Ordóñez de Pablos, 2009; Ordóñez de Pablos & Lytras, 2013).

Education is one of the most important human relationships. It is a social process in which knowledge is spreading among generations and that society devotes much attention and invests many resources. Educational has not kept out of this development and have benefited from new technologies in all stages of the teaching–learning process (Song, Singleton, Hill, & Koh, 2004): new ways of generating knowledge, teaching methods, teaching techniques for the acquisition of abilities and knowledge, etc. The learning process occurs in a social context through relationships as collaboration, negotiation, debate, peer review and mentoring (Grabinger & Dunlap, 2000).

Information systems, knowledge management and learning walk together to create synergy and add value to the processes involved in this social task (Lytras, Tennyson, & GarcíaPeñalvo, 2011). Through new technologies, students can access the same sources and resources that the teacher. In this sense, the work of teaching teams should provide added value to the teaching task. However, we still do not have enough experience and are not fully aware of the scope and consequences of the development of new technologies in education. Especially with regard to social networks and the role they play in the teaching's work (Boyd & Ellison, 2007).

It is especially important to the educational community understand the implications of using social media in teaching process. The proper management of social networks and their integration in educational processes will allow design strategies to take advantage of their potential and to reduce risks. There are many studies and research works that attempt to describe experiences and explain strategies using technology in the classroom at all educational levels. It is an issue of great importance. The teacher staffs should be aware of these experiences to implement the changes with greater assurance of success and ensure effective results and widely accepted by the students (MoraMora, Signes Pont, Camps Jordá, & GarcíaChamizo, 2009; Benson, Morgan, & Tennakoon, 2012; Dascalua, Bodea, Lytras, Ordoñez de Pablos, & Burlacua, 2014). These uncertainties are the motivation that drives the research described herein. This work has been developed in high education context (University of Alicante and National University for Distance Education – Spain) and in degrees in which students are experts in the use of technology: Degree in Computer Engineering.

The originality and value of this study is to show key aspects about how social networks can be used on the educational context to improve the efficiency of learning process. The right management of social networks is essential in this job.

The rest of the paper is structured as follows: the following section discusses the educational social networking and the hypotheses proposed in this paper; Section 3 describes shows the experiments carried out to demonstrate the propositions and discuss about results obtained, finally, Section 4 describes the conclusions and lines of future work.

2. Social networks for education

Educational social networks enrich the teaching–learning process by means of building a platform where users can interact with each other to share experiences, difficulties, results, materials, comments, documents, etc. (Greenhow, 2009). This knowledge is

extremely beneficial to take advantage of the experiences of other users and improve the effectiveness of the educational process (Moran, Seaman, & Tinti-Kane, 2011). Effects of social networks in educational environment are being studied by academics (Greenhow, 2011; Sandoval-Almazan, Romero-Romero, & Heredia Rodríguez, 2013; Koles & Nagy, 2012). In educational social networks, the link between users to interact on the network is group membership, whether this is the degree, the course or subject of the students.

In this section, some hypotheses are proposed on the operation and management of social networks in education. These hypotheses arise from the accumulated teaching experience and social habits observed in students. For testing the hypotheses, in the next section experiments and results are disclosed.

2.1. Hypothesis 1: communication capability

Today, most schools have internet web platforms or corporate web sites that deploy their educational resources on the Internet (Fig. 1a). There are many platforms, proprietary (UA-Campus Virtual, 2014) or not (Blackboard Academic Suite (BAS), 2014) to perform this task. These sites not only provide a web address for resources access but also incorporate support for other tools that help the educational process. From student point of view, through these platforms are available subjects and courses websites, news panel, on-line teacher tutorials, FAQs, repositories, forums, document delivery platform, etc. From the point of view of the teacher these platforms provide access to student files, management, evaluation and qualification tools, cloud space and other teaching administration tools.

Undoubtedly, the Internet platforms benefits all users in the educational process, however, although this web platform has all the resources necessary to develop the educational work, we think that it do not have the power of communication which is capable of providing a social network. With this respect, we refer to the speed at which the information is broadcast to users. At this point, we state our first hypothesis of this research:

Hypothesis 1. An educational social network has wider communication capability than conventional web platform.

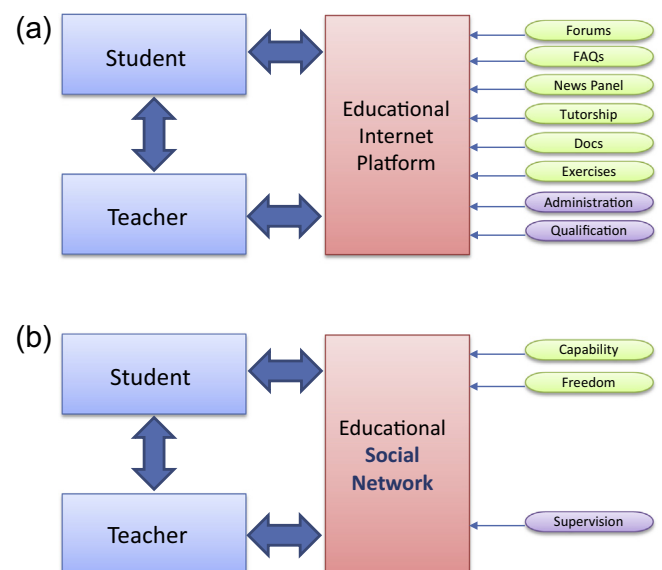


Fig. 1. Interactions between actors in the educational process.

The reason for our conjecture is on the fact that interactions in social networks are based more on personal relationships and not in educational needs, so those interactions are being motivated by many more factors than purely educational.

Due to the asynchronous nature of Internet web sites, communication between users will not take place until they access on the web (Vonderwell, 2003). Therefore, it is essential using synchronous or frequently accessed applications. Especially for those aspects that require frequent interaction with the student.

2.2. Hypothesis 2: freedom of communication

A widespread feature of educational web is that you need to register to access available resources and teaching tools. Moreover, this registration process is done together with the enrollment and payment processes at the educational institution. That is, login information assigned to access the web site is automatically created in the enrollment process and therefore is related to the user personal data. In many cases, the login itself corresponds to the institutional email account assigned to the student. This fact means that from the time when a user registers and access to academic web, the institutional staff can identify and audit all activity in each session.

Some educational web platforms have tools for students to express their opinions and comments about the studies. One of the most popular resources is communication forums. This tool (Balaji, 2010; Hentea, Shea, & Pennington, 2003) allows an asynchronous interaction between several web users to share experiences, opinions, questions and answers related to academic activities. Another application supported by many of these sites is the creation of survey forms for students or teachers. In some cases and according to administrators, these surveys even “guarantee anonymity” of the answers provided. However, despite this fact, we think there is a lack of confidence about comments made and therefore users do not answer in all sincerity.

Hypothesis 2. An educational social network provides more freedom of expression than the official educational platform.

The reason for this conjecture arises from the experience gained with the development of electronic survey forms embedded in educational web and its comparison with other surveys form on hard paper in the classroom. When the answers given by students in electronic survey form anonymously configured about different aspects of the subject or the teacher are analysed, a trend toward “political correctness” is observed in the comments. This behavior shows that students do not trust that anonymity is maintained, once identified for entry, if they shed unfavourable opinions.

Extrapolating this approach to other domains, we think that the personal aspect of the comments thrown into the forum can restrict the freedom of the students when reviewing different aspects of the subject.

2.3. Hypothesis 3: supervision of communication

As in other human relationships, there are limitations to the experiences and information can be obtained from these educational social networks. An anonymous network that preserves privacy may require a moderator to listen users, channel problems and avoid undesirable situations. The moderator can be a recognizable figure for other users and act on behalf of the educational institution, classroom, subject or teacher within the network, or may be a not recognizable figure and mingle with the other users.

This moderator agent basically responsible for overseeing the social network has been widely adopted in the business sectors. Some corporations aware of the impact on their business the

opinions and comments that move through social networks have created the role of the *Social Media Community Manager (CM)*. This agent has become one of the most important roles in marketing (Oracle, 2014) because he/she is in contact with the users or customers through social media and has got a first-hand knowledge about feelings, problems, demands, or other opinions (positive or negative) of the company. The job of a Community Manager is, basically, to facilitate the on-line environment where the users can speak and be heard, and, from here, influence the business processes to improve customer satisfaction and the way the company works. A Community Manager builds relationships with company's departments to make sure that the information they receive is accurate. This new position created at the mercy of new technologies acquired, in many cases, an executive profile with responsibility for business strategy (ITBusinessEdge, 2014; Kruse Control, 2014).

The work that is entrusted with the CM is performing the following functions (Bensen, 2009): perform on-line marketing, public relations, perform customer & technical support and product development & quality, identify opportunities for sales & business, transformator towards web 2.0 platforms and reporting.

The Community Manager term has also been used in computer fields with the same management meaning of collaborative ubiquitous computing environments in which its function is basically enables development of collaboration services using community model (Kang, Song, Kim, Park, & Cho, 2007).

Hypothesis 3. In an educational social network is recommended the Community Manager agent for network monitoring.

The big draw of social networks is that give each user a voice. The CM function is to hear those voices and address them to improve processes (Perkins, 2014). This role is well accepted in the business world but we think it should be extended to scopes where there is a strong interaction in social networks, such as the current teaching processes.

Social media interactions are becoming more relevant and intense especially in educational contexts. The key idea of the potential of CM in this environment is to establish a trusting relationship with students, collect feedback from them and use it to propose internal changes to improve the teaching process. This function should be performed by members of the teaching staff knowledgeable about new channels of communication through social media tools.

Community Managers are listeners, constantly in tune with students are saying and where they are saying it online, and this information should be conveyed to all fields of teaching process. These data can be used to help make decisions on how best to interact with students. CM manages the creation and activation of the communities and coordinates the collaboration among the community members. Thus, the role of CM is linked to the development of User-Centric community strategies.

The CM facilitate an environment where students can speak freely, be heard and make sure that their comments help to improve educational processes. As previously commented, students can speak with full freedom of opinion through social networks, therefore, CM can identify unfavourable opinions that reveal the existence of a problem in the organization and channel and redirect negative opinion or unwanted situations. The CM is the first of the institution aware of the problem. For such situations, the CM can play a major role (Oracle, 2014). The CM is very useful to avoid or mitigate opinions that unfairly penalize the work of a teacher, a faculty or department. It is clear that their role is not to exercise any censorship of comments that have written into the social network (this would not be possible to be the network outside the scope of the institution). However, student-teacher

relationships are very susceptible to criticism based on historical opinions of alumni, creating an unfavourable climate regardless of the improvements or progress made by the faculty. That is why the CM must identify these situations to explain and refute the criticism on the network with speed and transparency.

The CM's work causes that educational staff are more aware to the teaching issues and his/her work should be favourably received by the student, due to the true verification of the institution's concern for the occurrence unfavourable situations and for proposed solutions. In this sense, it can be treated with techniques of business strategy for maintaining the quality of service to users.

3. Social experiments & discussion

This section describes the experiments and demonstrations of the assertions and assumptions outlined previously. The test field was the university educational context of the article's authors (University of Alicante, National University for Distance Education) for students of engineering degree.

3.1. Hypothesis 1: communication capability

In order to compare the communication capabilities of social networks and the official educational platform has made the following experiment: it has created an announcement aimed at students of a subject announcing a change in the delivery date of an exercise. The message requires a confirmation that the notice was read by sending an email to the teacher of the subject. The spread of this notification was made in different ways: (a) by posting the announcement on the news panel of the website at the official site of the University; (b) by sending an email to students through their institutional university email account; (c) with a message on the wall of a social network related with studies. To classify and measure results independently target students in each case belonging to different subjects and degrees.

The results obtained are shown in the following table (see Table 1).

The above data shows that social networking offers faster response notifications to students, both average time and in terms of the first response. Arguments that can explain this can be as follows: social networks are much more friendly and carefree to spread and comment information; students accessed much more frequently to social networks than to educational web as they share experiences in broader areas and circles that exclusively

Table 1
Results of communication capability experiment.

	Average response time	First response time
(a) Announcement on official web page	3 days	1 h
(b) Send email to institutional email account	4 days	1 day
(c) Post message in social network wall	2 days	5 min.

Table 2
Results of freedom of communication.

	(1) Not anonymous users in managed forums (%)	(2) Not anonymous users of not managed forums (%)	(3) Anonymous users of not managed forums (%)
(a) Questions/answers about teaching issues or examination process	80	20	5
(b) Exchange of notes, exercises and problems	18	58	30
(c) Criticism of the subject	2	12	25
(d) Criticism of the faculty members	0	10	40
Total	100	100	100

educational (friends, family); usually the student access to educational web when he/she is looking for something (information, documents, exercises, etc.) but, but he/she do not frequently checks for new events. This latter behavior is very different to that experienced with the social network in which the user enters looking for news and new comments from friends.

It is noteworthy that the slower option has been institutional email. This corresponds to the e-mail account automatically assigned to each college student (@alu.ua.es; @alu.uned.es). Most of them has one or more personal email accounts when arrive to university and therefore these are the default accounts that are configured on their personal computers and mobile devices. Most students access institutional email through the web platform and webmail tool (UA-Webmail, 2014; UNED-Webmail, 2014), but this process is much slower than querying directly the web or social media.

In the results described, has not been taken into account the possible horizontal communications between students transmitted the news to each other personally.

3.2. Hypothesis 2: freedom of communication

To prove the second proposition we used the comments in different forums depending on the degree of privacy that members of the school community have over this communication tool. We consider three contexts of experiments: (1) registered know users in managed forums by staff; (2) registered know users in not managed forums; and (3) anonymous users registered with pseudonym in not managed forums.

The communication channel used in the context (a) is the online forum of web platform, in contexts (b and c) the site is the wall of the social network related to studies. In this social network, there are registered users with their real name and others who are registered with a user pseudonym. The analysis made of the content of the communication consist in identify the type of the comments for each context. We identified four categories of messages: (a) messages with questions and/or answers about aspects of the list of topics; (b) messages for exchange practical documents (notes, exercises, exams, problems); (c) messages for criticism of the subject; (d) messages for criticism of the faculty members.

Results obtained are shown in Table 2. Not relevant messages as greetings and introductions has been removed in analysis.

The above results show that anonymity is essential for students can give opinions freely on the subject and faculty member. In this sense, educational web with conventional communication tools do not provide relevant qualitative information on these aspects, but focus more on educational issues.

By reading educational social networks on related studies, the teachers and institutional managers can know what students really think about the educational development and help them to make the right decisions to solve problems. To get this kind of information traditionally obsolete hard paper surveys forms have been used, which are conducted in class time and for students of each subject. This system suffers from numerous problems that the proper use of social networks could solve.

Another remarkable aspect of the above data is that students are more favourable to exchange documents through anonymous spaces and prefer to direct questions about content through institutional forums. The sociological analysis of this behavior may require further study, but may be explained by the greater ability to attach documents and share via social networks and cloud platforms that do not require downloading the documents on personal devices.

3.3. Hypothesis 3: supervision of communication

The proof of this third hypothesis is much more difficult than the previous task. However, it has raised a small representative experiment of the job of Community Manager agent.

In this case we use two educational social networks outside the institutional web platform that are related to degree college studies and frequented by the authors of this work. The experiment consisted of spreading a false news on both networks by an anonymous user created who was posing as a former student of the subject. In one of the networks the figure of CM was performed by one of the teachers of the institution and recognized by students.

The false announcement was to spread that could easily pass the subject doing a documentation paper about one of the topics. To do that it is necessary to inform to the teacher prior to delivery.

- In the first social network that did not have the presence of CM, spreading the news sparked several emails to the teacher requesting a theme for the work.
- In the second social network, the CM quickly refuted the announcement. In this case, the subject's teacher was not bothered with emails unfounded. The work of CM avoided unwanted effects.

This simple example demonstrates that, even with not negative opinions, its effects can cause distortions in the functioning of the institution. In this sense, social networks grant power its users and their aggregation thereof.

Subsequently, to avoid misunderstandings, the news was also denied in the first social network by the subject's teacher.

4. Conclusions & future work

New communication technologies and the Internet have brought a great change to society in many sectors. Among the most notable changes, the development of social networks has meant a revolution in human relations. Educational processes should not be unaware of these changes and must adapt and take into account new social habits and behavior based on the network. Educational social networks were created as parallel structures to educational web platforms to meet the needs and gaps that they had (such as the anonymity of its users). In a way, that was the story of the creation the largest of them at Harvard University: Facebook.

In this paper we have presented some hypotheses about the characteristics of social networks and their exploitation for educational processes. The hypotheses have been tested with experiments on simple networks and platforms that produce objective facts that demonstrate the validity of the orientation of the propositions.

Although some of the results may be predictable or obvious a priori, what is really surprising is that most schools which have educational web platforms do not pay the necessary attention and remain outside of the social networks of their educational activity.

The main results that have been reached in this work (Fig. 1b) shows that social networks have more capacity to spread information than educational web platforms. Moreover, educational social

networks are developed in a context of freedom of expression intrinsically linked to Internet freedom. In that context, users can write opinions or comments which are not liked by the staff of schools. Social networks allow freedom of expression which could not be produced in the educational context. This feature can be exploited to enrich the educational process and improve the quality of their achievement.

The network has covered needs and created new ones. The Community Manager is proposed to monitor network, channel the opinions about learning issues and to provide a rapid response to a problem. After all, social networks can create new teaching opportunities to take advantage of Information Technologies for improving learning process.

As lines of future work we propose to extend the experiments to larger sets of students to compare the results with greater populations. Another area of interest is the analysis of the translation of the assumptions and results from the world of education to other human relationships in which managed web platforms and social networks are involved, such as government administration or private corporations.

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