

Social Networks as a Virtual Teaching and Learning Environment in Higher Education

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Abstract. Over the last two decades, technology infused into education in various creative ways. One of them is using virtual learning environments. This research investigates pre-service teachers' use of social networks to support their learning in the classroom. It is anticipated that this research may provide an opportunity for educators and researchers to discover a pedagogical use of social networks for teacher education in developing countries by analysing the weaknesses and shortcomings of the matter. Social networks, when used efficiently, could be beneficial for students and teachers. A mix method research was used in discovering students' use of social networks. The data was collected through pre- and post-surveys and followed by semi-structured interviews. It is stipulated that social networks can be used as a supportive virtual learning environment where the role of teacher and student can be reversed time to time. Students benefitted from using social networks and were engaged in learning through networking with peers and teachers. Although sustainability of the network was not achieved, its effects on connection, collaboration, and communication among all are appreciated.

Introduction

Most students in today higher education institutions are using technology informally in every aspect of their lives, like playing computer games for communication and collaboration. Beekman and Quinn (2008) also emphasize the important role of the computers and networks for great changes in society. In parallel, the needs and expectations of 21st century learners (Ellis, 1993; Fallows & Bhanot, 2005) and learning environments (Grodecka, Pata & Valjataga, 2008) are changing enormously. In order to face these challenges, the faculty has to use new approaches in teaching and learning to engage students. It is teachers' responsibility to integrate innovative technologies that facilitate student engagement via new, collaborative learning approaches that will supplement learning and connect the students with their teachers and peers.

Students are now frequent users of Facebook, Twitter, MySpace, and other social networking technologies (Oradini & Saunders, 2008b). Social networks became famous in the USA in 2004 with Facebook, which quickly spread all over the world. First students, then teachers joined this network, and the number of students sending friend invitations to their teachers exploded. Students also made and continue to make use of Facebook for informal learning activities (Madge, Meek, Wellens, & Hooley (2009).

In order to meet students' expectations and needs, it

is important to be able to adapt the use of these technologies to the teaching and learning environments in higher education. This usage may promote students' active and effective learning by engaging them both in classroom and online. Grodecka, Pata, and Valjataga (2008) comment that new technologies support, even facilitate, constructivist learning where students gain knowledge and build their skills through activities and experiences with other learners. They add that learners develop many important skills such as collaboration, negotiation, reflection, constructive criticism, selection, and information analysis.

The learning theories that form the basis of technology use in education are connectivism which is one of the recently emerging learning theories of the digital age (Kop, R. and Hill, A., 2008). Online learning communities will also form communities of practice in a time frame (Solomon & Schrum, 2007). New educational approaches transform students from listeners into active participants in the classroom. Active learning strategies should include instructional methods that involve students acting and thinking about what they are doing, by engaging them in high order thinking tasks such as analysis, synthesis, and evaluation (Bonwell & Eison, 1991).

Learning and Engagement in Virtual Learning Environments

Another concern in new educational approaches is engaging learners in the context of learning. There are many theories about student involvement and engagement. One of the those most often quoted is Astin (1984) who defines involvement as "the amount of physical and psychological energy that the student devotes to the academic experience" (p. 297). The students of the 21st century are keener to be actively engaged in their learning environment. Weimer (2009) argued that student engagement can be achieved by concentrating on factors such as student-teacher interaction, active and collaborative learning experiences, and involvement in extracurricular activities. Weimer adds that "engaged students are enthusiastic to learn and active participants in their own learning". As a result, the teachers in higher education should acknowledge utmost importance to student engagement in order to improve student participation and performance.

When the classroom teaching and learning environment is improved in this way, not only students, but the teachers as well will be engaged learners. Weimer (2009) says that, in order to create a good learning environment, teachers need to tell students that they themselves are

learners too, so that students think that their own contributions are valuable.

Social networks could be one of the solutions to utilize virtual learning environments anytime, anywhere, and at any pace. Greenhow and Schultz (2007) introduced a conceptual framework for special students in higher education aiming for their “educational attainment, leadership and social engagement”. Heibert and Harper (2008) emphasize students’ increased involvement in communication where social networks are a vehicle for this purpose. Junco and Cole-Avent (2008) mention social networks as one of most engaging technologies that students use. Social networks create such a degree involvement that students make comments, contribute to discussions, and share experiences.

Open-source Web-based tools are used for building an “online learning community”. Blogs, wikis, social bookmarking, feeds, internet telephones, podcasts, and photo-, link-, and video-sharing sites are used to interact with members in the community (Grodecka, Pata & Valjataga, 2008; Solomon & Schrum, 2007). The effective use of these tools in virtual environments also helps to improve student engagement. Here, students can play various active roles as a learner and teacher, and peer tutors (Berlanga, Bitter-Rijkema, Brouns, Sloep, & Fetter, 2009) through any type of learning resource or events that help learners to acquire competences.

Oradini and Saunders (2008b) consider social network usage as a practical and more interactive alternative to the involvement of students within large physical classrooms. They add that, in addition to academic development, social networks help diverse groups of students to settle and integrate. The use of interactive technologies can increase student engagement as they collaborate with both their peers and instructors (BrckaLorenz & Garver, 2010).

Current Experiences of Social Networks

There are many examples of social network usage in higher education around the world. Oradini and Saunders (2008a) implemented the “Connect” system, and discovered that only certain students were using this social network for communicating with peers with similar interests. Some of the students believed that it is unnecessary to have another social network such as Connect, because they did not have enough time or were already enrolled in many networks including Facebook. Another finding related to the reason for not using networks frequently for academic purposes was that students wanted to see their tutors also participating in the system. The more faculty members are encouraged and work with students in the online environment for educational purposes, the more contributions are made by students.

Juang (2010) developed a WIRE instructional model on Facebook and conducted a quasi-experimental research by applying this model. Many of the respondents claimed that using Facebook developed their sense of achievement and understanding of the lessons. On the other hand, much

teacher intervention was found to cause less interaction among students. However, Oradini and Saunders (2008a) stated that when the teachers had an active role in the social network, students could actively interact. Based on these two studies, it may be said that teacher interaction increases the students’ active participation although it may decrease peer-to-peer communication.

Wolfe (2007) conducted a research project in a college in order to examine students’ use of social networks and attitudes towards different learning modalities. The results show that the majority of the students (90%) were currently using social networks, mainly Facebook and MySpace, in their daily life. The research results showed that the majority of students did not want to use social networking tools for academic purposes. The higher percentage of students suggested using these tools for the purpose of interacting with peers and use bulletin board to share information. The students who wanted to use these tools in the classroom environment mentioned that they would be used for interacting with teachers and other students.

Hung and Yuen (2010) investigated whether the use of social networks supports the courses in the classroom and improves students’ ability to form communities using NING. They used NING as a social network since they believed that it was appropriate for educational purposes. The result shows that students create communities and share their knowledge in communities of practice by using social network as an additional learning tool. In a university with a limited use of learning management systems or social networks for educational purposes, this study provides one example of using social networks in an undergraduate course.

Purpose of the study

The purpose of the present study was to investigate the use of a social network in a freshman core course entitled “Information Technologies in Education CITE101 Part I” for students of the Computer Teacher Education Department. The objective of this course is to make students IT literate providing a foundation for the upcoming pre-service teacher education program. Lawrence (2009) suggests pre-service teacher training practice is expected to combine pedagogical and technological tools to prepare 21st century citizens. If these students learn by experience, they will be ready for their teaching environment after graduation. They will be empowered for ICT-based teaching in their career. Web 2.0 technologies were used to achieve this goal.

This study is significant for international researchers since it reflects how social networking is used among teacher candidates and educators from different cultures and teaching and learning background. Thus, it may also provide information about the significance, position, and implementation of social networks in teacher education. Our motive in this study is to use a social network to facilitate teaching and to enhance students’ learning in communities of prac-

tice. Thus, the research explored the questions below:

1. To what extent did the students use social networks to support their learning?
2. What benefits did students obtain from using a social network during the course?
3. What did the students perceive as factors that hinder the continuous use of social networks?

Methodology

The research project was conducted as a part of the Information Technologies in Education (CITE101) course in the Computer and Instructional Technology Teacher Education Program in the Department of Educational Sciences at the Eastern Mediterranean University (EMU) in North Cyprus. EMU is an international university with a large and diverse student body from different countries. The domain of the research was two groups of 55 freshman students. The authors were the teachers of these groups.

Teaching and learning took place in both the formal classroom, with lectures and laboratory sessions, and in a virtual environment, where a social network (<http://cite101.ning.com>) was designed and developed. The social network NING was used for educational purposes. The aim was to include learning materials and provide students with the opportunity to collaborate with peers and teachers in a virtual environment. In other words, social networking was used to create communities of practice. The instructors used the social network created for CITE101 to place their course materials, presentations, announcements to the students, and links related to the topics covered in the course. In addition, events and discussions were created. The students prepared their profiles and uploaded their photos. Communication with the students was done through chats, blogs, e-mail, and wall-to-wall messages. The students were assigned to write blogs and to upload subject-related photographs and videos. They also commented on each others' contributions to the network. All

participant but to each group. These results were presented by Elçi and Çubukçuoglu (2009) as a conference paper in ICERI. The second phase of the research was qualitative, *i.e.*, descriptive and subjective (Wellington, 2000). As part of this phase, open-ended questions and semi-structured interviews were used.

At the end of the course, an open-ended question was asked to discover the students' perceptions about the social network used during the course: "What are the benefits of using a CITE101 social network during the course?" One year later, interviews were held with volunteer former students as a follow-up to the previous survey results. All students in the social network were invited through network e-mail. Only ten of them accepted the invitation and three of them actually participated in the interview. The main reason for using a semi-structured interview was to obtain in-depth and detailed data based on participant feelings, ideas, and emotions (Denscombe, 1998) about the influence of social networks on their learning during the course and its sustainability after the course.

Results

The present research is thus a follow-up investigation to a prior study by Elçi and Çubukçuoglu (2009). In previous research, a pre-survey and post-survey were conducted before and after taking the course, to discover change in students' ICT skills. Survey results are summarized here to show the students' technological abilities.

Students' average use of Internet for recreational purposes was analyzed to find out the number of hours they spent using ICT. According to pre-survey results, more than half of the students in the class used the Internet at least six hours a week. However, in post-survey results, this ratio was decreased. Students were also asked which activities they had been engaged in recreationally on the Internet (see *table 1*). In the pre-survey, students responded that they often used chat and e-mail, and that they down-

Table 1. Descriptive results for students' Internet activities

Test		Chat	E-mail	Download	Shopping	Banking	Surf	Games
Pre-test	N	33	34	32	7	2	22	22
	%	76.7	79.1	74.4	16.3	4.7	51.2	51.2
Post-test	N	24	29	22	10	7	16	17
	%	50.0	60.4	45.8	20.8	14.6	33.3	35.4

these contributions were graded at the end of the semester. Each week, students who had the most interesting contribution in each group were "featured" by their instructors.

The research was completed in two phases. The first phase was quantitative and pre- and post-surveys were conducted. The participants included 43 students for the pre-survey and 48 for the post-survey. The results were collected anonymously so they were not specific to each

loaded files. On the other hand, according to the post-survey, the usage pattern was different. Shopping and banking increased, while chatting, e-mailing, downloading, surfing, and playing games decreased.

Students were asked to identify frequently used Internet tools (*table 2*). The most frequently used Internet tools were Facebook (95.3%), Wikipedia (74.4%), and Google (72.1%) in the pre-survey. In the post-survey Facebook

Table 2. Descriptive results for students' use of Internet tools

Test		Facebook	Wikipedia	Google	Video Service	Instant Messaging
Pre-test	N	41	32	31	30	22
	%	95.3	74.4	72.1	69.8	51.2
Post-test	N	36	27	28	29	26
	%	97.3	73	75.7	78.4	70.3

(97.3%) was again the most commonly used tool. The results of post-test showed that video services (78.4%) like YouTube and Instant Messaging (70.3%) tools such as Skype and MSN Messenger became frequently used tools during the course. In other words, students were frequently using social networks and other communication tools for connecting with others, as Oradini & Saunders (2008b) also mentioned.

One of the aims of this research was to investigate to what extent students use social network to support their learning in the classroom. This was explored through teacher's observations and analyzing students' participation and contributions to the social network. The researchers observed that most of the students were active in the virtual learning environment that was created for the course. It was obvious that students were responsible for their own as well as their classmates' learning since they added photos and videos related to the issues discussed in the classroom. Some of them even developed their own videos which explained issues in detail. Some students were leading and commented intensively on others' contributions. There were few who did only what the instructors assigned them. Students also became friends through the network. In addition to school work, they used it for socializing, chatting, and sharing experiences of university life.

It was also interesting that they had the chance to interact not only with classmates but also with students who were in another group of this course. This is consistent with Grodecka, Pata, and Valjataga (2008) and with Solomon and Schrum (2007) since students interact with each other using certain tools within social network. This provided them with an opportunity to share the two teachers' various classroom experiences through the Internet. It was clear that this social network engaged them not only in collaboration but also in competition to search the Internet and find more interesting facts about ICT and ICT related-topics and post them. More or less the majority of the students' engagement was established by using the social network during the course, similar to Junco and Cole-Avent's findings (2008).

The questionnaire results and informal observations through students' participation to the social network showed that students were keen to use social networks in their personal life for socialization and also for the purpose of education. Although there were intensive participation and contribution to the social network, some conflicting opinions were raised during the follow-up interview, where students generally did not support the idea that the social network directly enhanced their learning. All interviewed

students agreed that many of them joined the social network in order to get good marks. It is believed that everybody was sharing information and uploading a video or movie related to the course but nobody was conscious of their contribution.

"I know a student who shared a lot of information and uploaded many videos in the network but I am sure he never read anything that he added or others..." (an interviewee).

"Usually our friends do not watch our videos or blogs. The NING network is planned well but students did not like it."

Analysis of the open-ended question revealed that, most of the students mutually learned and improved their technological skills and educational knowledge about computers. Juang (2010) also discovered that the use of Facebook during lessons developed students' success and learning.

Creating and writing blogs was one of the most important skills students learned and developed. They were also very keen to upload videos and pictures on the social network. As one student wrote on his exam paper:

"I didn't know what embedded code was before, but I have learned it on the NING social network. Now I can add video to my webpage."

Many students expressed that using social network also improved communication and collaboration (Heibert & Harper, 2008). In other words, the social network was not only beneficial in improving ICT skills and knowledge, but also in improving good cooperation and collaboration skills. They managed to do these by communicating and connecting with friends, using forums and discussions, asking questions about the course, and instant messaging with friends and the teacher. All of these activities are beneficial in creating a virtual environment in which to learn, not only from teachers but also from peers. Berlanga *et al.* (2009) also stated that virtual learning environments provide an opportunity for students to learn from each other.

"I learned how to share knowledge fast and in an enjoyable way."

"I learned communicating outside the classroom."

"I already knew these [...] but I learned how students stick together and share knowledge easily."

"I became familiar with adding content to other social networks like NING."

Interestingly, some students perceived "online exam results announcement" as a benefit. The reason for this may be that it is more convenient for them to check it on

the virtual environment instead of checking the notice board. In another survey, students suggested using social networks as a bulletin board, as an information resource (Wolfe, 2007).

There were some benefits expressed by only a few students, however, they were impressive. These benefits were applying personal settings in the social network, uploading music, and adding hyperlinks inside the blogs. The importance of these benefits are mentioned by a student as follows:

“To tell the truth, I didn’t know about blog, vlog, podcast, etc. but now I have learned from our teachers and peers in the network”

Blogs were one of the most commonly used Web2.0 tools in this research and in others (Franklin & Harmelen, 2007).

On the other hand, the interviewees agreed that not all the students joined this network to get educational benefits; instead, it was in order to get good grades. They did not believe that this social network made a difference in the learning environment, nor were students active enough. In contrast, when they were asked whether they remembered any information that was added or uploaded, they did remember the information they contributed. It is clear that there is a conflict between students’ responses. They said nobody was aware of what they were adding or sharing but when asked about their contribution; they were able to remember and explain it. This may have been caused by students talking on behalf of others and may not exactly reflect reality as there were only three students out of the 55 who participated in the interview.

Moreover, they stated that the reason for not gaining many benefits from this network was that they already had good ICT skills, so they knew many of the things covered during the course. However, the students who did not have good ICT skills and knowledge improved through the social network.

“We graduated from a vocational school where we learned a lot of information about IT. However, our friends who had never studied computers in their school learned how to become a member of a social network, what activities could be done in a social network by using NING network.”

The above quote was confirmed by another student who commented positive perceptions on the benefits and effective use of the social network on student engagement and learning during the course.

“Before I came to this department, I did not know anything about IT but at the moment I know and understand some topics. Therefore, I am happy with the CITE101 course and the social network NING that we used.”

As understood from responses of the open-ended question, students generally had positive perceptions of the social network and its use. This network was used neither by the teachers nor by the students after the course was completed, thus, the sustainability of this social net-

work was also discussed during interview. Interviewees claimed that they neither ever used it nor signed in anyway they did not take any action. Interestingly, only one student mentioned that he entered the network once after the course.

“I signed in once, I was curious about what happened, whether there is something new or not.”

Since the network was designed for a specific course, students said they believed it was not going to be used after the course completed. They stated that all students were taking different courses now, so they were working on them and nobody was interested in the previous course they had already completed successfully. Their suggestion for making it a sustainable network was using it throughout their higher education time span, and making it a virtual environment where students can share new information and homework whatever their course is. This would also help to gather all students again under this social network.

“I spent a lot of time in Facebook, if CITE101 was open I would share with my friends the entire project that I am doing now....”

These results could show that designing a social network only for a specific course may hinder its sustainability, especially, if it is not one of the popular social networks that are commonly used for personal communication.

Conclusion

The aim of creating a virtual teaching and learning environment for this research was to follow a holistic approach. Within this network, the lecturer’ role was changed from knowledge provider to a friend, guide, and facilitator of learning. Students were also able to research, and to provide and share knowledge within the network. In this study the aim was to find out whether the use of social networks could be helpful when efficiently used to support classroom environment for teachers and students in higher education. Also, share the experiences that is faced while using social networks in higher education in spite of the weaknesses and shortcomings of the case.

This was the first time that a social network was used for educational purposes in the Computer Teacher Education Department, although a few decentralized implementations of the Moodle Learning Management System existed in some departments. The results show that students took advantage of the social network, especially those who had low level ICT skills. This could be understood from the difference between pre- and post-surveys and in the open-ended question analysis. In the pre-survey, the percentage of students using video services was not high, but in the post-survey this percentage increased. It is also confirmed in the analysis of the open-ended question that many students used social networks for uploading, sharing, and watching videos. Students were asked to contribute and share information to show they were in charge of their own

learning. In other words, they were responsible for their own and their peer's learning by cooperating and helping each other. They were in collaboration with their teachers and peers on the network. They researched and uploaded additional learning materials. Also, this social network supported students' learning by providing them with an opportunity to learn by doing. The developed interaction and connection between teachers and students improved the students' involvement. The findings of Hung and Yuen (2010) also supported the use of social networks, concluding that they formed a community of practice for their students.

This study yielded great benefits for the teachers as well. Teachers also learned state-of-art Web 2.0 technologies and developed professionally during the use of the social network (Berlanga *et al.*, 2009).

However, some students stated negative opinions in the follow-up research. They mentioned that most students were engaged in the social network environment in order to get good grades rather than for learning. They made this comment, but later mentioned their contributions and the knowledge they gathered. This seems to be a conflict in their perceptions.

Another limitation for the use of CITE101 network was its unsustainability. Although it remained open, nobody continued to use it after completing the course. It is suggested that in order to be sustainable, the network should be discussed with the teachers who will teach in the following semesters to make its use continuous. For the sustainability of the network Siemens (2004) suggests that the connections must be maintained and decision-making for learning has to be empowered.

During the course, students used it frequently since teachers were also active in the social network. However, once the course was completed, teachers were not often online so neither were the students. Oradini and Saunders (2008a) discovered that if teachers actively used the network, students would be actively engaged as well. Another limitation could be that NING is not a personalized learning technology that one could use in every aspect of daily life, the way Facebook is.

The network that was used in this CITE101 course was designed for a specific purpose, it was an educational social network, and students used it both within educational and social life. This shows that when the social network is designed for academic work, it may be easier for students to interact as opposed to what Wolfe (2007) discovered. She found that students did not want to use online tools of social life in their academic life. Thus, it could be argued that the social network to be used for academic life should have boundaries.

In this knowledge era it could be arguable whether to integrate social networks into higher education or not. Parallel to the findings of this research it could be also argued that besides some limitations, from different perspectives there would be benefits for teachers, students and even institutions. That is to say, using social networks in higher

education could be rewarding students in a different teaching and learning environment than the traditional classroom. Moreover, students who like sharing and researching new information would enjoy actively being involved in the social network for education purposes. Teachers may not transfer all developments and news to the students within a short time however, these new technologies may help teachers to lessen their work by giving opportunity to students to search and share knowledge with others.

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