Evaluation of the Use of the Online Community Tool Ning for Support of Student Interaction and Learning

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Abstract. *The interaction within groups or networks of learners can be effectively supported with the use of online community sites like Facebook, MySpace or Twitter. In our study we investigated the potential uses of the online community tool Ning in a hybrid university course for part-time students. The introduction of Ning supported the interaction between students themselves and enabled them to help each other in solving various problems. The Ning tool was used by the students to present the results of their work and create online diaries. Some of the technical features of Ning that are important for e-learning communities are discussed in the paper as well as the results of the course evaluation survey regarding the effects of its use on student motivation and collaboration.*

Keywords. e-learning, social software, community of learners, Ning

1 Introduction

Social software are various types of web tools or services that provide the users with possibility to "generate, present and share user-made content" and in educational use such tools enable exchange of ideas, collaborative creation/sharing of knowledge, peer support and feedback (see: [2, 94-95]). Some examples of social software that may be used in education include wikies, blogs, podcasting, e-portfolios, social bookmarking, social networking sites (Facebook, Twitter), audio- and videoconferencing tools, Google Earth, RSS web feed formats, etc. [18, 2-3], [22].

A recent review of literature [17] indicated that wikis and blogs are frequently mentioned in research reports regarding the use of Web 2.0 tools in higher education:

- Wikis have the potential to facilitate peer-to-peer learning and support collaborative creation of knowledge and problem solving.

- Blogs can be used for stimulating interactions among learners, creating students' personal documentation in form of an historical record and collecting student work similarly to the use of an e-portfolio, as well as for enhancing students' self-presentation and social presence among peers.

The investigation of the use of social software (discussion forums, blogs, e-portfolios, etc.) in education revealed that "active learning experiences are superior to passive models of instruction" [6].

Recently, there is a growing interest in the use of social networking sites in education, partly because they are a widely used virtual environment, especially by the student population. For instance, in June 2010 the social networking site *Facebook* reported 400 million active users, and in its recent study the Pew Internet and American Life Project [16] reported that 73% of young adults (ages 18-29) in the United States with an Internet connection use social network sites (among which 73% of online profile owners were users of Facebook). It must be noted that an adoption study related to the use of Facebook in education revealed that "communication, collaboration, resource and material sharing have a significant positive effect on educational usage" [20]. This study indicated that some of the reasons for Facebook adoption may be that it enables users to create a personal profile,

communicate, share information, create photo albums, chat and send messages, participate in group discussions, etc. Similar adoption related functionalities are also offered by microblogging services like *Twitter* and online community sites like *Elgg* or *Ning*.

The use of microblogging services has been considered to have the potential to contribute to the e-learning and m-learning environment, predominantly because of the possibility to network and build community with other learners [5], as well as because of their informal learning [4].

There are numerous examples of the use of social software and the so-called "Pedagogy 2.0" approach in tertiary education which confirm that social networking sites like Facebook and Twitter can be effectively used to support e-learning, improve interactivity and social presence of learners, as well as facilitate collaborative knowledge discovery and sharing [21]. There are also reports of the use of online community sites like Elgg and Ning for education purpose [22]. Such Web 2.0 tools can facilitate learner participation, creativity and online identity formation creating a need for more research on students' use of those tools in formal and informal learning [7].

However, social networking sites are not to be considered as a replacement for Learning Management Systems but as supplement tools for knowledge construction and sharing, collaboration and dialogue with "transparency and the ability to create awareness between students" as some of their most important characteristics [3].

Usability is one of the key factors of software quality and is often mentioned as crucial for the success of web applications [19][24]. It describes the quality of web applications from the viewpoint of people who use them. There are many definitions of usability, which differ according to the theoretical models they are based on. However, usability is not considered as an attribute itself but as a separate unit composed from several different attributes of quality. Consequently, usability can be defined as an extent to which it is easy to find and understand information located on the website [15]; as the ability to easily and effectively use the software product [1]; and as an extent to which software allows users to achieve specific objectives with efficiency, effectiveness and satisfaction in a specified context of use [11][12]. All aforementioned definitions could be applied to Web 2.0 applications, whose narrow specialization is in case of some of those web applications suitable for conducting educational or business related online activities. However, recent studies [8][25][28] have shown that previous approaches to evaluating usability are not appropriate for Web 2.0 applications and therefore a set of attributes for assessing their overall quality was proposed [24]. For instance, some of the potentially important usability attributes of Web 2.0 tools could be:

- *Navigability*, capability of web application to provide the users with effective and alternative navigation techniques [13];
- *Understandability*, extent to which the capabilities of the web application are easy to comprehend and unambiguous to the user [24];
- *Reliability*, the capacity of web application to maintain a stable and appropriate level of performance under specific conditions for a specified period of time [13];
- *Security*, ability to prevent accidental or deliberate unauthorized access to files or personal data [13];
- *Satisfaction*, capability of web application to meet user expectations [24].

2 Problem and hypotheses

The main problem of the study that is presented in this paper is to test the potential of the use of the online community tool Ning to support pedagogy, facilitate student interaction, and improve satisfaction and learning of students of the academic course entitled "Computer-Mediated Communication".

Four hypotheses have been formulated to investigate the problem of the study:

H1. The use of the online community tool Ning is perceived as useful in comparison to other Web 2.0 tools used in the academic course "Computer-mediated Communication" and it contributes to the educational effects of this course.

H2. The use of the online community tool Ning is perceived as interesting and motivating to the students of the academic course "Computer-Mediated Communication" and it also contributes to the enrichment of educational experience of students.

H3. The use of the online community tool Ning facilitates collaborative learning and peer interaction in study groups of the academic course "Computer-Mediated Communication".

H4. The technology of the Ning tool does not manifest usability problems when it is used in concrete educational settings of the academic course "Computer-Mediated Communication".

3 Method

The online community tool *Ning* was used in the academic year 2009/2010 in two study groups of part time students of the academic course "Computer-Mediated Communication" at the Faculty of Organization and Informatics, University of Zagreb, Croatia. The students were asked to use Ning to create their personal profiles, upload photos and links to video files on YouTube that illustrate the content of the course, participate in discussion forums on various course related topics, keep an online diary of course related activities (lectures) in a blog, and present the artifacts that they had created with Web 2.0 tools in their blog. The students could also make friend lists and participate in chat activities by using the Ning tool. For each of the two study groups a separate virtual community (ning network) was created.

At the end of the course, after the students passed the final exam, they were asked to complete a course evaluation survey. The survey consisted of items related to the academic course "Computer-Mediated Communication" in general, and also of items related to specific educational effects of the use of *Ning* and two other Web 2.0 tools (*Bubbl.us* for the creation of mind-maps and *Gliffy* for the drawing of block-diagrams) that were used in this course. This type of survey was regularly used for course evaluation and for the purpose of this study it was supplemented with several items for the evaluation of Ning tool regarding selected usability attributes. It must be emphasized that course evaluation surveys were collected only from the students who have successfully passed the exam in 2-4 weeks after the teaching was finished to ensure that they could correctly remember and reproduce their experiences with course content and used Web 2.0 tools.

The subjects in our study were two groups of part-time students who were between 19 and 35 years of age. The surveys collected in the first group were from 12 male and 11 female subjects (N=23), while the surveys collected in the second group were from 10 male and 5 female subjects (N=15). For the purpose of this study the survey data is supplemented with observation of student work and online discussions as a result of their use of the Ning tool.

4 Results

The responses of the subjects to the survey items "Evaluation of usefulness of working with Ning system" and "Evaluation of usability of technology of the Ning system in teaching (possible educational effects)" are presented in Figure 1. It must be noted that the response scale was in the range from "1 - very poor" to "5 - very good". It can be concluded from the data presented in Figure 1 that Ning received rather high average evaluations regarding usefulness (M=4.66) and usability of technology in teaching (M=4.42). Also, Ning received slightly better average evaluation than the mind-maping tool *Bubbl.us* or block-diagram tool *Gliffy*. Since the average responses for both study groups were similar, the calculations presented in Figure 1 were performed on all subjects who participated in our study.

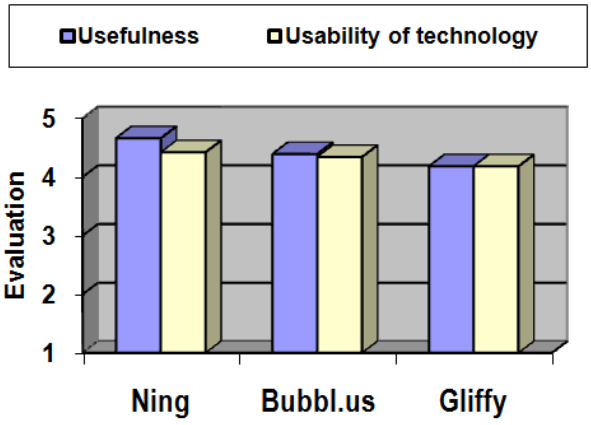

Figure 1: The results of evaluation of *usefulness* of the Ning tool and *usability* of Ning technology in teaching (possible educational effects); N=38

The typical open-ended responses of subjects to

this part of the course evaluation survey in relation to the usefulness and usability of technology of Ning were: "Great means for communication and support", "Very useful Ning network", "The use of Ning is useful because it enables easier learning of course content", "I like the Ning system", etc. When they were asked to state what they liked about the Ning system, some of the comments of the students were "taking notes about lectures", "exchange of notes", "maintaining a personal profile page and forum", "editing and publishing of my blog posts", "writing blog posts, downloading photos, reading the comments of other students", "the possibility to get more information about the course", "I liked just about everything".

As a supplement to the course evaluation survey, the teachers of the academic course "Computer-Mediated Communication" have asked the students to participate in a forum discussion in Ning about their experiences with this tool. The responses of the participants in this online forum were mostly favorable. For instance, one participant stated that it is "a great way to connect students and professors, accessible and simple, which is in correspondence with the title of the course". However, many students indicated in their responses that there were some usability and privacy related problems in the use of Ning.

The data presented in Figure 1 and the open-ended responses of the subjects in our study confirm the first hypothesis: *H1. The use of the online community tool Ning is perceived as useful in comparison to other Web 2.0 tools used in the academic course "Computer-mediated Communication" and it contributes to the educational effects of this course.*

To evaluate the potential motivational effects of the Ning tool the following items were included in the course evaluation survey: "Evaluation of interestingness of work with Ning system", "Increase of my motivation for learning course content", and "Enrichment of my 'educational experience' during class attendance and while performing activities". The available responses were again in the range from "1 - very poor" to "5 - very good". The results for both groups of part time students are presented in Figure 2. As can be concluded from the data presented in Figure 2, in both groups of subjects the Ning tool was highly evaluated for interestingness (M_{G1}=4.47; M_{G2}=4.74), positive effects on motivation for learning course content (M_{G1}=4.33; M_{G2}=4.48), and enrichment of educational experience (M_{G1}=4.27; M_{G2}=4.74). In fact, many of the students from both groups stated that the work with the Ning tool was one of the most interesting activities of the course "Computer-Mediated Communication". In their forum discussions the students commented that the use of Ning adds practical aspects to the course, makes it possible to create a personal profile, includes diverse communication channels for interaction, ensures more privacy than an open social network, etc. For instance, one student stated that he was sure that, regarding the use of Ning, "for many students learning is easier in that way because the course becomes more attractive, and we must admit that is easier to learn when it is fun and when we enjoy it".

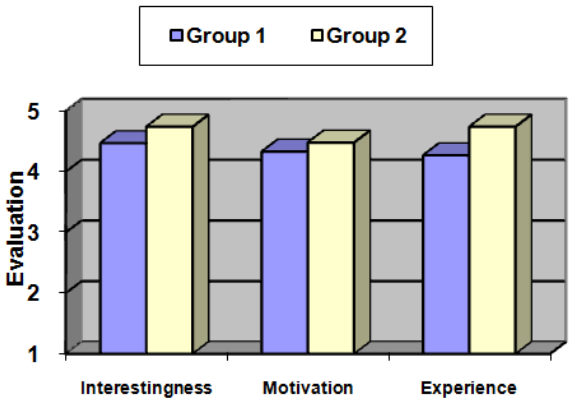

Figure 2: The results of evaluation of *interestingness* of work with Ning tool, effect on increase of *motivation* to learn, and enrichment of *educational experience* for Group 1 (N=15) and Group 2 (N=23)

On the basis of the data presented in Figure 2 it can be concluded that the second hypothesis was also confirmed: *H2. The use of the online community tool Ning is perceived as interesting and motivating to the students of the academic course "Computer-Mediated Communication" and it also contributes to the enrichment of educational experience of students.* In fact, regarding interestingness, motivation increase and enrichment of educational experience, the Ning tool was on the average more favorably rated than mind-mapping tool *Bubbl.us* or block-diagram tool *Gliffy*.

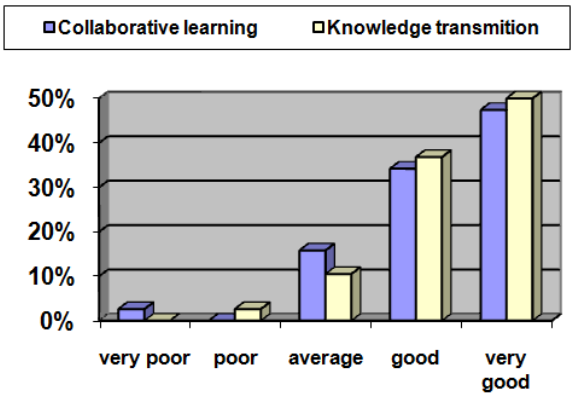

Figure 3: The results of evaluation of the contribution of Ning tool to *collaborative learning* and *possibility for transfer of personal knowledge* to other students (N=38)

The evaluation of the potential for collaboration and peer-to-peer learning with the Ning tool is presented in Figure 3 as an average response to the following survey questions: "Collaborative learning (learning of new course related content on the basis of material created by other students)" and "The possibility to provide others students with my knowledge, ideas and opinions". The rating was performed on a scale in the range from "1 - very poor" to "5 - very good" and both groups of subjects were included in data analysis. The results of data analysis indicate that the Ning tool provides good possibility for collaborative learning and exchange of information with other students.

The interaction between participants in the Ning network is facilitated with the functionalities like blog, forum, chat, internal messages, and profile pages. For the students of the course "Computer-Mediated Communication" it was not only possible to present their work to other members of the group and communicate through diverse channels, but they were also able to get to know each other better because of information that was shared on personal profile pages and as well as a consequence of their self-disclosure in blog posts, chat and forum discussions. Even though for most part-time students who participated in this course this was their second year of study, many of them stated that Ning enabled them to learn more about their colleagues and form with them a more cohesive experience of group membership. The data presented in Figure 3 enables the confirmation of the third hypothesis: *H3. The use of the online community tool Ning facilitates collaborative learning and peer interaction in study groups of the academic course "Computer-Mediated Communication".* In fact in some of their comments the students compared Ning to Facebook, but also observed that it is more suitable for groups of learners since it is a closed network without unnecessary information and distraction from other sources.

In their forum discussions many of the students observed that they had technology related problems with Ning. For instance, they had problems with the use of the chat tool, experienced data loss when creating/editing blog posts and encountered unpredictable results of the use of the text editor of the blog tool, witnessed loss of user accounts, and developed privacy concerns related to no logout status in situations after the browser application was closed and computer shut down.

To assess the usability of technology of the Ning tool we have asked the students to evaluate some of the characteristics/attributes that were important for its effective use in education. The following statistics are from 30 students who responded to selected usability items that were used for course evaluation with possible responses in the range from 1 - *totally disagree* to 5 - *totally agree*.

The design of the user interface is an important technological aspect of social software. In case of the *navigability* attribute of user interface 13% of the students who used Ning stated that they *disagree* with the related statement "It is not possible to make a mistake when choosing options/functionalities of web application for performing different activities". Also, in relation to *intuitivity* (i.e. understandability) of Ning user interface 47% of students *agreed* with the statement "To understand the meaning of specific icons and symbols which represent the functionalities of the web interface, additional explanation is needed". This means that less computer/Internet literate students could experience problems when learning how to use Ning user interface and perform activities with this tool that are not adequately represented in the user interface. However, many of the students stated that Ning has similarity with *Facebook* and since most students are at least occasional Facebook users this could help them in managing the

user interface of Ning.

The problem of data loss when using the text editor of the blog in Ning was mentioned in forum discussions by several students of the course "Computer-Mediated Communication". This was reflected in the results of evaluation of technology used in the course since 20% of those who participated in this part of the survey disagreed with the statement "Web application enables automatic backup of changes/data of the document". The prevention of data loss could be linked to usability attributes like error prevention and recoverability. Potential loss of user data is an important problem when social software is considered for use in education. Educational technology should not create distraction from the subject of learning, disrupt the learning process or negatively influence student motivation. The problems with the blog and chat functionalities of Ning were probably the main reason why as many as 57% of the students agreed with the statement "The use of some functionalities of the web application can cause frustration of users". One other cause for frustration could be privacy and security concerns since 10% of the students stated that they were not sure that their personal data and files are protected from unauthorized use.

Our findings regarding the potential problems in the use of the Ning tool for education purpose confirm that student feedback in form of forum discussions, in combination with an analysis of their responses to selected items of a course evaluation survey, are useful means for identification of issues that should be resolved either through training of online learners to effectively use a social networking tool in a hybrid course or by contacting the developers / administrators of the tool to make necessary corrections. In fact, the teachers of the course "Computer-Mediated Communication" have contacted the developers of the Ning tool to bring their attention to some usability problems and they tried to resolve them.

In our study we have identified the potential positive effects of the use of the online community tool Ning on the outcomes of a hybrid university course, including increased motivation, peer-to-peer learning and greater collaboration of students. However, educators should be responsible for potentially negative effects of the use of technology in their courses and those social software applications and other types of Web 2.0 tools which manifest basic usability problems or create privacy concerns should be avoided. In the case of Ning the technical problems were more an occasional cause of frustration than a serious dysfunction. Having in mind the previously presented data on the technological aspects of the use of the Ning tool the fourth hypothesis can not be confirmed: *H4. The technology of the Ning tool does not manifest usability problems when it is used in concrete educational settings of the academic course "Computer-Mediated Communication".*

5 Conclusion

The study that is presented in this paper is based on the the Web 2.0 social networking tool Ning which has attracted considerable attention of the e-learning community. It must be emphasized that in 2008 Ning had 500.000 registered social networks [27] and today it hosts numerous communities of scholars and professionals in the field of education and e-learning. Ning can effectively be used in hybrid academic courses [9] and in teacher education [23]. The results of our case study are in correspondence with positive effects of using Ning that are reported in other studies [14], for instance a greater level of personalization, use of a digital portfolio, facilitation of communication and collaboration among students, increase in information sharing, informal peer-to-peer learning, and socialization. In fact, Ning is considered as a useful tool for online teachers with features that extend the possibilities of traditional online communication tools in education [26]. Based on our experience of the use of Ning in the "Computer-Mediated Communication" hybrid course we can conclude that Ning is a useful tool for small groups of 15-40 students and that it can help connect part-time students who have less face-to-face interaction in the classroom. Because of its functionalities (forum, blog, chat, personal profiles, events management, uploading of images and video) it was very suitable for this course which deals with online communication technology. However, it may not be as accepted by students who meet frequently face-to-face or equally suitable for courses of different content and structure. Also, creation of a sense of community may not be possible for large study groups.

The limitation of our research is associated with data collection from a small number of students in two study groups who participated in the course evaluation survey and also with the specific ICT skills that they shared as a consequence of their study of informatics and their attendance of the course "Computer-Mediated Communication". Therefore, it is not possible to generalize the findings to other educational settings with students of different level of computer/Internet literacy and to courses of other topics. However, the other reports on the use of Ning that can be found in literature are in concordance with the results that are presented in this paper. Still, as our findings indicate, the potentially negative aspects of the use of online community tool Ning should also be taken into account (see: [10]) and this has implications on student training to effectively use this tool and preserve their online privacy.

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