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THE USE OF ELGG SOCIAL NETWORKING TOOL FOR STUDENTS' PROJECT PEER-REVIEW ACTIVITY

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ABSTRACT

Numerous e-learning 2.0 studies have advocated the use of social networking sites for educational purposes, but only a few of them have observed social networking sites as an instrument for specific learner skill development. This paper discusses a study which addresses the motivation and challenges associated with the introduction of the social networking tool Elgg for the peer-review activity related to students' projects evaluation. In our study, Elgg was utilized to support the development of skills related to (a) peer-reviewing, (b) collaborative work on research projects and their online presentation, and (c) critical analysis of research proposals and reports. This report therefore aims to contribute to those areas of learner skills' development as well as to the evaluation of Elgg as an e-learning 2.0 tool.

KEYWORDS

Social networking site, Elgg, peer review, e-learning

1. INTRODUCTION

During their average day students spend a lot of time using different social media tools (e.g. Facebook, Youtube, Twitter, Instagram, Google tools etc.). Similar to (mobile)phones, listening to music CD's or watching television as their predecessors of two decades ago, such tools have become a part of students' daily social interaction and media consumption related activities. Due to the proliferation of smartphones and affordable internet connections, today's students tend to spend a lot of their time online and, with the use of various social media, most of them remain connected with their friends (via Facebook, Skype, Viber, WhatsApp etc.) during their active hours.

Social networks provide a means for posting (announcing, presenting, delivering) and retrieving (finding, following, encountering, discovering) different kinds of information. Owing to them, it is possible to track what our social connections are doing, what the latest things that *everybody* is talking about are, what our connections like or recommend, what they are *following*, or what they think is worth sharing with others. In fact, these days students depend closely on the use of online social tools as an important means for everyday interaction with their peers.

The prevalence of social networks use presents challenges for contemporary instructors who wish to appropriately exploit the potential of these social tools in a concrete learning setting. It must be noted that recent developments in e-learning have reinvigorated the higher education environment, opening up new opportunities for learning. However, in e-learning used in a conventional way as part of a *hybrid course* many of its potentials are often not fully exploited and are sometimes even regarded as a minor disturbance. For instance, having to attend face-to-face lectures in a traditional classroom, while being able to simultaneously or subsequently download representative presentations and PDF files of those lectures from the learning management systems (LMS), may result in students' reduced motivation for listening to the lecturer and also for their active participation in class. It must be emphasized that when traditional classroom lectures are supplemented with the use of LMS merely as *content repository*, its prospective use as a place for meeting with peers and collaboration among students is generally omitted. On the other hand, it has been suggested that in the hybrid teaching approach the concepts of community, collaboration and interaction among users should be introduced whenever it is appropriate to overcome limitations of conventional use of a virtual learning environment or LMS (Zhou, Sabino & Rodrigues, 2011).

As educational technology researchers, in this paper we aimed to examine how social networking tools could be effectively integrated with other university course resources, as well as included in the pedagogical design in which the use of those tools is one of course completion requirements in an effort to enhance students' online learning and collaboration.

In our research and hybrid teaching approach the social networking site *Facebook* was not included so as to reduce the risk of unnecessary distractions, like receiving messages or contact requests from friends who do not belong to the class. Such widely used social networking sites can be disadvantageous for education purposes owing to news feeds which are unrelated to course content, commercial advertisements and easy access to online games, among others. Therefore our decision in the academic year 2012/2013 was to implement the social networking tool *Elgg* in the course entitled *Computer-Mediated Communication* at the *Faculty of Organization and Informatics, University of Zagreb*. In this course Elgg was used for the organization of students' projects, team collaboration and project related collaborative writing, as well as for publication of project proposals and gradually improved reports in combination with peer-to-peer review activity at each of the project development steps. The aim of this paper is to present the results of the evaluation of learner experiences in the project related peer-review activity using the social networking site Elgg.

2. REVIEW OF RELEVANT LITERATURE

2.1 Social Networks in Learning

Social networks provide a possibility to interact, communicate and collaborate online in innovative, unconventional and complex patterns. Boyd and Ellison (2007) describe social networking sites (SNSs) as technologies that enable *public articulation of social connections* whether they are pre-existing networks or newly created ones based on some common interest. Numerous authors report that the main reason for using social networking sites is *social presence* (Cheung, Chiu and Lee, 2011), as they allow instant communication and connection with our friends, family members or colleagues. Social presence is also reported to be an essential component of education and learning (Brady, Holcomb and Smith, 2010). The use of SNSs can provide a lot of benefits for learners since they "encourage peer-to-peer dialogue, promote the sharing of resources, facilitate collaboration, and develop communication skills" (Siemens and Weller, 2011). Finally, some researchers have concluded that in the educational context social networking is seen not only as a possibility, but also as a necessity (Silius, Miilumaki, Huhtamaki, Tebest, Merilainen and Pohjolainen, 2010).

Several authors have reported the benefits of SNSs in distance education courses as a technological tool for improvement of online communications among students (e.g. Brady, Holcomb and Smith, 2010). The positive use of social networks in team projects (Nygard, Bender, Walia, Kong, Gagneja and Lenoue, n.d.) and language learning (Blattner and Lomicka, 2012) have also been reported. Although Facebook is one of the most popular social networking sites and students have a lot of experience using it, several research papers have reported that students did not feel safe and comfortable using Facebook in the educational context as their privacy might be revealed (Wang, Woo, Quek, Yang and Liu, 2012). Other authors argue that although Facebook has a potential to promote collaborative and cooperative learning, further research regarding how it can affect learning outcomes is necessary (Irwin, Ball, Desbrow and Leveritt, 2012).

Besides Facebook, there are other general-purpose SNSs containing all the necessary social features that could be applied in different contexts. Such sites provide a unique opportunity for educators to enhance the sense of belonging to a certain community and encourage interactions among students, which also lead to creation of new knowledge (Brady, Holcomb and Smith, 2010). In the literature there is a strong emphasis on the need for technological innovations to be accompanied by pedagogical progress in order to be successful within an educational setting. Accordingly, we decided to use the Elgg tool for a specific pedagogical activity, i.e. peer-reviewing.

2.2 Peer-review Activity

Peer review activity basically refers to an *evaluation of someone's work by one or more peers of similar competences*. The purpose of this activity is to provide the learner with an opportunity to improve their reading skills, writing skills, critical thinking and to learn how to effectively collaborate with other students by giving and receiving feedback. The ability to produce quality feedback is considered to be one of the fundamental skills of graduate students that should receive considerable attention in higher education curriculum (Nicol, Thomson and Breslin, 2014). Peer-review activity results in gains both for the writer and receiver of feedback (Cho, Schunn and Kwon, 2007). Lundstrom and Baker (2009) revealed that the benefit for feedback writers was more significant than that of its receivers. There are several tools which can be used for peer-reviewing and some of them were found to bring positive outcomes (Sondergaard, 2009; Chen, 2012). Indeed, according to Sondegard (2009), "if used properly, peer reviewing can become an important step towards the creation of a culture of mutual support amongst the students in a class". The goal of our research was to test the application of the social networking tool Elgg for peer-review activity and investigate students' opinions and experience regarding its use.

3. RESEARCH AND METHOD

3.1 Research Questions

The goal of our research was to identify, describe, and understand students' experiences in peer-reviewing of student's projects which was facilitated through a social networking platform. In particular, our research questions were:

- What were the students' experiences performing an online peer-review activity using the social networking platform Elgg?
- How did students perceive the use of the social networking platform Elgg for project peer-review activity?

3.2 Study Context

This study was conducted in the winter semester of academic year 2012/2013 with students of a graduate-level hybrid course entitled *Computer-Mediated Communication* at the *Faculty of Organization and Informatics*, *University of Zagreb*. The Elgg social networking tool was installed on a college server for e-learning projects and administered by the first author of this paper. After registration to Elgg, students had to personalize their profile page (short introduction, their interests and likes). Most of the students had known each other from earlier years of study and many of them had also attended other courses together.

The authors of this paper had already had considerable experience of using different Web 2.0 tools in higher education, as well of using SNSs such as Ning (Bubas, Coric and Orehovacki, 2010). They had also been using Mahara ePortfolio, Wordpress blog and MediaWiki engine in educational settings. The challenge in this research was to experiment with the use of Elgg beyond its evaluation as a tool. In other words, we also intended to examine the peer-reviewing online activity in practice with the use of Elgg, its appropriateness and effectiveness in the development of critical thinking, as well as to obtain students' feedback on their experience using the tool.

In the academic year 2012/2013, the *Computer-Mediated Communication* course was enrolled by 65 students. It was an elective course in the first year of the graduate study. As an online activity for this course the students needed to form groups in Elgg that were named according to their project title. The students had previously selected their project topics by themselves and discussed them with the teachers regarding topic appropriateness and possible improvement. The project topics were chosen by the students (with some teacher guidance) on the basis of recent scientific literature (e.g. the journal *Cyberpsychology, Behavior and Social Networks*) and were related to broad thematic areas of the hybrid course, including internet addiction, online gaming, online relationships, social network use by different age groups etc. After the students and lecturers agreed on the project topic, each team of students was required to develop 5 blog posts which represented 5 consecutive versions of their project proposal and results presentation. Each version was

available for peer-reviewing upon its completion on a fixed date. Peer reviewing activity was obligatory and students needed to choose two other projects which they would follow (i.e., read and reflect upon) until the end of the semester. A timetable was set containing dates on which students would need to present each version online and in class, as well as provide their reflections on other's projects. After the project was presented and new project presentation versions were available, students' peers were required to post their reflection with some help and guidelines from the teacher. In that way the successive project versions were developed and progressed fairly well. In the end, only the final – fifth – version of the project was submitted for assessment/grading by the teacher, without the earlier project versions. The main motto for promoting peer feedback was "Help your classmates to develop better project versions!"

3.3 Data and Results

After the semester and grading had finished we offered the students a possibility to reflect on the hybrid course design, on the project peer-review activity, and also on Elgg as a tool to perform collaboration, project presentation and peer-review. The participation in the survey was not obligatory since at that time students also had to complete several surveys in other courses related to teachers' performance, so we expected that they may not be enthusiastic about the obligation to fill in another survey. Nevertheless, 33 students provided their feedback (19 female and 14 male students). It must be noted that out of 33 students in our survey, only 7 of them had participated in peer-review activity before. For others this was their first-time peer evaluation experience.

As mentioned above, after the course completion we applied an online survey with 16 questions that were accompanied with a five point Likert-type scale for measurement of students' responses regarding their experience of participating in the peer-review activity. Students were able to provide their answers to each survey item on a scale ranging from *1 - Strongly Disagree* to *5 - Strongly Agree*. Most of the items and frequencies of students' answers are shown in tables 1-3. On the whole, the majority of students from our sample found the feedback they received or provided useful and delivered with good intentions, stating that, on average, they were satisfied with the peer-review procedure and experience. This was a confirmation of the pedagogical value of the peer-review activity and its possibility to be effectively used in the educational context. More detailed analysis of survey results regarding particular groups of survey items is given below.

Table 1. Responses to survey questionnaire items regarding the acceptance of others' comments in peer-review activity

Statement	***Answer***	***Number***	***Percentage****
1. I find comments that our project received to be useful.	1 - Strongly Disagree	1	3%
	2	5	15%
	3	2	6%
	4	**13**	**39%**
	5 - Strongly Agree	**12**	**36%**
2. We changed some parts of the project because of the comments that we received.	1 - Strongly Disagree	2	6%
	2	2	6%
	3	8	24%
	4	**3**	**9%**
	5 - Strongly Agree	**18**	**55%**
3. Because of reviewers who followed our work I was motivated to make each project version better than the previous one.	1 - Strongly Disagree	6	18%
	2	3	9%
	3	9	27%
	4	**8**	**24%**
	5 - Strongly Agree	**7**	**21%**
4. The intention of our project reviewers was to give us comments/reviews to help us to reveal possible gaps early, so that in the end we could have a quality, well-designed project.	1 - Strongly Disagree	3	9%
	2	0	0%
	3	4	12%
	4	**14**	**42%**
	5 - Strongly Agree	**12**	**36%**

** Note: The total for each statement in the column "Percentage" may differ from 100% because of rounding to the nearest integer.*

The data presented in Table 1 indicates that the majority of students consider the comments that they received by peer review to be useful (75% of responses *agree* or *strongly agree* with regards to the first survey item in Table 1). Also, most of the students (64%; item no. 2) stated that they made changes to their project according to the comments that they received, and almost half of them (45%; item no. 3) stated that because their successive project versions were followed by the reviewers they were motivated to repeatedly improve them. Finally, as many as 78% considered the intention of project reviewers as positive and directed toward overcoming the shortcomings and possible gaps (see responses to item no. 3 in Table 1). It must be noted that if the survey items 1-4 in Table 1 were considered as a separate self-assessment scale the internal consistency (Cronbach alpha) of this scale measured on our subjects (N=33) would be 0.83, which indicates good reliability.

Table 2. Responses to survey questions regarding skills development of participants in peer-review process

Statement	***Answer***	***Number***	***Percentage****
1. I read reviews that other students wrote for other projects in order to find ideas and inspiration for my own reviews.	1 - Strongly Disagree	4	12%
	2	6	18%
	3	6	18%
	4	**11**	**33%**
	5 - Strongly Agree	**6**	**18%**
2. Reviews of other students that were related to projects other than mine helped me to improve/change the project of our team.	1 - Strongly Disagree	8	24%
	2	7	21%
	3	10	30%
	4	**3**	**9%**
	5 - Strongly Agree	**5**	**15%**
3. The experience of participating in peer reviewing helped me in the development of critical thinking in the analysis of textual content.	1 - Strongly Disagree	5	15%
	2	4	12%
	3	6	18%
	4	**13**	**39%**
	5 - Strongly Agree	**5**	**15%**
4. The experience of participating in peer reviewing helped me in the development of my scientific paper writing skills.	1 - Strongly Disagree	6	18%
	2	2	6%
	3	9	27%
	4	**10**	**30%**
	5 - Strongly Agree	**6**	**18%**

** Note: The total for each statement in the column "Percentage" may differ from 100% because of rounding to the nearest integer.*

As can be seen from the data in Table 2, the *collaborative learning (side) effects* of participation in the peer-review process may have positively influenced the motivation and mental schema ("idea") development for the peer-reviewing process for a considerable proportion of participants in our survey (51%; see item 1 in Table 2). About the same positive effects were reported by respondents regarding the critical thinking ability in the analysis of the texts of research proposals and project reports of peers (54% of the respondents agreed with the content of item 3 in Table 2). Finally, the experience of participation in the peer-review process on the whole was considered helpful by almost one half of the respondents (48% of them, to be exact; see item 4 in Table 2) in developing their skill of writing a scientific paper. However, only a small proportion of students (24%; item 3) stated that reading the reviews of other projects helped them to improve their own project. As for the items presented in Table 2, if the survey items 1-4 in this table were considered as a separate self-assessment scale related to skills development in peer-review activity, the internal consistency (Cronbach alpha) of this scale would be 0.86 (N=33), which also indicates its potentially good reliability.

The final section of the evaluation survey regarding the use of peer review contained items related to several aspects of the use of Elgg (see Table 3.). The data obtained from the survey suggest that students were predominantly satisfied (63% of subjects; item 1 in Table 3) with the use of the social networking tool Elgg during their project creation, as well as with its use for the peer-review activity (69% of subjects; item 4 in Table 3). The Elgg's blog tool also received positive evaluation by the majority of students for both the project activity (57% of subjects; item 2 in Table 3) and peer-review (72% of subjects; item 3 in Table 3). Finally, as in the case of items presented in Table 1 and Table 2, if the survey items 1-4 in Table 3 were considered as a self-assessment scale related to evaluation of the social networking tool Elgg for peer-review activity, the internal consistency (Cronbach alpha) of this scale would be 0.90 (N=33), which indicates very good reliability.

Table 3. Responses to survey questions regarding the evaluation of Elgg for peer-review activity

Statement	***Answer***	***Number***	***Percentage****
1. I am satisfied with the use of social networking tool Elgg during project creation within the CMC course.	1 - Strongly Disagree	2	6%
	2	3	9%
	3	7	21%
	4	**12**	**36%**
	5 - Strongly Agree	**9**	**27%**
2. I consider that the use of a group blog within the social networking tool Elgg is suitable for the project activity.	1 - Strongly Disagree	3	9%
	2	5	15%
	3	6	18%
	4	**12**	**36%**
	5 - Strongly Agree	**7**	**21%**
3. I consider that the use of a group blog within the social networking tool Elgg is suitable for the performance of peer-review activity.	1 - Strongly Disagree	1	3%
	2	3	9%
	3	5	15%
	4	**16**	**48%**
	5 - Strongly Agree	**8**	**24%**
4. I am satisfied with my experience of using the social networking tool Elgg for the performance of peer-review activity.	1 - Strongly Disagree	2	6%
	2	2	6%
	3	6	18%
	4	**16**	**48%**
	5 - Strongly Agree	**7**	**21%**

** Note: The total for each statement in the column "Percentage" may differ from 100% because of rounding to the nearest integer.*

As the final step in the analysis of our survey data we performed factor analysis of the responses to the items presented in tables 1-3. The results of the principal components confirmatory factor analysis with varimax rotation generally confirmed the categorization of items into three groups, i.e. "Acceptance of others' comments in peer-review activity" as factor *F1*, "Skills development of participants in the peer-review process" as factor *F2* and "Evaluation of Elgg for peer-review activity" as factor *F3*. The result of this factor analysis, together with the value of Cronbach alpha coefficients that were calculated as if the items in tables 1-3 were considered as separate self-assessment scales (the values were 0.83, 0.86 and 0.90, respectively), indicate that these items could be useful for similar research regarding evaluation of peer-review activity that is supported by the use of social networking tools.

Although Elgg provides a lot of special features (like wall posting, bookmarking, posting video or photographs etc.) with the possibility of unique sharing of information modes, the use of these features was fairly modest during the peer-review activity in our study (as the students mainly used chat and blog). In fact, the students were predominantly concentrated on the fulfillment of their assignments and on the peer-to-peer communication which was necessary for the ongoing project related activity. This can be explained by the fact that in the hybrid course the students were able to meet each other regularly in class, so they did not need additional types of interaction.

4. FINDINGS AND CONCLUSION

Students like using social networking tools and from the students' responses in our research, it is evident that they accept them as a medium for collaboration and practical learning activities within the higher education context. From the survey results presented in tables 1-3 we can conclude that the adoption of the social networking tool Elgg for peer-review activity had educational value for students.

According to the results of our study, we can suggest the following responses to our research questions: (1) students' experience in performing online peer-review activity using the social networking platform Elgg were predominantly positive; and (2) the majority of students had a favorable perception of the use of the social networking platform Elgg for project peer-review activity.

There are several limitations of this research. Firstly, the survey questionnaire was completed only by the students who chose to do so, so the opinions of other students who also participated in the online peer-review activity are not represented in the results. Secondly, 79% of the students in our convenience sample

participated in the peer-review activity for the first time so they could not compare it with their prior experience in other courses, which may also have affected the results of our case study. Thirdly, the number of students in our convenience sample was rather low, which has a negative impact on the statistical significance and generalizability of the results of data analyses.

Nevertheless, we encourage instructors with similar course activities to feel confident about integrating social networking tools like Elgg as well as the peer-review activity into their course curriculum taking into account both their effectiveness and acceptability among graduate college students. It is our conclusion from this and other Web-2.0 related projects that using social networking tools in the educational context contributes to the improvement of students' learning experience, skills development and may also increase their motivation for work.

REFERENCES

Blattner, G., Lomicka, L., 2012. Facebook-ing and the Social Generation: A New Era of Language Learning. *Alsic Apprentiss. Lang. Systèmes Inf. Commun.*

Boyd, D.M., Ellison, N.B., 2007. Social Network Sites: Definition, History, and Scholarship. J. *Comput.-Mediat. Commun.* 13, 210-230.

Brady, K.P., Holcomb, L.B., Smith, B.V., 2010. The Use of Alternative Social Networking Sites in Higher Educational Settings: A Case Study of the E-Learning Benefits of Ning in Education. *J. Interact. Online Learn.* 9, 151-170.

Bubas, G., Coric, A., Orehovacki, T., 2010. Evaluation of the use of online community tool Ning for support of student interaction and learning. *Central European Conference on Information and Intelligent Systems*, Varaždin, Croatia, pp. 171-178.

Chen, K.T.C., 2012. Blog-Based Peer Reviewing in EFL Writing Classrooms for Chinese Speakers. *Comput. Compos.* 29, 280-291.

Cheung, C.M.K., Chiu, P.-Y., Lee, M.K.O., 2011. Online social networks: Why do students use facebook? *Comput. Hum. Behav.* 27, 1337-1343.

Cho, K., Schunn, C.D., Kwon, K., 2007. Learning Writing by Reviewing in Science, in: Proceedings of the 8th International Conference on Computer Supported Collaborative Learning, CSCL'07. *International Society of the Learning Sciences*, New Brunswick, New Jersey, USA, pp. 141-143.

Irwin, C.G., Ball, L.E., Desbrow, B., Leveritt, M., 2012. Students' perceptions of using Facebook as an interactive learning resource at university. *Australasian J. of Educ. Technol.*, 28, 1221-1232.

Lundstrom, K., Baker, W., 2009. To give is better than to receive: The benefits of peer review to the reviewer's own writing. *J. Second Lang. Writ.* 18, 30-43.

Nicol, D., Thomson, A., Breslin, C., 2014. Rethinking feedback practices in higher education: a peer review perspective. *Assess. Eval. High. Educ.* 39, 102-122.

Nygard, K.E., Bender, L., Walia, G., Kong, J., Gagneja, K., Lenoue, M., n.d. Collaboration using Social Networks for Team Projects.

Siemens, G., Weller, M., 2011. Monograph "The Impact of Social Networks on Teaching and Learning". Introduction: Higher Education and the Promises and Perils of Social Networks. *RUSC Univ. Knowl. Soc. J.* 8, 156-326.

Silius, K., Miilumaki, T., Huhtamaki, J., Tebest, T., Merilainen, J., Pohjolainen, S., 2010. Students' Motivations for Social Media Enhanced Studying and Learning. *Knowl. Manag. E-Learn. Int. J. KMEL* 2, 51-67.

Sondergaard, H., 2009. Learning from and with Peers: The Different Roles of Student Peer Reviewing, in: Proceedings of the 14th Annual ACM SIGCSE Conference on Innovation and Technology in Computer Science Education, *ITiCSE* '09. ACM, New York, NY, USA, pp. 31-35.

Wang, Q., Woo, H.L., Quek, C.L., Yang, Y., Liu, M., 2012. Using the Facebook group as a learning management system: An exploratory study. *Br. J. Educ. Technol.* 43, 428-438.

Zhou, L., Sabino, F.M.R., Rodrigues, J.J.P.C., 2011. Enhancing e-learning experience with online social networks. *IET Commun.* 5, 1147-1154.