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Enhancing e-learning effectiveness with social software. A heuristic evaluation of Exabis – Moodle

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Abstract

Social networking tools are morphing into the next generation utility solutions for e-learning environments. This work explores the pedagogic potential of social software integrated inside Learning Management Systems and attempts a heuristic evaluation of such an implementation.

Keywords: social networks, LMS, e-learning, social software

Introduction

Social network services allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system (Boyd & Ellison, 2007).

Social software carries the potential to engage learners in interaction activities. The term "social software" may be broadly defined as "software that supports group interaction" (Shirky et al, 2003). Nowadays students are already using social networks to connect and communicate.

Social networks can support self-governed, problem-based and collaborative activities. They support cooperation by their fundamental design: the knowledge and awareness of each other in the network, along with equal access to all network services and information.

Educators nowadays have access to a variety of new social media tools. Each tool may be suitable in some contexts and totally impractical for others. Some solutions include Third party Websites (e.g. Facebook, MySpace, Twitter, Ning, Skype, Flickr), Peer-to-peer blogs and wikis, RSS feeds and social bookmarking from areas of interest.

This work attempts to explore to what degree social software may enhance the learning effectiveness and accomplish pedagogical goals. It introduces the use of social software as a supplementary learning tool embedded inside an LMS and evaluates the pedagogical value of such an approach.

Background review

The observed change of E-Learning from medium to a platform (McGreal & Elliott, 2004) leads to the conclusion that several Web 2.0 concepts and technologies exert influence on contemporary E-Learning. On the one hand, there are several core technologies that are likewise associated with Web 2.0 and E-Learning 2.0. On the other hand, the crucial role of social interaction and collaborative work results in online community applications which must be considered in the context of learning. As far as the technological viewpoint is concerned, several points of intersection between E-Learning practices and Web 2.0

philosophy can be identified. First, there are E-Learning approaches that support communities of practice (i.e. where learners interact and learn together). Interaction typically occurs through discussion, commenting, collaborative writing, or working together on projects (Strijker & Collis, 2002; Ocker, 2003). Recently, tools such as wikis are being used to support such community aspects in E-Learning (Fucks-Kittowski, Köhler & Fuhr, 2004). Current technologies in the social network arena prompt educators to inquire knowledge on the aspects of social interaction that can facilitate learning (Discipio, 2008).

True social learning networks hold the potential to bring an innovative pedagogy to online communities, along with students' other Web 2.0 digital resources, and a collection of social media tools that empower students to master the curriculum and to learn issues that transport them beyond the classroom. Figure 1 below indicates the various networks and resources that illustrate how individuals link with communities and networks in the process of knowledge sharing, construction and understanding.
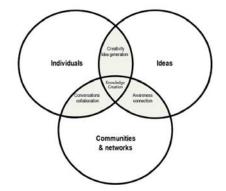

Figure 1. Framework for knowledge creation in Web 2.0

Research question

The effective use of any new instructional technology should be guided by theories on how students learn. The research question this work is addressing is the following: To what degree can social software enhance the learning effectiveness? Is it possible to utilize a social network tool in favour of pedagogical goals? This work approaches the use of Web 2.0 social software as a supplementary learning tool embedded inside a Learning Management System. The goal is to heuristically evaluate the pedagogical value of such an approach and to critically examine if there is a pedagogical potential to such an attempt.

Research methodology

To evaluate the pedagogic potential of social software, the Exabis module (www.exabis.at) was installed in the University's e-learning platform (AMC's Moodle, http://www.athensmetro.org). The Exabis Block enables e-portfolio work for Students from within Moodle. Thus, students can create e-portfolio work across Courses building up and using their individually created categories. Exabis records the number of interconnections between the users of the LMS as well as the time that they spend on their profile, the amount of data that they exchanged and the overall usage of the LMS features. Exabis was chosen over similar systems because of the SCORM file export feature, which exports all the required data of the user's e-portfolio.

The research subject was two sample groups composed of undergraduate students of two classes of the University. This selection was made under the criteria of researching a sample group of individual students with possible previous experience on Web-based systems as well as individuals without previous experience.

The research approach was developed in two main tasks, by two student groups. The first task was a process that would encourage the first group of students to exchange information through physical interaction. To accomplish this, the students were given hardcopy reading material for a mock exam, which would help them prepare for the final exams. The studying material (unanswered mock exam questions with accompanying reading material and web resources) was divided into to five different parts for each class and each part was credited to two students (acting as leaders) of each study group, ensuring that at least one of them would be able to interact with the other nodes of the network. The students had to contact each other to exchange the divided studying material for the mock exam by combining all of the five parts. Next, a question sheet regarding the connections and interactions created was answered by each student. By analysing the question sheets we were able to draw charts of the student's physical contact along with the exact part of information that each student exchanged.

The second task was similar to the first but in this process the second group of students were asked to exchange information through the LMS combined with the newly integrated Exabis social software block. Once again, study material was divided into five different parts and delivered to two students (acting as leaders) of each study group. The evaluation methodology utilizes graphical visualization techniques which represent the social network of the collaboration starting from the usage logs of the LMS. The social network depicts actors' relationships and presents a perspective of their social context. The nodes of the network represent actors (group leaders and students) and the arcs represent the interaction between them. This type of network is essential for understanding social dynamics (Bang & Dalsgaard, 2006). In our approach, the graphical representation of the social networks will be generated from the LMS's logs using the Graphviz tool. (http://www.graphviz.org).

The social network that represents the real world interactions among actors will be extracted from the questionnaires that were collected from participating actors. To contrast the real world interactions against the ones generated from the social software this work will await the exam results for final conclusions.

The criteria used to evaluate the effectiveness of the approach this work will measure the social network centrality, density and network reach of actors (students and group leaders). The centrality of a node (Albert & Barabasi, 2002) helps to determine the importance or prominence of an actor in the network. Centrality and centralization help to analyse if there are "strong" connected teams among the students and also the important role of the group leader in the communication process. The Density is an indicator, describing the general level of cohesion in a social network or the number of different people the actor interacts with. The average density being low shows that students do not interact within the platform.

Work in progress

This paper is submitted under the category "short paper" because of time limitation. It is critical for the research to complete a contrast of marks between the mock exam and the grades of the final exam and among the two groups using physical and virtual (Exabis) social networking mechanisms. Since the final exams have not been completed yet, only early but still creditable conclusions can be drawn. After receiving the final results this

experiment will publish results that will include the number of contacts, the time spend on profiles and the amount of data transacted to the average personal improvement of the student's learning outcome. Furthermore, we will be able to critically evaluate if there is a pedagogical potential in the use Social software.

Conclusion

This research aims to contribute to the evaluation of social software used in e-learning. More specifically, the degree in which social software enhances the learning effectiveness in a certain experiment is measured, by using networking/contribution patterns and metrics based in logs and question sheets.

The first indications of the research are hopeful. By integrating the Exabis module into the University's LMS, there was a significant number of students that used the social software mainly for academic purposes (shared files, customized the e-portfolio, commented on others etc.). However, these interactions did not focus around specific tasks but were sporadic, indicating the very short time of use. A set of questionnaires answered by the students suggests that there is a great inconvenience in the way studying material was collected in the natural way. The distribution was centralized to the students to whom the distribution of the learning material was credited and there were actors with only two or fewer connections.

This research sets certain points but also carries limitations that suggest further research on the benefits of the learning effectiveness of social networks. In which ways does social networking improve knowledge management and student skills? How does a structured social community manage content quality and satisfy learning needs? However, the level to which learning is enhanced remains a question that will be approached more consistently in the final paper.

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