

## OPEN SOURCE SOCIAL TECHNOLOGIES FOR TEACHING HEALTH INFORMATICS

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### **Abstract**

An estimated 87% of university students rely on social networking sites (SNS) in their daily social activities. Some universities have adopted open source SNS in teaching. This paper discusses the benefits of using open source SNS, especially Elgg, in teaching health informatics. It is organized as follows: (a) A literature review to define open education, (b) a review of open source SNS and their effects on education systems, (c) an overview of Elgg pointing out its features, (d) a case study of implementing Elgg in teaching Health Informatics course, including a discussion of results and recommendation, and finally (e) the conclusion.

### **Introduction**

People use social networking sites (SNS) as tools to connect with others around the world. Institutions and organizations that provide teachers and students with community building capabilities can use such tools. Specifically, open source SNS include a lot of features that provide institutions with a way to enhance learning capabilities. Institutions have adopted open source SNS as an effective approach to improve students' academic performance where teachers and students can benefit from online services to achieve high level of cooperative learning platform.

The aim of this paper is to show the importance of using open source SNS, especially Elgg, in teaching the Health Informatics course at the department of Computer Science at the University of Balamand. The paper starts with an overview on open source social networking and its effects on educational systems. It highlights the most included features offered by Elgg that makes it the correct choice to be used as a social learning tool in institutions. In order to properly assess the effectiveness of adopting Elgg as an open source learning platform, a questionnaire survey was conducted with teachers and students who are teaching or taking the Health Informatics course. Results clearly show a good satisfaction from all participants of using Elgg, promising to be adopted as a learning management system offering all the needed and important features.

### **Open Source Social Technologies and Their Effects**

According to the GNU's Not Unix (GNU) project, free software can be defined as "a matter of the users' freedom to run, copy, distribute, study, change and improve the software" (Stallman, 2018, para. 3). The benefits of using open source are: less expensive, more secure, and easier to fix code bugs (Van Rooij, 2009; Weber, 2004). Subsequently, the world is adopting online teaching by moving towards open education-- a new social process that can substitute traditional face-to-face class where knowledge and learning

materials should be free and open to use by students (Hiltz & Turoff, 2005). Through open education, the following advantages can benefit institutions: cost-saving, evolving educational performance and strategies, increasing communications and collaborations among teachers and students, increasing learning quality, and improving teaching functionalities (Siemens, 2003).

By definition, an open source social networking tool is an online platform providing a primary role of building social relations among people. People use SNS for a number of purposes: connecting with friends, sharing photos, discussions, activities, ideas, events and interests (Srivastava, 2012). SNS will meet the changing needs of higher education (Jalal & Zaidieh, 2012) where they help in adding an interactive side with students and make their participation in the educational process more important. Many universities have adopted open source SNS as an online tool to deliver real-time education for many reasons, including software licenses' cost reducing and rapid fixing of open source software bugs and problems. Students rely and use SNS in their daily social communication life. Students want systems that place them at the epicenter, rather than being course-focused (Garrett, Thoms, Soffer, & Ryan, 2007). According to some academic researchers, the greatest benefits of using open source SNS are in their ability to promote student reflection, engagement, portfolio, and high-level synthesizing activities (Berscia & Miller, 2006). SNS can be used as a source of knowledge. Blogging can be used to post research topics as a way of increasing students' learning by reading recent topics in areas that they are studying.

Open source social networking platforms provide an abundant number of positive effects on improving the learning process:

- Improved collaboration: Advanced collaboration between local students and others from different communities and advanced collaboration between teachers and other teachers and researchers.
- Customization: Customization where educational institutions can customize open source technologies to meet their needs.
- Motivation: Students' motivation in which students can build online collaboration to enhance their learning capabilities.
- Creative teaching atmosphere: Teachers use social networking sites to go beyond the institution walls and track their students in an effective learning system.
- Fruitful conversations: Online conversations between teachers and students that allow teachers to keep track of their students' activities and comments, interact and give proper help.

### **Elgg**

Elgg is an open source, award-winning social networking tool, that enables businesses, schools, universities and associations to create their own fully-featured social networks and applications (Elgg, 2014). Elgg has a lot of social features including: social networking, weblog, bookmark, instant messaging, files repository, access control, tagging, customization, and community building. These features provide an attractive environment that allows students to collaborate in an online learning community.

Elgg offers students the possibility to fully control their own online profiles where they can maintain their personal file gallery, blog, and individual customized templates. Furthermore, Elgg users have full control over other users in the community who can view their content. Elgg users can maintain their own blog, gallery, files, and private personalized templates. Through a Wiki add-in component, Elgg can be more practical for an academic course community where several students can have their own pages with the same name. Table 1 summarizes the most important features that Elgg includes and is characterized by.

Table 1

*Elgg Most Important Features*

Important Features	Description
Community Building	Shared interests communities can be created by students
Weblog	Personal and friends weblogging can be created and can be shared with others
Instant Messaging	Provides students with instant conversations and messaging
Multiple Institutions Support	Link specific account to multiple institutions
Full Students Track	Can monitor and track all students activities
Full Course Management and Delivery Tools	Elgg can be integrated with an API to provide a complete learning management system
Create Pages and Groups	Students and Teachers can create groups for classes or own pages. They have full control over created pages/groups
Real-Time Notifications	Students/Teachers can send Real-Time messages

Based on the most important features that Elgg offers, Elgg could be considered as a powerful social network component for higher education institutions to improve students' interaction and flexibility in learning.

**Case Study**

**Implementation**

In this paper, we describe using Elgg as a social networking platform to create an online community, for teaching the Health Informatics course in the Department of Computer Science at the University of Balamand, Lebanon. The main goal of adopting Elgg as a social networking platform was to provide teachers and students with all needed features that are considered as an enhancement for the educational process. Also, this platform enhanced a learning community among students and teachers through a collaborative online framework. Such a framework emphasized the significance of the academic activities and the perceived learning of students in a cooperative learning community. Teachers and students used Elgg as a learning tool to post class materials, projects, etc. They got engaged in class discussions and project coordination.

**Survey Questionnaire**

Being used as a social networking platform, Elgg has been implemented to provide Health Informatics students with an effective tool for the creation of a cooperative learning community. Teachers used Elgg to communicate with their students, post course information, and follow their students’ online activities. Students used this platform for social learning and communication, to build collaboration among others, work on projects and assignments with their colleagues, link to resources, and share their personal files.

A questionnaire survey was conducted to evaluate the effectiveness of using Elgg in higher educational institutions as an open source learning platform. The total number of survey participants was 177 (5 teachers and 172 students). Teachers and students had given or taken the Health Informatics course using Elgg as a social learning tool over two sequential semesters in the year 2017. Selected teachers and students have good know-how in using social networking sites (e.g., Facebook, Moodle, etc.).

The survey was comprised of 10 questions on the usefulness of Elgg with its offered features. A five-point rating scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used for each question in the survey. The survey included questions about features related to communication between users, blogs, file repository, instant messaging, customizability, resource publishing, group discussions and collaboration, class interaction, and course management.

**Discussion of Results**

Table 2 highlights the number of participants in the corresponding scaling rate for each Elgg’s feature.

Table 2

*Elgg’s Features Rating-Points Survey*

Features	1	2	3	4	5
Communication between users	0	0	15	46	116
Blogs	0	0	11	51	115
File repository	0	0	31	54	92
Instant messaging	0	0	13	48	116
Customizability	0	0	9	23	145
Resource publishing	0	0	25	31	121
Group discussions	0	0	16	29	132
Group Collaboration	0	0	24	56	97
Class interaction	0	0	12	25	140
Course Management	0	0	16	19	142

Based on the above table, the total results clearly show that most teachers and students were very positive about using Elgg as a powerful open source tool for social learning. These high good numbers reflect the facts that students can use Elgg as a social learning platform and as a social networking site in their

daily communication. Such communication can offer, and are not limited to, communicating with their colleagues, sharing news and personal files, exchanging interests, and meeting new friends from other communities. In addition, students can use such a tool to collaborate in their classes, get involved in class discussions, coordinate projects, share ideas, and solve assignments. Overall, students can benefit from such an interactive environment to improve themselves and communicate with their teachers and remaining colleagues in their daily life and classrooms. Such adoption shows that students have more interest in learning and have achieved better results in their learning progression.

From another perspective, using Elgg teachers can reach a high level of collaborative research with other colleagues. Teachers can post materials and information related to their courses and keep track of their students. They can collaborate with their students and assist them in their assignments and projects. Generally, teachers can participate in an excited and interactive learning system with students.

Accordingly, this platform will provide better collaboration and offer high level of knowledge achievement in an improved learning educational system. Most participants showed satisfaction in using Elgg as a social networking and learning tool in the educational system. Based on the above results and satisfaction, Elgg is recommended to be adopted by the remaining departments in the university as an online social learning tool that empowers the educational process with a numerous number of effective features.

### **Conclusion**

Many educational institutions and organizations have started the initiative of adopting open source social networking platforms. Elgg can be used as an efficient class social networking tool that empowers learning with effective features and simplifies real-time communications in classrooms. In this paper, a case study of implementing Elgg in teaching the Health Informatics course at the University of Balamand was presented. The results promise that Elgg can be considered as an efficient tool that can be adopted as an open source fully featured social networking platform to enhance education in classrooms. In conclusion, Elgg can be considered as a substitute for learning management systems.

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