A PROPOSED FRAMEWORK FOR A SOCIAL LEARNING HUB WITH WEB 2.0 TECHNOLOGIES

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ABSTRACT

The existing social learning systems used in higher education are limited, especially in terms of content resources and the interactivity of learning environments. With the rapid development in technologies and web services, the level of communication, interactivity and collaboration is lower than expected for current learning management systems (LMSs). This paper explores four factors (motivation, collaboration, connectivity, interactivity) of our proposed social learning hub (SLH) framework. SLH is a social network-based learning model that integrates Web 2.0 technologies and social networking site (SNS) platforms to enhance four learning aspects: academic communication, collaborative learning, interactive learning and learning motivation.

Keywords: *Social Learning; Motivation; Collaboration; Interactivity; Connectivity; Case Study*

I. INTRODUCTION

Social networking sites (SNSs) are becoming pivotal in changing ways of seeking and disseminating knowledge. SNSs have become a bridging tool among Internet users who have similar interests and engage in similar activities. These platforms with their motivating interactive tools entice learners to be active users in network groups. Thus, the use of social networking sites and Web 2.0 tools adds more dynamism to the learning environment and teaching methodologies for general and higher education in particular. The new trends in learning technologies have changed the structure of learning and teaching methods and strategies. People have become more independent learners, but with this emerging approach to learning, it is important to know how these technologies affect learners and the learning environment (Kop & Fournier, 2011).

This paper presents a social learning hub (SLH) framework in order to deeply explore the influence of integrating SNSs and advanced web tools in learning environments and on learner activities. Four factors which possibly affect learning environments and the higher education experience led to the investigation of implementing SNSs in teaching computer applications and skills subjects in the higher education sector. The four learning factors are academic communication, interactivity in learning, collaboration and learning motivation.

II. PROPOSED FRAMEWORK OF SLH

Learning systems are an important part of any learning environment. These systems are generally used to facilitate the learning experience and instructional methods by implementing effective strategies and approaches. Each learning system covers different learning aspects. In this paper, the four learning aspects to be investigated are: academic communication (connectivity), interactive

learning, collaborative learning and learning motivation. These four learning aspects are the core components of our proposed SLH framework.

What motivates us to propose the SLH? The SLH is a theoretical framework based on integrating learning models and a review of the current literature and research on using Web 2.0 technologies and social networking sites in educational settings. This is in order to bring together the most effective elements of the learning process when using Web 2.0 and SNS tools which affect the learning environment of teaching computer applications and skills subjects.

The proposed framework, shown in Figure 1, aims to foster communication channels between students, their instructors and other faculty staff. The use of advanced synchronous and asynchronous communication tools, ubiquitous computing and mobile technologies is the medium of communication on and off the university campus. It is proposed that the use of Web 2.0 technologies and social networking sites and applications enhances interactivity in learning environments. Learners are more interactive by posting and sharing course materials on the online SNS platform. Students can also comment and give feedback to their colleagues. Further, they can participate in SNS platforms by tagging, bookmarking, uploading and sharing course materials in different formats (video, audio, photos, text, etc.).

With this in mind, improving communication by using smart and portable devices in combination with the interactivity of Web 2.0 tools has the potential to achieve an ideal collaborative learning experience between learners. As a consequence, when students engage in collaborative work as active participants of study groups, online discussion forums and collaborative group learning, they are likely to be more motivated and self-directed learners. They acquire both peer-to-peer and student-to-instructor learning skills which encourages their motivation to engage in effective learning.

In the following subsections, the four learning aspects are reviewed with respect to the related literature and in relation to the use of social online learning platforms .

Figure1:The social learning Hub freamework

A. Academic communication (connectivity)

Social network sites construct bridges and hubs of communication between Internet users. They support student performance and learning environments with rapid and effective communication approaches. However, SNS interactivity is a result of the learner's position in this network. Using SNSs in the learning environment has changed the communication style between learners and instructors from one-way communication to a more interactive multi-way communication (Bruun & Brewe, 2013). According to Lampe, Wohn, Vitak, Ellison, and Wash (2011), how students use Facebook determines the nature of interaction between students and instructors in the contexts of psychology and sociality.

Several studies have revealed that students are ready for this integration and are able to incorporate it as a part of their course, since the use of SNSs (in this case Facebook) may enhance communication and access to course materials and enable the better management of course materials (Bosch, 2009; Madge et al., 2009; Ophus & Abbitt, 2009). Ventura and Quero (2013) in their study found that Facebook has facilitated smooth communication between learners and instructors. Thus, the learner-instructor relationship has become stronger. This improvement in the relationship results in increased learner trust which makes learners more active in their participation. The use of Facebook also fosters a longer-lasting relationship which develops in a professional manner through more professional social networking platforms.

Another study by Cuesta, Eklund, Rydin, and Witt (2015) found that learning via Facebook under the administration of a course instructor transformed the course by offering more innovative communication tools which allows students to interact with a feeling of equality with regard to their participation in and interaction with course tasks. The positive attitude of students towards the use of SNSs in education positively affected their relationships and communication with the instructor. This finding was obtained by Özmen and Atıcı (2014) in the case of online Turkish students. From a survey of a US college faculty and students, Sarapin and Morris (2015) observed congruence between the expectations of students and staff regarding their social interactions on Facebook, and showed that their interactions increased with the increasing expectation of the faculty regarding their relationships. Based on the results obtained from a survey of third-year undergraduate engineering management students in South Africa, Shambar and Mvula (2011) concluded that Facebook has become more popular and utilised in educational contexts. To assess this, the authors first introduced Facebook in a business management course and studied the perceptions of students on the utility of Facebook in the learning context. They used the survey instrument of Rogers's diffusion model on approximately 200 UG students.

Griffith and Liyanage (2008b) explored the sharing of information between student groups and between the instructor and student groups as an application of SNSs in education. According to Pollara and Broussard (2011), the opportunity to engage in informal group discussions was perceived by students as an advantage of SNSs. The incorporation of Facebook into courses has a considerable effect on the learning environment and students' outcomes as it boosts student-student and student-instructor communication (Irwin, Ball, Desbrow, & Leveritt, 2012). When the SNS Ning was integrated into a blended course, increased interactions between students and teachers took place. Building communities and modelling were additional hidden advantages (Arnold & Paulus, 2010). A review of the Gypsy project implemented in the Netherlands by Wentze, van Lammere, Molendijk, de Bruin, and Wagtendonk (2005) noted that by using mobile learning, student-student and student-instructor communications are promoted. The need to blend Internet and mobile tools to promote maximum effective communication among students and between students and teachers through social networking applications was stressed by Andone, Dron, Pemberton, and Boyne (2007).

Another form of communication, that is, SMS-based classroom technology, W. W. S. SO (2009) stated that learning tools should promote both student-student and student-teacher communications. However, it is only supplementary to other e-learning methods. Messages of a small size may not be clear enough to the recipients. The cost of sending a message is a concern, even if it is not very high. Slow transmission speed is also a major problem. In a Norwegian study by Rekkedal & Dye (2007), it was found that student-student and student-teacher interactions were promoted by the use of personal digital assistants, however the requirement for mobile access to the Internet and the cost of sending messages were shown to be major problems. The implementation of SNSs in learning improved the overall quality of learning. It was found that there was a correlation between the use of SNSs and maintaining relationships between learners and their peers and instructors. The social element of SNSs enables learners to find friends and interact with them. This element also promotes interaction with instructors (Rutherford, 2010).

The struggle experienced by the faculty in developing student-teacher relationships on SNSs was highlighted by Veletsianos and Kimmons (2013). The need to differentiate and establish personal and professional borders while maintaining suitable and meaningful connections, ensuring that they are seen by their students and their peers in the proper light and using their time efficiently, were some of the problems discussed. The use of Ning in a blended learning context in the USA was found by Arnold & Paulus (2010) to promote reflection and the review of each other's work. The blogs and discussion forums in Ning were used both by students and teachers for this purpose.

An investigation of Elgg as the SNS by Veletsianos and Navarrete (2012) found that students utilized this site effectively to build interactions among them by sharing and helping one another in learning, even though this site was limited to academic activities. Managing the vast amount of content and the students' available time was a critical issue in. Reinhardt and Zander (2011) reported the emergence of student-student interactions and transcultural and multilingual relationships as a result of the use of SNSs in an American intensive English development programme.

Students using Facebook reported positive interaction opportunities in a formal course in Turkey. However, they stressed the need to increase teacher-student interactions. In the study by Blattner and Lomicka (2012), both student-student and student-teacher interactions were promoted by the use of Facebook in a French class by facilitating communications among students and between students and teachers. In their study, Yapıcı and Hevedanlı (2014) observed students reported positive student-

student interactions. As there is limited interactivity in the case of conventional teacher-centred learning, blending this with online methods ensures increased communication between students and teachers as well as among students (Banerjee, 2011).

Applying social capital theory to the use of Facebook in education, Wang, Scown, Urquhart, and Hardman (2014) showed that in a computer-mediated environment, SNSs (e.g. Facebook) were able to build and use relationships between students and teachers as well as among students to a high degree. Lee, Lee, and Kim (2015) found that using SNSs for educational purposes increased student-student and student-teacher communications and interactions. A study in Omani higher education sector by Al-Mukhaini, Al-Qayoudhi, and Al-Badi (2014) noticed that due to collaborations and resource sharing, there was a high level of student-student interaction among higher education Omani students using an SNS (Facebook).

In a Turkish study on the use of Facebook as a course management system, Albayrak and Yildirim (2015) identified the high potential for its use for out-of-class interactions and off-campus communications between students and teachers. Positive results for the potential to use WhatsApp for instructor-student communication were obtained by Najafi & Tridane (2015). In the case of ESL learning in East Asian contexts, the use of an SNS (Facebook) facilitated the formation of highly interactive online communities of learners and the strong presence of teachers online increased the interaction of students with the teacher as well.

B. Interactivity in the learning environment

Interactivity is a significant feature of Web 2.0 tools which is supported by social networking applications. Rohani and Yazdani (2012) observed that an SNS is a Web 2.0 tool and e-learning occurs through collaboration facilitated by SNSs when computers or mobile devices are used to access learning materials through the Internet. According to Griffith and Liyanage (2008b), the interactivity afforded by SNSs like Facebook and Myspace has become very popular with students in different learning environments. Students need a more professional website which is dynamic compared to the static pages usually available in universities. The quantity of information offered on academic SNSs is very large and impressive which promotes higher levels of interactivity. The more personalised the SNS presence, the greater the participation in interactive sessions motivated by participation and the need to learn course material. Some limitations discussed include: cyber bullying, data mining for illegal use, attacks by porno predators, sensitivity, safety and security involving revealing personal details by both teachers and students, and the possibility of discrediting or insulting messages and harmful adds appearing on SNS pages. These limitations affect the effectiveness of the interactivity of SNSs in the educational context.

The use of Web 2.0 social software and technology to construct a personal learning environment was proposed by Wang, Li, Zhao, & Xu (2009) for situations where learners find it difficult to integrate these diverse technologies by themselves. The development of a web learning community using SNSs as a new trend was discussed by Fan, Wang, and Liao (2008). Web-based learning has similarities with e-learning platforms, including interpersonal relationships, interactive activities and the culture of these online communities. However, in an Australian study by (Gosper, Malfroy, McKenzie, & Rankine, 2011), it was found that students used SNSs mainly for social purposes whereas they used search engines and online content through LMS for educational purposes.

A mixed-method study was conducted by Fan, Radford, and Fabian (2016) to explore the possible adoption of Web technologies supported by mobile devices in the School of Medicine. The study found that there was disagreement between the desired and actual usage of Web 2.0 tools for academic purposes among medical students and faculty members. Also, Selevičienė and Burkšaitienė (2015) observed that students used SNSs for social purposes only and they preferred traditional face-to-face learning over the use of any Web 2.0 tools, including SNSs.

Due to the nature of these networks, interactivity and collaboration result from encouraging participation in the creation and reproduction of knowledge among learners (Du, Fu, Zhao, Liu, & Liu, 2013). On the other hand, traditional teaching approaches in the classroom are mainly teacher focused. In interactive learning environments, students are more active and incorporated as the centre of the learning process. By implementing Web 2.0 tools, a learner-centred approach replaces an instructor-centred approach, making learning more interactive and collaborative (Sessoms, 2008).

The importance of SNSs (using Livemocha as an example) in fostering interactivity by extending new social relationships in online learning environment was stressed by the findings of Harrison & Thomas (2009). In an environment of online collaborative group activity, it was found that different SNS tools mediate interactivity differently. Research on this topic led Yi-Mei & Laffey (2006) to the conclusion that the tool's features are related to several patterns of communication and interactions and

this affected the social interactivity of the students in the group. In the virtual learning environment provided by online platforms, there are limitations of customizability, interactivity, collaborative work, and real-time communications. To solve this problem, Chua and Choo (2013) proposed the integration of SNSs into the virtual environment. Such a system integrates Web 2.0 tools and some social networking applications were developed by these authors at the Multimedia University in Malaysia.

Creative activity has been incorporated in the school curricula of Korea since 2011. This is a student-centred, self-directed and interaction-based method in which informal learning elements are also included. The interactivity between learners and between learners and instructors is made possible by social networking. Overall, creative activity in any learning environment makes it a smart learning environment (M.-S. Lee & Son, 2012).

The principles of social presence were applied to computer-supported collaborative learning (CSCL) in the work of Yamada & Goda (2012). Collaborative learning is increasingly enhanced by increasing levels of interaction among the members of the collaborating group. CSCL is a learning environment of cognitive change promoted by interactions. Thus, interactivity is the core of CSCL. When SNSs are used, collaborative learning becomes more effective due to the fact that Web 2.0 tools provide greater opportunities for interaction. The quality of interaction is important for successful collaborative learning and is determined by the extent of social interactions and the group culture. For better social interactions, a greater extent of social presence is required. Without social presence, interaction is not possible. Social media is an effective tool to ensure greater social presence through which greater social interactions take place in the CSCL environment.

C. Collaborative learning

According to Kuh et al. (as cited by Rutherford, 2010), student engagement refers to the time and energy spent by students on educationally useful activities. Student engagement in the distance learning environment is enhanced by SNSs. This theme was reviewed by Lester & Perini (2010). Many engagement models have been suggested. The model of Kuh, Kinzie, Schuh, & Whitt (2005) offers academic challenge, student-teacher interaction and active collaborative learning. But these models apply only to the traditional classroom environments of universities and not to modern methods or distance education, according to Lester & Perini (2010). In other work on the use of Ning by graduate students in distance education, Brady, Holcomb, & Smith (2010) observed increased student engagement through increased communication. Oliver & Nikolettatos (2009) noted that universities endeavour to keep learners engaged with the learning environments and activities provided by SNSs. Large universities have the additional challenge of incorporating their support services to university-wide curriculum applications. However, universities cannot impose student engagement. But if curricula and learning spaces are optimised, there will be a manageable level of student engagement. The support agencies of Australian universities collaborated to design tools and places for the optimisation of engagement with Web 2.0 tools and mobile technologies. (Oliver & Nikolettatos, 2009)

Web 2.0 technologies and SNSs support student engagement by linking them with administration. Live interactions which are possible via direct conversations in SNSs and easily updatable content create a strong perception of a supportive learning experience. Thus, information and communication are two aspects of student engagement in the distance education environment. Compared to email or text messages, more meaningful interactions occur when SNSs are used. The posting of pictures, the uploading of videos and the updating of profiles, message panels and text messages are all possible with SNSs. These features ensure high levels of student engagement. Active and collaborative learning opportunities in traditional classrooms can also be incorporated in SNSs. The duration of student engagement, either socially or academically, can also be increased by SNSs. Students who spend more time in active and cooperative learning are strongly expected to succeed in their academic aims (Lester & Perini, 2010).

The effectiveness of SMSs in enhancing the student experience and engagement in higher education was assessed by Brett (2011). SMSs were used to promote student engagement in the formative evaluation of objective questions by receiving feedback and engaging in collaborative learning through the use of SMS technologies. Positive engagement with respect to academic aspects and negative experiences with respect to cost, time, culture and perception of no educational benefit were observed.

In a review by Tess (2013), the role of SNSs in higher education classes was discussed. This study found that although there is a strong argument to integrate social media as an educational tool into college classrooms, empirical evidence is inadequate. Mostly self-reported data, such as surveys and content analysis, are used in these findings. The effectiveness of interactive Facebook teaching

methods in different learning environments was compared with non-Facebook methods for undergraduate students (Jenny, Lin, Wei-Chieh, & Emily, 2013). The use of Facebook had a significant and positive effect on grades and student engagement (Jenny, 2013).

It was found by Madge et al. (2009) that in the UK, over 95% of UG students use SNSs only to discuss work with their friends rather than actually doing the work. In their study, they found that the pre-university-enrolment use of SNSs is meant for making new friends at university [47]. After joining the university, SNSs act as 'social glue' only. The authors caution against the over-use of SNSs and that face-to-face interactions are important. SNSs are used more for informal rather than formal teaching purposes. On the other hand, US high school students use SNSs to engage in the social learning process (Greenhow & Robelia, 2009) and the authors opined that the students were already practising the educational reforms being considered now.

D. Learning motivation

Student' learning motivation can be positively affected by the self-disclosure of their instructor. Mazer, Murphy, and Simonds (2007) investigate the effect of teacher self-disclosure when Facebook is used between students and their instructor. They indicated that when students access their instructor Facebook profile with a high self-disclosure expected a higher level of learning motivation, affective learning, and a more ideal classroom environment, which can enhance learning outcomes (Sánchez, Cortijo, & Javed, 2014).

SNSs platforms are easier to use when compared to other e-learning platforms. There perceived ease of use has made them popular among students of higher education. As a result, most learners have adopted them as a means to motivate their learning. (Sánchez et al., 2014). According to Ciampa (2014), the value of social media in learning can never be underestimated, and its influence on students' learning motivation is particularly huge. Through SNSs, students can create blogs and share videos with their peers. Thus, they develop more interest in learning since they are motivated to share knowledge with one another (Ciampa, 2014). A site like Facebook is good for navigation and enables students to learn more by sharing with their fellows. Learners maintain their relationships with their colleagues and instructor when they use the effective communication tools. Consequently, they become more enthusiastic and motivated in the online learning environments (Serdyukov & Serdyukova, 2015).

The use of Facebook by students is driven by the need to belong and the need for self-representation. Demographic and cultural factors influence the need to belong and emotional factors influence the need for self-representation, as concluded by Nadkarni & Hofmann (2012) from a review of the work on the factors affecting the use of Facebook. Lampe et al. (2011) noted that the perceived motivation of students to use Facebook was to communicate with others using the site [51]. According to Selwyn (2009), the motivation to use Facebook by UK undergraduate students arises from the identity politics of being a student. Facebook provides the ready space of a comparatively closed backstage zone to accommodate role conflicts experienced by them in their interactions with instructors, other university staff and academic conventions and expectations.

Furthermore, it is important to note that Facebook improves the motivation to learn through communication, interrelationships and social relationship. Students can also exchange assignments and resources in addition to holding discussions about education issues. Through SNSs, students can improve their writing skills and thus become more motivated to learn (Tess, 2013). Hamid et al. (2015) also note students who learn using SNSs display more positive attitude and engage in more peer interactions as compared to their compatriots who do not use these sites. Some learners may also be unwilling to express themselves face to face, and thus these SNSs give them a different avenue of interaction hence influencing their learning motivation (Hamid et al., 2015).

When the purpose of a learning activity is not clear, students fail to be motivated to engage in that activity. According to Glover (2013), the gamification of learning activity solves the problem as it keeps the student interested in the topic. Most of the above work was on learning although a few studies from the perspectives of teaching were also reviewed. Many studies touched upon computer-mediated SNSs. In the findings of Kim, Sohn, & Choi (2011), cultural differences between the US and Korean college students explained their online behavioural patterns on SNSs. The major motivations for US and Korean college students to use SNSs were: finding friends, entertainment, social activities, convenience and knowledge, however the order of importance of these motivations was different. American students had a much larger network than the Korean students and ranked entertainment first, whereas the Korean students ranked social support from current social relationships first.

III.CONCLUSION AND FUTURE WORK

Due to the revolution in communication and knowledge resources, learners and instructors have been influenced by the new social networking applications. SNSs, such as Facebook, Google+, Twitter and WhatsApp, have been researched well and these applications have produced successful outcomes in various learning contexts. Debate on the theoretical aspects still continues.

The current literature indicates that the majority of higher education students have already used social networking sites and they have active accounts on a number of these platforms. Youth, especially higher education students, are the heaviest users of these applications and sites and are very familiar with and aware of these networks' interfaces and tools. They use them for everyday communication, posting news, and uploading their course materials. Thus, where they are already in use, there is scope for their increased use for more beneficial outcomes. Where they are used to a lesser extent or not used at all, students need to be motivated to use them and teachers also need to encourage their students to use SNSs for learning. But the forced use of SNSs is a certain failure. The course curricula need to be designed accordingly.

Although the LMSs used in higher education learning offer several useful tools and features, they are limited in some of their functions and tools. With the rapid development of information and communication technologies and web-based services, communication and interactivity, the collaborative learning tools of LMS are less than satisfactory. This paper explored four variables of the proposed framework for the learning environment named Social Learning Hub (SLH). SLH is a social network-based learning model that integrates Web 2.0 technologies and SNS platforms to enhance four aspects of learning: academic communication, collaborative learning, interactive learning and learning motivation.

However, there have been very few studies on the use of SNSs in teaching computer applications and skills subjects. Thus, a clear research gap exists in this area. The proposed Social Learning Hub framework has the potential to address this gap. Hence, our future work includes an experimental study involving a cohort of students from a Saudi higher institution based on our proposed Social Learning Hub framework (shown in Figure 1) in relation to teaching and learning computer applications and skills subjects.

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