

# Social Media and Higher Education: A Literature Review

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**Abstract.** This paper presents a literature review of empirical research related to the use and effects of social media in higher education settings. The adoption of social media has been steadily increasing. However, a majority of the research reported focuses on students' perception on the effects of social media in learning. The research on the effects of social media on student learning and faculty perspectives are still limited. This literature review focused on the empirical studies that involved the use of social media in higher education in the computing field. Recommendations for future research directions were presented as the result of this literature review.

**Keywords:** Social media · Higher education · Student learning · Faculty

## 1 Introduction

The popularity of social media sites has been steadily increasing over the last few years, and over 70 % of online adults are now using a social networking site of some kind. Many users of social networking sites have more than one account, and check these accounts several times daily [6]. But even as social media has been widely adopted by many users, its use for higher education has also been questioned by educators. Although faculty in higher education often utilizes social networking sites in a professional context, many are reluctant to use social networking sites for teaching and learning. Moreover, even though computing faculty members may have more experience with the technology, their adoption of social media for teaching purpose has been at a lower rate comparing to faculty in other fields such as Humanities and Arts, Professions and Applied Sciences, and Social Sciences [6, 20].

Web 2.0 (often referred to as the “social web”), with its many benefits such as social networking and user-generated content, has drawn much attention for teaching and learning [2]. Learning paradigms have shifted over the last decades from a traditional classroom setting to include online learning, e-learning, collaborative learning, and many hybrid forms. This shift indicates a move from instructor-led and instructor-centered learning environments to learner-centered environments, which focus on knowledge creation and building rather than knowledge transmission [3, 5]. At first glance, Web 2.0 applications such as social networks, wikis, blogging, and micro blogging seem to be well suited for learner-centered environments, but a closer look reveals that the adoption of Web 2.0 technologies and applications in higher education learning is lagging behind the adoption of Web 2.0 technologies overall. Although roughly 90 %

of young adults (18-29 years old) use some social network site, many faculty members also see limitations and potential problems with the use of online and interactive technologies in higher education [6, 20]. In a survey, 56 % of faculty members stated that they see online and mobile technologies as more distracting than helpful to students for academic work [20].

Several studies have investigated the use of social media in higher education, many concentrating on the use of Facebook in their courses. Facebook still dominates the social media landscape, and is popular across a diverse mix of demographic profiles, but other sites have gained popularity and many users now participate in multiple networks [20]. However, the popularity of Facebook has prompted many educators to integrate some elements into their learning environments.

Some studies point out that it is an obligation to prepare students for what they will encounter once they graduate from college and enter the workplace [1, 5]. Other studies examine the connection between social networking and informal and formal learning. Learning in a constructivist environment focuses on the individual learner and the situational context in which learning occurs, and the variety of options and tools that are available through social networking could support this type of situational learning. Students with different backgrounds, learning styles, and preferences can choose which tools they prefer for their individual learning process [19]. In addition, these technologies may create a higher level of student engagement that will build and support a community of scholars [9, 12, 23].

The majority of studies are experimental studies investigating specific social networking tools (e.g. MySpace, Facebook, Twitter) in specific settings (Business education, communication, medical school), and several studies focusing on pedagogy, learning outcomes, or teaching styles are emerging [19]. There is little discussion to date about some practical concerns for educators when integrating this technology into the higher education learning process. The fast pace in which technology changes, privacy and security concerns, intellectual property, accessibility for students with disabilities, or the increased workload for instructors have not received much attention [19, 20]. Many educators are concerned about the short lifespan of certain applications. MySpace, for example, once the top site for young adults, is practically non-existent in the list of social networks used by this age group [6]. Moreover, it recently resorted to mass-mailing its former users to convince them to reactivate their still existing accounts [25]. Many young adults also have moved on from Facebook to other social networking sites, are participating in several sites, and check only their preferred site frequently [6].

The purpose of this paper is to review existing literature related to the use of social media in computing education at higher education level, the effects of social media on learning, and the concerns of adopting social media in learning. Empirical studies that focused on the use of social media for computer education in colleges, the effects of social media on student learning, and potential barriers of the social media adoption are presented in this paper. This literature review attempts to answer the following research questions:

RQ1: Does social media lead to any improvement in higher education for learning computing related subjects?

- RQ2: What are the general objective benefits associated to the use of social media in higher education for learning computing related subjects?
- RQ3: What are the perceived benefits associated to the use of social media in higher education for learning computing related subjects?
- RQ4: What are the barriers or concerns that computer faculties have toward the use of social media in higher education for learning computing related subjects?

## 2 Method

Literature focusing on the use of social media in higher education for computing subjects was collected and reviewed. The following online databases were utilized for the literature search: EBSCO, IEEE, ACM digital library.

The focus of the search was to gather full-text articles presenting empirical studies which involve the use of social media in higher education setting, especially the ones used for computing related subjects. To manage the scope and the comprehensiveness of the study, the following criteria were used to determine the inclusion of the paper for the review:

1. The study involved social media tools.
2. The study investigated the effects of the social media to students' learning performance and behavior, the effects of the social media to students' perception of learning process, the perception of the faculty members related to the use of social media.
3. The study focused on higher education preferably in computing related field. Therefore, studies conducted at K-12 level were excluded from this review.
4. The study must include a clear discussion on the research method utilized.
5. The study must be published between 2010 and 2014.
6. The paper must be written in English.

## 3 Findings

This section discusses the findings of this literature research. The findings are organized based on the key perspectives of the study.

### 3.1 Student Perspectives

Majority of the studies reviewed are focused on students' perspectives of the social media use for instructional purpose, using various social media tools, such as Facebook, Blog, Wiki, and in-house social network tools, etc. Facebook has been the most frequently used site for the studies. This is consistent with the findings reported by Pearson's social media for teaching and learning survey [20]. Based on a survey to 191 students in the use of Facebook for a closed group discussion, Gonzalez-Ramirez, Gasco, and Taverner [7] reported that students' perceived weaknesses of Facebook in teaching included privacy issues, time required, and technological deficit; while the potential

strengths that students predict include performance, communication, participation, and motivation. Students' perceived usefulness of the tool and students' learning achievements were the most frequently studied factors.

**Student Perceived Learning Experience.** In order to study the impact of social media in higher education setting, many researchers conducted explorative studies to investigate the students' perceived learning experience [4, 7, 12, 17, 21–23]. Veletsianos and Navarrete [24] conducted a case study utilizing Elgg as the online social network in an online course, and investigated students' perceived learning experience. The students reported to have overall enjoyed the experience. When being asked to compare the experience of using social network site (SNS) for class purpose to their previous experience of using traditional learning management systems (LMS), most students preferred SNS over LMS. However, when investigating further in terms of how students were using the tool, they noticed that there was limited participation to course related and graded activities, and little use for social networking and sharing purpose. In addition, students requested more support in managing the amount of information offered in SNS showing the potential of information overload by using SNS. While SNS provide more ways of communication and have the potential of accessing more resources, some students reported to have lacked the ability to effectively find and categorize content for future retrieval. However, all the findings from their study was based on students' self-reported usage and perception. No investigation in terms of students' actual usage of the site was done.

Li, Ganeshan and Xu [12] conducted an online survey to 300 students and a follow-up interview with nine of the respondents to investigate students' preference of the communication tools and social networking sites. They reported that the students preferred Facebook in general. However, when it is time to discuss course related topics, Facebook is much less preferred than email. Some of the factors that affected the use of SNS for learning purpose included network speed, security and privacy.

Ozmen and Atici [17] conducted semi-structured interviews with 15 students in the use of LMS supported by SNS. They've incorporated Ning to support a Blackboard site. When being asked the overall perception of their learning experience, students responded that although Ning may have the potential to enhance the communication by using the chat tool, the overuse of chat actually lead to more distraction than to help them learn. Therefore, it is suggested that more pedagogical considerations need to be taken when incorporating SNS to the class environment. Finding the appropriate level of integration with the existing LMS and identify the appropriate activities may be the key to improve perceived learning experience.

In addition to general learning experience and preferences, several studies focused on the specific elements that may have the potential of affecting students learning by incorporating SNS to their classes. One of the common studied effect was the social support provided by SNS. For example, DeAndrea, Ellison, LaRose, Steinfield, and Fiore [4] presented an experiment they conducted that involved first year college students utilizing SpartanConnect, a social media site they designed, to study the effect of SNS in enhancing students' perceptions of social support. Students were asked to create an account on the site before the semester started. The researchers then distributed

pre-test survey after the first two weeks of classes to all first year students, and a post-test survey after using the site for the semester. Out of 1616 first year students who completed post-test survey, 265 students filled out both surveys. Higher level of perceived social support was reported after the use of the site.

Thoms, Eryilmaz and Gerbino [22] conducted a quasi-experiment in which students were asked to use an in-house online social network (OSN) to receive peer support recommendation. They also found that the use of OSN has improved students' perceived level of course interaction and peer support, which in turn may lead to better learning.

Taylor [21] conducted a case study that investigated the possible effect of SNS on students' retention rate in lower level computing class. The author reported to have seen an increased retention rate after the use of Facebook in CS1 class.

Unfortunately, although much previous research [21, 22] reported improvements in students' perceived learning experience and social support, there are also negative impacts reported. For example, Junco [9] conducted a survey to investigate the relationship between the use of Facebook and students' engagement in learning. A negative relationship was reported between the self-reported frequency of Facebook use and students' engagement. Based on the self-reported data, it shows a negative relationship between the frequency of engaging in Facebook chat and time spent preparing for class as well. This finding seems to be consistent with the study reported by Ozmen and Atici [17] that overuse of chat can become a distraction for learning since chat takes away the time that initially should have been allocated for study.

**Student Learning Achievements.** Unlike the studies of the impact on students' perceived learning experience, the actual learning achievements were not investigated as heavily. Laru, Naykki, Jarvela [11] conducted a case study that involved 21 students work in groups of four to five for 12 weeks to complete a wiki project. A number of social media tools were introduced to the students, such as ShoZu, Flickr, Google Reader Mobile, Wordpress.com, Wikispaces, FeedBlendr, and FeedBurner RSS. Data was captured by using video recordings, social software usage activity and pre-and post-tests of students' conceptual understanding of the materials. The comparison between the pre- and post- conceptual knowledge test showed an improvement in test scores received. Looking into more detail in terms of the relationship between the actual activities and the learning outcome, the researchers reported that the higher level of wiki-related activities was an indicator for determining the students improved scores.

Hernandez et al. [8] conducted an experiment to investigate the impact of different tools supporting students' learning and perception of interaction. The students were assigned into groups that used Facebook with wiki-style document creation and wall/comment feature, Google Docs, or LMS discussion forum. After comparing the level of activities in each group setting and their final product, it was reported that the number of messages posted was higher in SNS compared to those using traditional LMS forum, time between messages posted was shorter in Facebook compared to other groups, and groups using Facebook also reported higher level of perceived interaction. However, the final result was the same among all groups. No effect in the learning outcome was reported when comparing groups using different tools for group communication.

Instead of an objective measure of the students' learning achievement while SNS was used, many studies either overlooked the impact of SNS for learning outcomes or used only students' self-reported data for this purpose [9, 11]. More research is needed to look into the impact of SNS on student learning in addition to the impact on student learning experience.

**Student SNS Usage Pattern.** In addition to the potential impact of SNS for learning, the patterns of the posts in different tools were also investigated. Maleko et al. [13] reported their findings based on a case study conducted that compares Facebook and Blackboard usage by the students. They reported that posts in Facebook were unique in that they were concentrated in the expression of dissatisfaction, course admin, encouragement, discussions outside programming, and general advice; while the posts in Blackboard tend to be more for the purpose of community building and question to the lecturer. In addition, students reported to have preferred the use of Facebook for learning support where no authoritative figure was present.

Kear et al. [10] conducted a survey after students were asked to use an in-house wiki to co-edit a document after completing an online tutorial of how the wiki can be used. They collected data about students' use of wiki over time. The authors reported decreased use overtime although students learned how to use wiki. After further investigation through the survey instrument, they found that the students were unhappy about editing other students' work. When being asked to compare wiki and traditional discussion forum for this kind of collaborative activities, students preferred forum over wiki.

### 3.2 Faculty Perspectives

Unlike the studies focused on students' perspectives, only a handful of studies that we investigated looked into the SNS use from faculty members' perspectives.

**Faculty Perception.** Faculty perception of the SNS use for learning purpose has been mixed comparing to students perception. The survey conducted by Pearson [20] indicated that one of the reasons for faculty members not incorporating SNS in their teaching was because they consider the use of SNS as a distraction. Roblyer et al. [18] reported different perceptions of the faculty members compared to students. They found that students are more open to use Facebook when comparing to email for the communication purpose. Faculty members were more prone to traditional technologies, such as email. Brown also did a survey and a follow-up more in depth interview with the faculty members regarding the use of Web 2.0 technologies for learning purposes. The responses received from the faculty members indicated that promoting active student participation, enhancing distribution of and access to tutor-selected or generated learning content are the potential benefits indicated.

**Faculty Concerns.** The hesitance of faculty members regarding the use of SNS in classrooms may be explained by the concerns identified by previous studies. For example, Brown [2] reported that misalignments between the increasing amount of collaborative group work expected and continuing individual assessment, no "added

value” to teaching, and too many constraints (because of the university policy) are the major concerns from faculty members. Kear et al. [10] reported that, in addition to the above mentioned concerns, performance of the SNS used, the difficulties in marking and monitoring students’ work, workload issues are also among the concerns raised by the teaching staff members.

## 4 Discussion

The literature review has shown some empirical findings that this paper attempted to investigate. In terms of the question regarding whether social media lead to any improvement in higher education for learning computing related subjects, the literature shows some evidence of improvement. Although the empirical study is extremely limited in gathering objective performance data to showcase the improvement of learning, the student self-reported data shows promising potential of the effectiveness of SNS use in higher education. In addition, literature indicated that careful pedagogical consideration needs to be made in order to ensure the effective use of SNS. However, more investigation is definitely needed.

The general objective benefits associated to the use of social media in higher education for learning computing related subjects has been identified by case studies and survey data. The identified benefits included improved social support, improved retention rate through peer support, and improved perceived interaction. However, the empirical study also showed that there can be negative impact of the use of SNS to the students’ engagement in learning.

When answering the perceived benefits associated with the use of social media in higher education for learning computing related subjects, the answers from students and faculty members are similar. Students tend to enjoy the activities using SNS considering it to help improve the interaction, and motivation to learning. In addition to the benefits identified by students, faculty members value the possibility of enhancing distribution of and access to tutor-selected or generated learning content through the use of SNS.

The specific concerns from computer faculty members were not identified from the literature review. However, the investigation of the literature shows that there is a list of potential concerns that are common for most of the faculty members. In general, faculty members share similar concerns as the students which include security, privacy and performance of the site/tool being used. In addition, faculty members are also concerned about the work load issue, the difficulty of performance evaluation and monitoring, and need for careful pedagogical design when it comes to the use of SNS for learning. Faculty members in computing field may be more concerned about the potential distraction of SNS and its security issues because of their familiarity of the technology. However, this was not identified in the literature and further investigation is definitely needed.

## 5 Recommendations and Future Research

Even though the literature review shows potential of social media usage for learning purpose, the use of the technology is still limited and not many controlled evaluations

and in-depth studies in higher education settings have been conducted. First, more empirical study is needed to investigate the actual “added” benefits of SNS comparing to the use of traditional LMS. One of the major limitations of current literature is that most of the studies focused on self-report data to study the effect of the technology. Therefore, the actual usage and learning outcome should be addressed and investigated in more depth.

Although computing faculty members may know the technology better than faculty members in other field, their adoption of SNS is lagging behind. Is there any specific reason? Is it because of the nature of the topic that is sometimes hard to describe in texts? Is it because of the higher security concern from the faculty members? More investigation is needed to address this issue.

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