REVIEW ARTICLE

The Opportunities and Challenges of Social Media in Higher Education: A Literature Review

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Abstract

This paper presents a review of the use of social media for learning and teaching in higher education, as well as the opportunities and challenges revealed from its use. A total of 77 related case studies published from 2010 to 2019 were collected from Scopus and Google Scholar for analysis. The results showed that social media was usually used as a learning management system and for enhancing learner engagement. The use of social media has brought opportunities for educational practices in terms of its high popularity among students, and its capacity to support two-way communication, easy knowledge sharing, community building, and collaborative learning, which enhance student learning experience. The challenges reported in the case studies cover the blurring of the boundary between the public and private life of students and between the relationships of students and instructors, as well as its doubtful effectiveness for knowledge construction, the inadequacy of instructors' pedagogical and technological skills, and the lack of integration with instructional design. The results suggest the need for further work on examining suitable ways of using social media which would be viewed positively and accepted by users. There should also be future work on surveying the need for support for instructors for their involvement in teaching with social media, and developing effective pedagogies which cope with the features of social media.

Keywords Social media · Social networking sites · Web 2.0 · Higher education

Introduction

The prevalence of social media and its uses for educational purposes have been emerging in the past decade. Social media, also called "social networking sites" (SNSs) and "Web 2.0", is defined as "technologies that emphasize the social aspects of the internet as a channel for social interaction and collaboration" [1]. It allows users to engage and share content generated by other users in a digital environment. A survey from the Pew Research Centre [2] found that 72% of American adults used at least one type of social media in 2019, among which 90% of users were aged between 18 and 29.

The popularity of social media has produced a range of initiatives for exploring its potential for educational purposes. For example, Skype was used by some institutions to allow students to interact with experts in relevant disciplines as a learning activity, and WordPress was adopted for students to develop their e-portfolios for assessment [3]. These attempts have demonstrated the advantages of social media for active and informal learning by strengthening students' interaction and engagement inside and outside the classroom [4]. On the other hand, the challenges of effective adoption of social media have also been identified, such as the difficulty in striking a balance between its informal and academic use, as well as in adapting existing pedagogies to cope with the features of SNSs [5]. How to tackle the challenges has become an important issue to address to fully realise the educational potential of social media.

Despite the many studies which have examined the effective use and limitations of social media for educational purposes, their findings have yet to be comprehensively reviewed and summarised. Relevant reviews have only provided an overview of the developments [6, 7], or focused on a specific discipline [8] or SNS [9].

This paper aims to review the studies on the use of social media in higher education institutions, and identify

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the opportunities and challenges reported in the studies. It summarises the use of social media by the institutions, the opportunities for improving educational practices, and the challenges encountered by the institutions, staff or learners. On this basis, a number of recommendations are proposed on the effective use of social media.

Related Work

The increasing significance of social media has led to a proliferation of related studies on its educational potential, many of which have focused on the use of social media in learning and teaching. For example, Balakrishnan and Gan [10] analysed students' use of social media for learning in relation to their learning styles, and identified the factors which affect its use. Also, Manca and Ranieri [11] examined academics' use of social media to find out their patterns in terms of personal, teaching and professional purposes.

The results of these studies have revealed the opportunities which social media presents for advancing educational practices. These include the improvement in students' learning engagement in relation to their use of social media as supplementary tools during instruction [12]. Gikas and Grant [13] also found that the use of social media facilitated collaboration and interaction, and students were more engaged in content creation.

A number of challenges have also been reported in the literature. The survey findings of Brooks and Pomerantz [14] showed that nearly half of the respondents preferred instructors to use less social media as a learning tool. Ajjan and Hartshorne [15] found low adoption of Web 2.0 technologies among faculty members for learning and teaching, despite their overall positive attitude towards it, due to the problems of low perceived usefulness, compatibility with current practice, and lack of experience. Moran, Seaman and Tinti-Kane [16] pointed out that the issue of low adoption is also affected by factors such as staff's seniority and subject discipline, with younger faculty staff being more likely to use social media during instruction, and the usage level of social media in Art and Humanities, Applied Sciences and Social Sciences being generally higher than in Mathematics, Computer Science, and Natural Sciences.

Despite the wide range of opportunities and challenges presented in studies, the existing reviews have been weak in providing a comprehensive overview of them. Many of the review have focused only on the use of social media in specific disciplines, such as healthcare education [8, 17] and medical education [18]. Also, some reviews have covered only particular SNSs, such as Twitter [8] and Facebook [9]. In addition, there are reviews which have only summarised relevant studies [7, 19], or provided a general narrative on the use of social media in higher education [6, 20]. This paper aims to supplement the existing reviews in this area and address their limitations.

Methodology

This study aims to survey how higher education institutions apply social media in educational practices and the opportunities and challenges reflected in their experience. The survey method was based on the review studies of Li and Wong [21] and Wong and Li [22]. Relevant case studies were collected from the publication databases Scopus and Google Scholar, using the key terms "social media" and "higher education". The period of publications is 2010–2019. Only journal articles were selected. An initial search returned a total of 670 results, which were then screened according to the following inclusion criteria:

(a) The article reports an empirical study on the use of social media in a higher education institution.
(b) The study contains the details of the use of social media, such as the purpose, implementation, evaluation, and outcomes.

Finally, a total of 77 case studies were selected. Each of them was checked to identify and categorise the social media use and the related opportunities and challenges presented in the studies.

Results

Use of Social Media by Institutions

As a Learning Management System (LMS)

Social media was used by some institutions like a conventional LMS, such as Moodle or Blackboard, as a supplement to the traditional classroom setting. Table 1 shows examples of case studies on this social media use, which helped to enhance the involvement of students outside the class [26]. Social media serves as a platform to display course announcements, manage course materials, and collect assignments [27]. This also addressed the problem of a conventional LMS which was used by some students only in the campus due to a negative attitude toward it [28]. The community building and sharing functions of SNSs provide an alternative to instructors, allowing them to use SNSs as an LMS platform.

Table 1 Examples of institutions which used social media as an LMS

Institution	Use of social media
Two public universities in Taiwan [12]	An SNS—Ning—was used for students in a way similar to a traditional LMS. The students could access course materials and conduct online discussion. They had to create their own profiles on Ning and share their interest by uploading photos or videos
The Northeastern University [23]	A Facebook page was created for students. The students were encouraged to take an active part in posting messages, responding to others, and sharing ideas on the page
Griffith University [24]	Students were invited to use Facebook pages as a learning resource for their courses. Instructors provided course information on the pages, such as notification of course materials, course announcements, and topics for initiating discussion. The instructors logged on to the pages at least once per day to monitor student activities and respond to their questions
Canterbury Christ Church University [25]	Facebook was used by students like an LMS. The students could use Facebook freely or stick to the conventional LMS Blackboard
A private university in Turkey [26]	Students from selected courses were required to complete compulsory tasks outside the classroom on Facebook pages. Instructors and students could share information, make announcements, and initiate course activities and discussion

Enhancement of Student Engagement

Table 2 provides examples of the use of social media by institutions to enhance student engagement. Student engagement refers to the time and effort devoted by students in learning activities assigned by teachers or self-directed by students on social media [33]. Relevant activities may include in-class discussion, interaction with faculty staff and among peers, and group work. Social media offers a new space for communication and collaboration, which allows students to participate in both formal and informal learning contexts and enhances their learning experience.

Opportunities

Higher Popularity as an LMS

Table 3 presents examples of studies showing the high popularity of social media among students. Compared with a traditional LMS, social media such as Facebook or Ning was shown to have attracted students to visit more frequently, which can be measured by, for example, the numbers of posts, comments, views, and "likes" on the SNSs. Because of their popularity among students, they are useful for disseminating course information and materials to students and engaging them in learning activities.

Improvement of Student Participation

Table 4 shows examples of study results on improving student participation in learning activities via the use of social media. Students were generally more active in participating in online discussion, asking questions, joining activities, and reading others' posts on social media. They reflected that the social media environment made them more comfortable in expressing themselves and commenting on others' work or ideas.

Table 2 Examples of institutions which used social media to enhance student engagement

Institution	Use of social media
The University of Adelaide [29]	Students were required to use Facebook as part of the assessment. They needed to upload a series of videos or images every two weeks and comment on peers' submissions in Facebook. Topics for discussion in the physical classroom were generated from the discussion on Facebook
Liverpool Hope University [30]	Students were divided into groups and invited to use a blog as the major method of interaction. Through writing blog posts, students were asked to discuss issues in groups. An unrestricted blog was chosen because its lack of formalised structure could partly reflect how students engaged with SNSs
A British university [31]	Educational activities were conducted on Twitter and Ning, such as class discussion, Q&A, book discussion, interaction with peers and teachers, projects and study groups, as part of assignments
A midwestern research university [4]	Students were required to use Twitter as the only communication channel to exchange information and they had to tweet on a daily basis
Singapore Management University [32]	Students were asked to post on Twitter during class, and were encouraged to express their views and comments or ask questions through posting. The Twitter feeds were projected to a seminar room, and lecturers would follow-up on some tweets when needed

Table 3 Examples on high popularity of social media as LMS

Institution	Opportunity
The Northeastern University [23]	Students showed a higher participation in Facebook for learning activities than in Blackboard. Sixty-two percent and 77% of students agreed that they preferred to post, and read posts, on Facebook rather than Blackboard, respectively. Using Facebook can enhance the visibility and accessibility of the course information and materials to students more than by using a conventional LMS
Griffith University [24]	Over half of the students who participated in the study engaged with the course page on Facebook at least once per week and over 75% of them at least viewed or "liked" the page. Facebook was regarded by them as a communication channel that was easy to keep up to date. Receiving academic information from this channel saved their time from logging in to another LMS to receive similar information
Canterbury Christ Church University [25]	Fifty-eight percent of students checked Facebook several times a day, while 62% of them checked Blackboard only once a day. Students tended to receive messages and read course announcement via Facebook instead of Blackboard
A private university in Turkey [26]	The majority of students agreed on the usefulness of Facebook as regards the communication with instructors and classmates, the clarification of concepts and the development of their interest in a course. Compared with a traditional LMS, students were more likely to get a timely response from instructors on Facebook

Table 4 Examples on improvement of student engagement

Institution	Opportunity
The University of Adelaide [29]	Students generally agreed that the virtual space on social media could mediate some of the first year students' common difficulties such as language barriers and introversion. These students can express their opinions freely on Facebook, and the Facebook group helped them to recognise their classmates and have interaction with local and international peers
Portuguese Catholic University [34]	The use of Twitter in presentation enabled real-time comments, questions and debates among instructors and students. Multiple-choice questions could also be released to engage students via Twitter, which induced cognitive learning and positive behaviours in the classroom
Centria University of Applied Sciences [35]	The use of social media intensified the teaching–studying–learning process and enhanced the engagement of students and teachers
Middlesex University [36]	Social media increased students' engagement and improved their in-depth learning. It also enhanced their appreciation of e-professionalism and networks for personal learning. Learning activities using social media increased the interrelation of learning experiences, enabling students to develop evidence-based online engagement
Singapore Management University [32]	Tweeting allowed instructors to monitor whether students understood the contents they taught, and allowed students to voice their opinions freely. Students agreed that tweeting gave them the opportunity to understand their classmates' ideas, and made it easier to gain insights and develop their views based on others' ideas
The University of South Australia [37]	Most students preferred providing and receiving feedback via the SNS—Café. As they felt uncomfortable in critiquing their peers face-to-face, the feedback provided by students online can be more in-depth and critical. Café also provided a platform for international students to engage in the university culture

Enabling Two-Way Communication

Table 5 lists the examples of studies demonstrating the influences of social media on two-way communication. The results of the relevant studies have shown that social media provides opportunities for enabling real-time communication. Students expressed their preference for communicating and discussing course-related issues with fellow students, and instructors could provide individualised mentorship to students via this channel.

Knowledge Sharing

Table 6 presents the case studies on knowledge sharing with social media. A number of studies have shown social media to be an effective platform for requesting and sharing subject-related materials. The ease of use and immediate communication of SNSs are two main factors promoting sharing among users.

Community Building

Table 7 summarises a number of examples on community practices in learning induced by social media. By enhancing the communication among social media users, a community could be created to foster the relationship among them, and promote communities of inquiry and practice.

Collaborative Learning

Table 8 exemplifies the implication of social media use for collaborative learning. Through social media (e.g. blogs and wiki), students are supported to interact with their peers on problem-solving, and co-construct and share knowledge, which foster their collaborative learning.

Enhancement of Learning Experience

Table 9 summarises a number of examples which revealed the effectiveness of social media in enhancing learning experience. By increasing their engagement in both formal and informal learning through the use of social media, students can pay more attention to the class and be eager to discuss course-related contents after class. This results in their greater understanding of the concepts which may benefit their learning experiences.

Challenges

Blurring Boundary Between Public and Private Life

Table 10 presents the concern about the blurring of boundaries between public and private life through the use of social media for educational purposes. Although most studies

Table 5 Examples of two-way communication

Institution	Opportunity
Lakeshore University [13]	Students found themselves communicating more on social media because of its immediate accessibility. They also regarded constant communication as a key factor for them to be productive in learning
A South African University [38]	Educators perceived Facebook and Twitter as convenient meeting platforms that bridged the social distance between students and themselves. Social media served to facilitate instant communication with students and promoted effective and authentic discussion
The University of Murcia [39]	Facebook facilitated interaction between teachers and students, which catalysed students' participation
University of Zaragoza [40]	The chat and message functions of Facebook allowed instructors to clarify individual students' understanding, and supported individualised follow-up and mentorship

Table 6 Examples on knowledge sharing

Institution	Opportunity
Universities in Malaysia [41]	Over 90% of student respondents would use SNSs to support project collaboration, discussion and sharing of documents; and 94% of them perceived SNSs as a useful platform for information and knowledge sharing
University of Southern Denmark [42]	Social media extended the instructor' role from being a subject expert to also delivering coaching and mentoring. It provided opportunities for individual reflection via personal blogs, and for collaborative learning by constructing shared knowledge
Helwan University [43]	Students agreed that SNSs could facilitate their sharing of knowledge, course information and experience without anxiety to promote online peer learning

Table 7 Examples on community building

Institution	Opportunity
Iowa State University [44]	Using social media in blended courses can augment interaction among students and teachers, and carry conversation outside formal learning environments. It facilitated information sharing, created a course community and helped instructors to reflect on the course content
Nacional de Educación a Distancia [45]	Students showed a high degree of commitment in their use of Twitter, which helped them to create a sense of belonging to the community and enhanced their motivation for learning
Manchester Metropolitan University [46]	The use of Twitter fostered communities of practice, bridged the communication between instructors and students, and supported the casual learning between learners and in online communities

Table 8 Examples on collaborative learning

Institution	Opportunity
Queensland University of Technology [47]	Wiki combined the features of social media and information and communication technology in order to fit the pedagogical goals of teachers to ensure students' in-depth and collaborative learning
Lakeshore University [13]	Social media allowed learners to create user-generated content, such as wikis and social bookmarks, which promoted the development of collective intelligence
Universiti Teknologi Malaysia [48]	The majority of respondents recognised the effectiveness of social media for facilitating collaborative learning and improving learning experience. The perceived usefulness and ease of use of social media are factors which promote collaborative learning with interaction with peers and supervisors
McGill University [49]	Social media was convenient to use for collaboration with team members. This was shown to be a key determinant for students to choose the tools for collaboration
Halmstad University [50]	The co-learning Facebook community opened up group collaboration and stimulated knowledge production
Universidad de Alcalá [51]	Ninety percent of the participating students strongly agreed or agreed that Web 2.0 tools could promote cooperation among classmates; and 64% stated that they worked well with their groupmates through Web 2.0

Table 9 Examples on enhancement of learning experience

Institution	Opportunity
Universiti Teknologi Malaysia [48]	There was a positive relationship between the use of social media and academic performance. Social media promoted interaction among students and instructors, and encouraged students to collaborate actively and involve themselves highly in the learning process
Universidad Nacional de Educación a Distancia [52]	Twitter allowed students to improve their competencies in critical and reflective judgement, their skill in searching and selecting information and their collaborating skills
University of the Balearic Islands and Elon University [53]	The majority of student respondents agreed that the use of Twitter helped them to summarise the main ideas for learning

Table 10 Examples of concerns about students' social life

Institution	Challenge
The Northeastern University [23]	Forty-two percent of student respondents were not happy about seeing course-related materials on their social media as they perceived its primary use to be for social interaction
The University of Tennessee [54]	Some students disagreed with mixing their personal life with their higher education life. They regarded social media as a channel to relax or have fun so they did not feel obligated to participate in academic activities there
Middlesex University [36]	As social media could induce the collapsing of the boundaries between private and public life, how to balance individual privacy and the ease of dissemination of learning materials is an important ethical consideration. The use of social media for educational purposes might also lead to institutional violations of ownership and privacy

acknowledged the effectiveness of social media in promoting interaction and informal learning, some have indicated that students may have reservations about accepting instructors and classmates as their 'friends' on social media. Some students hoped that their academic discussion would be kept private, instead of being viewed by all of their friends on social media.

Doubtful Effectiveness of Knowledge Enhancement

Table 11 shows the problems related to the effectiveness of social media for knowledge enhancement. While social media was found to be effective in enhancing student engagement, its effectiveness for enhancing learning outcomes has remained doubtful. Students might not be able to

adapt to, and learn more effectively in, academic practices with social media.

Blurring Teacher–Student Relationship

Table 12 presents the findings on a blurring of the teacher–student relationship caused using social media in teaching. The distance between instructors and students is decreased by social media which facilitates a close interaction. However, relevant studies also revealed concern that such a blurring of the relationship would affect the effectiveness of teaching and learning.

Inadequate Pedagogical and Technological Skills

Table 13 summarises a number of challenges in relation to the inadequacy of instructors' pedagogical and technological skills. Instructors may not possess the required skills to use social media effectively in teaching, while students may encounter technical difficulties during the classes which are conducted on social media.

Table 11 Examples on challenges for enhancing knowledge

Institution	Challenge
Liverpool Hope University [30]	Blog postings were regarded by students as less effective for learning. The posts were mainly about students' personal opinions and there was a lack of collaboration in thoroughly analysing the opinions. There was also difficulty in conducting meaningful academic exchange through social media, which may be partly attributed to the use of internet slang and informal language styles
Thammasat University [55]	Most student respondents agreed that Facebook was an effective platform for discussion and collaboration, but only about half of them agreed that it helped them in learning. They used Facebook as a tool for communication rather than learning purposes
The Northeastern University [23]	Although students tended to read posts on Facebook rather than on LMS Blackboard, they were mainly passive observers and seldom interacted with other users by posting questions or giving comments

Table 12 Examples on blurring teacher–student relationship

Institution	Challenge
A major university in Turkey [56]	Faculty members had concerns about the change in their role and relationship with students. Their prior experience of failure in using social media, if any, might heighten such concerns
A South African university [38]	Educators were reluctant to use social media in an educational setting because it sanitised their profession from the perceived flippant influences of social media. It was suggested that instructors may have an intention to establish some boundaries between students and themselves

Table 13 Examples on inadequate pedagogical and technological skills

Institution	Challenge
Northeastern University [57]	Instructors expressed challenges in relation to their ignorance of innovative use of social media, and the lack of professional development on the technical and pedagogical aspects of social media use. Faculty staff also did not have the incentive to engage in professional development or training to learn relevant innovative teaching methods
The University of Melbourne, The University of Wollongong, and Charles Sturt University [58]	The implementation of Web 2.0 in pedagogy was hindered by the lack of familiarity with it among instructors. Other technical challenges included the immature technology that was under development and the lack of support and infrastructure. The design of learning and teaching tasks should also be emphasised in order to achieve the desired learning outcomes
A large public university in Turkey [59]	Although students were familiar with the use of social networking sites, most of them were not even familiar with Wiki-based learning practices. Therefore, training was needed to overcome the technical issues of novelty

Little Integration with Instructional Design

Table 14 shows the related case studies that presented little integration of social media with instructional design, which may reduce the effectiveness of educational practices. It has been recognised that the use of social media alone does not suffice for achieving pedagogical outcomes, and the pedagogical use of social media should be compatible with the relevant instructional design.

Discussion

The use of SNSs shown in the case studies revealed the potentials of social media for learning and teaching in higher education. They have been used as an LMS and for the enhancement of student engagement, through ways such as community building and knowledge sharing which help to enrich students' learning experience.

The high popularity and accessibility of SNSs on various internet and mobile devices have allowed them to encourage students' access to course materials and participation in course activities and interaction, both inside and outside the class [23]. The features of social media, which usually allow students to engage in anonymous or private communication, enable them to feel comfortable to freely discuss online and comment on others' ideas [37]. Students' active participation in social media has made this channel highly applicable for other technology-enhanced learning approaches such as mobile learning [62], blended learning [63], and personalised learning [64], as well as a possible source of data for learning analytics [65]. The use of SNSs may have involved one or more of these approaches. Future work in this area should, therefore, pay more attention to the interoperability of these approaches and identify their effective linkage [66].

It has been shown that social media provides an opportunity for strengthening communication, collaboration and sharing. A closer connection can be developed among students and between students and instructors, where students can get timely responses for their learning and share course-related information via SNSs. The virtual communities built among these participants also help to foster the community of practice and inquiry, and give students a collaborative learning experience. Despite such opportunities, the benefits for students' academic performance have been less clear. There have been case studies reporting the interactive and collaborative learning supported by social media which have led to the improvement of academic performance [67, 68], and students' critical thinking, summarising and collaborating skills [52, 59, 69]. However, as one of the challenges identified, it has also been claimed that the influence of social media use on knowledge construction has remained doubtful [23, 30, 55]. There is thus a research gap which requires further examination of the relationship between students' social engagement on SNSs and their learning outcomes.

The results have shown that blurring the boundary between students' public and private life, as well as the boundary between the teacher and student relationship, are part of the challenges for social media use. This may involve the need to review and set relevant guidelines for the use of SNSs, such as not requiring students and teachers to use their personal accounts of SNSs for class activities [14]. This also reveals the need to survey students' and teachers' perceptions of various ways of adopting SNSs and their most accepted ways of using them for learning activities—as a part of the evaluation of technology-enhanced learning [70]—so as to minimise their potential uncomfortable feelings about the educational use of this channel.

Instructors' participation in social media use has been shown to be a common feature among the case studies which reported a positive learning outcome. "[C]onsiderable creative involvement from teachers" (p. 35) has been regarded as essential in order to adapt social media effectively to educational practices [71]. The participation of instructors allows them to monitor student involvement and facilitate the interaction on social media. However, the use of SNSs itself may not suffice in leading to desirable pedagogical outcomes. It should be accompanied by clear pedagogical objectives [14], and those existing instructional practices may not be suitable for use on social media which was designed originally for private life [72]. In this regard, future work should address

Table 14 Examples of the lack of integration with instructional design

Institution	Challenge
An Australian university [60]	Concern about increasing workload was raised for introducing the pedagogical use of social media
A public university in the United States [61]	In this study, only 29% of the class used SNS for communication and online collaboration. Those who preferred not to use it commented that the SNS did not add value above and beyond their regular communication tools
A South African university [38]	Challenges such as bandwidth constraints, an ineffective design of learning tasks with the use of social media, the distracting nature of social media tools and the unintended student dependence on instructors were identified, which may undermine the effectiveness of social media in pedagogy

the pedagogical practices which are suitable for use with social media and the kinds of institutional support required for the instructors.

Conclusion

This paper provides an overview of social media use in higher education as well as the related opportunities and challenges revealed from its use. The results contribute to supplement existing reviews and highlight the features of educational practices with social media. For institutions, social media can serve as an LMS to improve students' engagement in both formal and informal learning, and its use can promote two-way communication, knowledge sharing, community building and collaborative learning. These benefits help to cultivate students' learning experiences and outcomes.

The challenges for social media use suggest the areas for future work. They cover the concerns about blurring the boundaries between students' and instructors' public and private life as well as their relationships; the unclear linkage between social media use and learning outcomes; the insufficient technical skills of instructors; and the incompatibility of existing instructional practice on social media. These challenges have identified the need to examine suitable ways to use social media which would be perceived positively and accepted by users, and lead to desirable pedagogical outcomes. There should also be future work on surveying the needs for support for instructors for their involvement in teaching with social media, and developing effective pedagogies which cope with the features of social media.

Declarations

Conflict of interest The authors declare no competing interests.

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