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Learning management systems and social media: a case for their integration in higher education institutions

Darren Turnbull* , Ritesh Chugh and Jo Luck

School of Engineering and Technology, Central Queensland University, Rockhampton, Queensland, Australia

Higher education institutions across the globe rely on learning management systems (LMSs) to deliver course content, assess student learning, and maintain effective communication. However, contemporary learners may prefer to use popular social media platforms to share knowledge and collaborate with peers. Higher education institutions can benefit by fusing the best features of social media and LMSs into course delivery systems, particularly in online settings. This study investigates the technological and pedagogical integration of social media and LMSs in higher education institutions that incorporate these technologies into their course delivery infrastructure. From the 36 peer-reviewed papers examined, the identified benefits of successful social media-LMSs integration were classified into six categories: access to learning materials, student recruitment, communication and peer support, improved results, a single access point to both online environments, and speed and reliability. Three categories of disadvantages were also established: need for ongoing support, social media distractions, and technical and security issues. We propose that a close inter-relationship between social media platforms and LMSs enhances course outcomes within a social constructivist framework and satisfies learner needs for social interaction. This study's findings will benefit educational institutions seeking to enhance engagement with online learner communities.

Keywords: learning management system; social media; software integration; Facebook; Twitter; Moodle; virtual learning environment

Introduction

Learning Management Systems (LMSs) (or otherwise known as virtual learning environments, VLEs) are online software platforms that assist in the delivery of course materials and facilitate student learning (Turnbull, Chugh, and Luck 2019). LMSs can be used to enhance all three delivery modes: face-to-face, online, and blended learning. LMSs host a variety of tools that can facilitate user communications, such as discussion boards, real-timse chat modules, and email clients. However, within LMS environments, students often do not use the available tools for communication

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*Corresponding author. Email: d.turnbull@cqu.edu.au

purposes, preferring instead to use dedicated Social Media (SM) platforms such as Facebook (Gosper *et al.* 2014; Pilli 2014). A possible reason could be that institutionally-controlled LMSs define institutional boundaries and roles (Wise, Skues, and Williams 2011), and students could consider it too restrictive for social interactions. Another reason could be that academics design LMS course content primarily for desktop deployment, while students increasingly prefer the convenience of mobile devices to engage with their learning (Baldwin and Ching 2020). The authors contend that a sharper focus on mobile device use when designing an LMS-based curriculum may enhance student satisfaction with online course delivery.

In contrast to LMSs that primarily focus on educational delivery, SM are web-based online communication technology platforms that facilitate the interchange of ideas and the development of socially engaged online communities (Chugh and Ruhi 2019). Examples of popular SM platforms available in the English-speaking world include Facebook, WhatsApp, Twitter, Instagram, Snapchat, YouTube, Pinterest, Reddit, and LinkedIn (Kellogg 2020; Kircaburun *et al.* 2018). Countries that restrict open Internet access often sanction alternate home-grown SM platforms. For example, Chinese citizens within mainland China are prevented from accessing foreign SM platforms but have access to local alternatives such as WeChat, Weibo, and QQ (Li, He, and Zhang 2019). There is often little crossover between social interactions in established SM environments and communications contained within institutionally-controlled LMSs (Hrastinski and Aghaee 2011). However, some evidence supports observations that many students enrolled in Higher Education Institutions (HEIs) such as universities and colleges use SM applications to communicate with peers for course-related purposes (Mozhaeva, Feshchenko, and Kulikov 2014; Rahman, Ramakrishnan, and Ngamassi 2019). Nevertheless, educators are often reluctant to embrace this communication medium as a vehicle to enhance student learning (Chugh, Grose, and Macht 2021). Possible reasons for this include faculty concerns about the privacy of personal information, the perceived inability to authenticate the originality of student work created via SM (Martínez-Alemán 2014), and the lack of control over the SM interfaces controlling the displayed content and user interaction (Wise, Skues, and Williams 2011). A thorough investigation of the characteristics and features of SM platforms selected for possible inclusion into LMS environments, including vigorous testing with representative samples of students, may help diminish resistance to the adoption of these technologies within existing course delivery structures. In this study, we explore this issue in the context of LMS-SM integration.

Social media use in education is often guided by social constructivist principles. It is important that educational technology research is founded on explicit theories to enable a deeper understanding of explored phenomena (Hew *et al.* 2019). Building from the relativist premise that knowledge is contextually dependent, constructivism focuses on how people develop meaning and understanding of a phenomenon of interest from interactions with its situated environment (Schrader 2015). A variant of constructivism, social constructivism, developed by Vygotsky in 1934, has as a central tenet a belief that knowledge is co-constructed in a social environment where people use language to develop meaning (Churcher 2014). Learning through SM supports social constructivism because of the technology's focus on enabling collaboration (Sarwar *et al.* 2018). However, this could be at odds with many behaviourist approaches towards LMS use that emphasise the use of mechanical drills and trackable objects to deliver compliance training (Pinner 2011).

It is also essential to look at the reasons why users engage with technologies. Davis (1993)'s seminal work on the technology acceptance model (TAM) highlights five influences that shape an individual's intent to use Information Technology (IT): system design features, perceived usefulness, perceived ease of use, attitude towards using technology, and actual system use. Another important consideration is the influence of learner cultural characteristics on IT adoption decisions. Hofstede (2011) defines culture as consisting of six dimensions: power-distance, uncertainty avoidance, individualism versus collectivism, masculinity versus femininity, long-term versus short-term orientation, and indulgence versus restraint. By unearthing the triggers that influence learner choices of technology, HEIs and their educators will be better positioned to argue for the use of a framework/lens to determine technology selection for maximising student engagement.

Higher Education Institutions and educators can benefit from leveraging SM, which students regularly use as part of their social communications. There are many advantages to communicating via SM applications such as Facebook. For example, students may have more confidence in communicating via this medium when they know that the account is within their sphere of control (Lampe *et al*. 2011). Also, communication within SM tends to be more synchronous than in many traditional LMSs such as Moodle (Awidi, Paynter, and Vujosevic 2019). However, integrating SM within an LMS platform has significant challenges. Many specialised functions within LMSs cannot be replicated within an SM environment like Facebook. The capacity of an LMS to integrate with external systems is also a key consideration in selecting an appropriate platform to support student-centred learning in HEIs (Kasim and Khalid 2016). Clear guidelines need to be made about SM's purpose within a course delivery framework (Chugh and Ruhi 2017). Technical and legal issues must be resolved to ensure that course functionality is not impeded by a third-party application outside an educator's sphere of control (Lockyer and Patterson 2008). In a global communication environment increasingly influenced by rapid, synchronous information exchange, there is a need to identify, evaluate, and decide how best to accommodate contemporary learner preferences for communication via popular SM sites within traditional LMS-dominated course delivery structures.

This paper examines prior research on the integration of SM into the framework of institutionally-controlled LMSs. Integration, in the context of this study, refers to the seamless amalgamation of popular SM technologies (e.g. Facebook, Twitter) within HEIs' LMS infrastructure. However, integration could also be seamless both technologically and pedagogically. For example, seamless technological integration could involve a single-sign-on process, that is, student signs in to an LMS, which authenticates access to an SM platform. In this case, students would be present on the SM platform with their institutional account (and associated email address). Pedagogical integration could mean that in a classroom or session, teachers may ask students to do some tasks within the LMS that involve using an SM platform such as Facebook or LinkedIn. The main aim is to establish whether there is any evidence that SM-LMS integration leads to improved learning conditions in higher education. The next section outlines the research method, followed by the study's main results. The findings are then discussed in the context of the main advantages and disadvantages of embedding SM applications within LMS systems. Finally, managerial implications are presented, followed by a conclusion outlining the study's limitations and recommendations for further research.

Method

This study examined previous empirical research on course delivery using LMSs and their relationship with SM. Two research questions (RQ) drove the study: (RQ1) What are the advantages of SM-LMS integration?, and (RQ2) What are the disadvantages of SM-LMS integration? This paper adopts a narrative approach to address the research aims and applies some of the rigour of systematic review methodologies to the selection and inclusion of the published articles reviewed in this paper. Turnbull *et al*. (2023) posit that this hybrid systematic-narrative methodology can provide a robust framework for exploring literature without overburdening researchers with systematic review procedures. A total of four separate providers were used in the search strategy: EBSCOHost (38 databases), Gale (26 databases), Informit (10 databases), and Scopus. These databases were chosen because of their reputation as reliable repositories of peer-reviewed research in the field of education and technology. However, it is acknowledged that including additional databases could have augmented the number of papers identified in this review. The search query was defined as 'The use of embedded SM in learning management systems'. A search was conducted in each database using the primary terms 'Social Media' and 'Learning Management System' along with the following commercial SM applications: WeChat, Twitter, YouTube, WhatsApp, Facebook, Instagram, Snapchat and Pinterest. The popular SM applications selected for inclusion in the search string were deemed relevant to the English language publications targeted in this study and are often used as synonyms for all SM platforms. While LMS and VLEs are often used interchangeably (Williams 2022), we have only searched for LMS in this study because it is a commonly used synonym for VLE (Njoki 2021). The Boolean search string applied to the search was: (Social Media OR WeChat OR Twitter OR YouTube OR WhatsApp OR Facebook OR Instagram OR Snapchat or Pinterest) AND (Learning Management System OR LMS OR 'online learning' OR elearning or e-learning).

Searches were conducted within the abstract field of each database for peer-reviewed journal articles that were empirical studies. The search targeted English-language articles published between November 2015 and January 2021 that contained retrievable PDFs. This date range restriction was applied to ensure each identified study had a contemporary focus. The results of each database search were added to a single repository within EndNote. Any duplicates were subsequently removed. There were a total of 61 unique articles in the initial list. Three articles were removed because they were duplicate studies under different first author names. These articles were further examined to identify findings relevant to SM-LMS integration. Iterative thematic analysis using NVivo software was then used to identify and code important observations and analyses on SM-LMS integration contained in the articles. A total of 36 papers were included in this coding scheme. These articles were also classified against two attributes: region of origin, and year of publication. The results are presented in the next section.

Results

The 36 studies included in this review are marked with an asterisk (*) symbol in the reference list. Each study was assigned a geographic location (Africa, Middle East, Australasia, Europe, Sub-continent, North America, Europe, South East Asia, North
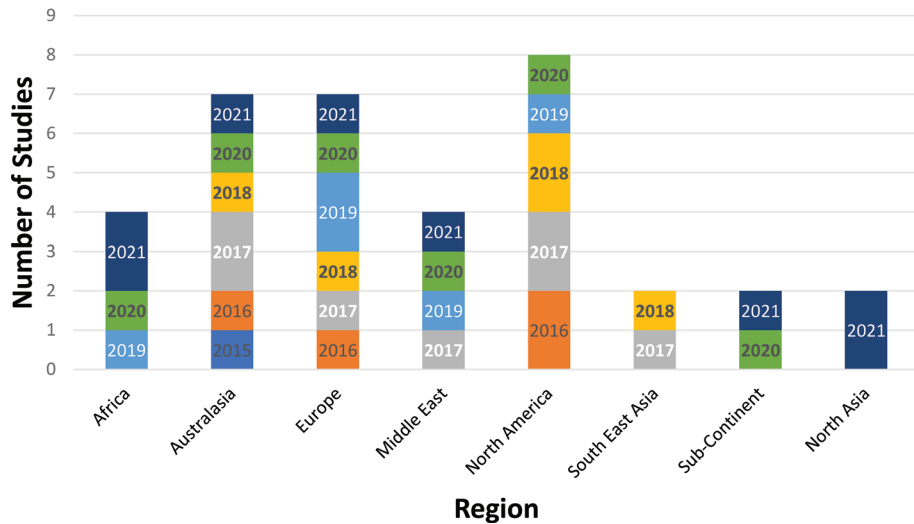
Figure 1. SM-LMS studies by region of origin.

Asia) indicating its origin. Figure 1 provides a graphic representation of the distribution of included studies along with their year of publication. As shown in Figure 1, most studies originated in North America, Europe and Australasia. However, this does not necessarily reflect the level of usage of SM and LMS technologies per country, as studies conducted in languages other than English were not included in this review.

Articles were examined in further detail, and codes were created to identify comments attributed to SM and LMS integration. All 36 studies had comments relevant to SM-LMS integration. The relevant text was coded in an iterative process against emerging themes supporting or opposing SM-LMS integration. This led to the establishment of six integration advantage categories and three integration disadvantage categories, as illustrated in Figure 2. Some studies had multiple comments highlighting both the advantages and disadvantages, which were coded in more than one category.

Discussion

In many of the selected studies, SM and institutionally controlled LMSs were regarded as distinct environments with separate and unrelated primary functions. Analysis of the reviewed literature yielded more evidence in support of SM-LMS integration than against it: there were a total of 37 instances of integration advantages compared to 16 instances of integration disadvantages. However, the data analysis did not include a weighted evaluation of the relative strength of each study's advantage or disadvantage, so no definitive conclusions can be drawn on the overall ranking of each category. The six categories of *advantages* and three categories of *disadvantages* with respect to SM-LMS integration are displayed in Figure 2. The rest of this discussion is devoted to exploring the characteristics of each category.
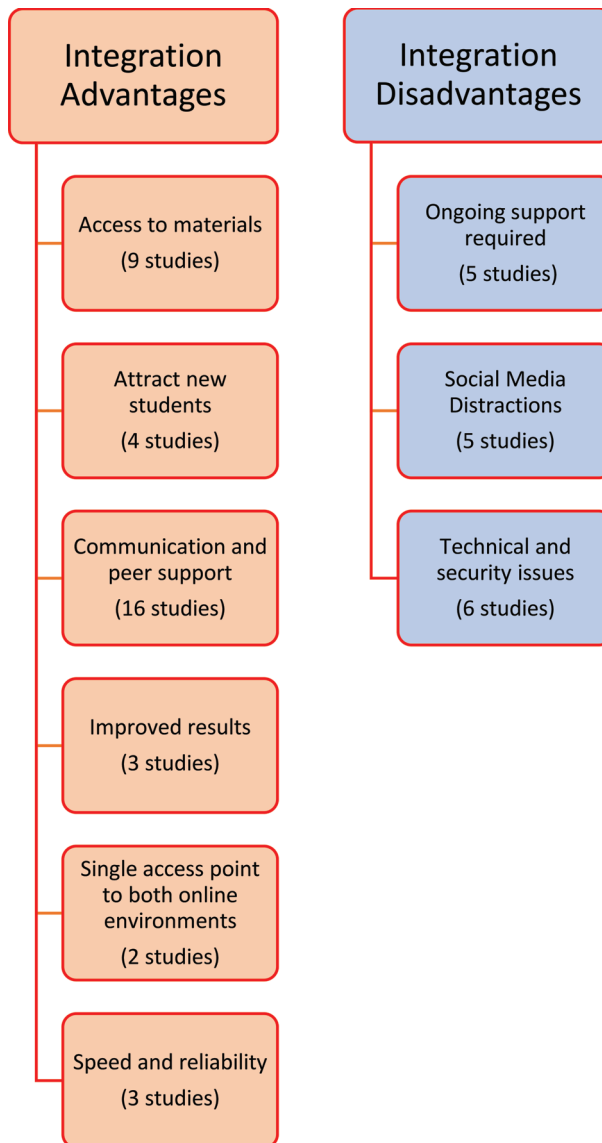
Figure 2. Breakdown of categories describing the advantages and disadvantages of integrating SM into LMS platforms.

SM-LMS integration – advantages

Combining popular features of SM with structured LMS functions facilitates the harvesting of synergies between these two information systems. This can result in an enhanced student learning environment and a more efficient course delivery system for educators and institutions. For example, students adept at using Facebook to communicate with their peers on a social basis, may experience enhanced course engagement via Facebook groups that focus on course-related issues (Thai, Sheeran, and Cummings 2019), while faculty and institutions benefit from an additional channel to share course- related resources (Li, Ganeshan, and Xu 2012). The benefits of

SM-LMS integration are grouped into six categories, as displayed in Figure 2: access to materials, student recruitment, communication and peer support, improved academic results, a single access point to both online environments, and speed and reliability. The following six sub-sections represent a synthesis of the research findings of the included articles that addressed LMS-SM integration benefits in these categories.

Access to learning materials

SM-LMS integration can improve access to learning resources through information sharing (Hamadi *et al*. 2020). Access to learning materials contained within an LMS may be subject to learners meeting certain access criteria. For example, learning materials may be made available to students only on a specific date, or restricted to a specific course or year of enrolment (Judd and Elliott 2017). Facebook, on the other hand, permits the peer-to-peer exchange of learning resources outside the LMS environment (Ghounane 2020; KalelioǦLu 2017; Kent 2016; Todorovic *et al*. 2021). YouTube is also mentioned as a useful tool to provide supplemental materials for students in two papers (Mansour 2021; Turkyilmaz, Hariri, and Jahangiri 2019) and can be used for the informal exchange of ideas and resources. Providing pathways for students to search and retrieve course-related materials via SM promotes ownership of the learning process and fosters inter-student cooperation (Frankel 2020).

Student recruitment

Educational institutions need to attract students to participate in their courses. Selecting social learning systems that deploy features that enhance enjoyment in addition to being functionally effective should be a primary concern of institutional decision-makers (Khechine, Raymond, and Augier 2020). The integration of popular SM functions within an LMS framework could attract potential new students who may be familiar with a particular SM platform (Parusheva, Aleksandrova, and Hadzhikolev 2018). As a means of attracting new students, setting up a course with a familiar platform like Facebook and then transitioning students to learning within an institutional LMS is cited as an excellent way to introduce new learners to an institution's learning environment (Ingalls 2017). Al-Azawei (2019) points out that it is essential to provide potential students with details about how SM is used within a course to help ensure student retention after recruitment.

Communication and peer support

Communication and peer support was the most prominent category of advantages. Thirteen studies indicated that communication, particularly peer-to-peer communication, is enhanced by integrating SM within LMS frameworks. Facebook featured prominently as an SM platform that could assist learners in communicating within a course (Akcaoglu and Lee 2018; Aleksandrova and Parusheva 2019; Camus *et al*. 2016; Charteris *et al*. 2018; Dalsgaard 2016; Kent 2016; Moghavvemi *et al*. 2017). The main advantages of Facebook when integrated within an LMS that was cited in these studies include improved peer-to-peer communication between learners, improved access to other learners within a course, a more acceptable way to receive course-related announcements, student ownership of learning outcomes, and the

potential for Facebook to function as a stand-alone entity if needed. Two studies mentioned WhatsApp as a useful SM platform to adopt, as it allows students to share better informal experiences (Mpungose 2019; Tagoe and Cole 2020). Other communications-related advantages cited in non-platform specific studies include: enhanced synchronous communication within SM (KalelioĞLu 2017; Trivedi, Patra, and Singh 2021), improved communications from shy or reserved learners (Khan *et al.* 2017), increased interactivity when compared to stand-alone LMS environments (Oktavia, Supangkat, and Prabowo 2018), improved communication between teachers and students (Hamadi *et al.* 2020; Raspopovic *et al.* 2017), and enhanced frequency of communication between learners due to the familiarity of SM to the learner community (Salmon *et al.* 2015).

Improved results

The integration of SM applications within LMS platforms was mentioned in two papers as an enabling factor for improved student results. The lack of focus of articles on improved results could be because it is difficult to measure and relate the performance of SM-LMS to improved results. Cao and Saini (2021) posit that QQ (a Chinese SM platform) improves student performance through the provision of lecturing, conferences, discussions, group activities, and messaging functions, while Chuang and Liao (2021) point to the excellent connectivity provided by SM platforms as a factor contributing to enhanced learning outcomes. Another study claimed that student use of WhatsApp within a course led to improved academic results when used in conjunction with an LMS (Khan *et al.* 2017). This may be difficult for future studies to verify in practice because the privacy constraints on WhatsApp accounts prevent the aggregation of user data by HEIs that could be used to establish a causal link between this platform's use and improvements in academic performance. However, the study emphasised that improvements in academic performance were realised within a uniquely blended LMS-WhatsApp delivery that combined the administrative functions of the LMS with WhatsApp's capacity to facilitate learner collaboration.

Single access point to both online environments

The availability of multiple platforms for learners can sometimes create confusion and be difficult to navigate. Two studies described the development and integration of course delivery environments that incorporate the features of SM and structured LMSs within a single environment accessible through a single gateway. In the first study (Sabin and Olive 2018), a free web-based application called 'Slack' was adapted to help deliver a second-year online course in environmental politics. Slack became the defacto LMS for course delivery and was the single access point for learners to engage with course content and each other. Slack was transformed, in effect, into an LMS-SM platform through the strategies adopted by educators for its deployment. Microsoft Teams, which is an SM platform with LMS functionality, is now being used extensively across HEIs. Both Slack and Teams are platforms with SM functionality (e.g. emoticons, chat, visual content, gifs, likes, peer-to-peer connections, voting, notifications, tagging, etc.). The second study (Wautelet *et al.* 2016) took a different approach. They proposed the creation of a Multi-Agent System (MAS) capable of

integrating disparate virtual environments such as LMS and SM. As a result, learners would experience a unified learning environment using familiar features of SM platforms such as Facebook and Twitter. The main advantages of doing this include ease of access by only logging on to one integrated platform and improved access to course-related materials.

Speed and reliability

In any online course environment, the time taken to authenticate access, exchange learning materials, and communicate with other users is critical to maintaining learner interest. Akcaoglu and Lee (2018)'s research into the use of Facebook groups to support social presence in online learning, suggests that students find Facebook facilitates faster user interactions and communications than would be the case within an LMS. Some of the reasons cited for this include a less cumbersome authentication system in Facebook compared to an LMS and the ability to easily deploy this SM environment on mobile devices. In addition, in some countries and regions with inadequate Information and Communication Technology (ICT) infrastructure, SM maintained by overseas companies may be an essential supplement to LMSs to facilitate communication between learners in online environments (Al-Azawei 2019). The integration of SM communication tools within an LMS platform, therefore, has the potential to enhance both the speed and reliability of online delivery, as supported in Chaka, Nkhobo, and Lephalala (2021)'s exploration of the use of WhatsApp to support LMS-enabled e-learning in Africa. However, this will depend on environmental factors such as available communications infrastructure and the ability of SM communication channels to support and not compromise LMS functions such as assessments that are not generally available within SM platforms.

SM-LMS integration – disadvantages

There are disadvantages to incorporating SM platforms within LMSs highlighted in the selected studies, which can potentially reduce the effectiveness of course delivery. These disadvantages are grouped into three broad categories: the need for ongoing support, SM distractions, and technical and security issues (Figure 2). The following is a discussion of the identified integration disadvantages.

Need for ongoing support

If a course delivery structure incorporates SM, support to students is required from the educator delivering the course and the institution (Camus *et al*. 2016). Students often create their own learning space within SM environments, which are autonomous self-functioning spaces outside institutional and educator control. Therefore, the capacity for students to support each other when using SM applications needs to be fully identified by teachers before developing a course delivery framework (Cao and Saini 2021; Coman *et al*. 2021; Tull, Dabner, and Ayebi-Arthur 2017). One study also pointed out that HEIs do not necessarily approve of SM environments such as Facebook, so there may be some resistance to learners using these environments as learning tools (Charteris *et al*. 2018).

Social media distractions & privacy/welfare concerns

The capacity for SM applications to distract learner attention was also cited as a significant disadvantage of incorporating their use within an LMS framework. In one study, students indicated that specific distractions, such as advertisements, games, and communicating with friends, impeded progress in their studies (KalelioǦLu 2017). In two other studies, SM was cited as a significant factor in distracting students from their studies (Chuang and Liao 2021; Clavier *et al.* 2019). It is evident from these studies that SM has the potential to be a source of distraction; Salmon *et al.* (2015) have proposed that the risk could be mitigated by reducing the opportunities for the use of SM as part of course delivery. There were also concerns about the capacity for SM to interfere with the personal lives of students if used for educational purposes. A study on the role of SM in supporting structured online courses found that students and faculty were concerned about possible negative impacts on students' private lives if the platform were to be used for educational purposes (Salmon *et al.* 2015). Another study on using Facebook as a developmental writing tool highlighted safety, security and privacy issues as significant drawbacks of SM compared to LMSs such as Blackboard (Ingalls 2017). In their study on the use of Facebook to support social presence in online learning, Akcaoglu and Lee (2018) go one step further on student safety and welfare concerns by recommending that all critical information, such as important dates and reminders, be disseminated only within an LMS environment and not via Facebook. Another interesting perspective is that students could pay more attention to the information and system functionality within an SM environment rather than the LMS itself (Al-Azawei 2019). This could lead to a belief that SM is a more reliable source of content and learning than the institutional LMS.

Technical and security issues

There are, of course, possible technical impediments to integrating SM into LMS-supported course delivery that educational institutions must consider. Judd and Elliott (2017) highlight that SM accounts are owned by the student and are beyond the control of course administrators and teachers. This makes it difficult to seamlessly authenticate SM accounts within a single institutional logon. Two studies also highlighted that Facebook was not designed as an LMS and cannot substitute an institutional LMS by itself (KalelioǦLu 2017; Niu 2017). For example, an LMS such as Moodle can be configured with time constraints for assignment submission, whereas no such functionality exists within Facebook (KalelioǦLu 2017). There is also the issue of security. For example, it is challenging to verify the identity of students via self-created profiles on their SM sites (Parusheva, Aleksandrova, and Hadzhikolev 2018) and to maintain personal privacy in an educational environment that requires interconnectedness (Hamadi *et al.* 2020). Finally, poor internet connectivity can constrain the usefulness of SM and other online platforms, such as LMSs, particularly for students enrolled in distance learning courses (Paidamoyo Nyambuya *et al.* 2021).

Managerial implications for higher education institutions

As outlined in this paper, there are many factors to consider when attempting to integrate SM with institutional LMSs. The potential benefits and drawbacks of integrating these disparate platforms must be carefully evaluated before implementing a solution. For example, the benefit of increasing access to learning materials hosted in an LMS via

SM platforms such as Facebook must be carefully weighed against the security risks of confidential student data 'leaking' into the public domain. In addition, the security and safety of student accounts and data are of concern, especially under European Union's General Data Protection Regulation (EU-GDPR). For teaching staff to ask students to create accounts on SM which are not 'controlled' and safeguarded by institutional protocols appears to be a barrier to the use of SM for HEIs. Pedagogical issues must also be a prominent component of SM-LMS integration decisions. Teaching and learning strategies based on social constructivism theory have been identified in the introduction to this paper as essential drivers of e-learning. Other key categories of learning theories (such as social constructivism and behaviourism) that may impact SM-LMS integration include behaviourism, based on stimulus and response; cognitivism, focusing on information transmission and processing; and constructivism, founded on the personal discovery of knowledge (Hung 2001). Learner characteristics are also an important input into SM-LMS integration design. Perceptual modality, or the means through which information is obtained, either visually, aurally, or kinaesthetically (Wislock 1993), is one way of categorising learners; cultural differences, as defined by Hofstede (2011), could be another. Adoption intention or the likelihood of an individual to invest the time and energy to incorporate specific technology platforms into their learning efforts is another important consideration. Davis (1993)'s TAM is a reasonable starting point to assess this motivator.

Having established an understanding of learner characteristics and their motivation to engage in e-learning, the utilisation of course delivery infrastructure needs to be carefully crafted to maximise students' propensity to engage with the learning process. This paper proposes that a tight inter-relationship between SM and LMSs can benefit course delivery within a social constructivist framework that satisfies innate human needs for social interaction. We offer the following recommendations:

- The potential positive and negative consequences of SM-LMS integration need to be carefully evaluated for each proposed instance of course delivery in order to create effective synergies that will leverage the strengths of each platform while minimising any potential problems. For example, 13 papers in our study featured improved communication as a positive benefit of LMS-SM integration which supports social constructivist teaching practices applied through the use of SM (Sarwar *et al.* 2018). However, teachers must carefully weigh this potential benefit against the capacity for SM applications to direct learner attention away from curriculum goals (Chuang and Liao 2021; Clavier *et al.* 2019).
- For HEIs that offer programs in a purely online format, selecting and promoting an SM platform familiar to students is recommended to sustain effective learner engagement. For example, Facebook or Twitter may be ubiquitous in a usage context in North America, but WhatsApp could be a better choice for learners in Africa. For example, cellular data charges for WhatsApp use are very low in many African countries (Omanga 2018), making it a popular choice for mobile phone users in the continent. HEIs must also consider the available infrastructure to support learner interactions within a structured course environment.
- There is little utility in deploying a sophisticated online LMS integrated with SM platforms to students in countries with inadequate network infrastructure to support activities requiring high bandwidth services. It may be better in these circumstances to rely more on offline resources supplemented by low bandwidth communication modalities such as text-based messaging to deliver course content.

The key to successfully integrating SM and LMSs is to remain vigilant to the natural need for learners to interact socially with each other and recognise that this need is situationally dependent. There is no 'one-size-fits-all' to a successful marriage between popular SM platforms and institutional LMS.

Conclusion

Social media is a rapidly growing global phenomenon (Chugh, Grose, and Macht 2021). In addition, HEIs worldwide are increasingly relying on the use of LMS to deliver course content and interact with learners. Moreover, learners place importance on the social aspect of pursuing education and the HEI they select (Capraro *et al*. 2004). The social interactions between people in a learning environment can be an important motivator to enrol in a specific study course. In an increasingly online learning environment, leveraging the power of SM platforms such as Facebook and Twitter in conjunction with LMSs could enhance learner experiences and improve the reputations of institutions as quality providers of educational services. The studies investigated in this review indicate that the advantages of integrating popular SM applications within the framework of LMSs are more prevalent than the potential problems. This has significant implications for decision-makers in institutions of higher learning who may be tasked with creating a regulatory environment for the use and deployment of SM within their institution's course delivery framework.

This study is limited by the inclusion of English language publications only, and a focus on SM platforms that are prevalent in countries with democratic prevalence. For example, other regions, such as China, may present a different picture of SM-LMS integration, so it is hoped that future research may contribute to a more comprehensive snapshot of global SM-LMS integration efforts. Also, it is possible that not all keywords that capture the essence of LMSs, such as VLEs, have been included in the search string. Hence, future researchers should consider expanding their search terms. Another potential limitation is the adoption of a narrative approach to addressing the RQ, which did not quantify the relative strengths and weaknesses of each of the selected studies. HEIs, their educators, and technical support professionals should pay careful attention to evolving trends in SM that may impact the design and deployment of established LMSs. This study makes a case for critically analysing SM-LMS integration that will be of assistance to LMS developers and educators interested in leveraging popular SM platforms to enhance the learning outcomes for students in a digital (or e-learning) context.

Disclosure statement

The authors report that there are no competing interests to declare.

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