A social media adoption framework as pedagogical instruments in higher education classrooms

Hamadi, Mostafa; El-Den, Jamal; Narumon Sriratanaviriyakul, Cherry; Azam, Sami

Published in:
E-Learning and Digital Media

DOI:
10.1177/2042753020950869

Published: 01/01/2021

Document Version
Peer reviewed version

A Social Media Adoption Framework as Pedagogical Instruments in Higher Education Classrooms

Social Media(SM)'s use as pedagogical tools in Higher Education (HE) institutions is gaining robust momentum among researchers from different disciplines. While most universities have progressed to include Learning Management Systems (Blackboard Learn, Moodle, etc..) as essential instruments in their teaching and learning(T&L) methods, few attempts were made to adopt SM platforms such as Facebook, YouTube, etc., as in-class educational and communication tools. In spite of the numerous available studies on SM's adoption as T&L instruments in HE, little has been made to develop a standard framework for SM's integration as effective educational tool in classroom environments. This paper followed a thematic review of 19 relevant studies to analyse and identify common practices and findings on SM's inclusion as T&L tools in HE. Subsequently, the findings formed the basis in developing a conceptual framework for SM's integration as pedagogical tools in HE classrooms. The framework facilitates SM's adoption process as a formal educational tool, the development of SM implementation processes, and assists in understanding the influence of SM on education environments. The research outlines major findings in current literature, thereby, providing valuable insights on SM's use in education, besides forming the basis for future quantitative and qualitative researches in this area of study.

Keywords: Social media, pedagogy, teaching and learning tools, Social Media adoption.

Introduction

In recent years, integrating popular SM platforms such as YouTube, Facebook, LinkedIn and others, as pedagogical tools in HE classrooms has increasingly become a subject of interest for many researchers as well as practitioners. Without any doubt, SM with its influential characteristic as a highly interactive online tool makes it a perfect communication and collaborative channel, especially in an education environment. Hence, universities are known to have promptly adopted SM platforms in addressing various institutional needs. Though, universities' adoption of SM as formal T&L tools remains very limited and subject to myriads of restrictions, as well as lacking broad acceptance and adoption. Nonetheless, current researches in this study area are limited to isolated case studies; including self-reported studies that primiraly examines perceptions and experiences of major classroom stakeholders (students and instructors), rather than addressing the practicality

and effectiveness of SM as an educational tool i.e. performance measurement and quality of T&L practices. In addition, the literature lacks a common framework for SM's integration as pedagogical instrument in HE classroom environment. The absence of such framework contributes to the growing number of isolated studies that seeks an effective integration of SM in HE's T&L practices. A common integration framework acts as a decision-aiding guide that supports an effective integration of SM in HE's T&L approaches. Whilst promoting a targeted approach to address both, the challenges and needs of SM in education. The availability of miscellaneous self-reported studies in the scholarly reveals a manifold of determinants that contributes to the success of SM's adoption within classroom environments. Hence, analysing relevant studies to extract common determinants and drivers for effective SM's adoption as educational tool is a viable approach for developing a conceptual adoption framework that can support its integration process.

This paper identified relevant case studies and research papers addressing SM's use as T&L tools in education at HE classrooms' level. The analysis of such sources is anticipated to support our level of understanding of SM's practicality as T&L tools; in addition, it is expected to help in identifying key determinants for its effective integration in HE environments. The paper attempts to extract and integrate common determinants and drivers of SM in HE in an initial framework that forms the basis of a comprehensive framework for SM's adoption as T&L tool in HE.

Background

There is a general consensus that the emergence of web 2.0 technologies, has caused major change, not only in the leaning goals within HE, but also in course delivery methods adopted by universities. As Bransford (2000) puts it, "a fundamental tenet of modern learning theory is that different kinds of learning goals require different approaches to instruction". Thereby, innovative learning approaches, including integrating SM in HE's classrooms' settings is viewed as a need rather than a choice to effectively address the changes in universities' learning goals, particularly by supporting student-centred learning environments. The widespread embracement of Learning Management Systems (LMS) by universities as well as the emergence of contemporary learning approaches such as Blended Learning (BL), Massive Open Online Courses (MOOCs) and SM mediated courses are all seen as promising initiatives to address the changes in learning goals within universities (Graham, 2006; Pappano, 2012; McAuley et al., 2010.). This change in learning goals and needs, especially for the "digital learner" student base, as well as the continues advocacy and initiatives by researchers and practitioners in HE to

capitalise on innovative technologies for educational use (Greenhow, Robelia and Hughes, 2009), makes integrating SM as supplementary educational tool in HE a logical step forward. Hence, research on SM's adoption for educational use is growing with more studies are yet to surface. Recent research such as (Al-Rahmi et al., 2018 ; Stathopoulou, Siamagka and Christodoulides, 2019; Anderson, 2019; Aldahdouh, Nokelainen and Korhonen, 2020; Rahman, Ramakrishnan and Ngamassi, 2019) suggested more studies are needed to address the issue of effective SM's adoption in HE, which was instigated by its reported affordances as an innovative educational tools and its potentials to support student-centred learning environments (see Table-3).

Nonetheless, the literature fells short in providing a standard comprehensive SM adoption framework in HE. In her book titled "Using social media in the classroom: A best practice guide", Poore (2015) provided an extensive guide to integrate SM in classrooms. Although (Poore, 2015)'s guide included a step-by-step approach to integrate major SM platforms in general classrooms (schools, high schools, etc...), it did not focus on HE classroom settings which are distinct in terms of their specifications and characteristics. (Poore, 2015)'s book is perhaps the most notable best practice guide available in current literature, though, it does not specify a standard framework for SM's inclusion in HE's T&L practices. Even though (Poore, 2015)' guide does not address SM's implementation in HE classroom at a granular level, it does otherwise provide valuable recommendations and SM lessons' learnt which lays the groundwork for its use as part of constructivist learning approaches. In addition, (Poore, 2015)'s guide described sensitive aspects of SM's use in education, such as privacy concerns and control and monitoring issues which were corroborated by findings of other researchers' work (see Table-4).

Currently, very limited research papers have been conducted to propose a common SM adoption framework in HE such as (Al-rahmi, Othman and Yusuf, 2015). Al-rahmi, Othman and Yusuf (2015)'s framework was built to address one specific pedagogy approach, that is collaborative learning and engagement, and put a great effort in linking theory (constructivism theory and Technology Acceptance Model (TAM)) with practice (SM adoption), thus, establishing solid theoretical basis for SM's inclusion in HE classrooms. However, Al-rahmi, Othman and Yusuf (2015)'s framework is primarily based on a self-reported method, in which the authors used results from a survey questionnaire completed by 323 HE students to propose a SM adoption framework in HE. Despite the evident research effort and analysis of data gathered from the survey, the findings (and the proposed framework) were merely based on HE students' experiences and expectations. Although, students are at the centre of any SM integration framework, it is essential for a comprehensive framework to address the needs of

major HE classroom's stakeholder, namely, instructors and students. In addition, an effective adoption framework is ought to comprehend lessons learnt from previous studies (real-world case studies), especially SM's inclusion as T&L tools, and build on the knowledge (findings) acquired from past experiments, since its ultimate purpose is to be transformed into practice. This has been addressed in the paper's proposed framework (Figure 2).

This paper aims to investigate available evidence on how SM platforms have been used as formal pedagogical tools, especially in HE classroom environments in the past 10 years (2010-2018), in order to integrate them into a SM adoption framework. The review examines prominent studies conducted on various SM platforms as part of T&L tools in HE classrooms and attempts to analyse their findings and outcomes. The sampled studies were analysed to examine the strengths and weaknesses of using SM platforms as T&L tools (delivering course's learning materials, educational knowledge and information). The paper lays down valuable insights on the integration of SM in educational institutions, universities in particular, and its anticipated outcomes on the overall T&L environment. It further assists in developing an adequate understanding of how SM platforms are being used in practice as formal educational tools (tactics and approaches for SM's inclusion in HE classrooms). Nonetheless, the paper attempts to apply recently acquired knowledge of benefits and challenges of SM's adoption in education in support of developing the conceptual integration framework.

Specifications of the Proposed Framework

The originality of the proposed research framework stems from the fact that it explicitly addresses the adoption of SM in HE classrooms, which distinguishes it from other scarce literary frameworks such as (Poore, 2015). The proposed framework (Figure 2) incorporates major determinants of SM's integration process and key HE elements as per the analysis in Table-5. The proposed framework provides a targeted approach to address predefined goals and objectives of T&L in HE environments as well as a practical clear solution for educators seeking to implement SM in their T&L approaches in a HE classroom. In addition, educators can refer to it as a decision-aiding framework in identifying effective practices and processes when integrating SM in their overall T&L approaches. The outlined stages of the framework follow a straightforward design, which makes it both, comprehensible and affordable to apply in real-world scenarios (HE classrooms).

The 19 analysed papers shown in Table-5 examined SM's integration in HE classrooms without following a predefined framework and solely based on the researchers' views and expertise in setting up general T&L

guidelines in a classroom. In other words, the SM integration processes followed in the analysed studies along with the assessment of results were not framework-based. While most reviewed paper provided solid evidence of positive impacts following the integration of SM in HE's T&L practices, the parameters and determinants for such results were not specified in a clear framework that when applied can ensure an effective and successful integration process.

Methods

Search Strategy

The paper followed a thematic analysis of relevant published literature. The scholarly papers included in this review were entirely identified through online research databases accessed via Charles Darwin University (CDU)'s library and Google Scholar. The peer-reviewed academic papers were primarily published in scholarly journals in e-learning, educational technology, broadcasting and electronic media, computing, economics and business, communication and management. In searching for selected articles, specific search terms were used including, SM in education, HE, classrooms, e-learning and m-learning and their variations.

Research's Selection Methods

Figure-1 provides a summary of the search methods followed in this study. Initially, the search returned over 500 relevant sources including online books, articles and reports based on the title and searched keywords. The sources were further examined to eliminate any duplicates and isolate explicitly relevant papers to the topic of interest. A sample of shortlisted studies was produced and further analysed to draw common practices, besides identifying key determinants for its inclusion in the proposed framework. Eligibility of shortlisted studies was determined following a predefined criteria list exhibited in the following Table-1:

Questions	Check
Was the focus of the study on SM's use in a classroom environment?	
Did the study directly addressed SM's use as a T&L tool (i.e. delivering course content)?	
Did the study focus on one or more SM platform (apart from Social Learning Sites)?	
Did the study include an experiment concerning the use of a specified SM platform (i.e. real-classroom example, hands-on approaches, and real-life case studies)?	
Did the experiment involve major classroom stakeholders (students, instructors)?	
Were the sources used in the build-up for the experiment considered credible, recent and relevant for the purpose of addressing current concerns in SM and education?	
Were the study's methods considered credible and valid for the purpose of addressing the research question?	
Was the data gathering methods used in the study considered appropriate, reliable and accurate?	
Did the findings address the research question directly?	
Has the study produced/supported unique results in this area of study	

Table-1 Eligibility Criteria for Sampled Research

PLEASE INSERT FIGURE 1 HERE

Search Outcomes

Upon further examination and screening, over a 100 paper were excluded based on their research focus, research context, methods used, education settings and research limitations, in addition, duplicate papers were identified and marked as excluded. Further, titles and abstracts along with key highlights of the papers were examined to identify most related studies. Finally, the identified papers were assessed following our pre-defined eligibility criteria for inclusion of related papers. The included sources involved experiments (real-world examples and case studies) on different SM platforms and were not limited to one SM platform. In total, 9 distinct platforms were studied by selected papers as seen in below Table-2:

Name of SM platform	Frequency in papers
Twitter	6
Facebook	5
YouTube	3
Skype	2
Flickr	2
Instagram, Pinterest, Classroom salon and LinkedIn	1 (each)

Table-2 Frequency of SM Platforms Studied in Selected Research Papers

Results

Major Benefits of SM's Adoption in Education

A shortlisted sample of academic papers has previously been reviewed, and the underlying positive impacts for SM's integration in education were identified. In what follows, a list of four most common major SM benefits is outlined along with sources supporting each finding (Table-3):

SM's Advantages in Education	Sources
1. Ensures greater access to information	(Greenhow and Burton,2011; Brown, Wohn and Ellison, 2016; Sharma Joshi and Sharma, 2016; Gruzd et al., 2018)
2. Enhances student-student and student-lecturer interactions	(Balcikanli, 2015; Anderson, Swenson and Kinsella, 2014; Northey et al., 2015; Al-Rahmi et al., 2018; Chugh et al., 2018; Hamid, Waycott, Kurnia and Chang, 2015)
3. Supports student-life satisfaction	(Heiberger and Harper, 2008; Daugherty et al., 2015; Nehls and Smith, 2014; Strayhorn, 2012; Wheeler, Yeomans and Wheeler, 2008; Chen and Marcus, 2012)
4. Supports student engagement in learning and campus activism	(Biddix, 2010; Enjolras, Steen-Johnsen and Wollebæk, 2013; Valenzuela, Arriagada and Scherman, 2012; Velasquez and LaRose, 2015)

Table-3 Common Findings of SM's Benefits in Education

Major Challenges and Barriers to SM's Adoption in Education

Critics of SM and its influence on both, users and the overall organisation, put forward concerns and challenges to its adoption, especially when being examined from an education perspective. In summary, challenges to SM's integration in a classroom environment can be classified into three major categories: user challenges, technical risks/challenges and administrative challenges. Hence, an evident major debate is prevalent in this area of study, albeit other controversial aspects of SM in education especially in HE, are continuing to be challenged and examined for their significance on the overall learning environment i.e. "utilizing SM platforms as principle or supplementary tools in delivering HE courses?" Table 4 provides a summary of major findings on challenges, barriers and risks of SM in education:

SM's Challenges and Drawbacks in Education	Sources
1. Personal privacy	(Moran et al., 2012; Au and Lam, 2015; Boyd, Danah and Ellison, 2007; Chugh et al., 2018; Brew, Cervantes and Shepard, 2013; Alkis, Kadirhan and Sat, 2017; Wang et al., 2014)

2. A blur in SM's use among education stakeholders	(Novakovich, Miah and Shaw, 2017; Rambe and Ng'ambi, 2014; Tuten and Marks, 2012; Fenwick, 2016; Balakrishnan, 2017; Davis et al., 2012; Hope, 2016)
3. Technical Barriers to SM's implementation	(Alzaza and Yaakub, 2011; Sobaih et al., 2016; Harran and Olamijulo, 2014; Bahati, 2015)
4. Workload concerns	(Pearce & Learmonth, 2016 ; Rambe & Nel, 2015; Mokhtari, Delello & Reichard, 2015; Chen, 2015; Callaghan & Fribbance, 2016; Junco and Cotton, 2012; Kirschner and Karpinski, 2010; Rowan-Kenyon et al., 2016; Negussie & Ketema, 2014)
5. Control and monitoring	(Au & Lam, 2015; Wu, 2015; Pasquini & Evangelopoulos, 2017)

Table-4 Common Findings of SM's Challenges and Drawbacks in Education

The following Table-5 presents a summary of a thorough examination and analysis of selected papers, showing references, examined platforms, study location, student samples, methods used, and a discussion of results and lastly identified determinants for each experiment in the studies. The examined papers involved different samples of university students, who were the primary target of the completed experiments. In addition, surveys and questionnaires were used as primary sources for gathering data from the sampled students. The data mainly included reflections, perceptions, feedback, experiences and recommendations from students.

Author/s	Tool	Location	Sample	Methods	Discussion	Determinants for success/failure
Chawinga (2017)	Twitter and blogs	Malawi University	N=64 Undergraduate students	Twitter and blogs as part of teaching in 2 courses. Gathering data: first, analysing the posts by students on both twitter and blog and second by a questionnaire sent to students.	Students shared and discussed course materials, posted their course reflections and interacted amongst themselves and with their lecturer 24/7. T&L continued even outside the classroom.	-Internet connectivity -User's ICT skill -User's knowledge of SM tool -Using real names as their username -Rewarded grades for participation -Tweeted multiple media -Students' groups with an average of 10 members -Weekly blog posts
Junco, Heiberger & Loken (2010)	Twitter	U.S.A College	N=125 First year students	Using experimental and control groups: twitter for academic and co-curricular activities. Duration expanded 14 weeks and students were asked to take a pre- and post- test.	Significant increase in engagement among students, as well as education stakeholders Positive effects on students' grades Students were motivated and engaged with each other Encouraged collaborative learning Promoted active learning Allowed prompt feedback	-Using interactive content – announcements -2xfaculty members regularly monitor and participate in feed -Frequency and intensity of faculty queries -Training on how to use twitter -Providing academic and personal support -Marked assignment
Elavsky, Mislan and Elavsky (2011)	Twitter	U.S.A University	N=300 university students	A mixed-method approach was used; Twitter used as part of the course content, and using a survey, descriptive statistical analysis and qualitative coding of tweets.	-Outcomes were multi-faceted, unpredictable, however generally positive. -Allowed instructor to encourage students' reaction to class themes, ideas, discussions and points.	-Access to university's Wi-Fi -Private list of students' accounts (real identity) -Class feed was a public forum -Students' contributed to the feed using any digital devices -No instruction on how they could use it but encouraged to post -Using tradition lecturers, films and video clips -Using case-studies on twitter -Used in Real-time (during the lecture's hours)
Mazer, Murphy & Simonds (2007)	Facebook	U.S.A University	N=133 undergraduate students	Varying self-disclosure on Facebook, among three groups of students (low, medium, high), with varying posts and content (including academic)/ In addition three open-ended questions were used to gather responses from students	High self-disclosure (by instructors) may lead students to higher levels of motivation and affective learning and promote a more comfortable classroom climate	-Teacher provided all photographs to Facebook -Teacher providing personal information about books, movies, and relationship status -Teacher strategically revealing pictures, quotes and personal information

McCorkle & McCorkle (2012)	LinkedIn and google reader	U.S.A university	N=65 University students	Several LinkedIn assignments (in marketing course) were administered to the students to encourage students' job search and career	Benefits: technology expertise, up-to-date knowledge, critical thinking, improved communication skills as well as promoting creativity.	-Instructions on how to set and use accounts on LinkedIn -Join the university's college account -Connect with other students -Rewarded grades for participation -Smaller size of capstone classes
Kaufer, Gunawardena, Tan and Cheek (2011)	Classroom Salon	Multiple U.S.A universities	Not specified-Open- to all student participants	A social learning platform combining T&L approaches in an online interface, with more than 100,000 students (as of 2011), authors administering survey assessments	It changed the classroom dynamics, supported teaching and assessments of courses, enhanced students' engagement with course learning materials, enhanced students' interactions, encourage team-work skill development	-Students and instructors' training is required -Details of students are uploaded including names, pictures and titles -Held students accountable to one another
Wang, Woo, Quek, Yang & Liu (2012)	Facebook	Singapor ean institute	N=31 University students	Using Facebook group as part of tutorial sessions both online and face to face, while delivering course content using Facebook. In addition, online surveys were used to gather feedback from the students	Facebook group has the potentials to be used as a LMS. Provides instructors more control and overcome limitations found in commercial LMSs. Does not support traditional learning resources such as PDF and PPT and others Students showed concerns for their privacy	-Created specific Facebook groups (closed) -Posted: Announcement, Sharing course content resources, Weekly tutorial sessions and Online discussions -Multimedia content -Links to other resources (google docs)
Evans (2014)	Twitter	UK university	N=252 Undergra duate students	Students to use Twitter in communicating with their tutor and each other. 1 semester (12-week course). A survey was to be completed and analysed for data analysis	Found no relation between interpersonal construct and twitter usage. Strong relation between twitter usage and student engagement. Students felt that twitter did not affect the need to attend classes	-Part of course requirements (graded) -Use a common hashtag to post content -Tutors were given more control on posts and usage -No limitation as to what devices can be used to access accounts
Clifton & Mann (2011)	YouTube	Not specified	Not specified-Student nurse segment	Review on using YouTube to search and access educational content (modules and approaches). Universities creating their own channels to provide learning materials.	YouTube can increase engagement in classrooms (nursing students' classrooms). Improves deep learning among students Enhance students' critical thinking. Encourages multiple viewpoints and associated stimulated discussions	-Ensuring students can critically evaluate the resources the encounter -Acknowledging the risk of authorship -Concerns of the credibility of information and content on YouTube -Availability of wireless access and smart devices -Engaging students from a passive to an interactive position

Rinaldo,Tapp &Laverie. (2011)	Twitter	U.S.A university	N=276 University marketing students	For 2 semesters the students were asked to have a presence on twitter and follow the professor. While the professor twitted course related content. Survey to be completed at the start and end of each semester	Twitter an excellent platform for marketing. Educators interested in engaging student. Increase interaction between instructors and students. Provides greater access to information related to course materials Privacy concerns raised (a confidentiality issues) Smart devices facilitate the inclusion of such technologies	-Formal and informal rewards must be created to encourage students to participate -Instructor (professor) provided detailed explanation of what is expected in the activities -Many of the students were unfamiliar with using twitter encourage use of mobile devices
Al-Ali (2014)	Instagram	UAE-higher education institution	N=40 first semester students	Planned activities were posted on Instagram and teacher assigned activities and posted observations in a reflective journal. While continuously asking for feedback form students.	Teacher felt generating content was a daunting task. Eased the process of providing students with contextualised content they could relate to. Helped create a more personalised learning experience for students	-Access to either a tablet or a smart phone -Wi-Fi connection in every class -Teacher provided clear instructions on the activities to be performed -Many of student accounts were set on private -Students hesitated to post educational content
Bussert, Brown,&Armstrong (2008)	Flickr	Cairo (Egypt) University	N=300 students	Implemented Flickr in the course. Provided hands-on practice and students were taught databases are organized by working in groups to create a Flickr photo stream. Survey implemented at the end of the semester.	Implementation of Flickr fostered intellectual curiosity Promoted critical thinking Supported students' lifelong learning Fostered connection between library research skills and innovative tools	-High speed internet access -Access through mobiles phones, iPods and gadget galore -Students are eager to try new things including risk taking -Instruction provided to students for completion pf activities (lesson plan) -Students indicated their first and last names -Participative approach was used to persuade student in engaging activities
Tian and Wang (2010)	Skype	2 universities: A Chinese and an Australian university	N=30 University students	Students were required to engage in a 1-hour session each week for 9 weeks. Half/half Chinese and English language outside class time. Completion of a reflective sheet and record each session by students. A written survey and interviews were used to gather data on the experiment.	Implementing skype proved to be an effective and sustainable venue for enhancing linguistic skills Improvement in learners' intercultural understanding Identified differences in students' perspectives	-Assessment (marking) for completed activities -Students provided with instructions (handbook) and a webcam -Used a Freeware "Skype" (free download) -A user-friendly tool "skype" -Constantly maintained and upgrade by its developers "skype" -Supported language learning "skype" -Supported group text chat for up 100 users

Pearce and Learmonth (2013)	Pinterest	UK university	N=52 University students	Created a range of pinboards reflecting 10 weeks of learning materials on an anthropology class. Manually gathered statistics on users' activities. In addition, authors used 2 focus groups to gather data from students.	Students found the resource useful to their learning and understanding Encouraged students' critical thinking Enhanced students' learning beyond the classroom Students raise work-load concerns	-Sharing resources on different SM platforms -Grouping of a range of multimedia in one place -Accessing the resource via mobile phones and phone apps -A huge volume of information was posted
Irwin et al. (2012)	Facebook	Australian University (Griffith)	N=253 University students	Specific Facebook pages were created to be used in the semester's teaching. Content published on the pages were mainly informative (on the course content). A questionnaire was used to gather data of experiences and perceptions from students	Facebook, an excellent tool to be implemented into the learning resources of university courses Results revealed students to be receptive to integrating Facebook into learning Unclarity on effectiveness of Facebook to enhance student learning outcomes	-No assessment or incentives used -Regular posting by instructors 3-5 posting /week -Content included links to course's materials and links to relevant learning materials and media -Students could post directly on the created pages and create their own questions and concerns -Instructors constantly responded at least once a day to posts on the pages -Discussions were monitored to ensure it abided by the university's code of conduct
Dyson et al. (2015)	Facebook	Canadian university (Ryerson)	N= 1200 university students	A course Facebook group was created for students to join. Posting content related to class discussions. Presenting Facebook discussions in class (10-15 minutes). A questionnaire was used to gather data of students' experiences.	Facebook's integration did not impact on the global measures of course appreciation Integrating Facebook into classrooms is challenging	-Approval by the university's research ethics board -Facebook posting varied in time during the semester (two-third of the course) -Instructions sent to students on intentions of the experiment -Ability to post from an anonymous account
Cain and Policastri (2011)	Facebook	U.S.A University (Kentucky)	N=128 university student	Created a Facebook group page. Guest experts invited to post business-related content. Students asked to participate in discussions and other SM activities. Questionnaire and a focus group was used to examine results of the experiment	The Facebook group exposed students to useful learning/industry content that could not have been met through course materials (also extra) Enabled students' interactions with experts in their industry Appropriateness of Integrating Facebook in classrooms depends on courses and intended activities and objectives	-Participation is optional for students -Privacy setting by students allowing specific posts to show -Instructor not being "Facebook friends" with students -Attempted to avoid "creepy treehouse" effect to occur (person of authority, i.e. teacher, forcing students into social situations) -Variety of sources of content were used in posting on the group -Incentives: possibility that bonus questions from the exam could be posted in the group

George and Dellasega (2011)	Twitter, YouTube, Flickr, blogging and Skype	U.S.A university (Penn)	N=15 university students	Two case studies were used in Integrating SM platforms. Use twitter accounts to post and share learning materials Students anonymously responded to a questionnaire	Students showed positive perceptions on SM's integration in course's learning materials Raised concerns about privacy and lack of facility with technology SM's integration is favoured over traditional classroom methods (real-time communication, collaboration, connection with experts)	-Students allowed to write open-ended comments on their responses to electives -Induction to use twitter was delivered to students -Variety of content posts were used -Use of Skype to call external experts (conversation relating to experiences and shared insights on educational topics) -Streaming videos on YouTube in class -Used Flickr during storytelling sessions where pictures can be accessed by all students
Jaffar (2012)	YouTube	U.A.E university (Sharja)	N=91 university student	Suggesting links (YouTube videos) for students to watch. A YouTube channel was identified. Self-assessment questions to be answered after watching the videos A survey was used to gather data	Acceptance of YouTube as an Online information source by majority of students (92%) Students were aware of YouTube's educational use YouTube, an effective educational tool in anatomy	-Weekly basis uploads to the channel -Using videos directly related to course's learning materials -Links to the channel were provided in the LMS

Table-5 Summary of the Analysis of Selected Academic Papers

As shown in Table-5, most of the studies had positive outcomes (in T&L) which were directly associated with the inclusion of a selected SM Platform in various teaching approaches. Many of the noted outcomes were replicated amid selected studies. To further understand the recurrence of common positive outcomes in the examined papers, we examined the methods applied in each study (experiments' methods). Nonetheless, common activities and practices used in the studies' methods were detected and identified. Thereby, the noted activities and practices reflected common determinants that are associated with positive outcomes of SM's integration. These common determinants were subsequently extracted and presented in Table-6. The table was structured in a basic format, as to show each determinant identified in the analysis, with brief description, along with the respective education stakeholder that has major control over its conduct.

Key Determinants of an Effective SM Integration

As identified in the analysis of selected sources, common determinants for an effective SM integration process have been identified as shown in Table-6. The determinants are associated with one or more education stakeholder and have been outlined accordingly in Table-6. Later, in the discussion part of the research, each determinant will be further explained as included in the proposed framework.

Major Determinants/Sources	Dependant Stakeholder
-Content management (managing content on the selected SM platform)	Instructors
-Purpose for platform's use (scope, motives, goals, objectives, deliverables)	Instructors
-Control and ownership on selected platform	Instructors/students
-Motivation for platform's use (incentives, rewards, assessments)	Instructors
-Evaluation of platform's use (assessment of activities and tasks on the platform)	Instructors
-SM drivers (adaptability, functions, features, accessibility, usability, technical)	Instructors/students
-Resources (allocated for the integration process)	Instructors/students
-University elements (vision, goals, culture, resources and regulations)	Instructors/students
-Challenges and risks' mitigation (implementation of appropriate measures to mitigate associated risks and challenges)	Instructors/students
-ICT and SM skills	Instructors/students

Table-6 Extracted Determinants for Effective SM Integration Process

Discussion

The Framework

PLEASE INSERT FIGURE 2 HERE

The proposed initial framework (Figure 2) defines major determinants and key phases for an effective integration process of SM as T&L tool in a HE classroom environment. The defined determinants are critical success factors for SM's integration as educational tool in HE classrooms, as found earlier in the analysis of sampled studies (Table-6). The framework attempts to mitigate common challenges and barriers to SM inclusion in education and proposes an approach to address respective challenges in various stages of the integration process. The relation between each of the identified challenges and the respective stages of the integration process is presented by a solid-line arrow directed at the indicated stage of the process. In addition, target attributes (or common advantages of SM in education) are identified to steer the integration process. The process consists of five essential stages: Scope, Administration, Incentives, Content Management and Evaluation. These stages are directly associated with main classroom stakeholders, namely, the instructors and students (classroom actors). Typically, a university classroom (traditional or online/virtual) involves instructors (lecturers, tutors, practitioners, etc...) and students (or learners) who are, ultimately, at the centre of this integration process.

The framework depicts the relationship between classroom actors and the evaluation stage of the process with a solid double-headed arrow symbol, signifying a direct influence relationship. Ultimately, the integration process is validated during the evaluation stage of the process. In this stage, the outlined attributes of students and instructors are assessed and evaluated. Nonetheless, the integration process is designed to promote specific aspects (target attributes) of classroom's T&L as displayed in ellipses. The identified SM target attributes have a direct influence on students and instructors' attributes; hence, the relationship is depicted with a solid double-headed arrow symbol.

In what follows, the layout of the framework will be explained in-depth, and the relations between its components are illustrated.

1. Scope

The proposed framework outlines the "scope" as a first stage in the integration process. As shown in Table-6, major research such as (McCorkle & McCorkle, 2012), (Rahman et al., 2019) and (Poore, 2015)'s guide emphasized on the importance of having clear objectives and goals as an initial step in the integration process

(Determinant outlined as : Purpose for platform's use). Establishing unambiguous objectives which are defined clearly in the scope stage would effectively steer and facilitate the integration process, rather than just having an "us too!" mentality in adopting SM. The scope stage describes the fundaments of SM's inclusion in education. In simpler words, it answers four elementary questions of "Why is it being used (significance)?", "What will it achieve (anticipations)?", "What are the constraints (limitations)?" and "What is the selection criteria of an appropriate SM platform?". Typically, the inclusion of a selected SM platform, as part of the overall T&L initiatives in a HE classroom, aims to enhance students' overall learning, as well as aligning students' learning with the course's learning objectives. In addition, the literature reveals various advantages to SM's inclusion in formal T&L approaches. Hence, the identified common advantages (SM target attributes) are perceived as key motives for SM's integration in HE classroom teaching. Nonetheless, SM's integration motives are not limited to the outlined common advantages, thereby; educators must ensure that the objectives and grounds for their SM's integration are clearly depicted in the scope. Each of the identified target attributes has a direct influence on classroom actors, especially, on their T&L properties including students' learning process and progress as well as instructors' organisation skills and overall T&L approach.

Accordingly, it is the role of instructors, (teaching staff), to determine the scope of their planned SM's integration process. Though, staff can involve students in the selection process of the platform, as to promote positive relations and encourage collaboration. This can also ensure that the selected platform is most suited, and students are familiar and eager to use it for educational purposes. Educators should ensure that the proposed approach in course delivery is aligned with the university's vision and is conducted in-line with its overall mission and goals. Further, it is the responsibility of staff to attain the required approvals and provisions from the university to initiate the integration process. Typically, universities develop and maintain SM policies and protocols regularly; hence, it is essential for staff to adhere to SM policies and regulations set by their respective universities. The selection process of an appropriate platform involves various determinants, including nature of deployment, type of (anticipated) activities, users' acceptance, relevance to learning materials, usability (also regulations by providers) and functionality (of the platform). In addition, internal policies and regulations by the institutions, as well as the competency of instructors (to use and monitor- "know-how") have a major influence on the selection process as shown in below figure 3.

PLEASE INSERT FIGURE 3 HERE

Besides the defined determinants in figure 3, it is essential to develop clear and comprehensive understanding of the unique functions and uses of the selected platform. Despite having significant similarities in terms of functionalities, different SM platforms have unique characteristics and features that make them most effective in specific settings or contexts (also relevant to the learning materials and the identified target attributes). In addition, the popularity and ubiquity of major platforms makes them more favoured and easier to adopt and use, especially among younger age groups. Hence, it is necessary to examine the unique attributes of the selected platform. To aid in the selection process, the following Table-7 (matrix) was developed based on the findings of the performed analysis on 19 selected sources. It lists various SM platforms along with their matched attributes. This matrix can assist in identifying an appropriate platform by associating its matched attributes with the intended learning objectives of the specified course unit.

Name of SM platform	**Attributes**						
	Collaboration	**Engagement**	**Posting**	**Sharing**	**Professional network**	**Presentation**	**Communication**
Twitter	X	X	X	X	X		X
Facebook	X	X	X	X			X
YouTube		X	X	X		X	
Skype	X				X		X
Flickr		X	X	X		X	
Instagram		X	X	X		X	
Pinterest			X	X		X	
Blog		X	X	X			
LinkedIn	X	X	X	X	X		X

Table 7 Selection matrix based on the performed analysis of 19 selected sources

Addressing technical barriers to SM's integration is best achieved during the scope stage of the process. Following the selection of a platform, instructors are to define key constraints to its implementation in classroom teaching. These constraints are associated with the platform's connectivity, accessibility and mobile learning aspects; and must be defined in the scope stage prior to their transformation into delivery guidelines in the administration stage of the process.

2. Administration

After defining the scope, it is essential to examine the administration side of the integration process. Primiraly, when implementing a selected platform, educators should specify the accessibility approach, in which a SM platform can be utilized as a standalone tool or via an existing Learning Management System-LMS (embedded). It is recommended however, despite the selected accessibility approach, to include a link on the provided LMS to facilitate and maintain ease of use. Thereby, instructors must develop a delivery approach and implement

necessary measures for administering and controlling the activities on the selected platform. In this context, key determinants of an effective administration design include the following: Delivery approach guidelines (or methods of delivery: when, where and how-the 3 W's), controls on activities (controls and restrictions) and specifying rules and guidelines as shown in figure 4.

PLEASE INSERT FIGURE 4 HERE

As outlined in Table-6, a common determinant for a successful SM adoption in education was "challenges and risks mitigation". As found by researchers such as (Al-Ali, 2014; Cain & Policastri, 2011; Dyson et al., 2015; Evans, 2014; Q. Wang et al., 2012), mitigating associated risks and challenges in education can promote an effective implementation of SM. Throughout the integration process, instructors must develop clear understandings of the risks and challenges associated with the use of selected platforms, especially privacy and ambiguity concerns. Recent researches have provided valuable insights, as well as solutions to mitigating the risks and challenges in education (Hamadi et al., 2019). Accordingly, instructors are required to raise awareness among students and work closely to implement appropriate measures for mitigating identified risks. Rules and guidelines in the administration stage should address key privacy concerns, particularly, confidentiality, anonymity and online behaviour concerns. The delivery approach, activities' control and guidelines should involve an effective mitigation approach that addresses each of the identified privacy concerns. Most popular SM platforms enable users to create closed "groups" or "accounts" that can be set to private as opposed to the publicly available and accessible "accounts". The availability of such alternative can facilitate the adoption of SM platforms in closed classrooms. A private "account" can be created for designated classes and made only accessible and available for enrolled students. This can protect the confidentiality and privacy of classroom activities that will be initiated on the selected platform. It will also support effective monitoring of online behaviour. Besides, ambiguity concerns can be moderated in this stage through developing pre-defined guidelines and rules that sets clear description of intent and purpose for creating designated "accounts". The pre-defined guidelines and rules must also cover professionalism aspects and provide examples and templates to clear any misinterpretations that may occur during the conduct of SM activities.

3. Incentives

An important determinant for a successful SM adoption as shown in Table-6, was "Motivation for Platform's Use", signifying incentives for its implementation within HE classrooms. The analysis of selected sources (presented in Table-5), as well as other prominent research such as (Poore, 2015)'s guide, stressed on the

importance of adopting appropriate incentives to effectively conduct the SM integration process, and ensure adequate participation by students. From a HE education perspective, incentives for T&L play a big role in promoting educational activities among students. Incentives for SM's use by students for educational purposes have a substantial influence on the success of the integration process. Most of the reviewed academic sources stress on the importance of having an unambiguous effective reward system in place to promote and encourage full participations of students in educational SM activities. Hence, an effective integration process is correlated with effective reward system that can both promote and foster students' participation in the intended SM activities. Although, this can be achieved through following a traditional marks-oriented approach (i.e. assessed SM activities), it can further be achieved via other innovative approaches (i.e. score point approach). Nonetheless, a reward system can also be coupled with a penalty system (participation & attendance points).

The inclusion of a reward system alongside the implementation process can motivate students to participate and engage more in the proposed SM learning activities. Hence, instructors should develop an appropriate system (relevant to the proposed learning activities) that is associated with key student learning attributes such as collaboration, engagement and interaction. In defining an appropriate reward system, instructors should also investigate relevant university attributes, such as resources, to prescribe the nature of the "reward" that will be coupled with the completion of proposed activities by students. Moreover, the instructors should reflect on workload concerns that may arise from the inclusion of SM activities in the overall T&L approach. Primiraly, workload concerns are associated with multitasking, distraction and time management aspects while using the selected platform. While the specified aspects can be well governed during face-to-face classrooms, it is rather challenging to control them outside the boundaries of the classroom. Hence, instructors must continually raise awareness among students to minimize the adversities that can be caused by these factors.

4. Content Management

A major determinant for a successful SM adoption, which was corroborated by many researchers such as (Al-Ali, 2014; Anderson, 2019; Elavsky et al., 2011; Evans, 2014; Irwin et al., 2012; Junco et al., 2011; McCorkle & McCorkle, 2012; Stathopoulou et al., 2019), was "Content Management ". Accordingly, content management was incorporated as an integral part of the developed framework shown in figure 2. This stage of the proposed framework holds its major components together and establishes the connections between its different stages. Though, managing content on the selected SM platform requires cooperation from both, instructors and students. Primiraly, a selected SM platform is an interactive online resource that can be utilized during designated class time, as well as outside class hours. Thus, content must be managed and directed in accordance

with class learning materials and allocated hours to each unit. Above all, instructors should have higher levels of control on content to be posted, shared or created on the platform. Hence, instructors are required to act as mentors on the platform, directing activities for students and providing needed support. Nonetheless, instructors should aim to address and achieve identified (earlier) goals and objective of this process. It is best for them to prepare a clear SM task-activity list to include in their teaching methods (delivery).

An effective content management plan involves high levels of planning and understanding of the functionality of selected platforms. In addition, instructors should respond to the challenges and risks associated with SM by selecting and implementing needed measures in their content management plan. All whilst providing clear instructions for students to follow and advise them on the expectations of the proposed activities. A list of major determinants of an effective SM content management plan is as follows: Content type (multimedia/videos/pictures/blogs/others), nature (informative/call-for-action/engaging), challenges and risks, consistency and functionality and usability of selected SM platform as shown in figure 5.

PLEASE INSERT FIGURE 5 HERE

In this stage of the process, instructors must work to mitigate associated challenges and risks that may occur during the conduct of SM learning activities. Workload and monitoring/control concerns should be addressed continuously throughout the teaching period. The proposed SM learning activities should have clear instructions that highlight what needs to be accomplished by students (intents/objectives) while describing the ownership and supervision aspects related to each task or the overall activities.

5. Evaluation

The final stage is evaluating (and assessment) of the overall activities and stages of the integration process. A suggested by different researchers including (Clifton, 2011; Tian & Wang, 2010; Zhu, Hao Yang, Xu, & Macleod, 2020), an effective process evaluation can have two dimensions; first, measuring the overall academic performance of the students throughout or at the completion of the implementation process, and secondly, evaluating and assessing the completed stages of the integration process.

The evaluation of the different stages of the integration process is best achieved by measuring the fulfilment of previously set goals and objectives. The list of objectives, covering different aspects of the integration process along with anticipated outcomes are to be reviewed and assessed accordingly by instructors in an elaborate manner. This includes measuring the identified learning outcomes of SM's inclusion against a set of standards

(metrics) and expectations. In addition, assessing SM activities through observation and marking responses of students can aid the overall evaluation process. Hence, instructors must have discussed extensively the anticipated SM learning outcomes earlier in the "Scope" stage of the integration process. Consequently, evaluating the fulfilment of the set deliverables becomes a straightforward step and ultimately, a conclusive review of the overall integration process. In addition, instructors can opt to seek constructive feedback and reflections (surveys, questionaries, others) from students throughout the process, while making necessary changes to conform to the overall vision and goals of SM's adoption in education. Below figure 6, shows major steps for achieving an effective evaluation process.

PLEASE INSERT FIGURE 6 HERE

Measuring students' overall academic performance

The proposed framework aims to facilitate and support the inclusion of SM as a supplementary educational tool to enhance the overall students' learning process. Intrinsically, SM's integration as part of the overall T&L approach is directed at enhancing student learning as well as supporting their progress throughout the duration of the teaching period (semester). Accordingly, evaluating the integration process includes measuring students' overall academic performance after SM's implementation. Yet, since the motives for SM's inclusion may vary depending on classroom settings and designs, as well as units' learning materials and objectives, measuring students' performance is highly correlated with predefined learning attributes which can be set by educators. Commonly, three major students' learning attributes are measured throughout and/or at the completion of the integration process, namely, students' knowledge, comprehension, and retention. Since there is no uniform process for measuring these attributes, it can be accomplished using various methods depending on the allocated resources and overall T&L approach. As an example, a pop quiz approach can be adapted to assess the identified attributes. Pop quizzes are associated with educational SM activities delivered throughout the teaching period. Other approaches to assess the outlined attributes include surveys, questionnaires, and observation.

The following figure 7 presents a flow diagram for implementing SM mediated evaluation activities. The diagram outlines key planning stages of a T&L approach within a classroom environment. It starts with the learning materials for the specified course unit. The learning materials along with the T&L objectives are correlated with the selection process of a SM platform. Developing SM activities as part of the overall T&L approach comes as an important step when defining T&L activities for the specified course unit. SM is primiraly

utilized as a supplementary educational tool; hence, SM activities may be included in educational support activities, as well as in formal lectures and tutorials. Lastly, SM mediated evolution activities can be included as part of the overall non-marked assessments, including formative, summative, students' self-assessment and informal observations.

PLEASE INSERT FIGURE 7 HERE

Summary and Future Work

Scholars have discussed the use of SM as educational tools within different academic disciplines. The literature review found that integrating SM was not limited to one academic discipline, thought, it was most notably used in literacy education, medical, marketing and social sciences disciplines. Nonetheless, SM's use in academic disciplines was predominantly associated with positive aims such as promoting information sharing, enhancing interaction and engagement, boosting collaboration and cooperation, as well as supporting general-life satisfaction for the concerned practitioners, learners and/or academic staff (see Table-3). Albeit, it is noted that SM's adoption for educational use was significantly high in courses that rely more importance on practice (training) rather than theory, such as in medical education where it is being as part of student-centred learning approaches i.e. flipped classrooms, cooperative and collaborative learning methods (Cheston, Flickinger and Chisolm, 2013; George and Dellasega, 2011; Linand Hwang, 2019; Cankaya and Yunkul, 2018; Dysonand Casey, 2016; Alenazy, Al-Rahmi and Khan, 2019). On the contrary, many researchers remained sceptical of SM use and impact on users in education settings and have raised several concerns. These concerns are regarded as major challenges or "resistance" to SM's inclusion in academic disciplines, which include personal privacy, ambiguity concerns (and workload issues), technical barriers and control and monitoring concerns as seen in Table-4.

This paper attempts to address a gap in current literature by proposing a standard framework for SM's integration in HE classroom environments. Current researches in this study area are limited to isolated case studies; including self-reported studies that primiraly examines perceptions and experiences of major classroom stakeholders (students and instructors), rather than addressing the practicality and effectiveness of SM as an educational tool i.e. performance measurement and quality of T&L practices. The proposed framework will support SM's integration within classroom teaching by enabling a targeted approach in T&L. The paper presented a comprehensive review of current major scholarly on SM's use as a pedagogical tool in education; it then analysed and identified common current literary practices and findings. Through a detailed search

approach, 19 major studies were selected for a thorough analysis, and a number of key determinants for an effective SM integration process were identified. The outlined SM determinants were then used to support the development of a conceptual framework for SM's integration within a university classroom environment. This framework intends to facilitate the adoption of SM as a formal pedagogical tool, the development of SM implementation processes (within classroom environments) and would assist in studying the effects of SM on education (especially, major education stakeholders). It is essentially a decision-aiding framework that works to support the overall decision-making process of educators seeking an effective integration of SM platform in their T&L approaches. In addition, the research outlined major findings in current literature, providing valuable insights on SM's use in education and further forming the basis of future quantitative and qualitative research in this area of study.

The proposed framework is a conceptual framework that requires further testings and validation, preferably following a real-world experiment in a HE classroom environment. Future researches will focus on applying the developed framework in a real-world scenario, in which empirical data will be gathered and analysed to validate and contribute to the advanced development of this conceptual framework. The unambiguous stages of the proposed framework support a smooth and practical implementation of the framework within existing learning management system.

References

1. Al-Ali, S., 2014. Embracing the selfie craze: exploring the possible use of Instagram as a language mlearning tool. *Issues and Trends in Educational Technology*, *2*(2).
2. Aldahdouh, T.Z., Nokelainen, P. and Korhonen, V., 2020. Technology and Social Media Usage in Higher Education: The Influence of Individual Innovativeness. *SAGE Open*, *10*(1), p.2158244019899441.
3. Alenazy, W.M., Al-Rahmi, W.M. and Khan, M.S., 2019. Validation of TAM model on social media use for collaborative learning to enhance collaborative authoring. *IEEE Access*, *7*, pp.71550-71562.
4. Alkis, Kadirhan and Sat, 2017. Development and Validation of Social Anxiety Scale for Social Media Users. *Computers in Human Behavior*, 72, pp.296–303.
5. Al-Rahmi, W.M., Alias, N., Othman, M.S., Marin, V.I. and Tur, G., 2018. A model of factors affecting learning performance through the use of social media in Malaysian higher education. *Computers & Education*, *121*, pp.59-72.
6. Al-rahmi, W.M., Othman, M.S. and Yusuf, L.M., 2015. Social media for collaborative learning and engagement: Adoption framework in higher education institutions in Malaysia. Mediterranean Journal of Social Sciences, 6(3 S1), p.246.
7. Alzaza, N.S. and Yaakub, A.R., 2011. Students' awareness and requirements of mobile learning services in the higher education environment. *American Journal of Economics and Business Administration*, *3*(1), pp.95-100.
8. Anderson, B., Swenson, R. and Kinsella, J., 2014. Responding in real time: Creating a social media crisis simulator for the classroom. *Communication Teacher*, *28*(2), pp.85-95.
9. Anderson, T., 2019. Challenges and Opportunities for Use of Social Media in Higher Education. *Journal of Learning for Development*, *6*(1), pp.6-19.

10. Au, M. and Lam, J., 2015. Social media education: Barriers and critical issues. In *Technology in Education. Transforming educational practices with technology* (pp. 199-205). Springer, Berlin, Heidelberg.
11. Bahati, B., 2015. Extending student discussions beyond lecture room walls via Facebook. *Journal of Education and Practice*, *6*(15), pp.160-171.
12. Balakrishnan, V., 2017. Key determinants for intention to use social media for learning in higher education institutions. *Universal Access in the Information Society*, 16(2), pp.289–301.
13. Balcikanli, C., 2015. Prospective English language teachers' experiences in Facebook: Adoption, use and educational use in Turkish context. *International Journal of Education and Development using ICT*, *11*(3).
14. Biddix, J.P., 2010. Technology uses in campus activism from 2000 to 2008: Implications for civic learning. *Journal of College Student Development*, *51*(6), pp.679-693.
15. Boyd, Danah m. and Ellison, N.B., 2007. Social Network Sites: Definition, History, and Scholarship. *Journal of Computer-Mediated Communication*, 13(1), pp.210–230.
16. Bransford, J.D., Brown, A.L. and Cocking, R.R., 2000. *How people learn* (Vol. 11). Washington, DC: National academy press.
17. Brew, L., Cervantes, J.M. and Shepard, D., 2013. Millennial Counselors and the Ethical Use of Facebook. *Professional Counselor*, *3*(2), pp.93-104.
18. Brown, M.G., Wohn, D.Y. and Ellison, N., 2016. Without a map: College access and the online practices of youth from low-income communities. *Computers & Education*, *92*, pp.104-116.
19. Bussert, K., Brown, N.E. and Armstrong, A.H., 2008. IL 2.0 at The American University in Cairo: Flickr in the classroom. *Internet Reference Services Quarterly*, *13*(1), pp.1-13.
20. Cain, J. and Policastri, A., 2011. Using Facebook as an informal learning environment. *American journal of pharmaceutical education*, *75*(10), p.207.
21. Callaghan, George & Fribbance, Ian, 2016. The Use of Facebook to Build a Community for Distance Learning Students: A Case Study from the Open University. *Open Learning*, 31(3), pp.260–272.
22. Cankaya, S. and Yunkul, E., 2018. Learner Views about Cooperative Learning in Social Learning Networks. *International Education Studies*, *11*(1), pp.52-63.
23. Chawinga, W.D., 2017. Taking social media to a university classroom: teaching and learning using Twitter and blogs. *International Journal of Educational Technology in Higher Education*, *14*(1), p.3.
24. Chen, B. and Marcus, J., 2012. Students' self-presentation on Facebook: An examination of personality and self-construal factors. *Computers in Human Behavior*, *28*(6), pp.2091-2099.
25. Chen, Yu-ching, 2015. Linking Learning Styles and Learning on Mobile Facebook. *International Review of Research in Open and Distributed Learning*, 16(2), pp.94–114.
26. Cheston, C.C., Flickinger, T.E. and Chisolm, M.S., 2013. Social media use in medical education: a systematic review. *Academic Medicine*, *88*(6), pp.893-901.
27. Chugh, Ritesh and Ruhi, Umar, 2018. Social Media in Higher Education: A Literature Review of Facebook. *Education and Information Technologies*, 23(2), pp.605–616.
28. Clifton, A. and Mann, C., 2011. Can YouTube enhance student nurse learning?. *Nurse education today*, *31*(4), pp.311-313.
29. communication in humanities and social sciences disciplines. *Procedia-Social and Behavioral Sciences*, *147*, pp.436-445.
30. Daugherty, J., Broghammer, R., DeCosmo, A., Giberson, P. and Birnbaum, M., 2015. Perceived benefits of participation in the "class of" Facebook pages. *The Journal of Social Media in Society*, *4*(1).
31. Davis III, C.H., Deil-Amen, R., Rios-Aguilar, C. and Gonzalez Canche, M.S., 2012. Social Media in Higher Education: A literature review and research directions.
32. Dyson, B. and Casey, A., 2016. *Cooperative learning in physical education and physical activity: A practical introduction*. Routledge.
33. Dyson, B., Vickers, K., Turtle, J., Cowan, S. and Tassone, A., 2015. Evaluating the use of Facebook to increase student engagement and understanding in lecture-based classes. *Higher Education*, *69*(2), pp.303-313.
34. Elavsky, C.M., Mislan, C. and Elavsky, S., 2011. When talking less is more: exploring outcomes of Twitter usage in the large-lecture hall. *Learning, Media and Technology*, *36*(3), pp.215-233.
35. Enjolras, B., Steen-Johnsen, K. and Wollebæk, D., 2013. Social media and mobilization to offline demonstrations: Transcending participatory divides?. *New media & society*, *15*(6), pp.890-908
36. Evans, C., 2014. T witter for teaching: Can social media be used to enhance the process of learning?. *British Journal of Educational Technology*, *45*(5), pp.902-915.
37. George, D.R. and Dellasega, C., 2011. Use of social media in graduate-level medical humanities education: Two pilot studies from Penn State College of Medicine. *Medical teacher*, *33*(8), pp.e429-e434.

38. George, D.R. and Dellasega, C., 2011. Use of social media in graduate-level medical humanities education: Two pilot studies from Penn State College of Medicine. *Medical teacher*, *33*(8), pp.e429-e434.
39. Graham, C.R., 2006. Blended learning systems. *The handbook of blended learning: Global perspectives, local designs*, pp.3-21.
40. Greenhow, C. and Burton, L., 2011. Help from my "friends": Social capital in the social network sites of low-income students. *Journal of Educational Computing Research*, *45*(2), pp.223-245.
41. Greenhow, C., Robelia, B. and Hughes, J.E., 2009. Learning, teaching, and scholarship in a digital age: Web 2.0 and classroom research: What path should we take now?. *Educational researcher*, *38*(4), pp.246-259.
42. Gruzd, A. et al., 2018. Uses and Gratifications factors for social media use in teaching: Instructors' perspectives. *New Media & Society*, 20(2), pp.475–494.
43. Hamad, M., El-den, J., Sriratanaviriyakul, N., Azam, S., 2019. A Stochastic Framework for Social Media Adoption or Abandonment as Pedagogical Tool in Higher Education Research. Manuscript submitted for publication.
44. Hamid, S., Waycott, J., Kurnia, S. and Chang, S., 2015. Understanding students' perceptions of the benefits of online social networking use for teaching and learning. *The Internet and Higher Education*, *26*, pp.1-9.
45. Harran, M. and Olamijulo, C., 2014. Social media communication spaces to develop literacies in a higher education language classroom context. *South African Journal of Higher Education*, *28*(2), pp.410-435.
46. Haughey, D. (2016). *SMART Goals*. [online] Project Smart. Available at: https://www.projectsmart.co.uk/smart-goals.php [Accessed 22 May 2018].
47. Heiberger, G. and Harper, R., 2008. Have you Facebooked Astin lately? Using technology to increase student involvement. *New directions for student services*, *2008*(124), pp.19-35.
48. Hope, A., 2016. Educational heterotopia and students' use of Facebook. *Australasian Journal of Educational Technology, 32(1).*
49. Irwin, C., Ball, L., Desbrow, B. and Leveritt, M., 2012. Students' perceptions of using Facebook as an interactive learning resource at university. *Australasian Journal of Educational Technology*, *28*(7).
50. Jaffar, A.A., 2012. YouTube: An emerging tool in anatomy education. *Anatomical sciences education*, *5*(3), pp.158-164.
51. Junco, R. and Cotten, S.R., 2012. No A 4 U: The relationship between multitasking and academic performance. *Computers & Education*, *59*(2), pp.505-514.
52. Junco, R., Heiberger, G. and Loken, E., 2011. The effect of Twitter on college student engagement and grades. *Journal of computer assisted learning*, *27*(2), pp.119-132.
53. Kaufer, D., Gunawardena, A., Tan, A. and Cheek, A., 2011. Bringing social media to the writing classroom: Classroom salon. *Journal of Business and Technical Communication*, *25*(3), pp.299-321.
54. Kirschner, P.A. and Karpinski, A.C., 2010. Facebook® and academic performance. *Computers in human behavior*, *26*(6), pp.1237-1245.
55. Lin, H.C. and Hwang, G.J., 2019. Research trends of flipped classroom studies for medical courses: A review of journal publications from 2008 to 2017 based on the technology-enhanced learning model. *Interactive Learning Environments*, *27*(8), pp.1011-1027.
56. Mazer, J.P., Murphy, R.E. and Simonds, C.J., 2007. I'll see you on "Facebook": The effects of computer-mediated teacher self-disclosure on student motivation, affective learning, and classroom climate. *Communication education*, *56*(1), pp.1-17.
57. McAuley, A., Stewart, B., Siemens, G. and Cormier, D., 2010. The MOOC model for digital practice.
58. McCorkle, D.E. and McCorkle, Y.L., 2012. Using LinkedIn in the marketing classroom: Exploratory insights and recommendations for teaching social media/networking. *Marketing education review*, *22*(2), pp.157-166.
59. Mokhtari, K., Delello, J. and Reichard, C., 2015. Connected yet distracted: Multitasking among college students. *Journal of College Reading and Learning*, *45*(2), pp.164-180.
60. Moran, M., Seaman, J. and Tinti-Kane, H. (2012). *Blogs, Wikis, Podcasts And Facebook how today's higher education faculty use social media*. [online] Pearson, pp.8-20. Available at: https://www.onlinelearningsurvey.com/reports/blogswikispodcasts.pdf [Accessed 27 Mar. 2019].
61. Negussie, N. and Ketema, G., 2014. The relationship between Facebook practice and academic performance of university students. *Asian Journal of Humanities and Social Sciences (AJHSS)*, *2*(2), pp.1-7.
62. Nehls, K. and Smith, B.D., 2014. The role of facebook in fostering transfer student integration. *Journal of Student Affairs Research and Practice*, *51*(4), pp.392-406.
63. Northey, G., Bucic, T., Chylinski, M. and Govind, R., 2015. Increasing student engagement using asynchronous learning. *Journal of Marketing Education*, *37*(3), pp.171-180

64. Novakovich, J., Miah, S. & Shaw, S., 2017. Designing curriculum to shape professional social media skills and identity in virtual communities of practice. *Computers and Education*, 104, pp.65–90.
65. Pappano, L., 2012. The Year of the MOOC. *The New York Times*, *2*(12), p.2012.
66. Pasquini, Laura A. & Evangelopoulos, Nicholas, 2017. Sociotechnical Stewardship in Higher Education: A Field Study of Social Media Policy Documents. *Journal of Computing in Higher Education*, 29(2), pp.218–239.
67. Pearce, N. and Learmonth, S., 2013. Learning beyond the Classroom: Evaluating the Use of Pinterest in Learning and Teaching in an Introductory Anthropology Class. *Journal of Interactive Media in Education*.
68. Pearce, N. and Learmonth, S., 2016. Challenges and Opportunities in Using Facebook to Build a Community for Students at a UK University. In *Widening Participation, Higher Education and Non-Traditional Students* (pp. 105-117). Palgrave Macmillan, London.
69. Poore, M., 2015. Using social media in the classroom: A best practice guide. Sage.
70. Rahman, S., Ramakrishnan, T. and Ngamassi, L., Impact of social media use on student satisfaction in Higher Education. *Higher Education Quarterly*.
71. Rambe, P. & Nel, L., 2015. Technological utopia, dystopia and ambivalence: Teaching with social media at a South African university. *British Journal of Educational Technology*, 46(3), pp.629–648.
72. Rambe, P. and Ng'ambi, D., 2014. Learning with and from Facebook: Uncovering power asymmetries in educational interactions. *Australasian Journal of Educational Technology*, *30*(3).
73. Rinaldo, S.B., Tapp, S. and Laverie, D.A., 2011. Learning by tweeting: Using Twitter as a pedagogical tool. *Journal of marketing education*, *33*(2), pp.193-203.
74. Rowan-Kenyon et al., 2016. Social Media in Higher Education. *ASHE Higher Education Report*, 42(5), pp.7–128.
75. Sharma, S.K., Joshi, A. and Sharma, H., 2016. A multi-analytical approach to predict the Facebook usage in higher education. *Computers in Human Behavior*, *55*, pp.340-353.
76. Sobaih et al., 2016. To use or not to use? Social media in higher education in developing countries. *Computers in Human Behavior*, 58, pp.296–305.
77. Stathopoulou, A., Siamagka, N.T. and Christodoulides, G., 2019. A multi-stakeholder view of social media as a supporting tool in higher education: An educator–student perspective. *European Management Journal*, *37*(4), pp.421-431.
78. Strayhorn, T.L., 2012. Exploring the impact of Facebook and Myspace use on first-year students' sense of belonging and persistence decisions. *Journal of College Student Development*, *53*(6), pp.783-796.
79. Tian, J. and Wang, Y., 2010. Taking language learning outside the classroom: learners' perspectives of eTandem learning via Skype. *Innovation in Language Learning and Teaching*, *4*(3), pp.181-197.
80. Tuten, T. and Marks, M., 2012. The adoption of social media as educational technology among marketing educators. *Marketing Education Review*, *22*(3), pp.201-214.
81. Valenzuela, S., Arriagada, A. and Scherman, A., 2012. The social media basis of youth protest behavior: The case of Chile. *Journal of Communication*, *62*(2), pp.299-314.
82. Velasquez, A. and LaRose, R., 2015. Social media for social change: Social media political efficacy and activism in student activist groups. *Journal of Broadcasting & Electronic Media*, *59*(3), pp.456-474.
83. Wang, G., Wang, B., Wang, T., Nika, A., Zheng, H. and Zhao, B.Y., 2014, November. Whispers in the dark: analysis of an anonymous social network. In *Proceedings of the 2014 Conference on Internet Measurement Conference* (pp. 137-150). ACM.
84. Wang, Q., Woo, H.L., Quek, C.L., Yang, Y. and Liu, M., 2012. Using the Facebook group as a learning management system: An exploratory study. *British Journal of Educational Technology*, *43*(3), pp.428-438.
85. Wheeler, S., Yeomans, P. and Wheeler, D., 2008. The good, the bad and the wiki: Evaluating student-generated content for collaborative learning. *British journal of educational technology*, *39*(6), pp.987-995.
86. Wu, J.-Y., 2015. University students' Motivated Attention and use of regulation strategies on social media. *Computers & Education*, 89, pp.75–90.
87. Zhu, S., Hao Yang, H., Xu, S. and MacLeod, J., 2020. Understanding social media competence in higher education: Development and validation of an instrument. *Journal of Educational Computing Research*, *57*(8), pp.1935-1955.