

# Social Media Use in Higher Education During the COVID-19 Pandemic: A Systematic Literature Review

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**Abstract**—This study reviews the literature to gain an in-depth understanding of the pedagogical role of social media in higher education institutions (HEI's) during the COVID-19 pandemic. A systematic search in the Web of Science, Scopus, and EBSCO databases yielded 34 relevant empirical studies published between January 2020 and April 2021. The findings reveal that: a) the innovative possibilities furnished through social media facilitated the transition to a complete online learning setting, b) the majority of studies are oriented towards the perspectives of students, c) the lack of well-defined policy hinders the effective utilization of social media in the pedagogical process, and d) questionnaires were the mostly used data collection method overlooking the significance of digital tracing as a rich source of data. This article provides a research agenda to advance the knowledge of the pedagogical possibilities of social media, especially that these platforms were not used to their full potential for teaching and learning during the pandemic. This study also has practical implications for HEI's and policymakers to recognize the significance of social media in maintaining educational sustainability.

**Keywords**—higher education, social media, online learning, systematic literature review

## 1 Introduction

In response to the outbreak of COVID-19, an unprecedented disruption has occurred to the educational activities in schools, colleges, and universities resulting in discontinued in-person teaching. As of mid-September 2020, most of the educational institutes across the globe remain partially or completely closed, affecting over 873,000,000 students [1]. In order to deal with this challenging situation, most educational institutions were forced to shift completely to the online learning environment, where social media played an essential role.

Over the past decade, social media has become a convenient educational tool in the absence of a formal learning management system. Social media platforms refer to the constellation of Internet-based applications built on the technological and ideological foundations of Web 2.0 that supports and fosters communication, interaction, and

collaboration among individuals with common interests in the form of user generated content [2], [3]. Social media platforms include social networking sites, multimedia sharing sites, and discussion forums [4]. These platforms have become an integral part of the daily lives of students and educators engendering a transformation in the way they communicate and collaborate [5]. Introducing social media in educational practices has an impact on the perspectives and expectations of educators, students, and higher education administrations.

During the COVID-19 pandemic, social media platforms gained an increasing popularity due to their availability and ubiquitous usage for teaching and learning activities [6]. Although social media platforms lack a pedagogical framework, empirical findings prove their effectiveness in various educational activities [7], yet this topic remains under-investigated [6], [8]. The absence of validated instruments to evaluate and assess the formal utilization of social media as a pedagogical tool calls for further studies to explore the social media affordances and make use of their maximum potential [9].

Prior to the pandemic, the use of social media in education was optional and complemented traditional teaching methods [5]. The features of the platforms were used superficially without considering the possible pedagogical benefits they may offer [9]. However, the pandemic enforced higher education institutes (HEI's) to move to the online environment, and accordingly social media platforms replaced traditional classrooms. All teaching activities had to be carried out remotely to comply with social distancing restrictions [10]. This unexpected disruption revealed innovative affordances of social media. Besides the role of social media in facilitating teaching and learning, it also served as a supporting tool by providing virtual social connection [11] to overcome the associated psychological impacts, such as anxiety and depression caused by the lockdown and disconnectedness.

Social media platforms are dynamic, and their utilization varied between pre- and post-pandemic, yet the criteria used for evaluating their suitability for teaching and learning remains consistent [12]. Besides, it is evident that social media is used differently by different stakeholders. However, according to a recent literature review conducted by Chugh et al. [4], the utilization of social media in the higher education context is extensively discussed from the perspectives of students, while the use of social media by educators for teaching purposes is unclear.

This study aims to explore the value and use of social media platforms as effective teaching and learning tools in the HEI's during the COVID-19 pandemic. This is achieved through systematically reviewing the relevant studies to answer the following key questions:

- RQ1: What is the role of social media platforms in teaching and learning activities within the HEI's during COVID-19?
- RQ2: What are the potential benefits of incorporating social media in teaching and learning?
- RQ3: What are the barriers associated with incorporating social media in teaching and learning?

This paper is structured as follows. In Section 2, we explain the methodology of the search process. The results of the literature review are represented in Section 3. This is followed by the research discussion and implications in Section 4. Finally, the research is concluded in Section 5.

## 2 Method

This study presents a systematic review of case studies related to the role of social media in teaching and learning in universities and colleges during the COVID-19 pandemic. In the rest of this section, we describe the adopted systematic literature review framework.

### 2.1 Data collection

The Search Strategy was based on PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses). As illustrated in Figure 1, the search process went through 3 main stages: identification, screening, and the inclusion of studies.

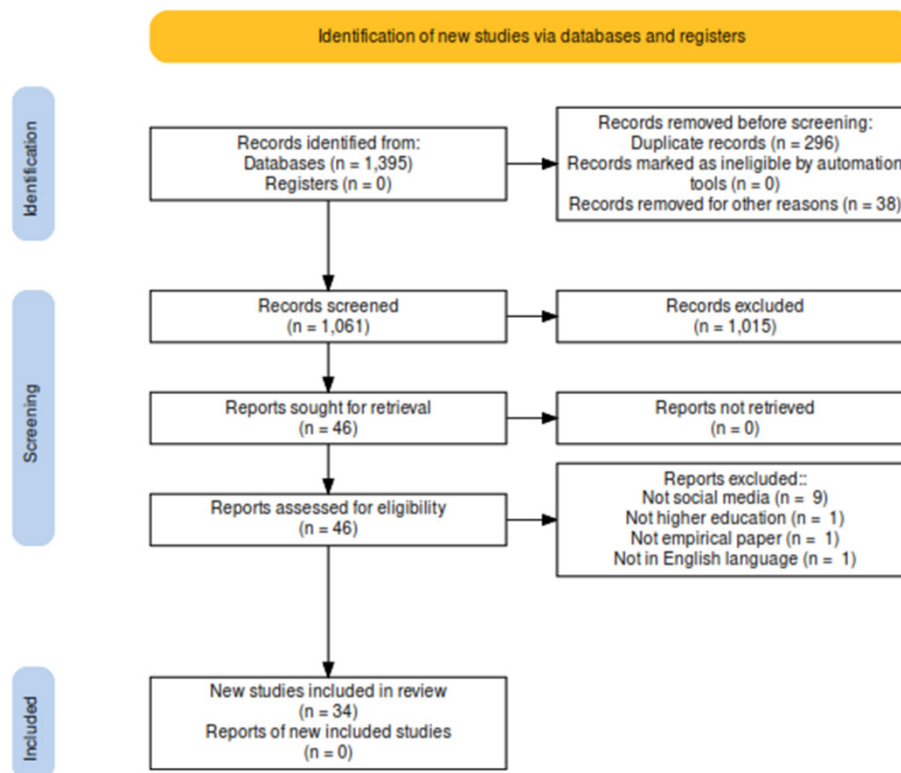


Fig. 1. Search strategy using PRISMA model

**Stage 1: The identification stage** involved conducting a comprehensive search to review, synthesize, and analyze full-text peer reviewed journal articles published from January 01, 2020, to April 08, 2021, regarding the use of social media for teaching and learning in universities and colleges during COVID-19. This date range provided the opportunity to focus on the role of social media during the pandemic only. The primary sources for the journal articles were Web of Science, Scopus, and EBSCO.

The search was conducted across these databases using the following wildcard keywords: “covid\*”, “corona\*”, “educat\*”, “social network\*”, “learn\*”, “teach\*”, and “social media\*”. These keywords were used in different combinations associated with Boolean operators (AND, OR). Due to the interdisciplinary nature of the topic, the search was not limited to information systems or information technology topics. The identification stage revealed a total of 1395 articles. However, 296 duplicates and 38 non-English language articles were excluded, yielding a total of 1061 articles.

**Stage 2: The screening stage** involved examining mainly the titles and abstracts of 1061 articles. In some cases, the methodology section of the articles had to be scanned to ensure that they exclusively focused on the role of social media platforms on teaching and learning activities. In order to ensure the credibility of the systematic literature review, it was essential to encounter transparency in describing the inclusion and exclusion criteria of the screening process [13]. Therefore, the screening stage included English language full-text empirical studies published in peer-reviewed journal articles. Based on the focus of this study, the inclusion criteria targeted articles related to higher education; specifically, university and college students, faculty, and administration. In addition, we have included studies focused on social media platforms, and social networking sites that are used for the purpose of teaching and learning.

The screening stage also involved setting clear exclusion criteria. Initially, duplicate articles were excluded. Also, non-empirical articles were excluded, such as letters to editors, research proposals, opinions, literature reviews, published conference articles, abstracts, editor prefaces, book chapters, and theses. We have also excluded generic articles that are not specific to the higher education context. The articles that did not focus on the context of teaching and learning were eliminated. In addition, as the core purpose of the study is to focus on how social media platforms acted as an alternative pedagogical tool during the pandemic, studies that have a scope beyond the use of social media platforms for educational purposes were excluded, such as articles with core focus on course management systems for class interactions (e.g., Moodle), and video conferencing platforms (e.g., Zoom or Google Meet) that involve virtual setting to engage multiple people via a live video/audio setting.

The decision for the inclusion and exclusion of the articles was carried out independently by the first and second authors who agreed to include 42 articles but disagreed on another 15. The disagreement was solved by the third author who checked the 15 articles, eliminated 11 and kept 4. Therefore, a total of 46 full-text copies were retrieved for the next stage.

**Stage 3: Inclusion of studies stage** is the final stage of the data collection. During this stage, the first and second authors independently evaluated the articles (23 articles each) against the inclusion and exclusion criteria. These articles were also categorized to extract useful information (see Section 2.4). Then, the third and fourth authors

peer-reviewed and confirmed the list. This stage excluded a non-empirical article (N=1), a non-higher education article (N=1), non-social media articles (N=9), and a non-English language article (N=1). This has yielded 34 articles derived from 26 different peer-reviewed journals.

## **2.2 Quality assessment**

To enhance the quality of the systematic literature review carried out in this paper, all authors peer-reviewed the literature at every stage. This involved noting key observations, monitoring, and keeping track of the selection criteria phases and any additional information associated with the review.

## **2.3 Data extraction**

The 34 articles included in this review were categorized and the following data were extracted from the studies:

- General information about the articles (authors, authors affiliation countries, year, title, publication forum, keywords).
- The main topic, addressed issues, and studied platform(s).
- The methodology used (study participants, country, academic discipline, benefited stakeholders, sampling, research approach, research methods).
- The research analysis method, and the underlying theoretical framework.
- The research findings (affordances, key findings, benefits of the platform(s), down-sides of the platform(s)).
- The limitations of the study and future directions

## **2.4 Data analysis and synthesis: classification approach**

The selected papers were analyzed through a qualitative content analysis technique using Nvivo software. The content analysis process involved performing a thorough reading of the selected papers [13] and classifying their content [14]. This classification approach categorizes the literature into major topics that answer the key research questions and highlight the emergent research trends in the domain. Classifying the literature into major topics and concepts is a common practice in the field of information systems and technology (e.g. [15], [16]). This is adopted to clearly present state-of-the-art research on the phenomenon under study and to show any future direction.

It is evident from the final list of papers that the research topic attracted the interests of scholars in different fields of studies, especially those targeting the use of social media during a pandemic that has caused an unprecedented disruption to the educational activities. This has encouraged researchers to understand the role of social media platforms to overcome barriers to teaching and learning, and the associated socio-economic and psychological implications on the students and educators. The classification approach assisted in analyzing the shortlisted papers from multiple perspectives to gain an in-depth understanding of the target research topic.



Fig. 2. The classification approach

After reading the selected papers, the content of the papers was classified into six categories, as shown in Figure 2. The papers were then coded using Nvivo based on these categories to facilitate the analysis and synthesis of the literature. The rest of this section briefly explains the categories.

**Context of study.** The identified papers were analyzed from two different contexts. The first context represents the country in which the study was conducted and whether it is a developing or developed country. The second context refers to the target subject discipline: natural or social sciences.

**Research methodology** is a category that refers to the research design of the selected papers. Here, we are looking into 1) the research approach, i.e., quantitative, qualitative, or mixed approach; 2) the data collection method; 3) the participants of the case study, e.g., students, educators, administrators; and 4) the theoretical aspects of the study.

**Core concepts** discussed in the literature. Reviewing the main concepts discussed in relevant studies is considered as one of the main quality criteria of a systematic literature review paper [17]. Therefore, this category highlights the major definitions, themes, and issues related to the research topic.

**Social media platforms** refers to the category that highlights the most popular social media platforms among HEI stakeholders. It also describes the main pedagogical features that supported online learning during the pandemic.

**Benefits** refers to the category that explains the benefits of social media platforms in facilitating teaching and learning during the pandemic. The benefits are explained from three different perspectives: students, educators, and higher education administration.

**Challenges** demonstrates the challenges associated with the use of social media tools regarding the administrative, class management, socioeconomic, skills, technical requirements, and tool properties aspects. The administrative aspect refers to the policies, rules, and regulations related to the pedagogical use of social media. The class management aspect illustrates how social media hindered class management in certain contexts. The socioeconomic refer to the challenges that faced students, educators, and HEI's. The skills aspect highlights the skills that need to be developed to cope with online learning; the use of social media in particular. Technical requirements refer to the challenges caused by the lack of certain technical requirements. Finally, the tools properties aspect focuses on the challenges related to the social media tool.

### **3 Results**

It is notable that the terms “social networking” and “social media” are used interchangeably in the literature. However, throughout this article, the term “social media” will be used to refer to both. In the rest of this section, we represent the findings of the systematic literature review according to the categories of the classification.

#### **3.1 Context**

The use of social media in HEI's during the pandemic has been studied across a wide range of settings. The studies were conducted in 21 distinct countries, of which 50% are considered developing countries. In terms of the academic disciplines in which the studies were conducted, a larger portion of the studies were generic and did not specify the field of study (41%). The remaining studies mainly focused on students enrolled in social sciences (38%), where one third of these were from the department of education, in particular Arabic Education, English Education, and Primary and Childhood Education.

#### **3.2 Research methodology**

According to the search strategy, we have selected case study articles only. More than half of the case studies adopted a quantitative research approach (53%). Qualitative studies represented 12% only, while 35% adopted a mixed approach. In terms of data collection methods, it is evident that questionnaires were the most popular as they were solely used in 53% of the studies. Further, 27% of the studies used questionnaires along with other tools (see Table 1). An important observation is that 18% of the studies relied on digital traces data, where these refer to multimedia, social media accounts, posts, and hashtags.



**Table 1.** Methodology characteristics for the overall sample of articles in the study (N=34)

Items	Type	Occurrence (%)
Research Approach	Quantitative	53%
	Qualitative	12%
	Mixed	35%
Research Method	Only questionnaire	53%
	Questionnaire & interview	21%
	Digital traces data	18%
	Questionnaire, interview, observation	3%
	Questionnaire & content analysis	3%
	Content analysis	3%
Study Participants	Students	82%
	Others	12%
	Educators	6%
Theories	No theoretical framework	79%
	UTAUT	6%
	TAM	6%
	Social Learning Theory	3%
	Active Theory	3%
	TPACK	3%

As shown in Table 1, the major participants of the case studies were students (82%), while educators formed only 6% of the participants. This illustrates that the literature primarily focused on the role of social media in education from the perspective of students. In addition, 79% of the shortlisted articles were non-theoretical based. The remaining articles relied on different theories, mainly the Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), Social Learning Theory (SLT), Activity Theory, and Technological Pedagogical and Content Knowledge Framework (TPACK).

### 3.3 Core concepts

The selected papers were extracted from various multidisciplinary journals, and thus discussed a wide range of concepts. The main concepts that were discussed are Perception (46%), Engagement & Interaction (35%), Awareness & Readiness (29%), Attitude, Behavior & Adaptability (29%), Educational Sustainability (18%), and Governance & Strategy (12%), taking into consideration that some articles discussed multiple concepts. Most of the articles (82%) discussed the concepts without explicitly referring to the underlying theoretical framework.

**Perception** is one of the main concepts discussed in the literature. The research shows a high interest in understanding how students and educators perceive social media as a formal teaching and learning tool; however, most of the empirical evidence



is not based on theoretical foundations. Out of the 16 studies that focused on perception, only two studies adopted a clear theoretical framework. Yaacob and Saad [18] adopted the TAM, while Maphosa et al. [19] based their study on UTAUT.

The studies indicate a difference in perceptions between students and educators [20]. In general, students perceive social media as an appropriate learning and teaching tool. Scholars noticed that this perception has increased significantly after the unexpected lockdown and transition to online learning [9]. During the pandemic, social media allowed students to easily access subject content and collaborate with their peers [19]. Besides improving learning outcomes [21], students of various studies agreed that social media platforms stimulated their creativity and allowed them to approach the subject content from different perspectives [22]. However, some students were overwhelmed by the amount of uploaded subject-related materials [23]. This highlights the importance of setting clear policies to formally integrate social media in teaching and learning activities.

On the contrary, negative perceptions towards the formal use of social media platforms are more evident among educators. In some cases, educators mainly perceived social media as an informal communication tool that is not effective for teaching and learning [24]. Also, when educators are forced to use such platforms, they are exclusively used for teaching and learning and rarely used for support and community building during the pandemic, as noticed among students [20].

**Awareness and readiness** from the perspective of students and educators. The pervasiveness of social media platforms has a beneficial impact on the transition to online learning, especially with the widespread use of social media accounts among university students and educators [21], [25]. In fact, students were familiar with the social media platforms even though they do not have an account [22].

In some cases, students and educators were aware of the social media platforms, yet they were not ready to use them as formal education tools. For instance, in a study conducted by Inpeng and Nomnian [24], English Language students at Chiang Rai University, Thailand, were asked about their experience in using Facebook as a formal learning tool. Although the students were regular users of Facebook, they were not ready to use it in formal settings due to a lack of confidence and English language skills. Similarly, faculty members in Indonesia were reluctant to use Facebook as a teaching tool although they were aware of its benefits [26].

**Attitude, behavior and adaptability** were the core topics of almost one-third of the shortlisted articles. However, scholars did not rely on a clear definition for these concepts. Attitude and adaptability were measured by the reaction and behavior of students and educators in response to the major shift in the education process.

Although the pandemic introduced profound changes to the educational process, HEI's managed to adapt to these changes in a short period of time [27]. Research demonstrates that students showed positive attitudes towards the use of social media for learning purposes. Students coped with the adjustments that have occurred to the educational settings [28]. They also demonstrated cooperative behavior in knowledge acquisition and knowledge sharing with their peers [29]. In fact, this positive attitude had a positive impact on their educational performance in an online learning environment [30].

On the other hand, the literature discussed the attitudes of educators towards incorporating social media platforms in the education process. Although both students and educators showed positive attitudes, in practice, a difference in attitudes between students and educators was apparent. In an Algerian case study, the findings reveal that some educators were found to be novices in social networking and thus developed technophobia towards social media tools [8].

**Engagement and interaction** attracted the interest of researchers because social media platforms have been found to provide a solution to overcome the disconnectedness caused by the pandemic [31]. The emotional and psychological impacts associated with the pandemic highlight the importance of effectively responding to requests and enquiries and facilitate the communication between all stakeholders [32].

There is a consensus in the literature that social media platforms create engaging content [22] that motivates student-to-student and student-to-educator interactions [9], [23], [33]. However, research shows inconsistencies in the relation between student engagement via social media platforms and their academic performance. In a study conducted in Zimbabwe by Maphosa et al. [19], 70% of the students stated that the social media, WhatsApp in particular, provided a motivating and engaging learning environment, and thus enhanced their performance. In a similar vein, students declared that integrating social media to the education process helped them achieve the learning outcomes [20]. This contradicts with the findings of [23], which indicate that despite the high engagement and interaction, the academic performance of students has declined.

**Educational sustainability** was also found to be a common core concept in the relevant literature. Research shows that some scholars decided to take more proactive steps to ensure educational sustainability and flexibility overtime. For instance, Al-Youbi et al. [32] proposed a methodological framework for the interactive use of social media in HEI's. The framework aims to facilitate the deployment of social media in a way that minimizes the negative impacts on education. Similarly, Cerna and Borkovcova [21] designed a mental knowledge model to evaluate the effectiveness of YouTube as an educational tool with respect to sustainability.

Scholars agree that social media platforms enable the development of course content that can be usable over a long period of time [34]. This provides a sustainable learning environment that allows education to be continued regardless of possible future lockdowns or pandemics [9].

**Governance and strategy** are considered as part of the success factors of social media utilization in HEI's [32]. Scholars acknowledge the importance of creating online learning policies that regulate the formal use of social media [23]. They believe that the selection of formal platforms should be based on pedagogical reasons, not because it is a trend [22]. However, the pandemic caused unexpected disruption to the education process, and most institutions lacked well-defined regulations.

In a study conducted by Sobaih et al. [20], faculty members in an Egyptian university were given the choice to select the most convenient free social media tool to communicate and conduct various teaching activities. Although almost all faculty members expressed a positive attitude towards this experience, they agreed that the absence of a clear policy created challenges in managing the class and setting consistent assessment methods. In this regard, students recommend that their preferences were taken into consideration in setting online learning strategies [35].

### **3.4 Social media platforms**

The most popular social media platform is Facebook, where 47% of the articles state that the HEI utilized Facebook for education and communication activities. In a study conducted by Sebo and Haskova [34], respondents described Facebook as a natural environment. Research shows that students used Facebook for communication, sharing information, and collaboration with their peers [11], [36]. Similarly, faculty members and administrative staff preferred Facebook to post announcements and reach out to students [8], [20], [37].

Facebook is equipped with various features that can be used to support online learning. For instance, this can be through the use of a Facebook group to categorize students and manage attendance, a Facebook page to upload subject materials, and Facebook chat to facilitate communication. However, scholars argue that Facebook is not designed to accommodate educational needs and cannot be used for complex online learning education [34]. It is found to be useful in informal settings, but not for academic activities [24], [26], [38].

The second most popular tool is YouTube (41%). This popularity is driven by the perceived ease of use, perceived usefulness, and social influence [18]. In addition, as a result of the lockdown, virtual curriculums became increasingly prevalent. Therefore, educators utilized YouTube to upload presentations and videos for students to view at their own pace [10], where discussions on the videos were done on other platforms [9]. In some cases, YouTube became the primary resource for learning, as in the study presented by Luu et al. [39]. In this study, YouTube was used as a repository for surgical videos for medical students who were limited in their clinical exposure.

YouTube videos and channels are also found to be effective resources for revision and exam preparations. In a study to evaluate the potential of YouTube as a supportive educational tool, almost half of the students who participated in the study used YouTube for revision and study purposes [21]. For this reason, scholars were encouraged to analyse popular video channels that are related to the subject discipline. For instance, López-Carril et al. [9] selected five relevant videos posted on the TED YouTube channel to act as a pedagogical resource for sports management students. This experience helped in developing students' professional skills and competencies. Similarly, Tolkach and Pratt [40] analyzed videos posted on a popular YouTube channel in the subject field of tourism called "Travel Professor". The study demonstrates that YouTube videos are useful for in-class and online learning. Moreover, in one of the reviewed studies, the researcher created her own YouTube channel to evaluate the effectiveness of YouTube for teaching and learning [8].

WhatsApp and Instagram were found to be equally popular (29%), yet they are used for different purposes. While both are used for communication, Instagram is more popular for interactions and WhatsApp is a convenient and easy to use platform. Besides sharing audio, video, and written documents, a number of studies point out that WhatsApp was also used for graded assessments [33]. In a study conducted in Zimbabwe, 77% of the students agreed that WhatsApp enabled independent learning during the COVID-19 lockdown [19]. Similarly, an Indonesian study shows that 90% of students rely on WhatsApp to learn reading skills [25]. Studies show that WhatsApp is popular among HEI's in developing countries due to its low data consumption.

The popularity of Instagram as an educational tool is a result of the shift of youth towards visual content and pictorial media [21]. This was evident in how students expressed their feelings towards the use of Instagram. In the study conducted by Peake and Reynolds [37], students described the content posted on Instagram as “colorful and motivating”. Also, Ye et al. [31] analyzed the interactions in a specific teacher-centered Instagram account that was created for Pharmacy students at Uppsala University. They noticed that students showed a high interest on the account by posting replies and motivational images and memes. In the same study, students stated that the Instagram account made them feel less lonely and more connected during the pandemic. Moreover, Instagram stories were utilized at Queens University at Belfast to post medical education topics for undergraduates, which was found to be useful in developing both professional and soft skills [41].

Twitter is the fourth popular social media platform (21%). Research shows that the use of Twitter differs from the aforementioned platforms. During the pandemic, Twitter was found to be a popular formal communication channel between the HEI and stakeholders. For instance, universities in the Kingdom of Saudi Arabia relied on Twitter as the main communication channel to reach a large audience in a short period of time [29]. Universities tweeted the new regulations of the Saudi Ministry of Education and announcements related to particular universities [32].

One of the most used features of Twitter is the hashtag. According to Trust et al. [42], educators create and participate in hashtags to build collective knowledge and provide peer-support that facilitates the transition to online settings. They also describe the hashtag spaces as the “teachers’ hallway”.

The shortlisted articles illustrate that TikTok, Snapchat, Telegram, LinkedIn, and Discord are gaining popularity as tools for teaching and learning. Among these platforms, TikTok has attracted the interest of scholars as it was the most downloaded application in 2020 [23]. TikTok enables the creation of motivational and engaging learning environments that are appealing to students [22].

### **3.5 Benefits of social media**

Social media platforms are ubiquitous. The different stakeholders of the HEI’s are accustomed to using them for different purposes [21], [25]. The shortlisted papers suggest that social media platforms were found to be effective educational tools from the perspectives of students, educators, and institutions.

Social media allow students to store lecture materials and learn at their own pace [33]. They provide a friendly environment that encourages raising questions and discussions [31]. Students also refer to a variety of platforms to review and prepare for assessments. In addition, social media enables students to provide peer-support by sharing tips and tricks for online learning [23]. Most importantly, students state that social media platforms are motivating and enable them to be active [43].

Educators found social media effective for communicating, delivering the subject content, and realizing learning objectives. The disruption caused by the pandemic demotivated students, and accordingly, it was necessary to employ diverse tools to enable interactive and collaborative environments [32], [33]. Social media platforms

enable open discussions and knowledge sharing without restrictions. It is also evident that the educators made use of these tools to prepare and share materials, not only for their students, but for the public [10]. In terms of professional development, creating interactive course materials in different platforms helped in developing the educators' professional and soft skills [41].

With regards to the benefits for the institution, social media platforms are mainly used for communication, awareness, and announcements. Besides their widespread use, these platforms have been chosen for their convenience. Unlike the common learning management tools, social media does not necessitate any sort of technical requirements, e.g., servers or technical maintenance. Sam et al. [12] refers to this feature as "Operation Stability", where social media platforms are known to be stable, accurate, flexible, and interoperable.

### **3.6 Challenges of social media**

**Administrative challenges** were evident in the relevant literature. In spite of all the benefits discussed in the literature, social media also brought negative implications. The major challenge is the lack of well-defined regulation or policy for the formal use of social media platforms for teaching and learning. Research shows that during the COVID-19 pandemic, the formal use of social media was not introduced pedagogically into the dynamics of the HEI's [22]. Integrating social media with existing teaching activities was a new culture in most of the studies, especially in developing countries. Accordingly, the absence of regulations and ethical codes had negative impacts, not only on the content material, but also on the quality of communication between educators and students [20]. The absence of policies was also a challenge in developed countries. For instance, Peake and Reynolds [37] illustrate the challenges faced by University of Bordeaux, France, due to the absence of an approved charter of conduct to regulate the formal use of social media.

Moreover, institutional policies have to be aligned with the related policies set by the social media platform. This has major implications on creating and managing social media content. For example, Czech students complained about the strict policy of YouTube towards content and content creators [21]. Similarly, AI-Youbi et al. [32] raised concerns on the official use of Twitter as the main communication channel because the society may hold the institute responsible for any tweet that may be perceived as negative. They argue that this has legal risks and may have consequences for the academic reputation of the HEI.

**Class management challenges** are direct result of the administrative challenges. Due to the absence of clear regulations, research shows that educators selected the social media platform for teaching without pedagogical justifications. Sobaih et al. [20] argue that this has overlooked the variation in student learning styles, which had to be clearly addressed. This also created challenges in delivering practical courses that require physical evidence and attendance. In addition, the unregulated utilization of social media caused an overload in materials and communications. Students described that as overwhelming, confusing, and demotivating [33], [38]. Similarly, educators experienced an increase in their workload [44]. Alongside their regular course-related

tasks, educators were required to create and manage social media content, and promptly respond to student messages.

Another main issue related to class management is controlling student behavior [33]. This was more evident in running exams and conducting grade assessments. Students shared strategies for cheating via social media posts, which led to exam malpractice at home [23].

**Socioeconomic challenges** were evident in developing countries. The main challenge was the lack of access to smartphones and laptops [19], [25], [33]. Also, the acquisition of Internet data bundles is expensive, especially in the absence of institutional support. The supply of electricity was also a major challenge due to the frequent power shutdowns [45]. However, surprisingly, electricity supply was also raised as a challenge in a study conducted in the USA. Literat [23] analyzed digital traces data of TikTok accounts of American students and found out that students were concerned about cuts in electricity during online exams due to unpaid bills.

Another socioeconomic aspect raised by [36] is the low contribution of female students in Zambia compared with males. This gender variation, according to the study, is due to various factors, mainly the pass rate, ethnicity, traditional beliefs, and tribal issues. Moreover, self-presentation was another socioeconomic challenge [23]. Studying from home raised concerns on how students were willing to be perceived by their peers when posting images and videos. Therefore, it was evident that students focused on their home environment and the items that they deliberately showed. For example, the images and videos analyzed by Literat [23] featured expensive brands, such as Apple products and clothing brands. From an educator perspective, Tolkach and Pratt [40] highlight the concerns related to the identity of the educators. In other words, adopting social media as a formal teaching tool raises concerns as to whether the educator has to appear in a professional manner to attract an expert audience or use layman's language and attract broader audiences.

**Skills development challenges** were evident due to the lack of institutional support and proper guidelines. Educators had to go through a self-learning process to cope with the sudden transition in teaching activities [20]. However, self-learning is insufficient for the long term. Advanced technical skills, public speaking, content management, and marketing skills have emerged as important skills for educators [40]. Likewise, college students are required to adapt to the changes associated with online learning and the utilization of diverse social media platforms [30].

**Technical challenges** were addressed by several scholars. The network is the most common technical challenge of online learning as stated by both students and educators [33], [45]. In their study about college student knowledge acquisition through online learning, Xie et al. [29] highlight the importance of increasing the technical support for students to optimize the use of social media tools. They urge institutions to develop emerging technologies, such as 5th-generation mobile networks and artificial intelligence to ensure a sustainable education process.

**Challenges related to social media platforms** were also common in the relevant literature, addressed by several scholars. In most studies, the institution did not impose any restrictions on the social media platform in use, and accordingly, educators used multiple platforms for learning and communication. This has added more stress on educators to manage the content and reach out to students [20]. Besides, it was common



that students join in with pseudo names and use informal English or multiple languages in posting information and joining discussions [8]. It was also common that students post negative statements and behave in an unpredicted manner [40].

Social media provided an interactive environment to share knowledge. However, it is likely that information shared by students may be inaccurate [41] with low quality videos, images, and voice notes [20], [39]. Developing high quality social media content requires dedication and is time consuming [40]. Besides, one of the major challenges with regards to the platforms is privacy. Students and educators show concerns regarding the security aspects of social media platforms used [20].

#### **4 Discussion and implication**

The research findings indicate that social media platforms are effective for teaching and learning; however, their pedagogical possibilities are under-investigated. This resonates with the findings of Cavus et al. [6], where the authors stated that the role of social media as a collaborative tool to support educational practices needs rigorous research. The collaborative nature of these platforms and the restrictions imposed by the worldwide pandemic of COVID-19 reshaped education in many ways. It is evident through the review of the literature that social media platforms are dynamic. The features of the platforms are continuously improved to cope with the rapid advancement in technology, which has positive implications on their ability to support teaching and learning. Moreover, the emergence of new platforms among higher education stakeholders, such as TikTok, draws the attention towards unexplored and underexplored platforms [46]. This reflects the need for further research on the pedagogical benefits of different social media platforms and features.

The research findings show variations in the needs and utilization of social media among students and educators, and across academic disciplines. Despite the transformation that has occurred to teaching strategies during the pandemic, assessing the effectiveness of social media as a teaching and learning tool remains constant. The findings reveal a lack of theoretical-based studies that explain the pedagogical usage of social media. According to Barrot [46], theoretical-based research in this area is modest. This calls for a need to rethink the existing theories and models, taking into consideration the new norm that promotes a sustainable online learning environment.

This study also urges researchers to enrich research methods by considering digital traces data as main sources of data. The significance of digital traces is stressed by scholars in recent studies [7], [47]. Social media data has significantly improved the ability to understand patterns of engagement, utilization, and interaction. In addition, further longitudinal studies need to be carried out to observe the evolution of the role of social media in HEI's. This aligns with a recent longitudinal study conducted by Dolch et al. [48], which investigated the dynamics and trends in student utilization of social media. Although their study shows an increased need for social media to support online learning, the popularity of different tools and platforms varied with the advancements in technology and teaching methods.

In terms of practical implications, this study draws attention to the lack of a clear policy or framework to regulate the formal utilization of social media for teaching



and learning. In a recent literature review, Luo et al. [49] highlighted the importance of setting a clear framework for the selection and utilization of social media for education purposes. Incorporating social media as a formal pedagogical tool is a strategic decision, and thus future efforts should be taken to conduct in-depth analyses of the key factors that foster sustainable online learning. In addition, a proactive policy is required to regulate the formal pedagogical use of social media to support educational sustainability.

## **5 Conclusion and future work**

Based on the systematic review of 34 articles published between January 2020 and April 2021, it is evident that social media platforms have gained an increasing prominence among university students and educators due to the consequences of the COVID-19 pandemic. The review revealed that social media facilitated online learning; however, the utilization of social media varied between students and educators. Students use social media for education purposes and to provide peer-support, while the utilization of social media among educators is primarily focused on teaching. This highlights the significance of stakeholders' perspective in selecting and integrating social media tools with teaching methods. Therefore, exploring the pedagogical role of social media from multiple perspectives is a promising area for further research, especially given how current research is highly focused on students' perspectives.

Despite their benefits and opportunities, this study shows that the utilization of social media during the pandemic is challenging mainly due to the lack of regulations and policies. Social media has introduced a paradigm shift in communication strategies as well as in educational processes. This has raised concerns related to legal risks and academic reputation. Scholars are urged to conduct in-depth studies to develop a strategy for the formal utilization of social media in HEI's. In addition, this study contributes to the literature by redirecting the attention towards digital traces data as a rich source of data. Social media datasets illustrate interactions and utilization patterns that can be used to triangulate methods to further understand the pedagogical possibilities of social media platforms.

This study has endeavored to provide insights on the current state of research on the role of social media in teaching and learning in HEI's. It presents a firm foundation that assists scholars to advance the knowledge on the theoretical and practical aspects of using social media as a pedagogical tool. It also has implications for policymakers, governments, and teaching communities to set a well-defined framework to regulate the formal utilization of these platforms and make the best use of them.

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