*Article*

# COVID-19 Pandemic: The Impact of the Social Media Technology on Higher Education

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**Abstract:** The COVID-19 pandemic led universities to transform the traditional teaching methodologies into distance education. Therefore, social media has become progressively prominent as teaching and learning resources in universities. Several studies have been conducted for the development of social media as a learning tool. However, there is limited empirical evidence supporting this claim. The present study bridges the gap in the literature concerning the value of the use of social media in higher education. This research seeks to examine the impact of the use of social media in (a) enhancing teaching and learning in universities, (b) motivating and supporting students and (c) developing community connection. A qualitative methodology was adopted. Specifically, in-depth interviews were conducted to assess the effectiveness of social media on students learning in higher education. The results showed that the use of social media by higher educational institutions positively impacts the educational process by (a) promoting teaching and learning, (b) motivating students to be active participants, and (c) establishing connections in the university community. Some obstacles in the teaching and learning process were also identified. Future areas of research are proposed.

**Keywords:** COVID-19; higher education; social media; technology

## 1. Introduction

It is generally accepted that there has been an extraordinary growth of social media and other Web 2.0 technologies [1–4]. However, the worldwide COVID-19 pandemic underlined its value and turned it into a necessity [5]. The environment of personal and professional relationships has been transformed by social media technology. Today, in the middle of a global health crisis, social networking sites are almost a vital part of most users' private lives with the use of technology. Social media consists of several activities such as interacting with friends, posting images and videos, engaging in conversation on public topics, watching the news, playing games, introducing real-time web chat instant messages, elements that allow networking, communication, and collaboration [6]. Defining social media is a challenging task since it is an area that is continuously changed. According to Joosten [7], the term "social media" is generally used to describe any number of technological systems connected to cooperation and community. More specifically, as Kietzmann et al. [8] quoted, social media "employs mobile and web-based technologies to create highly interactive platforms via which individuals and communities share, co-create, discuss, and modify user-generated content". Likely, Dulek and Saydan [9] defined social media as "social platforms where users share their information, manners, interests through the internet or mobile systems" and big data applications [10–12]. Additionally, Grosse et al. [13] underlined that social media is a way of sharing online information among people in a

virtual community and creating material. From our perspective, social media can be more easily defined and understood through some vital examples. Some of the most popular examples of social media are (a) Content Communities such as Youtube, (b) Blogs like WordPress, (c) Collaborative Projects such as Wikipedia, (d) Social Networking Sites like Facebook, Instagram, Twitter, and LinkedIn and (e) Social Messaging Applications such as Viber, Skype and WhatsApp [14–20].

According to Jiao et al. [21], social media is used to create social relationships and educational purposes. In several contexts, social media has attracted the interest of academics. One of these issues, limited but growing research, was using social media as a learning tool in higher education [22,23] or as mobile learning in higher education [24,25]. To the best of our knowledge, limited studies have been conducted on social media and its impact on education in Cyprus. The issue has increased in importance in light of the recent global changes because of COVID-19. The pandemic has changed teaching and learning from the conventional approach to a fully online way [26]. The present article is devoted to investigating the potential role of social media as a facilitator of learning in higher education in Cyprus, especially during a health crisis. It assesses the extent to which social media can be used in academic education as a learning and teaching tool. Which are the advantages and disadvantages of using social media in universities? Does social media enhance learning and knowledge and promote community connection? Is it a plague or a blessing? The potential obstacles that may emerge around adopting social media as communication for teaching and learning purposes are identified. It also adds to the existing literature as a forum for academic purposes on the use of social media.

Social media is used by millions of people all over the world. Young learners, teenagers, high school students, university students and elderly people use social media for communication, entertainment, work, sales, shopping, information sharing, travelling information sharing, sharing experiences, news, announcements, and so forth. Facebook, Twitter, Instagram, Wiki, Google, YouTube, and so forth are the most common social media. University departments are used Facebook to advertise their departments. Department of Biostatistics at Columbia University, Department of Biostatistics at the Harvard, Department of Political Sciences at the University of Oregon, Department of Psychology at Columbia University, Department of Biochemistry at University of Oxford, Department of Informatics at University of Western Macedonia, Department of Music, University of Sheffield, Department of Art at Miami University and many many other books on Facebook with the view to supporting educational developments. The majority of them are considering social media both as learning as well as instruction means passing through a precise platform [27]. Social media networking platform permits skills enhancement as well as communication skills [28], facilitates collaboration among peers from different university departments, different universities and different countries with different cultural and learning opportunities, different modules and enables both teacher and student to be active users in order to have the chance to learn in a collaborative environment by sharing information and various learning activities [29,30] has a serious impact on social media users, enables alliance, cooperation and dynamic interaction between students and teachers, and enhances innovativeness and imagination as well as enhancing student participation in learning activities [31,32], increases self-esteem, helps the development of a foreign language reading and writing and oral communications skills, increases students' awareness and finally enhances academic performance. In addition social media networking permits students to be informed continually, dissemination information is abundant and the information is shared rapidly and is effortlessness and widespread, social network takes each part of a person's life time and is a social platform for users to make contacts and start friendships, read news, spread information and a huge amount of data, to generate influence as well as influence teaching, learning processes and educational processes, and knowledge successfully [33], work independently, individually, and autonomously according to their appropriate working hours seeking the exact information they need in order to expand their own horizons [34]. What is of major importance is the fact that the use of network

platforms for education purposes can contribute to individuals' personal commination capabilities not only for educational targets but mostly for carrier purposes and job opportunities [28]. In addition it was stated [35] that social media networking not only offers opportunities related to interaction, communication, information sharing, video sharing and learning material sharing but also offers the opportunity for emotional intelligence sharing. Consequently from the previous analysis regarding the benefits of social media use in favor of academic achievement, the contribution of the present study to the scientific community and especially to the tertiary educational community is made obvious.

## 2. Literature Review

Social media is used in a variety of different sectors by different people. Social media is used for informal social networking or improving social capital and for online engagement and marketing, establishing customer relationships, problem-solving, and grievance resolution [36–39]. Performance in the industry is due to the successful use of information and communication technologies in today's digital economy. Higher education institutions are not excluded from these continually advancing changes in technology. They should, therefore, not afford to fall behind these innovations since they can not only provide the academic community with useful insights but potentially enhance learning.

A multitude of studies that explore its role in higher education have contributed to the overwhelming popularity of social media. These involve the study of the association between the use of social media by higher education researchers for professional and teaching purposes [40]; use of social media for learning concerning the learning styles of students [41]; online social networks' effect on the academic success [42]; learner-generated knowledge and its impact on student achievement and satisfaction [43,44] and success indicators of social media usage [45] and mature critical thinking [46] and trade [47,48]. Selwyn [49] stated that even though there are controversies on social media usage for education and information creation, educators are continuously encouraged to figure out ways to use social media in higher education environments effectively.

According to Hamid et al. [50], social networking can be used for content creation, sharing, engagement, and collective socialization in higher education. Social networking can be enabled to provide instructional materials, educational data, update and promote contact and collaboration. In the same vein, various researchers argued that social media could encourage communication among faculty members and students, support students, strengthen self-confidence and develop a strong partnership and community [51–59]. Specifically, McCarroll and Curran [55] stated that the use of social media is "beneficial to students on a number of levels, facilitating knowledge exchange, alleviating apprehension, enabling socialization and building- community". Moreover, findings of previous studies [46–48] showed that social media has a great potential to improve the learning experience via active communication and cooperation.

Indeed, there is a rigorous movement in using social media by universities. According to Blackhow et al. [59,60], an excellent distance education plan can help remote learning appear not so remote. Some universities create their channels to encourage students to watch videos, cultivate concerted efforts by students and teachers, improve the learning process, and enable students to provide real-time feedback [61–63]. Other institutions of higher education use Learning Management Systems, which are computer systems for the management and administration of teaching material and instructional and e-learning program evaluation [64]. The advantage of using these systems is that all learning information is stored and organized in a virtual learning area (such as Moodle). Similarly, other universities use Blended Learning, which positively impacts the teaching process [65–67]. According to various researchers, blended learning is adopted to reinforce conventional teaching methods with online sessions, which leads the students to respond easier and faster rate of learning [68–70].

The use of social media in higher education continues to increase and change as supporters discuss its merits and demerits. According to the literature, the use of social media also has some drawbacks. The first disadvantage while using social media is the difficulty to ensure personal privacy. It is easy to keep track of people's online activities through advanced technology, whose security and privacy may be threatened [71–73]. Moran et al.'s [74] study supported that faculty members had great concerns about keeping their personal lives and profiles safe. In the same vein, students can be discriminated against because of social media usage [75], being negatively or positively biased by their teachers [76], or facing bullying by their peers who are not friendly [77]. At the same time, the complexity of online communication makes misinterpretations possible and may lead to conflicts. Moreover, some advocated that social media leads to antisocial behavior because all the actions occur in a virtual student world, which is sometimes very different from the real one [78].

Another disadvantage is the difficulty in controlling and monitoring the quality of learning and teaching [79–81]. Since various external open social media sources are available, it is difficult for academics to monitor each tool to guarantee that the students use them appropriately. Moreover, according to Phillips [82], social media can interfere with studying time. In other words, the student's attention may be diverted so that valuable study time is left behind. Lastly, there is a possibility of either no Internet access at home or constraints on data downloading from mobile devices [83], a fact that would make the educational process very difficult. Similarly, ref. [84] illustrated the mobility weaknesses of Learning Management Systems since some of them are only available for selected mobile devices.

For several years, universities in Cyprus have promoted distance learning. It is a country that has got a robust infrastructure, strong communication technology, and good structural electronic strategies to communicate with students. For example, some universities use Blackboard while some others use Moodle and Microsoft Teams. However, it is the first time that Universities in Cyprus have been called upon to respond to a global health crisis and cope exclusively with distance education. Despite the fact that there is a variety of research on the use of social media in higher education, there are limited studies in the Greek context. At the same time, it is important to say that distance education used to be a choice. However, the covid pandemic transformed the choice into necessity. All conventional courses had to be converted to distance courses because of covid regulations and protocols. Thus, on the one hand the students of the conventional courses were obliged to conduct the lessons online, while on the other hand all universities had to develop a distance education program. This turn of events has been a challenge for all universities, especially those that have never had distance education before. Moreover, the academics used to use social media in order to enrich their lessons with supplementary materials, however during the pandemic they are called to use media as a means to conduct the lessons. As Hajli and Lin [85] argued, social media can play a significant role in supporting distance education in the area of education. Therefore, the present study is devoted to reinforcing or rejecting the view mentioned earlier, considering the Cypriot higher educational context. Additionally, the present study can be used as a guideline for institutions, all around the world, that have recently commenced teaching online due to the pandemic.

Other than social media, this research deals with three other important aspects that should be exemplified: teaching and learning, student motivation and support, and community connection. It is important to present the way that the terms mentioned earlier are used in this research. Learning is about a change: developing a new skill, changing a thought, or understanding a theory [86]. When the students attend a course in higher education they set out to learn. In the present study the students received distance education. Distance education is correlated with e-learning, in other words learning via electronic means. It includes the enhancement of knowledge and skills, using electronic devices and internet. Nevertheless, before the evolution of the internet, the distance lessons still existed. For example, in 1840s Isaac Pitman guided his students by correspondence, in 1954 Harvard

University introduced a teaching machine to give instructions to the students, in the 1960s the first computer-based program PLATO was invented and in the late 1970s e-learning became more popular via mail [87]. However, with the introduction of the internet and the technological advancements in the 20th and 21st centuries, e-learning has been improved and well-used worldwide. According to Mohammed et al. (2017: p. 221) [87] "e-learning is a platform that provides institutions with means of improving teaching and learning activities, enhances students-teacher relationship and provide students with means of interactions". In this study the aforementioned means is the social media. Social media gives the opportunity to develop student personalized learning environments and enhance learning experiences via customization and personalization [88].

Academics are responsible for supporting the process of learning by teaching. The role of the teacher is important in providing material, guiding, consolidating, interpreting, and giving feedback to the students to optimize learning [89]. Social media can be used to send course-related information to students; to provide a space where students' academic successes and failures can be shared and discussed; to improve interactions between teachers and students and provide a forum where the teacher can answer any educational question, providing an open-ended way of consulting that may produce interesting or unexpected points of view [90]. Academics can also make content available for future reflection and review through the use of social media, enabling students to revisit and revise their artefacts, enriching the learning experience. The ability to comment on students' creative work, as well as the fact that blogs can be commented on, provide opportunities for input, which helps a learner in his or her search for constructing knowledge [91].

Moreover, the learning process is facilitated by motivating and supporting students. According to Ryan and Deci [92], motivation refers to doing something interesting or enjoyable. Considering student motivation, they argued that motivation happens when a student is attracted to undertake an assignment for its good, the learning it gains, and the feelings he/she may have. Motivation is related to students' support. Support can take many forms, including mental, physical, financial, academic, and spiritual, and it is one of the most important factors in student success in education. The instructor must do everything possible to help the student achieve a higher degree of need satisfaction so that he or she can concentrate on learning [93]. Motivation and student dispositions, can affect students' desire to participate in immersive learning [94]. According to the existing research, students want to be encouraged to be less distracted during lectures [95]. It is important to understand the various behaviors, motives, and approaches to learning by this new generation in adult classes in order to improve learning for all students [96]. Researchers identified that social media plays an important role in student motivation, improving the student-learning environment with creative forms of education, and changing the essence of learning boundaries, resulting in student learning growth [97].

Additionally, when it comes to an educational institute, we must also have in mind the community connections, in other words, the relationship among the students and the faculty members. As Honig et al. [98] stated, community connections give more opportunities to teach and learn. We believe that social practice theory is an adequate theoretical framework for this situation [99,100]. In addition to the psychological and cognitive aspects of change, this theory considers the social and affective dimensions of change. In other words, it contends that the most important aspects of change processes in teaching, learning, and evaluation are social interactions at the workgroup level. In brief, they participate in the social construction of reality, at least in the places where they share common interests. They create a shared language, a distinct approach to using the resources at their disposal, and a situationally awareness of the project's various aspects. Social media may bring together small virtual groups of people who are interested in building awareness around a shared subject in a community of practice while also helping one another. Data sharing is allowed by personal or community blogs, and experts and novices alike may make their work accessible to the rest of the online world. As a result, learners not only engage in an activity and gain skills, but also achieve mutual results and contribute to the

group's intellectual capital. Thus, it is also essential to understand whether social media helps in the connected community.

Below new relevant research on the benefits of social networks in the learning processes of Higher Education students is added. The access to knowledge is fundamental [101]. According to Lifelong Learning Agenda (CEC, 2000) information skills as well as motivation and knowledge are of major importance in order to improve and enhance competitiveness and increase employability. Nowadays there is an ongoing argument among academicians as well as in the academic literature that the use of social media and social networking sites would enable collaborative learning and scholarship [102]. Use of social media, social networking sites and smart phones have advantages as well as unique challenges regarding retrieving course material and course subjects, video, applications and so forth. Social networking and social media for collaborative learning have an enormous impact on student academic achievements [103]. Collaborative learning syndicates can improve knowledge and teaching in many educational domains and lead to advanced learning outcomes [104]. In addition, Facebook and Youtube channels use similarly enlarged learning capabilities and understandings of outcomes [105]. Authors in their study [106] argued that ease of internet use can develop cognitive competences through social media availability. In their study, the authors of [102] found that the use of social network and platforms for collaborative learning drives communication and collaboration with peers, and instructors touch academic achievement in a positive manner. The authors of [107] argued that the social media practice shows an enormous positive impact regarding students' achievements and academic performance due to the fact that networking sites enhance interaction, collaboration, inspiration and creativity as well as facilitate their learning outcomes. Facebook, Youtube, Twitter and Instagram have revealed new forms of communication patterns with enormous possibilities for information and communication channels [108]. In [109] the authors argued that the use of social media platforms and virtual reality in tertiary education produces a sustainable and worthwhile procedure of technology heightened instruction. The authors of [110] stated that learning management systems simplifies instruction in an online situation. In the current situation of the pandemic the need for online instruction with the application of more sophisticated communication technology and digital interaction in real time by sharing teaching information is more necessary than ever before and the use of the internet for e-learning procedures is favored [111]. Moreover, in [112], the authors have stated that aside from entertainment reasons and societal commitments, social media has increased in the instruction area.

So far, we have presented the social media advantages, and now we are presenting some negative aspects of the digitalization of education, to make the analysis more complete, reflective and realistic. During the pandemic of COVID-19, distance education replaced in person education. There are many benefits of using social media in education and especially those that have to do with limiting the spread of the COVID-19 pandemic. We put emphasis on the strengths of the use of social media in education, but it is good to highlight some weaknesses and shortcomings, such as: (a) the huge amount of information, including fake news, which makes it difficult for students to sift through the true information; (b) the long time that students stay in front of computers and laptops; (c) the reduction or even lack of social connections and contacts, which affects the mental health of young people; (d) various health problems resulting from the prolonged use of computers; (e) the additional social divisions resulting from digitalization.

Without a doubt, the huge amount of information, including fake news, makes it difficult for students to sift through the true information. Anyone can post any information on social media. Facebook, Instagram, Youtube and Twitter are examples of such social media. Posts on these platforms transmit information very quickly, and it is not easy to determine its validity [113]. They are formulated in such a way as to attract the attention of online friends and constitute an appropriate framework for the dissemination of false news [114]. They point out that social media allows too much fake news that is likely to mislead, defame, manipulate, undermine, satirize people, situations or events, from

friendly, family, social, and political environments [115,116]. It is extremely difficult not only for pupils and students but also for adults to recognize the false from the true news. Knowledge and critical thinking are needed so that people do not become the target of manipulation through social networks. Excessive reliance on Internet sources can lead to misinformation and consequent deception [117].

The COVID-19 pandemic has imposed digital platforms as the only means for people to maintain socio–emotional connection [118]. The COVID-19 pandemic came with severe restrictions on social contacts and mandatory lockdowns. As a result, the use of digital devices has multiplied around the world. Consequently, people are being pushed to rely on digital platforms. Education, social contact, education and work, as well as socialization, can only occur online with incredible implications for mental health and user balance. While careful use of digital devices is associated with well-being, excessive screen time is reported to be closely associated with a number of negative mental health outcomes, low emotional stability, isolation, depression and anxiety [119].

It is not strange that the reduction or even lack of social connections and contacts affects the mental health of younger people as well as older people. On a daily basis and around the world people of all ages connect to social networking platforms such as Facebook, Instagram, Youtube and Twitter to communicate with their friends and connect with new online friends. Online friends often do not know each other through their social and professional life. Their connection is through the internet and is not identical to real social life. Social contact brings people closer, they share contact, people can hug each other in joy or sorrow, take a walk together, travel, have a meal, and so forth. In the case of the internet, where the question is communication, people feel indeed alone. Feelings of loneliness, anxiety and stress are not removed. Studies show that social media raises feelings of inadequacy for your life or appearance, fear of loss (FOMO), isolation, depression and anxiety, cyberbullying, self-absorption, and so forth. Learning or tele-learning with the help of Zoom, Teams, Webex, Google meetings and so forth causes great stress; stress about the conversation, about the appearance, the crisis, the communication and so forth, which affects mental health, especially of young people [120]. In [121], the authors report that very young people have realized the negative dimensions and negative effects of social media. Young people think that they are addicted to social media and resort to it because they are hunting something that was true, especially during the lockdown period in the COVID-19 pandemic. In addition, they report that the lessons and online meetings through Zoom, Teams and Webex were compulsory and long and exhausting.

In regard to the various health problems resulting from prolonged use of computers, studies have shown the effects that long hours have on children's health. More specifically, studies have shown that the longer children stay in front of a computer screen, the more they become overweight and have greater sleep disorders and vision disorders and loss of attention and stress [122,123]. There is also an augmented danger related to musculoskeletal problems, vision problems, stress disorders problems, headaches, sleeping problems, hearing problems from the headphones, fear of technology, internet addiction, and so forth [124–126].

In [127], the authors tried to explain the digital divide by focusing on four types of access. The first refers to the lack of any form of digital experience due to both the lack of interest in digital resources and the fear of digital resources, the second refers to the lack of digital resources and internet connection, the third focuses on the lack of digital skills due to absence or insufficient appropriate training and the fourth and last refers to the opportunities for accessibility and use of digital media. Social and class inequalities are a shaping and differentiating factor of digital inequalities. Factors related to access to the internet, hardware (computers and printers), access to tablets, smart phones, and so forth are differentiated and there is essentially unequal access to digital resources [128,129]. Access to distance education due to the lack of availability of digital resources is almost impossible or completely impossible for vulnerable students. Children from low income families do not have access to digital media, computers, mobile phones and internet

access [130–134]. The cost of internet access can be a deterrent to low-income families [135]. The low economic level of parents corresponds to very low digital skills for themselves and consequently the aggregated parents are unable to support their children and help them in their lessons and to support e-learning in general [136,137].

Although each of Cyprus's eight universities addressed the COVID-19 pandemic autonomously and individually during the Spring 2020 semester, a concerted and coordinated method was developed at the national level in order to develop a national framework within which all universities would operate. Various stakeholders participated in this collaboration, including: (i) the Ministry of Education, Culture, Sports, and Youth; (ii) the Cyprus Rectors' Conference; (iii) the Cyprus Agency for Quality Assurance and Accreditation in Higher Education; and (iv) the Pancyprian Federation of Student Unions. In the following there are some examples to demonstrate the significance of the numerous talks that took place. Pancyprian Federation of Student Unions The Pancyprian Federation of Student Unions provided feedback to the universities (POFEN). Following, there is a sample of POFEN's feedback:

(a) POFEN letter to the Ministers of (i) Education, Culture, Sports, and Youth, (ii) Health, (iii) Foreign Affairs, (iv) Finance, and (v) Transport, Communications, and Works. The letter was also send to the Chair and Members of the Educational Committee of the House of Representatives, and Universities.

(b) POFEN arranged Video Conference with the Minister of Education, Culture, Sports and Youth.

*2.1. Cyprus Rectors' Conference*

The Cyprus Rectors' Conference (CRC), comprised of the Rectors of all universities in Cyprus, collaborated amicably to build a unified framework for Cyprus universities' response to the pandemic. CRC has taken the following actions, which are listed below:

(a) On 19 March 2020, the CRC convened via videoconference to discuss the impact of COVID-19 on higher education in Cyprus and to agree on a shared set of actions and a framework for their joint response to the situation. The CRC unanimously passed a Resolution [138], which was then forwarded to the Cyprus Agency for Quality Assurance and Accreditation in Higher Education and the Ministry of Education, Culture, Sports, and Youth. The Resolution emphasized the following:

    1. "The Rectors' Conference welcomes the full compliance of the Higher Education Institutions with all emergency measures decided upon and stipulated by the Republic of Cyprus in order to address the dangers posed by the coronavirus pandemic to society and the economy.

    2. It is the unwavering intention of the Universities to complete, without delay, the current spring semester 2020, in accordance with each University's academic calendar 2019–2020, as announced to students at the beginning of the academic year. The Universities, through the Rectors' Conference, reassure their students once more, that their academic path and professional trajectory, along with ensuring their health and safety, are their highest priority.

    3. At the same time, the Universities have responded to the need to continue reliably providing high quality undergraduate and postgraduate Higher Education, by adopting and implementing the distance learning mode of delivery for each Programme of Study, utilizing online and digital tools and techniques. The high quality of education offered by universities in Cyprus continues to be assured, with the active support and constructive contribution of the Cyprus Agency of Quality Assurance and Accreditation in Higher Education (CYQAA)."

(b) On 30 March 2020, the CRC held a videoconference meeting with the Chair of the Cyprus Agency for Quality Assurance and Accreditation in Higher Education to inform the Agency about the universities' efforts to combat the pandemic, as well as conversations at the CRC and at the universities about the completion of the Spring

2020 semester and the use of alternative assessment methods. The Chair expressed the Agency's complete support and pledged to provide a quality assurance framework for alternative assessment methodologies.

(c)	There was a videoconference between CRC and the Minister of Education, Culture, Sports, and Youth on 13 April 2020, to discuss related issues and seek the Minister's cooperation.

(d)	On 5 May 2020, the CRC held a videoconference meeting with the Board of the Cyprus Agency for Quality Assurance and Accreditation in Higher Education and the Chair of the Parliamentary Committee on Education and Culture to discuss connected concerns and seek Parliamentary support.

*2.2. Cyprus Agency of Quality Assurance and Accreditation in Higher Education*

The Cyprus Agency for Quality Assurance and Accreditation in Higher Education has backed universities in their attempts to combat the pandemic. The Agency has taken the following initiatives in this regard:

(a)	Helped universities transition from face-to-face to online learning [139].
(b)	Recommended tools for online learning [140].
(c)	Alternative techniques of midterm assessments are suggested [141].
(d)	Created a quality standard and instructions for different methods of final evaluation [142].

As understood from the above discussion, all the Cypriot Universities used online learning delivery during the COVID-19 pandemic. This is of course based on the policies and measures taken at a national level basis.

As the Ministry of Education, Culture, Sports, and Youth mentioned, the online learning delivery offered by Cypriot Universities was successful. It is important to mention that the Cyprus Agency for Quality Assurance and Accreditation in Higher Education (CYQAA) monitored the situation caused by the COVID-19 epidemic, as well as the impact on higher education institutions and higher education in general. CYQAA has taken action within the context of its competencies to assist higher education institutions, students, and academic employees during this period of crisis in order to ensure the quality of online teaching delivery in all Cypriot universities. We believe that further research is needed in order to identify the success of the online learning delivery method. It is crucial that all Cypriot universities must carry out a SWOT analysis of their online learning delivery.

## 3. Methodology

*3.1. Sample*

This research is a case study. It was conducted using academic members and students of a higher education institute located on the island of Cyprus. The participants were selected from five different school faculties: Economics-Administration and Computer Science, Architecture and Engineering, Health Sciences, Social Sciences, and Law. Specifically, the sample of the research was randomly selected; two academics and four students from each faculty, thus the sample of the research consists of two groups: (a) 10 faculty members and (b) 20 students.

Written e-mailed consent forms were sought, from the academics and students, before conducting the interviews. The form was used to provide information and introduce the participants to the research, highlighting its purpose as well as the confidentiality of the data generated. To provide trust and openness, participants were also told of their rights to ensure that their privacy and personal data were confidential. Consequently, for confidentiality reasons, the authors will refer to the participants as Student 1–20 and Academic 1–10.

*3.2. Qualitative Research Method*

A qualitative research method approach was used to achieve the purpose of this research. The collection of data was accomplished by using interviews because the authors

aim to capture the "insider perspective" [143] of students' and academics' perceptions of social media as a tool for learning and teaching within faculty. In-depth interviews were implemented to assess the potential for effective use of social media in three areas and possible obstacles in the teaching and learning process.

*3.3. Research Questions*

According to Lan et al. [144], social media is a digital learning platform with high interaction between faculty and students. The authors believe that social media in distance education can have a significant contribution to higher education (see Figure 1). Specifically, the present study investigated the following research question: What is the impact of the use of social media in (a) enhancing teaching and learning in higher education, (b) motivating and supporting students, and (c) developing community connection?
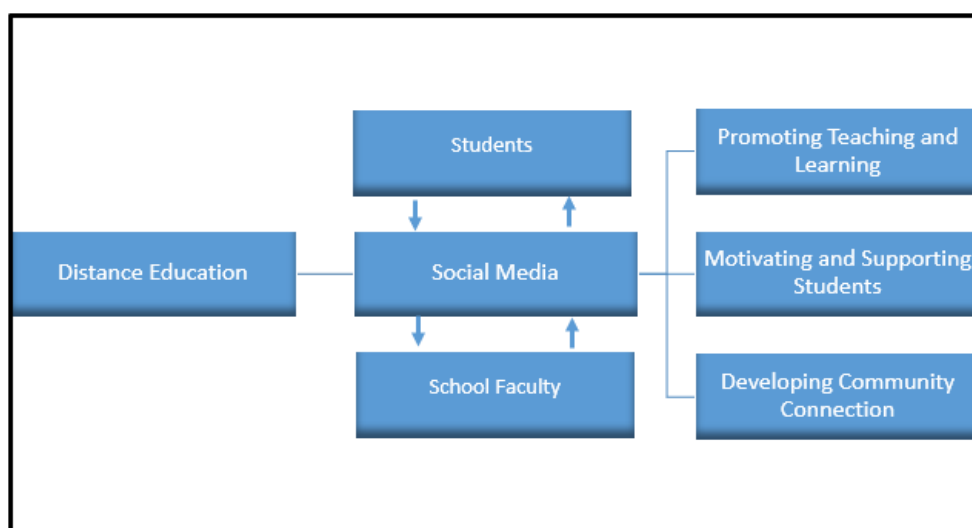


**Figure 1.** Theoretical Model Adapted from Lan et al. (2001).

*3.4. Research Tool*

The interviews were undertaken in two phases. During the first phase, academics were interviewed to examine how distance education works and how social media is used in the university under study. Students were interviewed in the second stage to cross-validate the data (gathered from the first stage) and discuss the effectiveness of learning with social media in more detail. The interviews took place online, through Skype, during the COVID-19 crisis in November of 2020. All the interviews were recorded (after approval by the participants). As already mentioned, overall, the researcher conducted 30 in-depth interviews, 10 from academics and 20 from students.

*3.5. Data Analysis*

The data were evaluated manually using content analysis. In the present study the authors adopted both manifest and latent analysis. In the first case we described what the informants actually said, staying very close to the text, while in the second case we went to an interpretive stage, where we looked for the text's underlying meaning [145–147]. To increase the validity of the research, we performed the analysis separately and afterwards we discussed the results in order to come to an agreement [148]. We followed the following main stages of content analysis: the decontextualization, the recontextualization, the categorisation, and the compilation. At the decontextualization stage we familiarized ourselves with data by reading through the transcribed text to get a sense of the whole. Afterwards, we broke down in smaller meaning units sets of sentences or paragraphs containing similar aspects that addressed the goal [149]. In other words, we used the "open coding method" technique [145]. At the recontextualization stage, we checked to

see if all aspects of the material were covered in relation to the target. Along with the final list of value units, the initial text was read again in order to discard non-essential knowledge ("dross") that did not pertain to the study's goal. In the categorization process, themes and categories were identified. The authors used the following key constructs in order to code (a) Teaching and Learning; (b) Motivation and Support; (c) Community connection. Teaching was coded under the subheadings: (a) providing material; (b) guiding; and (c) giving feedback, and learning was coded under the subheadings: (a) developing new skills; (b) understanding theories; and (c) improving critical thinking. Additionally, motivation related to whether the students were attracted to undertaking an assignment and support to any form of support including mental, academic, and spiritual. Lastly, community connection was coded under the subheading (a) connect with academics and (b) connect with other peers. At the compilation stage, the review and writing up process started.

### 3.6. Interview Structure

The questions of the interviews were clustered around six areas. Both academics and students were asked the same questions for the following reasons: firstly, to avoid bias responses [150] and secondly, to confirm and enrich the understanding from the two sources. The first part of the interview was devoted to the demographic characteristics (gender, age, years of studying/position, and distance teaching experience) and information relating to their internet reliability and speed in their respective universities and home.

The second part was related to the context of usage of social media, considering which social media were used, how much, when, and why. The third part was about the experience in an academic setting with the use of social media. Specifically, they were asked whether they had experience in using social media interactions, which platforms were often used, and how they were fully informed of the use of social media. In the fourth part of the interview, the perceived effects on learning and teaching experiences were assessed. Both academics and students were asked how useful they considered social media in learning, if they felt more interested in the educational process due to social media, and if social media had enhanced their learning/teaching experience and in which ways.

The fifth part was about student support. Academics were asked about the motivation and support that they provide to their students and its possible effectiveness. In contrast, the students were asked if they feel more encouraged to engage in the discussions, class planning, and completion of assignments via the use of social media. The final part was devoted to the barriers or difficulties that an academic or student faced using social media in an online university course. Respondents were also asked to add any comment or suggestion about the use of social media for academic purposes in higher educational institutions.

## 4. Results, Analysis, and Discussion

### 4.1. Demographic Analysis

The interviews gave a deep insight into student online activities in higher education, allowing a broader image to be created. At this stage, it is valuable to present the demographic data (see Table 1) and the engagement of the participants with social media. Regarding the gender, two (20%) of the academics were women while eight (80%) were men, while eight (40%) of the students were female and 12 (60%) were male. Turning now to their year of study, six (30%) were first-year students, five (25%) were second-year students, one (5%) was a third-year student, and eight (40%) were final-year students. Considering the distance learning, the experience of the academics was pointed out as follows; one (10%) academic had 1-year experience, three (30%) academics had 3 years experience, three (30%) academics had 4 years experience, two (20%) academics had 6 years experience and one (10%) academic had 10 years experience. The vast majority of the academics (seven (70%)) were between 41 and 60 years old, while the other three (30%) were between 30 and 40 years old.

**Table 1.** The profile of respondents.

| | | Academics | Students |
|---|---|---|---|
| **Gender** | Male | 8 (80%) | 12 (60%) |
| | Female | 2 (20%) | 8 (40%) |
| **Age** | <30 | - | |
| | 30–40 | 3 (30%) | |
| | 41–60 | 7 (70%) | |
| | >60 | - | |
| **Year of Study** | 1st Year | | 6 (30%) |
| | 2nd Year | | 5 (25%) |
| | 3rd Year | | 1 (5%) |
| | 4th Year | | 8 (40%) |
| **Years of Distance Academic Experience** | 1–3 | 4 (40%) | |
| | 4–6 | 5 (50%) | |
| | 7–9 | - | |
| | >9 | 1 (10%) | |
| **Faculty** | Economics-Administration and Computer Science | 2 (20%) | 4 (20%) |
| | Architecture and Engineering | 2 (20%) | 4 (20%) |
| | Health Sciences | 2 (20%) | 4 (20%) |
| | Social Sciences | 2 (20%) | 4 (20%) |
| | Law | 2 (20%) | 4 (20%) |
| **Devices Used to Connect in Social Media** | Smart Phone | 10 (100%) | 20 (100%) |
| | IPad | 4 (40%) | 10 (50%) |
| | Laptop | 5 (50%) | 10 (50%) |
| | Desktop | 8 (80%) | 2 (10%) |
| **Social Media Used** | Facebook | 8 (80%) | 18 (90%) |
| | YouTube | 10 (100%) | 19 (95%) |
| | Forums | 10 (100%) | 10 (50%) |
| | Viber | 5 (50%) | 17 (85%) |
| | Twitter | - | 11 (55%) |
| | WhatsApp | - | 3 (15%) |
| **The purpose of Using Social Media** | Connecting with friends | 10 (100%) | 20 (100%) |
| | Connecting with family | 9 (90%) | 17 (85%) |
| | Connecting with other colleagues and students | 10 (100%) | - |
| | Connecting with other fellows and academics | - | 16 (80%) |
| | For academic and learning Purposes | 10 (100%) | 20 (100%) |
| | Updating with the local and global news | 10 (100%) | 16 (80%) |
| | Demonstrating points of opinion | 8 (80%) | 7 (35%) |
| | Doing market research | 2 (20%) | 19 (95%) |

Importantly, all the participants (academics and students) stated that they use social media and have excellent Internet access and connectivity. Both scholars and students were involved in social media regularly. All interviewees referred to their smartphones as being active on social media. Except for the smartphones (100%), the participants also mentioned some other devices for connecting online such as iPads (four (40%) teachers, 10 (50%) students), laptops (five (50%) teachers, 10 (50%) students), and desktops eight (80%) teachers, two (10%) students). It is shown that the participants had easy access via various devices to social media.

Regarding the types of social media used, the data varied among the two group samples. The first group (academics) indicated that eight (80%) used Facebook, 10 (100%) used YouTube, 10 (100%) used Forums and five (50%) used Viber. In contrast, from the second group (students), 18 (90%) referred to the use of Facebook, 19 (95%) to the use of YouTube, 10 (50%) to the use of Forums, 17 (85%) to the use of Viber, 11 (55%) to the use

of Twitter and three (15%) to the use of WhatsApp. It can be seen that both academics and students use several social media. The highest social media used in both groups was YouTube. Academics, however, also had a preference for the Forums (100%), the fact that it is opposite to the community of students, as only 50% had indicated that they used it. Moreover, Facebook was the second-highest used site by both groups. The use of Viber was at the top of the student preferences, which was not in the academic community, as it was used by just half of them. Students also used other social media that were not mentioned by academics, such as Twitter and WhatsApp.

Given the prioritization of the participants' social media interests, it is important to examine the reasons for using them. While respondents used social media for more than one reason, according to them, the key motivation for using social media was communication. All academics and students used social media for connecting with friends. Similarly, 90% (9) of scholars and 85% (17) of students contacted family and relatives. Additionally, 100% (10) of academics stated that they used social media for connecting with other colleagues and students while 80% (16) of students with other fellow students and, of course, academics. Lastly, the interviewees also mentioned some other reasons for using social media such as keeping updated with the local or global news (10 (100%) Academics and 16 (80%) Students), demonstrating points of opinion (8 (80%) Academics and 7 (35%) Students) and doing market research (2 Academics (20%) and 19 (95%) Students).

### 4.2. Social Media as a Teaching and Learning Tool

Now, turning to the use of social media for academic and learning purposes, the data revealed that social media played a significant role. Starting with the academic community, the COVID-19 pandemic tends to lead them to the full use of social media to support their lectures. One hundred percent of academics referred to both YouTube videos and extra links for enriching their lectures and the Forums for enhancing communication and support to the students regarding their assignments. At the same time, as academic 1 stated, "Moodle is a fantastic instrument in the hand of any academic, and all we have to do is to take advantage of it". Similarly, academic 5 mentioned that "social media always enlightens in many ways my lessons". Moreover, Facebook was used by several academics (seven) for online lectures and seminars among colleagues and contact with colleagues from other universities (eight).

Shifting to the students group, the data showed that the students use social media for learning purposes. All of the students who took part in the research (100%) said they use social media to learn and complete their university courses. Some indicative answers are the following: "Of course I use social media for learning purposes" (Student 3); laughing …"I cannot imagine myself without learning from social media…you can find everything on YouTube" (Student 14); "…most of my courses use social media…" (Student 8). YouTube and Viber are used by most students, while Forum is used by half of the students (50%). From the responses, it is an interesting fact that students were using more Viber and WhatsApp for dealing with group course assignments in contrast with the academics who used the Forums the entire time. As student 4 mentioned, "Most of us frequently use Forums with our tutors to discuss the lesson and our activities. We use Viber or WhatsApp between us (students) to discuss any group work or solve course questions". Also, student 12 stated that "Viber is easier for us because we can also conduct group call sessions and discuss everything for our course tasks". This evidence may also explain the high rate of use of Viber relative to that of Forums in student groups, as they often use Viber for study purposes.

According to the academics, the university started to use full distance education courses in March 2020 because of COVID-19. As a result, Spring Semester 2020 courses were completed by distance education, using Moodle and Microsoft Teams. The in person university classes started again in September 2020, while at that time, the university adopted the Blended Theory Model. However, this did not last for long since the university switched back to completely online education by the end of October 2020. The interviews

of the present study took place during the period that the courses were conducted via the use of Moodle and Microsoft Teams.

It is essential to state that the data gathered from the third part of the interviews showed that a series of online training courses and lectures about using social media as a teaching and learning tool were embraced by academics and students. In particular, to increase understanding of how to use them effectively, a series of seminars took place to introduce and explain the Moodle platform and Microsoft Teams. They were educated in all of the educational options embraced by these sites. They were kindly asked to use them appropriately to facilitate the efficient running of the university courses since the pandemic still exists, as Academic 6 and Student 17 mentioned. Blackboard was also assisted by the university by launching and upholding a mobile service application package that provides a mobile service to students (Students 3, 16, 19 & 20). This move is in line with the study proposal by [151] for Blackboard support. Overall, the interview data supported awareness by both students and academics of how to use social media for teaching and learning purposes.

### 4.3. Discussion

The results of the content analysis showed that the participants' answers support the view that media impacts positively on student learning in higher education (see Figure 2). This article presents, discusses, and analyses the value of social media in three thematic areas: (a) enhancing teaching and learning in higher education, (b) motivating and supporting students, and (c) developing community connection.

### 4.4. Social Media Enhancing Teaching and Learning

These research results showed that the constructed and sustainable partnership between academics and students in learning and content sharing is the latest creation of social media. During the interviews, all participants (100% of both groups) answered that social media enhanced the teaching and learning process, which can support Grodeka and Wild's [152] study. Therefore, they were asked to explain in which ways the use of social media helps these processes.

Expanding on this, the authors first present the academics' views. Academics underlined the importance of social media as an economical way to transfer details to students (Academics 2, 3, 7 & 8). Moreover, the majority of them found the use of social media great for posting useful information and links to the students, for further studying and understanding of the lesson (Academic 9), and publishing of the lecture sections for examples power points, videos, guidelines, and so forth (Academic 10). As Academic 7 mentioned, "social media has increased my resource access". Of course, it helps to quote updates on assignments (Academic 2, 3 and 4) and changes on the course timetable (Academics 1, 5, 7 and 10). All academics also mentioned that it is an easy way to post students' accomplishments or educational achievements.

Additionally, academics underlined the importance of social media in guiding the students to learn. The presence of Forums for their subjects helps to "quickly explain students' questions about the lesson" (Academic 4), to "have a conversation about lesson strategies and material with students" (Academic 6), and to "facilitate class discussion, project work or assignments" (Academic 9). The majority of academics identify the use of social media in interpreting and developing the concepts and theories of the lesson. For example, academic 6 pointed out, "I guided my students to have a more deep insight in lesson's theories by using game simulation and online case studies". He also added that he organized theory debates in Forums, where each student had to consolidate the lesson's theory and give examples. Similarly, academics (5, 7, 9) argued that they used hypothetical scenarios based on course material and asked students to reflect critically on them as a group. Academic 7 characteristically reported, "it was amazing how students reflect on the scenarios. I have been watching their conversations and I was giving guidelines where it was necessary". In the same vein, Academic 3 stated, "I let my students contact

more research and investigate in depth lesson theories to optimize learning". Social media allowed the students to reflect on the provided material, do more research, and develop lesson theories. These findings are in agreement with the Moran et al. [153] study, which reported that the faculty members supported that social media sites are valuable tools for teaching and learning. Moreover, it supports Liburd and Christensen [154], who claimed that "social media supports a more reflecting approach to learning and offers the opportunity to make teaching more practical and application-oriented".
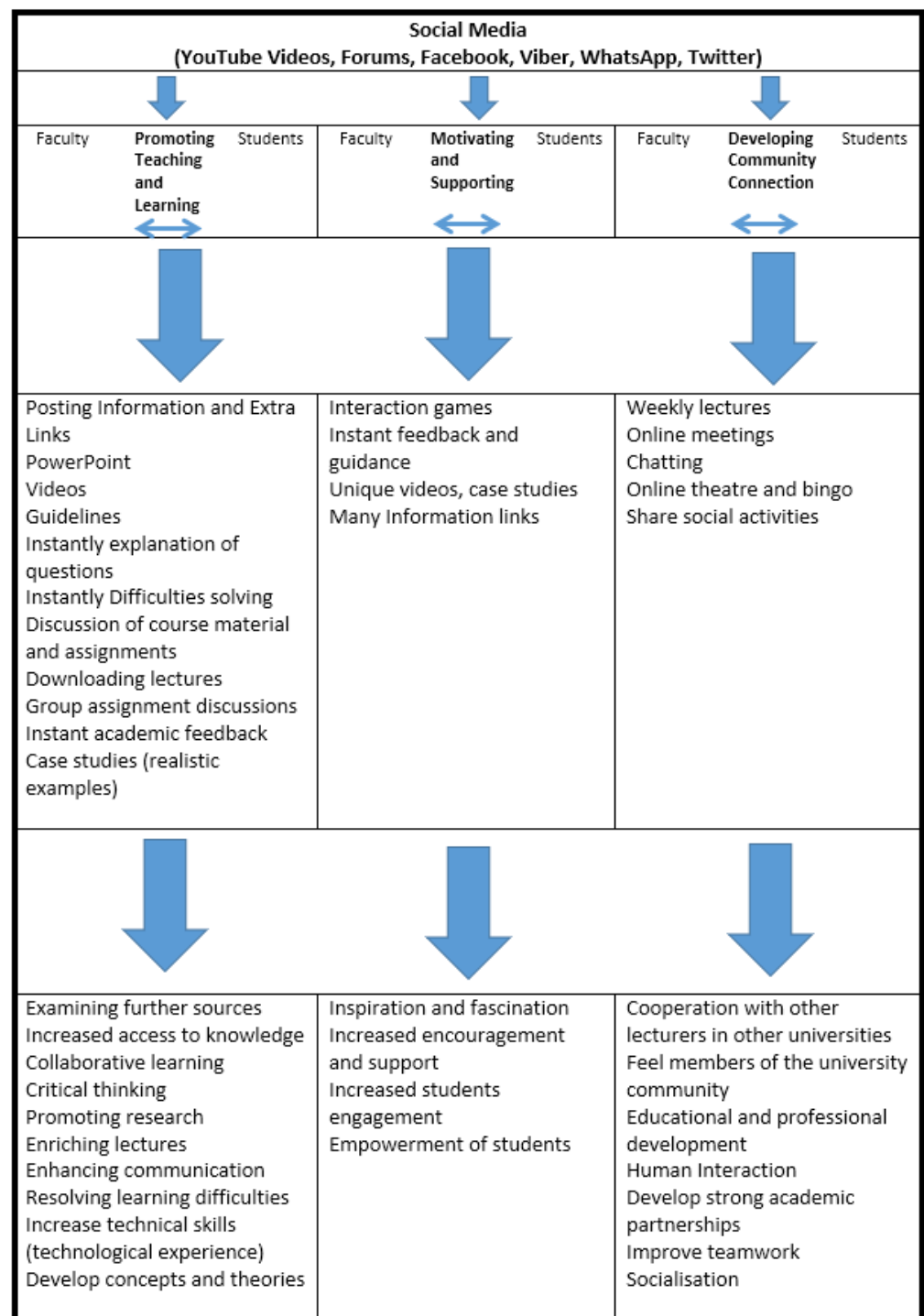


**Figure 2.** Results—The Value of Using Social Media in Higher Education.

In the same vein, students' group answers gave evidence about the positive value of social media on learning. All students referred to the advantage of direct access to their courses. They mentioned that it was easy to receive any course official statement (Student 18), to check course assignments (Student 19), and marks (Student 20). Similarly, all students said that it helped them to download lectures and any information posted by their academics to enhance their learning. For example, Student 1 claimed that he watched some of the lectures again to clarify some points, while Student 7 called the downloaded lectures and videos his "learning weapons".

Moreover, social media proved to be supportive in helping them discover new sources (Students 1, 7, 16 and 20) and providing the courses with a background context (Students 3, 6, 15, 18 and 20). Specifically via social media, academics provide examples or explain theories, by which, as it was noted, the reading was further facilitated (Student 20). Social media was lauded for getting students out of the theoretical bubble by bringing them into an external sense of only reading all these books, presenting examples of realistic applications of theories (Students 2, 4, 13, 15 and 20). At the same time, "students' doubts were easily explained by providing a discussion in the Forum based on our topic…our tutor was always there to answer any question or resolve any learning difficulty" (Student 14).

Additionally, the data showed that social media helped students access current events and examine further sources based on opinions (Students 5 and 3). For example, Student 9 said, "I have improved experience to different viewpoints". Increased access to knowledge via social media was also shown to help expand their resource base. Besides, Student 1 said, "I have the opportunity to share the concepts/ideas I have learned in other lessons".

Moreover, it is important to mention that the majority of the students (16, (80%)) referred to the weekly group assignments as a way of improving their critical thinking. For instance, student 7 mentioned that he had to interact critically with his fellow students to complete the assignment. There is a connection between social media and visual and active learning in terms of improving students' thinking skills. When using social media, students used videos, photographs, and short stories to view vast quantities of information (Students 4, 6 and 9). This verbal and visual knowledge aided students in making connections, comprehending the relationships between concepts, remembering relevant details, and expressing their thoughts through writing. Students' imaginations were piqued and their ingenuity was enhanced as they learned from social media.

Furthermore, student 9 said, "We had to reflect on all lessons theories and discuss in detail in order to have a good result". In the same vein, student 12 reported that they had opportunities for intercommunication and feedback, collaboration, and access to resources and interaction that are not limited by geography, a reality that enhances active learning by "involving them in the development of content". These are findings that agreed with Dyson et al. [155] study, which supported that social media offered self-study course material and promoted critical thinking. The findings are also in line with Liburd and Christensen's [156] study, which stated that social media encourage learners through engagement and collaboration to engage and build in-depth learning. At the same time, it follows Kele's [157] study, which stated that social media is one of the key means of collaborative learning.

Lastly, it would be an oversight not to mention that both groups of participants supported that the use of social media contributed to the increased technological experience. Here are some characteristic statements of the participants. "I realized that using more technology to support my lessons helped me enhance my technical experience" (Academic 10). "The fact that I had to teach all by distance to my students led me to look for more realistic rather than theoretical information, a fact that makes me an expert in using social media to search and implement new class materials" (Academic 5). "I already have technical skills, but I liked to learn more…I'm particularly excited about the use of Moodle and how Teams works" (Student 19). According to Kathuria [158], students can learn new technology and develop computer acquaintance by using social media.

### 4.5. Social Media Motivating and Supporting Students

Let us turn now to the second thematic area, the value of social media in student motivation and support. The majority 80% (eight) of academics believed that the presence of social media made the lessons more attractive for the students. For instance, Academics 7 and 5 said that it would be very hard to have an interesting lesson for the students without social media. Academics 2 and 3 also mentioned that social media-inspired some students to engage more in debates and discussions. Academic 10 exemplifies that he enjoyed having discussions on Forums with the students, especially when he was about to give feedback and support. It is important to say that four out of eight academics referred to increased encouragement and support due to the full-distance education led by COVID-19. They explained that the whole situation led them to want to be closer to and more supportive of the students. The only way, therefore, was with the use of online social media (Academics 3, 5, 7). Characteristically, Academic 9 said, "In order to attract the students and feel content with my course, I always try to use unique videos, case studies and examples", while Academic 3 said, "I want to have happy students, full of energy and ready to learn…so I include many interaction games in my lessons". These come in line with Nicol and McFarlane-Dick's [159] view that social media is a way to empower the students. It also supports the research of Ernst et al. [160], which stated that students use social media because of the pleasant experience they got from using it.

Similarly, the majority 85% (17) of students felt that social media played an important role in being motivated and supported. Social media knowledge was found to have improved incentives for students to engage in discussions. For example, it is mentioned that the existence of "impressive videos" (Student 11), "awesome interactive games" (Student 7), and "presentations rich in information links" (Student 20) made the lesson more fascinating to attend and take part in the activities. In addition, Student 4 quoted that "social media has served as a motivation for more reading because I am more interested in it". At the same time, Student 9 said that he was often inspired to do more in-depth research on the subject discussed at the lecture.

Moreover, it is of great importance that the student group also referred to COVID-19. A vast amount of 65% (13) of students mentioned insecurity and anxiety because of COVID-19 regulations. "It's frustrating to have a dissertation to do, but you can't physically visit your tutor or go to libraries" (Student 3). Nevertheless, the same student argued that through the Forums, Microsoft Teams, and Viber, he had full support from his tutor and characteristically stated, "the guidance of my tutor is more than appreciated". At the same time, four (66.6%) of the first-year students reported that social media use helped them navigate the registration process, attend seminars for staggered financial assistance, and get virtual orientation for the university and services. These data are similar to the findings of Wodzicki et al. [161] research. Despite the results of the research, it is not certain that the Coronavirus will last forever. Thus the faculty must provide more motivation to the students in order to keep their rigorous participation in discussion on social media. One way to do this is to ask students to participate as part of their course evaluations once a week or a given number of times per semester. Unless there is some reward, such as marks for evaluation, students lack the desire to interact online [162]. Additionally, as Bowers-Campbell [163] quoted, a system of virtual gifts can be used as a rewarding method for recognizing students' efforts in participating online.

### 4.6. Social Media Developing Community Connection

Last but not least is the third thematic area dealing with the impact of social media on the community connection. The data of the research showed that social media has a positive impact on the relationships inside and among groups. All academics and students spoke with positive comments towards the effects of social media on their relationships. First of all, academics developed strong partnerships with their colleagues since they have to face the same ambiguities because of the full distance learning and use of technology. Thus as they reported, they had on a regular basis online meetings (Academics 2, 5, 8 and

10), a Forum where they discuss any educational or administrative matter (Academics 1, 2, 6 and 9), a group on Viber for other than academic purposes (Academics 2, 3, 5 and 8) and weekly lectures via Facebook for educational or professional development (Academics 4, 6, 7, 9 and 10). Moreover, some of them mentioned that they arrange cooperation with lecturers in other countries (Academics 3 and 10). Simultaneously, the use of Forums and Teams gives a glimpse of human interaction among students and academics. It is a more student-oriented method that gives the opportunity to "break the ice" (Academic 6) between students and academics.

These research results strengthen the Lan et al. [164] study, which claimed that social media is an emerging digital learning platform in higher education and has a unique advantage in connectivity and interaction between students and faculty in the virtual community. Similarly, the results come in line with Ukwishaka and Aghaee's [165] research, which supported that social media promotes peer-to-peer and student-teacher interactions.

At the same time, the majority, 85% (17) of the students, stated that they found the use of social media an excellent way to connect with their academics. All students agreed that the use of social media helped them to feel like members of the University community and be connected, since they could not meet physically because of COVID-19 regulations. Ninety percent (18) of the students reported that they had live conversations and talks with their peers, which mostly allowed them to feel like they were students who belonged to the university. In particular, social media facilitated student's involvement and participation in online activities such as theatre and bingo (Students 4 and 7), improved their communication skills (Students 1, 6 and 10), and developed their ability to work on team projects (Students 2, 3, 8 and 9). As Student 9 said, "If it wasn't for Viber, how could we ever manage to do our assignment and meet my fellows after all?". He also added: "We have a Viber group to discuss football and the latest news". Likewise, Student 2 said that she made a friend, and they speak about fashion and design.

Moreover, 70% (14) of the students indicated that they were encouraged to share their social activities and make arrangements to join together after COVID-19. Overall, this study supports Ellison et al.'s [166] argument that indeed students are further integrated into university life by using social media. It is also in accordance with Gray et al.'s [167] study which claimed that social media could empower the connections in the university community and with Sanchez et al.'s [168] vision that social media promotes high levels of team working and cooperation.

### 4.7. Main Barriers/Recommendations for the Use of Social Media

Academics and students argued that using social media as a teaching and learning tool is of great significance; they were asked about the main obstacles to their limited use (see Table 2). It is interesting the fact that 60% of the academics have admitted that, in the beginning, they were concerned about their privacy. Fortunately, as the same academics said, the university faculty placed strict rules on privacy that would risk grades if the students omitted them. Indeed, no incident has ever been reported. Moreover, one of the key difficulties, identified by administrative academics, was the vast workload (2 and 10), as they had to verify the adequacy of the study guides and module materials before being distributed to the students.

Nevertheless, this is a big advantage of the university itself, because according to Mason and Rennie [169], there is a necessity to evaluate and recognize the work of the teachers as acceptable forms of academic work. The management and monitoring of information and student activities was another difficulty. The majority of academics (75%) said that it was very difficult to monitor the vast amount of students' activities on different social media. As Academic 8 said, "it was a very time consuming and exhausting procedure". In this case, the university can consider the Bubas et al. [170] study, which proposes a more integrated environment that incorporates a Moodle system with a Wiki tool built-in and an e-portfolio system such as Mahara's College. The authors pointed out that the separate topics generated by the various tools were handled more effectively [171]. The

authors argued that there is the potential to create a more personalized learning experience for students by combining these existing learning channels with Web 2.0 features.

In conclusion, 85% of the students reported as their main difficulty the controlling of the vast amount of information gathered from all the courses in social media. As Student 13 quoted, "It was very difficult for me to have constant daily contact with the social media in order to be up to date and take part in the courses". Likewise, Student 17 stated that he spent too much time on social media in order to be consistent on the scheduled assignments. This falls in line with the academics' references to the difficulty in managing information and the large workload. Perhaps the above obstacle can be resolved by setting a stricter program in each course with assignment specifications, word count limit comments, and posting hours. In this way, the information will be less and more precise, a fact that would help to reduce the workload. In addition, the fixed posting hours would enhance, for both faculty and students, better time management.

**Table 2.** Barriers and Recommendations.

| Barriers | Recommendations |
| --- | --- |
| Large workload<br>Time consuming | - Setting a strict program<br>- Word count limit comments<br>- Posting hours |
| Difficulties in monitoring the vast information<br>Time consuming | - Incorporate a Moodle system with a Wiki tool and an e-portfolio system |

## 5. Conclusions

Education employs digital technology as a new or enhanced method for better teaching and learning [172]. Social data has developed as a technology of highly useful personal contact. Still, can the incorporation of social media in higher education institutions positively impact the education process? Or as Rehow et al. [173] questioned, does social media serve as educational tools?

In a bid to improve academic success through a number of other methods, social media assists students socially. Social media builds partnerships that would never exist in the real world, putting together a wider variety of people and addressing the regional, class and ethnic barriers. In the educational process, the adoption of social media used by both students and educators has been shown to be more than beneficial through the current study. Nowadays, technology investment and social media incorporation, as future creative tools, have become important for the new generation.

Social media platforms, like a cooperative standard, enable students the opportunity to elucidate innovative educational projects and share data. Students claim to be satisfied regarding the use of Facebook, Instagram information with the team students and discuss details, information and relative issues considering every element [174]. Facebook offers chances to students to develop self-confidence to participate within teams and build trust between peers. The authors of [174] pointed out that social media networking is considered by students as a way to permit communication in real time. More especially according to students social media networking is a means of communication not only without time but without space restrictions. They also claimed that social media networking is a means for in depth discussions and immediate dynamic feedback. The author of [175] endorses the utility of social media in tertiary education, due to the fact that it produces a worthwhile type of knowledge enhanced teaching and learning. In addition, ref. [175] argued that social media networking benefits academic society from the point of view of dynamic collaboration, flexibility and interaction in order to maximize didactical methodology to provide the appropriate education needed in this specific high tech era and to offer both new learning prospects as well as new didactical challenges. Teaching by social media platforms and universities LMSs could and should provide on effective online instruction virtual environment appropriate for the new pedagogical demands.

Hajli and Lin [176] rightly argued that social media could significantly support online learning in education. This research seeks to fill a gap in the literature by providing evidence that the use of social media by higher educational institutions impacts positively on the educational process by promoting teaching and learning, motivating students to be active participants, and establishing connections in the university community. This provides further insight into the controversies surrounding the incorporation of social media in higher education and demonstrates how students and academics have reacted within a university with an already large social media existence.

Additionally, the results of this research indicate that every university should, as a priority in today's higher education, develop a strategy of incorporating information technology, including the use of social media. Nevertheless, the current study is a case study, so additional field studies should be conducted to generalize the findings. Moreover, future research should be devoted in every research question separately, in order to have a more in-depth investigation and more detailed results to be used by the universities. The authors are committed to continuing to explore and expand on all of the topics covered in this study in the future. Therefore, it can be easily adopted as a guide for future and further research. Specifically, future research could investigate the changing pedagogical strategies of educators through their use of social media, eliciting creative good practice models by using mixed methodology. Universities, backed by adequate policy tools and realistic guidance, should encourage social media as a means of teaching. Since we live in the big data and cloud computing era, there will be a growing interest in the field and its effects on education, in general [177–181]. Practice recommendations encourage scholars to investigate and acknowledge social media tools, not as an 'attach' technology, but as a detailed plan for successful teaching that facilitates the pedagogical transition to the use of social media technologies. Overall, the results of this research showed that social media has a positive effect on higher education. Social media enhances teaching and learning in higher education, motivating and supporting students and developing community connections. These results support the significant role of the use of social media in higher education. The authors recommend that university faculties should incorporate social media into the teaching and learning process.

## References

1. Lenhart, A.; Purcell, K.; Smith, A.; Zickuhr, K. *Social Media Mobile Internet Use among Teens and Young Adults*; Pew Internet American Life Project: Washington, DC, USA, 2010.
2. Vandeyar, T. The Academic Turn: Social Media in Higher Education. *Educ. Inf. Technol.* **2020**, *25*, 5617–5635. [CrossRef]
3. Siakalli, M.; Masouras, A.; Papademetriou, C. Understanding Online News: Uses and Gratifications of Mainstream News Sites and Social Media. *Int. J. Strateg. Innov. Mark.* **2015**, *2*, 1–13. [CrossRef]
4. Siakalli, M.; Masouras, A.; Papademetriou, C. Uses and Gratifications in Online News: Comparing Social Media and Online News Media Use by Users. In Proceedings of the 4th International Conference on Quantitative and Qualitative Methodologies in the Economic and Administrative Sciences, Athens, Greece, 21–22 May 2015; pp. 317–325.
5. Tawafak, R.M.; AlFarsi, G.; Jabbar, J.; Malik, S.I.; Mathew, R.; AlSidiri, A.; Shakir, M.; Romli, A. Impact of Technologies During COVID-19 Pandemic for Improving Bahaviour Intention to Use E-learning. *Int. J. Interact. Mob. Technol.* **2021**, *15*, 184–198. [CrossRef]
6. Zincir, O. Knowledge workers' social media usage as a personal knowledge management tool. In *Harnessing Social Media as a Knowledge Management Tool*; Chugh, R., Ed.; IGI Global: Hershey, PA, USA, 2017; pp. 108–124. [CrossRef]

7.    Joosten, T. *Social Media for Educators: Strategies and Best Practices*; Jossey-Bass: Hoboken, NJ, USA, 2012.

8.    Kietzmann, J.H.; Hermkens, K.; McCarthy, I.P.; Silvestre, B.S. Social media? Get serious! Understanding the functional building blocks of social media. *Bus. Horiz.* **2011**, *53*, 241–251. [CrossRef]

9.    Dulek, B.; Saydan, R. The Impact of Social Media Advertisement Awareness on Brand Awareness, Brand Image, Brand Attitude and Brand Loyalty: A Research on University Students. *Int. J. Contemp. Econ. Adm. Sci.* **2019**, *9*, 470–494.

10.   Souravlas, S.; Anastasiadou, S. Pipelined Dynamic Scheduling of Big Data Streams. *Appl. Sci.* **2020**, *10*, 4796. [CrossRef]

11.   Souravlas, S.; Katsavounis, S.; Anastasiadou, S. On Modeling and Simulation of Resource Allocation Policies in Cloud Computing Using Coloblack Petri Nets. *Appl. Sci.* **2020**, *10*, 5644. [CrossRef]

12.   Souravlas, S.; Anastasiadou, S.; Katsavounis, S. More on Pipelined Dynamic Scheduling of Big Data Streams. *Appl. Sci.* **2021**, *11*, 61. [CrossRef]

13.   Grosseck, G.; Bran, R. Script towards Research 2.0: The Influence of Digital and Online Tools in Academic Research. *World J. Educ. Technol. Curr. Issues* **2016**, *8*, 132–138. [CrossRef]

14.   Kaplan, A.M.; Haenlein, M. Users of the world, unite! The challenges and opportunities of Social Media. *Bus. Horiz.* **2010**, *53*, 59–68. [CrossRef]

15.   Sutikno, T.; Handayani, L.; Stiawan, D.; Riyadi, M.A.; Subroto, I.M.I. WhatsApp, Viber and Telegram: Which is the Best for Instant Messaging? *Int. J. Electr. Comput. Eng. (IJECE)* **2016**, *6*, 909–914. [CrossRef]

16.   Balakrishnan, V.; Gan, C.L. Students' learning styles and their effects on the use of social media technology for learning. *Telemat. Inform.* **2016**, *33*, 808–821. [CrossRef]

17.   Chugh, R.; Joshi, M. Challenges of knowledge management amidst rapidly evolving tools of social media. In *Harnessing Social Media as a Knowledge Management Tool*; Chugh, R., Ed.; IGI Global: Hershey, PA, USA, 2017; pp. 299–314. [CrossRef]

18.   Bellavista, P.; Foschini, L.; Ghiselli, N. Analysis of Growth Strategies in Social Media: The Instagram Use Case. 2019. Available online: https://www.researchgate.net/publication/336336530_Analysis_of_Growth_Strategies_in_Social_Media_The_Instagram_Use_Case#fullTextFileContentshor (accessed on 3 September 2009).

19.   Rehm, M.; Manca, S.; Brandon, D.L.; Greenhow, C. Beyond disciplinary boundaries: Mapping educational science in the discourse on social media. *Teach. Coll. Rec.* **2019**, *121*, 1–24. [CrossRef]

20.   Blackhow, C.; Galvin, S.; Brandon, D.; Askari, E. A decade of research on K-12 teaching and teacher learning with social media: Insights on the state-of-the-field. *Teach. Coll. Rec.* **2020**, *122*, 1–72.

21.   Jiao, Y.; Gao, J.; Yang, J. Social value and content value in social media: Two ways to flow. *J. Adv. Manag. Sci.* **2015**, *3*, 299–306. [CrossRef]

22.   Gupta, A. Scope and implications of social media in the context of higher education: Review of researches. *MIER J. Educ. Stud. Trends Pract.* **2014**, *4*, 231–253. [CrossRef]

23.   Tess, P.A. The role of social media in higher education classes (real and virtual)—A literature review. *Comput. Hum. Behav.* **2013**, *29*, A60–A68. [CrossRef]

24.   Romero, O.C. Social Media as learning tool in higher education: The case of Mexico and South Korea. *Rev. Electron. Sin.* **2015**, *44*, 1–15.

25.   Blackhow, C.; Galvin, S. Teaching with Social Media: Evidence-based Strategies for Making Remote Higher Education Less Remote. *Inf. Learn. Sci.* **2020**, *121*, 513–524.

26.   McKibbin, W.J.; Fernando, R. The Global Macroeconomic Impacts of COVID-19: Seven Scenarios. *Asian Econ. Pap.* **2020**, *20*, 1–55. [CrossRef]

27.   Issa, T.; Sulaiman Ghazi, B.; Ibrahim Al-Oqily, A.; Baltaci Goktalay, S.; Köse, U.; Issa, T.; Salih, B.A.; Almufaraj, W.K. Use of social networking in the Middle East: Student perspectives in higher education. *Heliyon* **2019**, *7*, 2021. [CrossRef]

28.   Kim, M.J.; Hwang, Y.S.; Hwang, H.S. Utilising social networking services as a collective medium to support design communication in team collaboration. *Archnet-IJAR* **2020**, *14*, 409–421. [CrossRef]

29.   Chauhan, J.A.; Goel, A. Feature-based analysis of social networking and collaboration in MOOC. *Int. J. Dist Educ. Technol.* **2020**, *18*, 34–51. [CrossRef]

30.   Hinojo-Lucena, F.-J.; Aznar-Díaz, I.; Cáceres-Reche, M.-P.; Romero-Rodríguez J.-M. Use of social networks for international collaboration among medical students. *Educ. Méd.* **2020**, *21*, 137–141. [CrossRef]

31.   Hirci, N.; Pisanski Peterlin, A. Face-to-face and Wiki revision in translator training: Exploring the advantages of two modes of collaboration. *Interpret. Transl. Train. (ITT)* **2020**, *14*, 38–57. [CrossRef]

32.   Issa, T. e-Assessments via Wiki and Blog Tools: Students' Perspective. In *Educational Networking*; Springer: Berlin, Germany, 2020; ISBN 978-3-030-29972-9.

33.   Guo, Y.; Cao, J.; Lin, W. Social network influence analysis. In Proceedings of the 2019 6th International Conference on Dependable Systems and Their Applications (DSA), Harbin, China, 3–6 January 2019; pp. 517–518.

34.   Lim, J.; Newby, T.J. Some Preservice teachers' Web 2.0 experiences and perceptions on Web 2.0 as a personal learning environment. *J. Comput. High. Educ.* **2020**, *32*, 234–260. [CrossRef]

35.   Gikas, J.; Grant, M.M. Mobile computing devices in higher education: Student perspectives on learning with cellphones, smartphones social media. *Internet High. Educ. Mob.* **2013**, *19*, 18–26. [CrossRef]

36. Eriksson, M.; Larsson, E. Facebook as a Tool for Building Customer Relationships in the Hospitality Industry: A Quantitative Study on the Effects of Facebook Activities on Relationship Drivers and Relational Benefits. 2014. Available online: http://www.diva-portal.org/smash/get/diva2:733323/FULLTEXT01.pdf (accessed on 1 March 2020).

37. Cvijikj, I.P.; Michahelles, F. Online engagement factors on Facebook brand pages. *Soc. Netw. Anal. Min.* **2013**, *3*, 843–861. [CrossRef]

38. Pinto, M.B.; Mansfield, P. Facebook as a complaint mechanism: An investigation of millennials. *J. Behav. Stud. Bus.* **2011**, *4*, 1–12.

39. Ellison, N.B.; Steinfield, C.; Lampe, C. The benefits of Facebook 'friends': Social capital and college students' use of online social network sites. *J. Comput.-Mediat. Commun.* **2019**, *12*, 1143–1168. [CrossRef]

40. Manca, S.; Ranieri, M. "Yes for sharing, no for teaching!": Social Media in academic practices. *Internet High. Educ.* **2016**, *29*, 63–74. [CrossRef]

41. McCracken, H. The Three Immutable Laws of Online Privacy. *PC World* **2008**, *8*, 13.

42. Paul, J.A.; Baker, H.M.; Cochran, J.D. Effect of online social networking on student academic performance. *Comput. Hum. Behav.* **2012**, *28*, 2117–2127. [CrossRef]

43. Orús, C.; Barles, M.J.; Belanche, D.; Casalo, L.; Fraj, E.; Gurrea, R. The effects of learner-generated videos for YouTube on learning outcomes and satisfaction. *Comput. Educ.* **2016**, *95*, 254–269. [CrossRef]

44. Gür, D.; Kılıç Türel, Y. Parenting in the digital age: Attitudes, controls and limitations regarding children's use of ICT. *Comput. Educ.* **2022**, *183*, 104504. [CrossRef]

45. Parameswaran, M.; Whinston, A.B. Social Computing: An Overview. *Commun. Assoc. Inf. Syst.* **2007**, *19*, 762–780. [CrossRef]

46. Anastasiadou, S.; Dimitriadou, C. What does Critical Thinking mean? A statistical data analysis of pre-service teachers' defining statements. *Int. J. Humanit. Soc. Sci. (IJHSS)* **2011**, *1*, 73–83.

47. Anastasiadis, L. Emotional Intelligence Influences on Consumers Consumer Behavior. *Int. J. Entrep. Innov. Compet. IJEIC* **2019**, *2*. Available online: https://hephaestus.nup.ac.cy/bitstream/handle/11728/11527/article1.pdf?sequence=1&isAllowed=y (accessed on 1 March 2022).

48. Anastasiadis, L.; Christoforidis, C. Evaluating citizens' actual perceptions and expectations and assessing e-Service Quality Gap in Public Sector related to e-Government Services. *Int. J. Entrep. Innov. Compet. IJEIC* **2019**, *1*. Available online: http://hephaestus.nup.ac.cy/bitstream/handle/11728/11395/Paper5.pdf?sequence=1&isAllowed=y (accessed on 24 February 2022).

49. Selwyn, N. Social Media in Higher Education. *Eur. World Learn.* **2012**, *1*, 1–10. Available online: http://sites.jmu.edu/flippEDout/files/2013/04/sample-essay-selwyn.pdf (accessed on 20 February 2022).

50. Hamid, S.; Chang, S.; Kurnia, S. Identifying the use of online social networking in higher education. In Proceedings of the ASCILITE, Auckland, New Zealand, 6–10 December 2009.

51. Sobaih, A.E.; Moustafa, M. Speaking the same language: The value of social networking sites for hospitality and tourism higher education in Egypt. *J. Hosp. Tour. Educ.* **2016**, *28*, 46–56. [CrossRef]

52. Dyson, B.; Vickers, K.; Turtle, J.; Cowan, S. Evaluating the use of Facebook to increase student engagement and understanding in lecture-based classes. *High. Educ.* **2015**, *69*, 303–313. [CrossRef]

53. Davis, C., III; Deil-Amen, R.; Rios-Aguilar, C.; Gonzalez Canche, M.S. *Social Media in Higher Education: A Literature Review and Research Directions*; The Centre for the Study of Higher Education at the University of Arizona and Claremont Graduate University: Claremont, CA, USA, 2012.

54. Hung, H.T.; Yuen, S.C.Y. Educational use of social networking technology in higher education. *Teach. High. Educ.* **2010**, *15*, 703–714. [CrossRef]

55. McCarroll, N.; Curran, K. Social networking in education. *Int. J. Innov. Digit. Econ.* **2013**, *4*, 1–15. [CrossRef]

56. Wang, W.H.; Hao, Y.M.; Cao, Y.H.; Li, L. A Cloud-Based Real-Time Mobile Collaboration Wiki System. *Appl. Mech. Mater.* **2014**, *441*, 928–931. [CrossRef]

57. Schlenkrich, L.; Sewry, D. Factors for successful use of social networking sites in higher education. *S. Afr. Comput. J.* **2012**, *49*, 12–24. [CrossRef]

58. Sobaih, A.E.E.; Moustafa, M.A.; Ghandforoush, P.; Khan, M. To use or not to use? Social media in higher education in developing countries. *Comput. Hum. Behav.* **2016**, *58*, 296–305. [CrossRef]

59. Blackhow, C.; Galvin, S.; Staudt Willet, K.B. What should be the role of social media in education? *Policy Insights Behav. Brain Sci.* **2019**, *6*, 178–185.

60. Andersson, A.; Hatakka, M.; Grönlund, Å.; Wiklund, M. Reclaiming the students–coping with social media in 1:1 schools. *Learn. Media Technol.* **2014**, *39*, 37–52. [CrossRef]

61. Torres-Ramírez, M.; García-Domingo, B.; Aguilera, J.; Casa, D.L. Video-sharing educational tool applied to the teaching in renewable energy subjects. *Comput. Educ.* **2014**, *73*, 160–177. [CrossRef]

62. Everson, M.; Gundlach, E.; Miller, J. Social media and the introductory statistics course. *Comput. Hum. Behav.* **2013**, *29*, A69–A81. [CrossRef]

63. Duncan, I.; Yarwood-Ross, L.; Haigh, C. YouTube as a source of clinical skills education. *Nurse Educ. Today* **2013**, *33*, 1576–1580. [CrossRef]

64. Collins, J. Writing multiple-choice questions for continuing medical education activities and selfassessment modules. *Radiographics* **2006**, *26*, 543–551. [CrossRef] [PubMed]

65. West, K.; Williamson, J. Wikipedia: Friend or foe? *Ref. Serv. Rev.* **2009**, *37*, 260–271. [CrossRef]

66.  Artal-Sevil, J.S.; Romero-Pascual, E.; Artacho-Terrer, J.M. Blended-learning: New trends and experiences in higher education. In Proceedings of the 8th International Conference of Education, Research and Innovation, Seville, Spain, 18–20 November 2015.

67.  Alebaikan, R.; Troudi, S. Blended learning in saudi universities: Challenges and perspectives. *ALT-J.* **2010**, *18*, 49–59. [CrossRef]

68.  Anastasiadou, S.; Anastasiadis, L.; Angeletos, T.; Vandikas, J. A Multidimensional Statistical Analysis of Students' Attitudes toward Physics. *Int. J. Divers. Organ. Communities Nations* **2010**, *6*, 341–356. [CrossRef]

69.  Graham, A.; Toon, I.; Wynn-William, K.; Beatson, N. Using 'nudges' to encourage student engagement: An exploratory study from the UK and New Zealand. *Int. J. Manag. Educ.* **2017**, *15*, 36–46. [CrossRef]

70.  Korr, J.; Derwin, E.B.; Blacke, K.; Sokoloff, W. Transitioning an adult-serving university to a blended learning model. *J. Contin. High. Educ.* **2012**, *60*, 2–11. [CrossRef]

71.  Au, M.; Lam, J.; Chan, R. Social media education: Barriers and critical issues. In *Technology in Education. Transforming Educational Practices with Technology*; Springer: Berlin/Heidelberg, Germany, 2015; pp. 1999–2050.

72.  Brew, L.; Cervantes, J.M.; Shepard, D. Millennial counselors and the ethical use of Facebook. *Prof. Couns.* **2013**, *3*, 93–104. [CrossRef]

73.  Boyd, D.M.; Ellison, N.B. Social network sites: Definition, history, and scholarship. *J. Comput.-Mediat. Commun.* **2007**, *13*, 210–230. [CrossRef]

74.  Moran, M.; Seaman, J.; Tinti-Kane, H. *Teaching, Learning, and Sharing: How Today's Higher Education Faculty Use Social Media*; Research Report; Pearsons Learning Solutions, and Babson Survey Research Group: Boston, MA, USA, 2011.

75.  Mendez, J.P.; Le, K.; De La Cruz, J. Integrating Facebook in the classroom: Pedagogical dilemmas. *J. Instr. Pedagog.* **2014**, *13*, 1–10.

76.  Allen, J.V.; Roberts, M.C. Critical incidents in the marriage of psychology and technology: A discussion of potential ethical issues in practice, education, and policy. *Prof. Psychol. Res. Pract.* **2011**, *42*, 433–439. [CrossRef]

77.  Chen, Y.-C. Linking learning styles and learning on mobile Facebook. *Int. Rev. Res. Open Distrib. Learn.* **2015**, *16*, 94–114. [CrossRef]

78.  Hope, A. Educational heterotopia and students' use of Facebook. *Australas. J. Educ. Technol.* **2016**, *32*, 47–58. [CrossRef]

79.  Anastasiadou, S.; Anastasiadis, L. Reliability and validity testing of a new scale for monitoring attitudes toward electronics and electrical constructions subject. *Int. J. Appl. Sci. Technol. (IJAST)* **2011**, *1*, 1–10.

80.  Anastasiadou, S.D.; Anastasiadis, L.; Vandikas, I.; Angeletos, T. Implicative Statistical Analysis and Principal Components Analysis in Recording Students' Attitudes to Electronics and Electrical Construction Subjects. *Int. J. Technol. Knowl. Soc.* **2011**, *7*, 63–77. [CrossRef]

81.  Mazer, J.P.; Murphy, R.E.; Simonds, C.J. I'll See You On "Facebook": The Effects of ComputerMediated Teacher Self-Disclosure on Student Motivation, Affective Learning, and Classroom Climate. *Commun. Educ.* **2007**, *56*, 1–17. [CrossRef]

82.  Phillips, C. Social Media Use: How Much Is Too Much? Millennial Marketing. Available online: http://millennialmarketing. com/2011/01/social-mediause-how-much-is-too-much/ (accessed on 25 October 2011).

83.  Harran, M.; Olamijulo, C. Social media communication spaces to develop literacies in a higher education language classroom context. *S. Afr. J. High. Educ.* **2014**, *28*, 410–435.

84.  Ryan, S.D.; Magro, M.J.; Sharp, J.H. Exploring educational and cultural adaptation through social networking sites. *J. Inf. Technol. Educ.* **2011**, *10*, 1–16.

85.  Lin, G.Y. Anonymous Versus Identified Peer Assessment via a Facebook-Based Learning Application: Effects On Quality of Peer Feedback, Perceived Learning, Perceived Fairness, And Attitude Toward The System. *Comput. Educ.* **2018**, *116*, 81–92. [CrossRef]

86.  Sequeira, A.H. Introduction to Concepts of Teaching and Learning. 2017. Available online: https://www.researchgate.net/ publication/272620585_INTRODUCTION_TO_CONCEPTS_OF_TEACHING_AND_LEARNING (accessed on 16 March 2022).

87.  Sequeira, A.H.; Mohammed, A.; Kumar, S.; Maina Saleh, B.; Shuaibu, A. E-Learning: A Tool for Enhancing Teaching and Learning in Educational Institutes. *Int. J. Comput. Sci. Inf. Technol.* **2017**, *8*, 217–221.

88.  Sigala, M. Integrating Web 2.0 in e-learning environments: A socio-technical approach. *Int. J. Knowl. Learn.* **2007**, *3*, 628–648. [CrossRef]

89.  Reece, I.; Walker, S. *Teaching, Training and Learning*; Business Education Publishers: Spring, UK, 1997.

90.  Celik, I.; Goknur Kaplan, A.; Tayfun Can, O. Social Media for Academics: Motivation Killer or Booster? In Proceedings of the IEEE 14th International Conference Advanced Learning Technologies (ICALT), Athens, Greece, 7–10 July 2014.

91.  Ferding, R.E.; Trammell, K.D. Content delivery in the 'blogosphere'. *Technol. Horiz. Educ.* **2004**, *31*, 12–20.

92.  Ryan, R.M.; Deci, E.L. Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions. *Contemp. Educ. Psychol.* **2000**, *25*, 54–67. [CrossRef]

93.  Williams, K.; Williams, C. Five key ingblackients for improving motivation. *Res. High. Educ. J.* **2011**, *11*. Available online: http://aabri.com/manuscripts/11834.pdf (accessed on 1 February 2022).

94.  Zepke, N.; Leach, L. Integration and adaptation: Approaches to the student retention and achievement puzzle. *Act. Learn. High. Educ.* **2005**, *6*, 46–59. [CrossRef]

95.  Ornstein, A.C. Motivation and learning. *High Sch. J.* **1994**, *78*, 105–110.

96.  Worley, K. Educating college students of the net generation. *Adult Learn.* **2011**, *22*, 31–39. [CrossRef]

97.  Brave, S.; Nass, C. Emotion in human-computer interaction. In *The Human Computer Interaction Hand-Book: Fundamentals, Evolving Technologies and Emerging Applications*; Lawrence Erlbaum Associates: New York, NY, USA, 2008; pp. 77–92.

98.    Honig, M.I.; Kahne, J.; McLaughlin, M.W. School-community connections: Strengthening opportunity to learn and opportunity to teach. In *Richardson ed Handbook of Research on Teaching*, 4th ed.; Aera: Washington, DC, USA, 2001.

99.    Wenger, E. *Communities of Practice: Learning, Meaning and Identity*; Cambridge University Press: Cambridge, UK, 1988.

100.   Engestrom, Y. Expansive learning at work: Toward an activity theory reconceptualization. *J. Educ. Work.* **2001**, *14*, 133–156. [CrossRef]

101.   Panitsides, E.A.; Anastasiadou, S. Lifelong Learning Policy Agenda in the European Union: A bi-level analysis. *Open Rev. Educ. Res.* **2015**, *2*, 128–142. [CrossRef]

102.   Ansari, J.A.N.; Khan, N.A. Exploring the role of social media in collaborative learning the new domain of learning. *Smart Learn. Environ.* **2020**, *7*, 9. [CrossRef]

103.   Zhu, C. Student satisfaction, performance, and knowledge construction in online collaborative learning. *J. Educ. Technol. Soc.* **2012**, *15*, 127–136.

104.   Dillenbourg, P.; Fischer, F. Basics of Computer-Supported Collaborative Learning. *Z. Berufs Wirtsch.* **2007**, *22*, 111–130.

105.   Daniel, E.A.; Isaac, E.N.; Janet, A.K. Influence of Facebook usage on employee productivity: A case of university of cape coast staff. *Afr. J. Bus. Manag.* **2017**, *11*, 110–116. [CrossRef]

106.   Dumpit, Z.D.; Fernandez, C.J. Analysis of the use of social media in higher education institutions (HEI's) using the technology acceptance model. *Int. J. Educ. Technol. High. Educ.* **2017**, *14*, 1–16. [CrossRef]

107.   Khan, M.I.; Azeem, M.; Ahmed, M.; Yasin, M.A.; Ali, R. Impacts of Social Media on Student's Academic Achievement: A Case of Higher Educational Institutions of Southern Punjab of Pakistan. *Int. Trans. J. Eng. Manag. Appl. Sci. Technol.* **2021**, *12*, 12A3S. [CrossRef]

108.   Elkaseh, A.M.; Wong, K.W.; Fung, C.C. Perceived ease of use and perceived usefulness of social media for e-learning in Libyan higher education: A structural equation modeling analysis. *Int. J. Inf. Educ. Technol.* **2016**, *6*, 192. [CrossRef]

109.   Kukulska-Hulme A. How should the higher education workforce adapt to advancements in technology for teaching and learning? *Internet High. Educ.* **2012**, *15*, 247–254. [CrossRef]

110.   Revythi, A.; Tselios, N. Extension of technology acceptance model by using system usability scale to assess behavioral intention to use e-learning. *Educ. Inf. Technol.* **2019**, *24*, 2341–2355. [CrossRef]

111.   Naidu, E. After COVID-19—'Nothing Will Be the Same'. University World News: Africa Edition. 2020. Available online: https://www.universityworldnews.com/post.php?story=20200406094611664 (accessed on 10 March 2022).

112.   Zachos, G.; Paraskevopoulou-Kollia, E.-A.; Anagnostopoulos, I. Social Media Use in Higher Education: A Review. *Educ. Sci.* **2018**, *5*, 194. [CrossRef]

113.   Machete, P. The use of Critical Thinking to Identify Fake News: A systematic Literature Review. In *Responsible Design, Implementation and Use of Information and Communication Technology, Proceedings of the Conference on e-Business, e-Services and e-Society, Skukuza, South Africa, 6–8 April 2020*; LNCS 12067; Hattingh, M., Ed.; Springer Nature Switzerland AG: Cham, Switzerland, 2020; pp. 235–246. [CrossRef]

114.   Paskih, D. Real or fake news: Who knows? *J. Soc. Media Soc.* **2018**, *7*, 252–273.

115.   Nielsen, R.K.; Graves, L. *News You Don't Believe: Audience Perspectives on Fake News*; Reuters Institute for the Study of Journalism: Oxford, UK, 2017. Available online: https:reutersinstite.politics.ox.ac.uk/ourresearch/news-you-don\T1\textquoterightt-beieve-audience-perspectives-fake-news (accessed on 1 February 2022).

116.   Janetzko, D. Social bots and fake new as (not) seen from the viewpoint of digital education frameworks. *MedienPädagogik Z. Theor. Prax. Medien.* **2017**, 61–80. [CrossRef]

117.   Jackson, S. *How a Critical Thinker Uses the Web*; Windsor Studies in Argumentation: Windsor, ON, Canada, 2019.

118.   Kanekar, A.; Sharma, M. COVID-19 and Mental Well-Being: Guidance on the Application of Behavior and Positive Well-Being Strategies. *Healthcare* **2020**, *8*, 336. [CrossRef]

119.   Allen, M.S.; Walter, E.E.; Swann, C. Sedentary Behavior and Risk of Anxiety: A Systematic Review and Meta-Analysis. *J. Affect. Disord.* **2019**, *242*, 5–12. [CrossRef]

120.   Morris, B. Why Does Zoom Exhaust Toy? Science Has an Answer. Wall StrJ-Online Ed [Internet]. N.PAG-N.PAG. 2020. Available online: https://www.wsj.com/articles/why-does-zoom-exhaust-you-sciencehas-an-answer-11590600269 (accessed on 17 February 2021).

121.   Hawke, L.; O'Reilly, A.; Bardis, S.; Henderson, J. *Youth Mental Health and Substance Use in the Context of COVID-19: A Rapid Response Multicomponent Program of Youth-Engaged Research and Action*; Centre for Addiction and Mental Health: Toronto, ON, Canada, 2021.

122.   Sanders, T.; Parker, P.D.; del Pozo-Cruz, B.; Noetel, M.; Lonsdale, C. Type of screen time moderates effects on outcomes in 4013 children: Evidence from the Longitudinal Study of Australian Children. *Int. J. Behav. Nutr. Phys. Act.* **2019**, *16*, 117. [CrossRef]

123.   Yang, L.; Cao, C.; Kantor, E.D.; Ngyyen, L.H.; Zheng, X.; Park, Y.; Giavannucci, E.L.; Matthews, C.; Colditz, G.A.; Cao, Y. Trends in sedentary behavior among the US population, 2001–2016. *J. Am. Med. Assoc.* **2019**, *321*, 1587. [CrossRef]

124.   Namlu, A.G.; Ceyhan, E. *Billgisayar Kaygisi Üniversite Öğrencileri Üzerinde Bir Çalişma*; Anadolu Üniversiteri Yayinlari: Eskişehir, Turkey, 2002; p. 1353.

125.   Bugün, I.; Yardimci, H.; Ertemel, S.; Öğün, A.M.; Dinçses, E. *Üniversite Oğrencilerinin Bilgisayar Kullanımınailişkin Bilgi, Davranış ve İlişkili Sağlık Sorunları*; Marmara University School of Medicine Student Congress: İstanbul, Turkey, 2006.

126. Guerrero, N.D.; Vanderloo, L.M.; Rhodes, R.E.; Faulkner, G.; Sarah, A.; Moore, S.A.; Tremblay, M.S. Canadian children's and youth's adherence to the 24-h movement guidelines during the COVID-19 pandemic: A decision tree analysis. *J. Sport Health Sci.* **2020**, *9*, 313–321. [CrossRef]

127. Van Djik, J.A.G.M. *The Network Society, Social Aspects of New Media*; Sage: London, UK; Thousand Oaks, CA, USA; New Delhi, India, 1999.

128. Cruz-Jens, F.; Vincente, M.R.; Bacao, F.; Oliveira, T. Teleducation related digital divide: An analysis for the EU-28. *Comput. Hum. Behav.* **2016**, *56*, 72–82. [CrossRef]

129. Andrew, A.; Cattan, S.; Costa Dias, M.; Farquharson, C.; Kraftman, L.; Krutikova, S.; Phimister, A.; Sevilla, A. Inequalities in children's experience of home learning during the COVID-19 lochdown in England. *Fisc. Stud.* **2020**, *41*, 653–683. [CrossRef]

130. Anderson, M.; Pierrin, A. Nearly One-in-Five Teens Can't Finish Their Homework Because of the Digital Divide. 2018. Available online: https://www.pewresearch.org/fact-tank/2018/10/26/nearly-one-in-fiveteens-can\T1\textquoterighttalways-finish-their-homework-because-of-the-digitaldivide (accessed on 4 March 2022).

131. Auma, O.; Arhieng, O. Perxeption of teachers on effectiveness of online learning in the wake of COVID-19 pandemic. *J. Humanit. Soc. Sci.* **2000**, *25*, 19–28. Available online: https://www.iosrjournals.org/iosrjhss/papers/Vol.202520Issue6/Series-11/C2506111928.pdf (accessed on 12 March 2022).

132. Frenette, M.; Franck, K.; Deng, Z. School closures and the online preparedness of children during the COVID-19 pandemic. *Econ. Insights* **2020**, *103*, 1–10.

133. Mataka, T.; Mukurunge, T.; Bhila, T. Vitrual teaching and learning: A sad reality of the "haves" and "Haves", the teacher;s voice in Zimbabwe during COVID-19 pandemic. *Int. J. All Res. Writ.* **2020**, *1*, 8–14.

134. Flack, C.; Walker, L.; Bickrstall, A.; Margetts, C. *Socioeconomic Disparities in Australian Schooling during the COVID-19 Pandemic*; Pivot Professional Learning: Melbourne, Australia, 2020. Available online: https://pivotpl.com/wp-content/uploads/2020/07/Pivot_Socioeconomic-disparities-in-Australian-schooling-during-COVID-19_1July2020.pdf (accessed on 11 March 2020).

135. Putri, R.; Purwanto, A.; Pramono, R.; Asbari, M.; Wijayanti, L.; Hyun, C. Impact of the COVID-19 pandemic on line home learning An explorative study of primary schools in Indonesia. *Int. J. Adv. Sci. Technol.* **2020**, *29*, 4809–4818.

136. Foti, P. Research distance learning in Greek kindergarten schools during the pandemic of COVID-19: Possibilities, dilemmas, Limitations. *Eur. J. Open Educ. E-Learn. Stud.* **2020**, *5*, 19–40.

137. Lestiyanawati, R. The Strategies and Problems Faced by Indonesian Teachers in Conducting e-learning during COVID-19 Outbreak. *CLLiENT Cult. Lit. Linguist. Engl. Teach.* **2020**, *2*, 71–82. [CrossRef]

138. CRC. Resolution by the Cyprus Rectors' Conference. 2020. Available online: https://www.dipae.ac.cy/index.php/en/news-andevents/announcements/507-20-03-2020-psifisma-sinodou-pritaneon-en (accessed on 16 January 2022).

139. CyAQAAHE. Switching to Online Learning. 2020. Available online: https://www.dipae.ac.cy/index.php/el/neaekdiloseis/anakoinoseis-el/498-10-03-2020-anavoli-episkepseon-distance-learning (accessed on 16 March 2022).

140. CyAQAAHE. Recommended Tools for Online Learning. 2020. Available online: https://www.dipae.ac.cy/index.php/el/neaekdiloseis/anakoinoseis-el/501-17-03-2020-ergaleia-tilemathima (accessed on13 April 2021).

141. CyAQAAHE. Midterm Examinations. 2020. Available online: https://www.dipae.ac.cy/index.php/el/neaekdiloseis/anakoinoseis-el/502-19-03-2020-endiameses-k-telikes (accessed on 6 April 2021).

142. CyAQAAHE. Quality Standards and Guidelines for Alternative Methods of Assessment. 2020. Available online: https://www.dipae.ac.cy/index.php/el/nea-ekdiloseis/anakoinoseis-el/511-31-03-2020-final-examskoronoios (accessed on 11 April 2021).

143. Howe, K.R. Getting over the quantitative-qualitative debate. *Am. J. Educ.* **1992**, *100*, 236–256. [CrossRef]

144. Schuman, H.; Presser, S. The open and closed question. *Am. Sociol. Rev.* **1979**, *44*, 692–792. [CrossRef]

145. Berg, B.L. *Qualitative Research Methods for the Social Sciences*; Allyn: Boston, MA, USA, 2001.

146. Catanzaro, M. Using qualitative analytical techniques. In *Nursing: Research Theory and Practice*; Woods, N.F., Catanzaro, M., Eds.; The CV Mosby Company: St. Louis, MO, USA, 1988; pp. 437–456.

147. Downe-Wambolt, B. Content analysis: Method, applications and issues. *Health Care Women Int.* **1992**, *13*, 313–321. [CrossRef]

148. Burnard, P. A method of analysing interview transcripts in qualitative research. *Nurse Educ. Today* **1991**, *11*, 461–466. [CrossRef]

149. Graneheim, U.H.; Lundman, B. Qualitative content analysis in nursing research: Concepts, procedures and measure to achieve trustworthiness. *Nurse Educ. Today* **2004**, *24*, 105–112. [CrossRef]

150. Bath, D.; Smith, C.; Stein, S.; Swann, R. Beyond mapping and embedding graduate attributes: Bringing together quality assurance and action learning to create a validated and living curriculum. *High. Educ. Res. Dev.* **2004**, *23*, 313–328. [CrossRef]

151. Grodeka, K.; Wild, F. *How to Use Social Software in Higher Education*; Grodeka, K., Wild Kiesinger, B., Eds.; Wydawnicto Naukowe Akapit: Kraków, Poland, 2008; p. 6. Available online: http://www.icamp.eu/ (accessed on 13 October 2015).

152. Ngamassi, L.; Ramakrishnan, T.; Rahman, S. Use of Social Media for Disaster Management: A Prescriptive Framework. *J. Organ. End User Comput.* **2016**, *28*, 122–140. [CrossRef]

153. Liburd, J.J.; Christensen, I.-M.F. Using Web 2.0 in Higher Tourism Education. *J. Hosp. Leis. Sport Tour. Educ.* **2013**, *12*, 99–108. [CrossRef]

154. Caldwell, J.E. Clickers in the large classroom: Current research and best-practice tips. *CBE Life Sci. Educ.* **2007**, *6*, 9–120. [CrossRef] [PubMed]

155. Liburd, J.J. Tourism research 2.0. *Ann. Tour. Res.* **2012**, *39*, 883–907. [CrossRef]

156. Keles, E. Use of Facebook for The Community Services Practices Course: Community of Inquiry as a Theoretical Framework. *Comput. Educ.* **2018**, *116*, 203–224. [CrossRef]

157. Kathuria, A. Importance of Social Media in Higher Education. *Int. J. Acad. Res. Dev.* **2017**, *2*, 297–299.

158. Nicol, D.J.; McFarlane-Dick, D. Formative assessment and self-regulated learning: A model and seven principles of good feedback practice. *Stud. High. Educ.* **2006**, *31*, 199–218. [CrossRef]

159. Ernst, C.-P.H.; Pfeiffer, J.; RothLauf, F. *Hedonic and Utilitarian Motivations of Social Network Site Adoption*; Working Papers in Information Systems and Business Administration; Johannes Gutenberg University Mainz: Mainz, Germany, 2013.

160. Wodzicki, K.; Schwämmlein, E.; Moskaliuk, J. Actually, I Wanted to Learn: Study-Related knowledge exchange on social networking sites. *Internet High. Educ.* **2012**, *15*, 9–14. [CrossRef]

161. Heinze, A.; Procter, C. Online Communication and Information Technology Education. *J. Inf. Technol. Educ.* **2006**, *5*, 235–249.

162. Bowers-Campbell, J. Cyber 'pokes': Motivational antidote for developmental college readers. *J. Coll. Read. Learn.* **2008**, *39*, 74–87. [CrossRef]

163. Lan, L.; Gou, X.; Xi, J. SNS communication model applying in network education system. In *International Workshop on Computer Science for Environmental Engineering and EcoInformatics*; Springer: Berlin/Heidelberg, Germany, 2011; Volume 159, pp. 195–200.

164. Ukwishaka, M.C.; Aghaee, N. Using Social Media for Peer Interaction in Higher Education: Students' Perception of Using Facebook to Support Peer Learning. In Proceedings of the 14th IADIS International Conference e-Learning, Virtual, 2–4 April 2020; ISBN 978-989-8704-17-7.

165. Kraut, R.; Kiesler, S.; Boneva, B.; Cummings, J.; Helgeson, V.; Crawford, A. Internet paradox revisited. *J. Soc. Issues* **2002**, *58*, 49–74. [CrossRef]

166. Gray, R.; Vitak, J.; Easton, E.W.; Ellison, N. Examining social adjustment to college in the age of social media Factors influencing successful transitions and persistence. *Comput. Educ.* **2013**, *67*, 193–207. [CrossRef]

167. Sánchez, A.R.; Cortijo, V.; Javed, U. Students' perceptions of Facebook for academic purposes. *Comput. Educ.* **2014**, *70*, 138–149. [CrossRef]

168. Mason, R.; Rennie, F. *E-Learning and Social Networking Handbook: Resources for Higher Education*, 1st ed.; Routledge: New York, NY, USA, 2008.

169. Bubas, G.; Coric, A.; Orehovacki, T. The integration of students' artifacts created with Web 2.0 tools into Moodle, blog, wiki, e-portfolio and Ning. In Proceedings of the 34th International Convention, Opatija, Croatia, 23–27 May 2011; pp. 1084–1089.

170. Anastasiadou, S.; Kofou, I. Incorporating Web 2.0 Tools into Greek Schools. *Int. J. Technol. Learn.* **2013**, *20*, 11–23.

171. Ophus, J.D.; Abbitt, J.T. Exploring the potential perceptions of social networking systems in university courses. *J. Online Learn. Teach.* **2009**, *5*, 639–648.

172. Blackhow, C.; Robelia, B.; Hughes, J.E. Learning, teaching, and scholarship in a digital age. *Educ. Res.* **2009**, *38*, 246–259. [CrossRef]

173. Hajli, M.N.; Lin, X. Developing tourism education through social media. *Tour. Plan. Dev.* **2014**, *11*, 405–414. [CrossRef]

174. Al-Ali, S. Embracing the selfie craze: Exploring the possible use of instagram as a language mLearning tool. *Issues Trends Educ. Technol.* **2014**, *2*, 1–16. [CrossRef]

175. Cubeles, A.; Riu, D. The effective integration of ICTs in universities: The role of knowledge and academic experiences of professors. *Technol. Pedagog. Educ.* **2018**, *27*, 339–349. [CrossRef]

176. Tantalaki, N.; Souravlas, S.; Roumeliotis, M. A review on Big Data real-time stream processing and its scheduling techniques. *Int. J. Parallel Emerg. Distrib. Syst.* **2019**, *35*, 571–601. [CrossRef]

177. Tantalaki, N.; Souravlas, S.; Roumeliotis, M.; Katsavounis, S. Linear scheduling of big data streams on multiprocessor sets in the cloud. In *IEEE/WIC/ACM International Conference on Web Intelligence*; ACM: New York, NY, USA, 2019; pp. 107–115.

178. Tantalaki, N.; Souravlas, S.; Roumeliotis, M.; Katsavounis, S. Pipeline-Based Linear Scheduling of Big Data Streams in the Cloud. *IEEE Access* **2020**, *8*, 117182–117202. [CrossRef]

179. Souravlas, S.; Anastasiadou, S.; Tantalaki, N.; Katsavounis, S. A Fair, Dynamic Load Balanced Task Distribution Strategy for Heterogeneous Cloud Platforms Based on Markov Process Modeling. *IEEE Access* **2022**, *10*, 26149–26162. [CrossRef]

180. Souravlas, S. ProMo: A Probabilistic Model for Dynamic Load-Balanced Scheduling of Data Flows in Cloud Systems. *Electronics* **2019**, *8*, 990. [CrossRef]

181. Souravlas, S.; Katsavounis, S. Scheduling Fair Resource Allocation Policies for Cloud Computing through Flow Control. *Electronics* **2019**, *8*, 1348. [CrossRef]