Understanding the Relevance of Digital Media in Higher Education

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Article Info	Abstract
	In higher education, new teaching and learning behaviors have been observed over the past few years, mainly driven by digital transformation. The COVID-19 crisis has accelerated this process, with higher education institutions as well as students often having to change their behavior virtually from one day to the next. Digital media is a widely used term in the academic literature. It can refer to components such as social media, smartphones or tablets, videos, wikis, and search engines. Online-based technologies and the consumption of digital media content became more prevalent during the COVID-19 crisis. The present study reviewed scholarly databases in an attempt to ascertain current knowledge of the use and relevance of digital media in higher education. Several studies have discussed the advantages of using digital media in higher education institutions, but a framework supporting the application of digital media components is lacking. The present study used content analysis to examine these studies. It recommends that examination preparation, instructional content assistance, and student self-study enhancement would benefit most from the use of digital media.

Introduction

The COVID-19 pandemic has had a dramatic impact on higher education institutions, for instance in Germany (Zawacki-Richter, 2021). The crisis has accelerated the speed at which organizations and individuals have adopted technology for business and personal purposes (Ossiannilsson, 2020). The acceptance and use of digital media such as social media and video have increased significantly in higher education, and many workers have had to adapt accordingly (Crittenden & Crittenden, 2015; Wymbs, 2011).

In most countries, lockdowns were used to flatten the curve of COVID-19 infection. Many people were forced to stay at home, reduce social contact, and change their consumption behaviors. A Germany-based survey (Statista Research Department, 2021) showed that Internet use (e.g., social media, streaming, gaming, and so on) increased by 53% in Germany (though the figure for podcasting was only 17%). In short, there was a shift towards the greater acceptance and consumption of digital media in the wider society. Stevens et al. (2021) found that 41% of the studies between 2000 to 2020 confirmed that online teaching was linked to better learning outcomes, though their conclusions differed from earlier studies claiming that it had no significant impact on student results. They also suggested that the challenges and opportunities presented by digital media in higher education may impact future learning modalities.

The use of digital media in higher education is not a new phenomenon (Reyna et al., 2018), but lockdowns forced higher education institutions to change their practices, especially those that only offered face-to-face on-campus sessions. Another Germany-based survey (Statista Research Department, 2022) aimed to identify the top challenges faced by students during lockdown; 60% said the absence of a social life was the most problematical, while poor digital competencies amongst teaching staff were also reported by 35%, which put them in the top 10.

Digital Media

The term digital media is widely used in the academic literature and business environments. In the present research study, digital media is understood to be digital content that incorporates the entire process of distribution to devices and individuals for consumption. Digital media involves the use of different service systems and up-to-date network technologies for the dissemination of information (Graziotin et al., 2014; Wu, 2020). Digital media is an umbrella term that encompasses components such as social media (e.g., Facebook and LinkedIn), smartphones or tablets, video, wikis, and search engines like Google (Bond et al., 2018; Eichen et al., 2021).

The use of digital media components can vary according to the age of the individuals accessing it (Twenge et al., 2018). Recent studies have explored the benefits of social media, which are a central component of digital media. Greenhow & Chapman (2020) paper "Social Distancing Meet Social Media: Digital Tools for Connecting Students, Teachers, and Citizens in an Emergency" showed that three areas benefited from social media: active learning, community building, and civic participation. It also showed that social media should be used as an add-on to conventional learning methodologies rather than a replacement (Greenhow & Chapman, 2020), not least because they are designed to advertise and sell products rather than educate individuals.

The components of digital media have changed the way many people work and share information over the past couple of decades, and the speed of change has been exponential, especially in the COVID-19 era. Boulianne & Theocharis (2020) argued that such digital media components have a wide range of positive effects on the behavior of individuals, including increased engagement in areas such as politics, and that they are used differently by different age groups. Other studies (e.g., Horst & Hitters, 2020 or Stevens et al., 2021) showed that digital media gave individuals greater information satisfaction. Those who used digital media for strategic communication were identified as being agile and closer to their audience, and this is something that institutions have come increasingly to recognise (Horst & Hitters, 2020). Several studies in the academic literature (e.g., Reyna et al, 2018 or Kumar & Nanda, 2019) have discussed the use and the meaning of digital media. There seems to be a consensus that their chief purpose is to share information and educate people (Bond et al., 2018). As a result, new skills and wider societal acceptance are needed. Individuals must be able to learn, communicate, and socialise using digital media at home, at university, and in the workplace (Reyna et al., 2018).

Method

The academic literature has offered a detailed and widely discussed understanding of digital media and its components. The COVID-19 crisis has increased the need for digital media to be applied in higher education. The

present research study intended to discover how relevant digital media use is in higher education post-COVID-19 and provide an overview of the latest research. The explicit aim of the present research study was to gather the current academic knowledge of the use of digital media in higher education to deduct recommended areas for the usage of digital media in higher education. Two research questions are therefore addressed herein:

RQ1. What can higher education institutions learn from the use of digital media?

RQ2. How can digital media in higher education institutions be used post-COVID-19?

Both questions and answers were formulated with a view to supporting the use of digital media post- COVID-19 and ascertaining the most up-to-date academic knowledge on the use of digital media in higher education and other organisational environments (e.g., businesses). Especially research question 2 was formulated to understand if there are areas allowing to conceptualize the usage of digital media components.

The study focuses on studies that were published after the outbreak of COVID-19 in 2019/2020 using a content analysis approach and following a stepwise method based on Moher et al., (2009) "Preferred Reporting Items for Systematic Reviews." This was successfully used in "A systematic Literature Review and Meta-Analysis: The Theory of Planned Behavior's Application to Understand and Predict Nutrition-Related Behaviors in Youth" (Riebl et al., 2015) which was used as a reference for this research study.

The scholarly databases ScienceDirect, Wiley Online Library, and Emerald were used to search for publications (only research articles and journals) on March 4, 2022. The terms "Digital media use in higher education COVID-19," "Digital media university COVID-19," and "Digital media COVID-19" were used for the search. The publications were verified according to their abstracts and keywords and the journals in which they were published. Because COVID-19 emerged in 2019/2020 and the term was incorporated into the search terms, so publication dates were stipulated. The first 100 search results from the scholarly databases ScienceDirect, Wiley Online Library, and Emerald were also systematically reviewed to verify the fit of each publication.

The quality of the publications was evaluated by reviewing the scope of the publications and their managerial implications. Those papers that discussed models, frameworks, and concepts regarding the use of digital media in higher education during the COVID-19 crisis were reviewed; they did not refer solely to Germany. COVID-19 has had a worldwide impact, and different institutions have been taken different approaches, though the present study was concerned principally with how it has affected higher education, and how higher education institutions might use digital media in the post-COVID-19 era.

Results

In total, 23,454 publications from the ScienceDirect, Wiley Online Library, and Emerald databases were returned after the search terms "Digital media use in higher education COVID-19," "Digital media university COVID-19," and "Digital media COVID-19" were inputted (Figure 1).
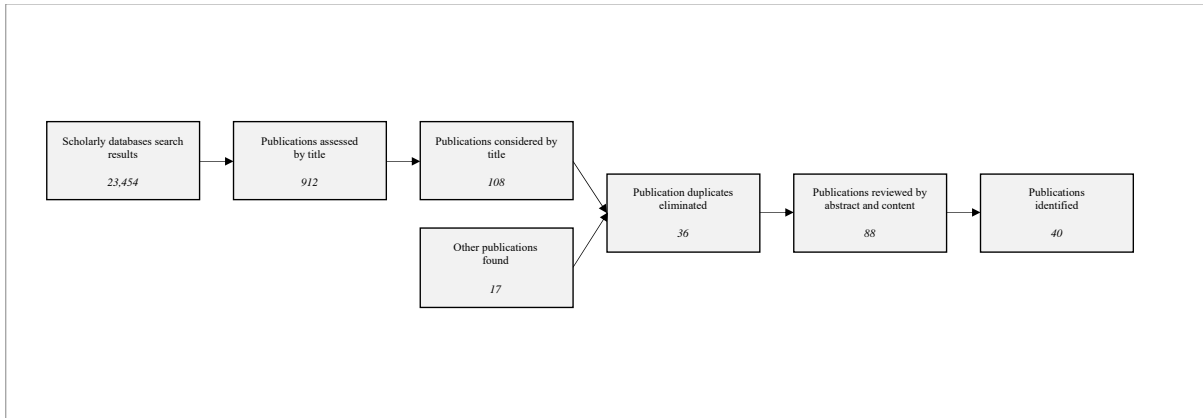
Figure 1. Stepwise Approach to the Identification of Relevant Articles

The results show that the topic of digital media and COVID-19 has been widely discussed in the academic literature over the past 2 years of the COVID-19 crisis. A detailed review of all search results was not performed because it was not deemed necessary, given that the focus of the study was higher education.

After reviewing 912 results in total for all three search terms, 108 publications were considered worthy of detailed review. Seventeen more publications from the scholarly databases ScienceDirect, Wiley Online Library, and Emerald were considered for the evaluation process. Duplicates were omitted before the final review, which left 88 publications. Of these, 40 (15 in 2020, 21 in 2021, and four thus far in the current year; Figure 2) were further evaluated.
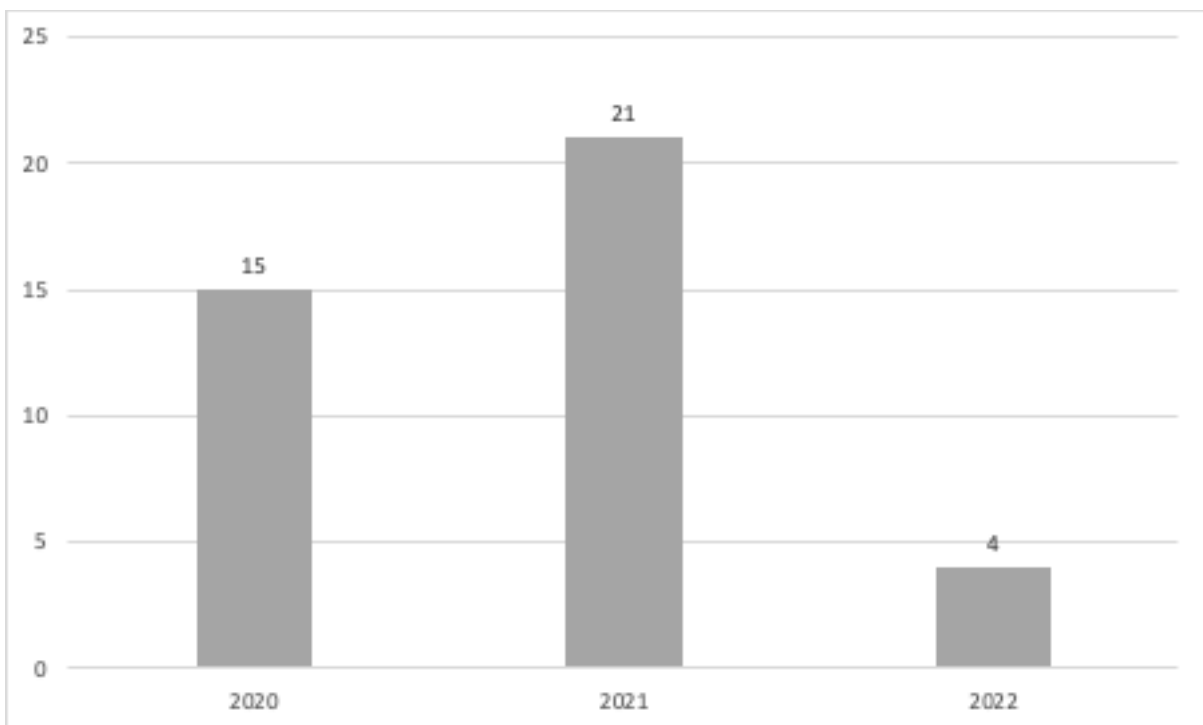

Figure 2. Identified Publications by Year

The results also show that ScienceDirect and Wiley Online Library published more studies on social media and

COVID-19 than Emerald. They also published more studies when the additional search terms "university" and "use in higher education" were omitted. In total, 10,426 publications were returned from a "digital media COVID-19" search for ScienceDirect and Wiley Online Library. This term generated the greatest number of results across all three databases (Figure 3).
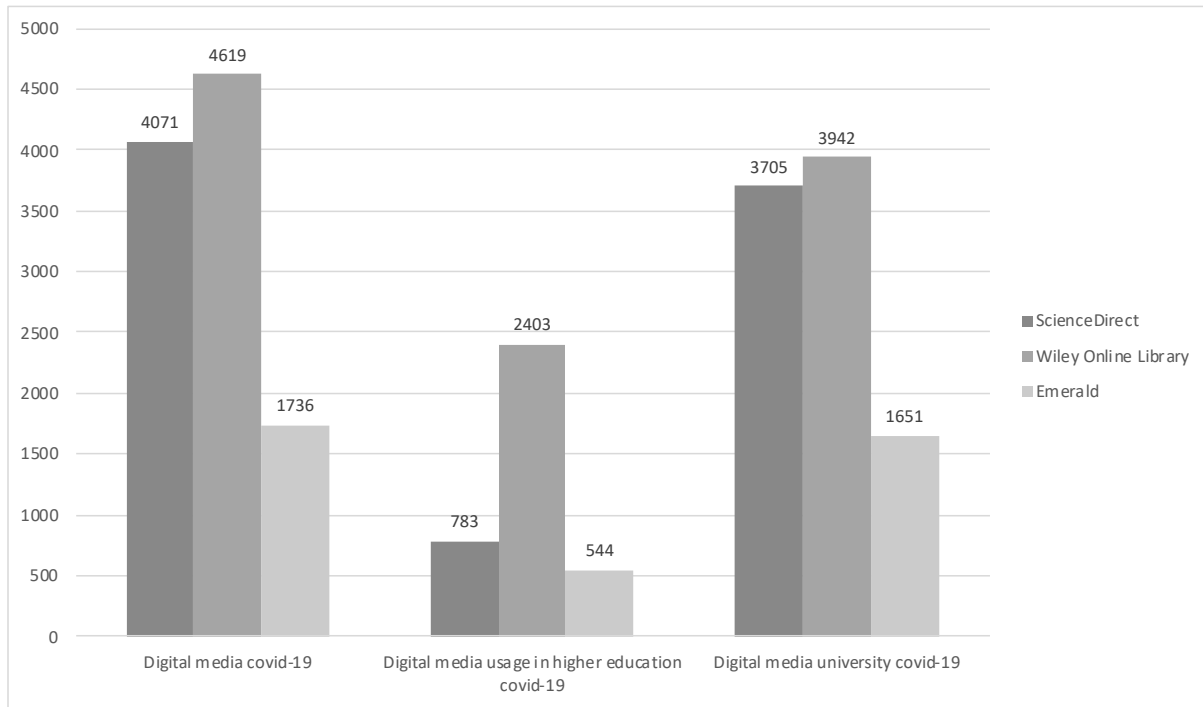

Figure 3. Database Search Results

Fewer publications discussed the use of digital media in higher education or in universities during COVID-19. The search term "digital media use in higher education COVID-19" returned 3,730 publications from ScienceDirect and Wiley Online Library. The search term "digital media university COVID-19" returned 9,298 publications.

Discussion

The impact of digitization on the traditional ways of doing things in higher education environments was a significant driver of discussion in the current academic publications (e.g. Stevens et al., 2021), and even without the additional search terms "university" or "use in higher education," the subject of digital media was widely debated. It was also clear that the academic literature contained several weaknesses and gaps of digital media usage in higher education. Many of the academic publications discussed behavioral change and the effect COVID-19 has had thus far on learning and teaching methods in higher education environments. The small rate of publications might be because the COVID-19 crisis is a relatively recent occurrence and related research studies are still ongoing or have not yet been released. Another reason may be the more detailed search terms "Digital media use in higher education COVID-19" and "Digital media university COVID-19", compared with the broader search term "Digital media COVID-19." The consensus in the reviewed studies was that the use of digital media in higher education had the potential to support and enhance learning and teaching post-COVID-19; however,

cultural and behavioral change of the teaching staff and the students was needed. It was recognized in the current academic knowledge that this change process was challenging for all parties and support in the transformation is required (Dutta, 2020).

The transformation of individual behavior within the higher education environment comes with the additional challenge that most social media outlets, such as Facebook, do not consider their users as critical and active contributors. However, commercial advertising is directed at them, and they are needed if profits are to be made. In higher education institutions, the active contribution of students is essential if they are to learn and develop skills (Fischer et al., 2020). This may explain why the studies pointed out that some countries intended to keep their universities open during the pandemic rather than go digital because learning requires the face-to-face input of students; this is naturally more difficult using social media (Stevens et al., 2021).

The review revealed that social media is the most widely discussed, evaluated, and explored component of digital media. Sometimes the terms digital media and social media are used synonymously. As has been noted, the present study understands digital media to be comprised of a range of online tools (e.g., social media, video, and wikis) that are used to transmit information to devices or individuals (Graziotin et al., 2014; Wu, 2020). Of these, social media have perhaps become the most important. There is a strong inner relationship between the various components, however; for example, videos can be shared through social media (Bond et al., 2018).

Another issue to be taken into account is the privacy of students, particularly regarding the way they can become the target of sales pitches when they are online (Greenhow & Chapman, 2020). Higher education institutions must ensure student confidentiality, when using digital media components such as social media in their day-to-day teaching practices. Keeping in mind that social media has a business and a to-generate-profit purpose, higher education institutions are recommended to be careful using and protecting their students. The extent to which higher education institutions are responsible for the transfer of personal data to digital media outlets, such as Facebook, needs more detailed discussion and may varies across countries. WhatsApp groups, for instance, are often used by students to share information or to ask and answer questions during the learning or exam-preparation process, but this is not under the control of the higher education institutions (Abdillah, 2020).

The reviewed academic studies show how digital media can be used in e-learning and on-campus classes. Digital media make it possible for teachers and students to share content, any time and any place. They can be used for self-study and independent learning, but institutions should decide on the extent to which this is appropriate given the nature of their students (and their age), their courses, and so on (Dutta, 2020; Lee et al., 2017). Cicha et al. (2021) found that pleasure and a sense of self-efficacy are the most important factors in students' acceptance of e-learning, though other conditions have to be met, for example, the user-friendliness, convenience and performance of applications, and the encouragement of teachers (Patra et al., 2021).

It seems that digital media will be given more consideration by students as time goes on, though they (as well as their teachers) will require a range of new, additional and different skills to make the most of them, at least in the context of higher education. Dutta (2020) stated that such skills include critical thinking and independent learning.

A recent academic study (Zawacki-Richter, 2020) pointed out that the use of digital media in higher education in Germany decreased before COVID-19, then turned around because of the lockdowns and the need to apply distance online learning methodologies. The study concluded that the digital transformation of higher education (as well as other sectors) is possible. However, given that some courses, such as for biochemistry, involve lab work, a local course-driven rather than a global perspective is needed; digital media cannot be applied uniformly.

The exploration of digital media experienced a boost during COVID-19. As has been noted, however, this has generated a great many challenges both for staff and students. Webb et al. (2021) discussed three of these. First, there is a need to ensure the fair and equal treatment of students who lack digital skills or who come from disadvantaged backgrounds. Second, the appropriate use of digital media in higher education demand significant and systematic training of an appropriate level of quality. Third, the use of digital media requires a suitable use of data monitoring or cyber-security, and this requires institutions to put bespoke policies in place. They must provide infrastructure and frameworks for their teaching staff who use digital media in e-learning and on-campus environments.

The need for effective policies for the benefit of both parties was discussed in the paper form Sobaih et al. (2020) called "Responses to COVID-19 in higher education: Social media use for sustaining formal academic communication in developing countries." They found that the teaching staff and the students of higher education institutions need support using successfully digital media. Policy makers are therefore recommended to consider this support in their work. The authors suggested also that social media, as a component of digital media, should be used for formal communication, for example, for purposes of teacher-student interactivity. Building online communities is one way of doing this. The implementation of policy-based netiquette requires greater attention by higher education institutions aiming to use digital media in a post-COVID-19 world.

The paper from Orji et al. (2022) "Assessing the pre-conditions for the pedagogical use of digital tools in the Nigerian higher education sector" pointed out how social media can be used to great an effect in higher education environments. It concluded that technical competencies, adequate budgets, and a regulatory framework are the most important pre-conditions, though managerial issues and guidelines have also to be taken into account. In addition, the associated processes have to be categorized.

Proposed Framework for Digital Media Use

The academic literature agrees that digital media and its components like videos, social media or wikis may be feasibly used in at least three different areas of higher education (Figure 4). Inspired by the teaching principles of Carnegie Mellon University (Teaching Excellence & Educational Innovation, 2022) the three proposed segments are recommended areas for the use of digital media, as identified in the academic literature (Monteiro et al., 2019; Smittle, 2003; Van Den Berg, 2019). Student self-study enhancement refers to activities involved in studying topics in addition to taught content on-campus or in the digital classroom. This includes video, wikis, and social media-based groups (Arzhilovskaya & Chumakova, 2019; Poluekhtova et al., 2020). Examination preparation refers to the review of the content that is required to pass examinations. This may involve videos recommended

by the teacher which explain content or social media-based learning groups where question and answer sessions are held (Alsmadi et al., 2021; Dalipi et al., 2022). Instructional content assistance refers to the aid that may be provided by teachers regarding the explanation of course content. Teachers might use, for instance, videos for discussion or to share additional information post-session (Reyna et al., 2018; Webb et al., 2021). Integrating these three core areas may accelerate learning outcomes.
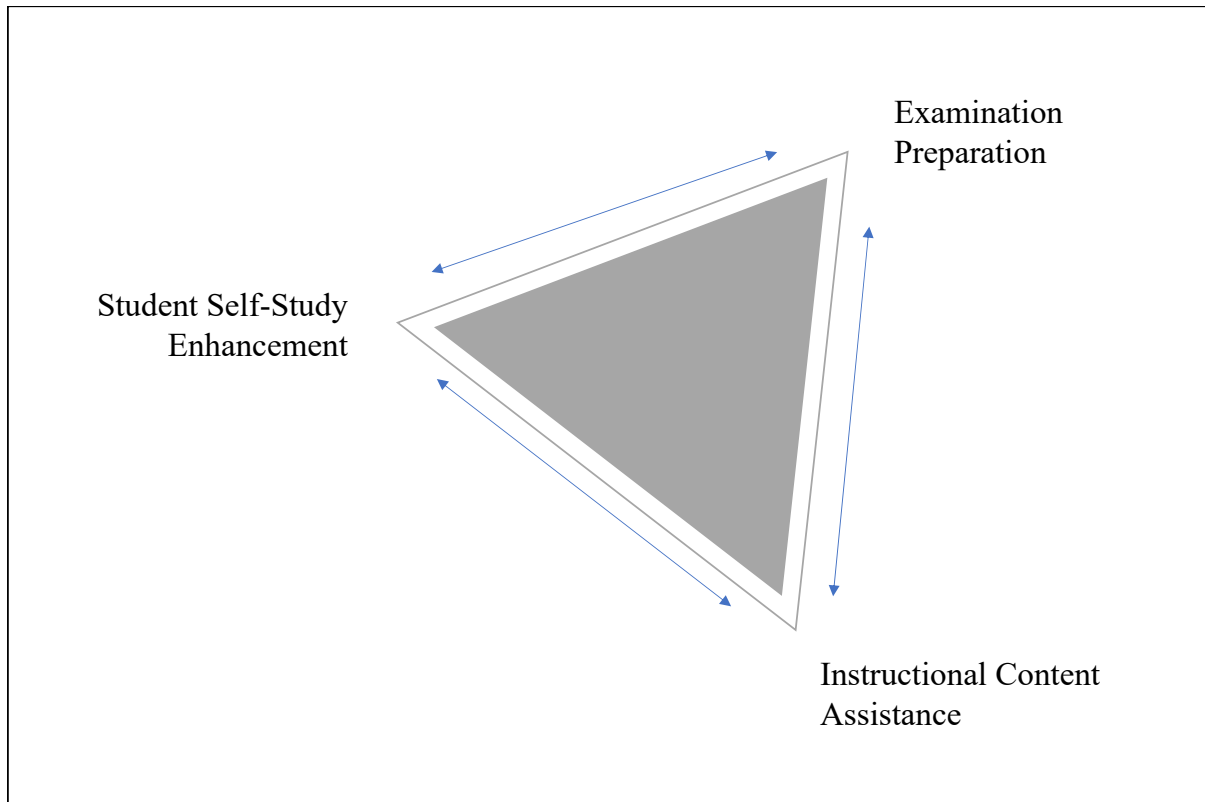
Figure 4. Recommended Areas for the Use of Digital Media

The digital transformation of education has increased the effectiveness of teaching in today's time (Alsmadi et al., 2021). New skills such as critical thinking, independent learning, and sharing information with others online have received more attention during COVID-19 (Dutta, 2020), but student self-study enhancement should be given special consideration by teachers, who should introduce appropriate self-study content and feel comfortable about integrating digital media into their day-to-day practice. Teachers need to support the self-study process of students through preparation and actual student guidance. In addition, higher education institutions also need to inform their students that expectations may be subject to change and provide support to those who may have difficulties in adapting. The use of digital media in higher education comes with a wide range of benefits (Dutta, 2020; Orji et al., 2022) but also responsibilities. Because each of the areas in the framework affects the others, students will need guidance as to when one is more applicable. Higher education institutions can also provide approved self-studying digital media-based content. If students are given this support, they will be encouraged in their further use of digital media (Alsmadi et al., 2021; Dalipi et al., 2022). While the Internet offers access to a wide range of different digital media content (e.g., video and wikis), some of it may not be of high enough quality, which adds an additional layer of complexity to the self-study process. It should therefore be evaluated before it is integrated into courses (Kumar & Nanda, 2019; Stevens et al., 2021).

The framework is intended to provide an overview of how digital media like video or social media can be employed. The need to develop new and additional skills to prepare, integrate or consume Digital Media should be given greater prominence. Teaching staff and students should agree on the right level of digital content and be given training that is fit for purpose (Webb et al., 2021). For teachers, this might involve the preparation and integration of digital media content and for students, self-study practice and learning how to consume digital media content that is appropriate for their needs.

Limitations and Future Research

The present study has two major limitations. First, a limited number of publications were reviewed in detail, though this is acceptable because of the initial large number of publications underlining the relevance of the topic. Second, the non-country specific research focus, which is accepted because of the intention to deduct a universal framework for higher education institutions. The proposed framework intends to support future research focusing on one of the three areas recommended for the use of digital media in higher education, though ultimately all of them could be incorporated. More research is also needed to understand the long-term implications of the use of digital media and whether they are critical or even relevant for effective post-COVID-19 teaching.

Conclusion

The present study has provided a brief overview of current academic knowledge regarding the use of digital media in higher education. It has attempted to understand the relevance of digital media post-COVID-19 in the sector. It also outlines some challenges such as preparation work of teachers or protecting the student confidentiality. Examination preparation, instructional content assistance, and student self-study enhancement are three areas in which digital media can make a significant contribution to student learning. Teaching staff may use these for different purposes; in turn, the relationship between the three may encourage the further use of digital media. The proposed framework, which offers a structured approach, might be used by researchers who wish to explore the subject further.

References

Abdillah, L. (2020). Collaborating Digital and Social Media For Teaching Science And Arabic in Higher Education Learning Process During COVID-19 Pandemic. *Ijaz Arabi Journal of Arabic Learning*, *4*(1), 12–25. https://doi.org/10.18860/ijazarabi.v4i1.10793

Alsmadi, M. K., Al-Marashdeh, I., Alzaqebah, M., Jaradat, G., Alghamdi, F. A., Mustafa A Mohammad, R., Alshabanah, M., Alrajhi, D., Alkhaldi, H., Aldhafferi, N., Alqahtani, A., Badawi, U. A., & Tayfour, M. (2021). Digitalization of learning in Saudi Arabia during the COVID-19 outbreak: A survey. *Informatics in Medicine Unlocked*, *25*(June), 100632. https://doi.org/10.1016/j.imu.2021.100632

Arzhilovskaya, E. I., & Chumakova, A. V. (2019). Changing Role of Self-Study Work in the University Education of the 21st Century Students. *Advances in Social Science, Education and Humanities Research*, *312*(Tphd 2018), 506–513. https://doi.org/10.2991/tphd-18.2019.95

Bond, M., Marín, V. I., Dolch, C., Bedenlier, S., & Zawacki-Richter, O. (2018). Digital transformation in German higher education: student and teacher perceptions and usage of digital media. *International Journal of Educational Technology in Higher Education*, *15*(1), 1–20. https://doi.org/10.1186/s41239-018-0130-1

Boulianne, S., & Theocharis, Y. (2020). Young People, Digital Media, and Engagement: A Meta-Analysis of Research. *Social Science Computer Review*, *38*(2), 111–127. https://doi.org/10.1177/0894439318814190

Cicha, K., Rizun, M., Rutecka, P., & Strzelecki, A. (2021). Covid-19 and higher education: First-year students' expectations toward distance learning. *Sustainability (Switzerland)*, *13*(4), 1–20. https://doi.org/10.3390/su13041889

Crittenden, V., & Crittenden, W. (2015). Digital and social media marketing in business education: Implications for the marketing curriculum. *Journal of Marketing Education*, *37*(2), 71–75. https://doi.org/10.1177/0273475315588111

Dalipi, F., Jokela, P., Kastrati, Z., Kurti, A., & Elm, P. (2022). Going digital as a result of COVID-19: Insights from students' and teachers' impressions in a Swedish university. *International Journal of Educational Research Open*, *3*(February), 100136. https://doi.org/10.1016/j.ijedro.2022.100136

Dutta, D. A. (2020). Impact of Digital Social Media on Indian Higher Education: Alternative Approaches of Online Learning during COVID-19 Pandemic Crisis. *International Journal of Scientific and Research Publications (IJSRP)*, *10*(05), 604–611. https://doi.org/10.29322/ijsrp.10.05.2020.p10169

Eichen, L., Hackl-Wimmer, S., Eglmaier, M. T. W., Lackner, H. K., Paechter, M., Rettenbacher, K., Rominger, C., & Walter-Laager, C. (2021). Families' digital media use: Intentions, rules and activities. *British Journal of Educational Technology*, *52*(6), 2162–2177. https://doi.org/10.1111/bjet.13161

Fischer, G., Lundin, J., & Lindberg, J. O. (2020). Rethinking and reinventing learning, education and collaboration in the digital age—from creating technologies to transforming cultures. *International Journal of Information and Learning Technology*, *37*(5), 241–252. https://doi.org/10.1108/IJILT-04-2020-0051

Graziotin, D., Wang, X., & Abrahamsson, P. (2014). A framework for systematic analysis of open access journals and its application in software engineering and information systems. *Scientometrics*, *101*(3), 1627–1656. https://doi.org/10.1007/s11192-014-1278-7

Greenhow, C., & Chapman, A. (2020). Social distancing meet social media: digital tools for connecting students, teachers, and citizens in an emergency. *Information and Learning Science*, *121*(5–6), 331–342. https://doi.org/10.1108/ILS-04-2020-0134

Horst, S.-O., & Hitters, E. (2020). Digital Media Entrepreneurship: Implications for Strategic Identity Work and Knowledge Sharing of Beginning Entrepreneurs. *Nordic Journal of Media Management Issue*, *1*(1), 23–44. https://doi.org/10.5278/njmm.2597-0445.3612

Kumar, V., & Nanda, P. (2019). Social media in higher education: A framework for continuous engagement. *International Journal of Information and Communication Technology Education*, *15*(1), 109–120. https://doi.org/10.4018/IJICTE.2019010108

Lee, C. S., Osop, H., Hoe-Lian Goh, D., & Kelni, G. (2017). Making sense of comments on YouTube educational videos: A self-directed learning perspective. *Online Information Review*, *41*(5), 611–625. https://doi.org/10.1108/OIR-09-2016-0274

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and

meta-analyses: The PRISMA statement. *BMJ*, *339*(b2535). https://doi.org/10.1136/bmj.b2535

Monteiro, A., Leite, C., & Rocha, C. (2019). Students' self-study time and its relationship with a lifelong learning profile. *European Journal of Curriculum Studies*, *5*(1), 753–768.

Orji, I. J., Ojadi, F., & Okwara, U. K. (2022). Assessing the pre-conditions for the pedagogical use of digital tools in the Nigerian higher education sector. *International Journal of Management Education*, *20*(2), 100626. https://doi.org/10.1016/j.ijme.2022.100626

Ossiannilsson, E. (2020). Reflection on 21St Century Competences, Smart Learning Environments, and Digitalization in Education. *Near East University Online Journal of Education*, *3*(2), 87–93. https://doi.org/10.32955/neuje.v3i2.244

Patra, S. K., Sundaray, B. K., & Mahapatra, D. M. (2021). Are university teachers ready to use and adopt e-learning system? An empirical substantiation during COVID-19 pandemic. *Quality Assurance in Education*, *29*(4), 509–522. https://doi.org/10.1108/QAE-12-2020-0146

Poluekhtova, I. A., Vikhrova, O. Y., & Vartanova, E. L. (2020). Effectiveness of Online Education for the Professional Training of Journalists: Students' Distance Learning During the COVID-19 Pandemic. *Psychology in Russia: State of the Art*, *13*(4), 26–37. https://doi.org/10.11621/PIR.2020.0402

Reyna, J., Hanham, J., & Meier, P. C. (2018). A framework for digital media literacies for teaching and learning in higher education. *E-Learning and Digital Media*, *15*(4), 176–190. https://doi.org/10.1177/2042753018784952

Riebl, S. K., Estabrooks, P. A., Dunsmore, J. C., Savla, J., Frisard, M. I., Dietrich, A. M., Peng, Y., Zhang, X., & Davy, B. M. (2015). A systematic literature review and meta-analysis: The Theory of Planned Behavior's application to understand and predict nutrition-related behaviors in youth. *Eating Behaviors*, *18*, 160–178. https://doi.org/10.1016/j.eatbeh.2015.05.016

Smittle, P. (2003). Principles for effective teaching. *Journal of Developmental Education*, *26*(3), 1–9. http://www.ncede.appstate.edu/resources/reports/documents/V26-3s....

Sobaih, A. E. E., Hasanein, A. M., & Elnasr, A. E. A. (2020). Responses to COVID-19 in higher education: Social media usage for sustaining formal academic communication in developing countries. *Sustainability (Switzerland)*, *12*(16), 1–18. https://doi.org/10.3390/su12166520

Statista Research Department. (2021). *Welche digitale Medien haben Sie in der letzten Woche (viel) mehr benutzt?* https://de.statista.com/statistik/daten/studie/1121090/umfrage/nutzung-von-digitalen-medien-waehrend-der-corona-krise/

Statista Research Department. (2022). *Was waren die größten Herausforderungen für Dich während der Corona-Pandemie?* https://de.statista.com/statistik/daten/studie/1238192/umfrage/corona-krise-groesste-herausforderungen-fuer-studierende/

Stevens, G. J., Bienz, T., Wali, N., Condie, J., & Schismenos, S. (2021). Online university education is the new normal: but is face-to-face better? *Interactive Technology and Smart Education*, *18*(3), 278–297. https://doi.org/10.1108/ITSE-08-2020-0181

Teaching Excellence & Educational Innovation. (2022). Carnegie Mellon University. https://www.cmu.edu/teaching/principles/teaching.html

Twenge, J. M., Martin, G. N., & Spitzberg, B. H. (2018). Trends in U.S. Adolescents' Media Use, 1976-2016: The Rise of Digital Media, the Decline of TV, and the (Near) Demise of Print. *Psychology of Popular*

Media Culture, *8*(4), 329–345. https://doi.org/10.1037/ppm0000203

Van Den Berg, C. (2019). Teaching innovation to strengthen knowledge creation in a digital world. *Electronic Journal of Knowledge Management*, *17*(2), 144–155. https://doi.org/10.34190/EJKM.17.02.004

Webb, A., McQuaid, R. W., & Webster, C. W. R. (2021). Moving learning online and the COVID-19 pandemic: a university response. *World Journal of Science, Technology and Sustainable Development*, *18*(1), 1–19. https://doi.org/10.1108/wjstsd-11-2020-0090

Wu, S. (2020). Design of interactive digital media course teaching information query system. *Information Systems and E-Business Management*, *18*(4), 793–807. https://doi.org/10.1007/s10257-018-00397-1

Wymbs, C. (2011). Digital marketing: The time for a new "academic major" has arrived. *Journal of Marketing Education*, *33*(1), 93–106. https://doi.org/10.1177/0273475310392544

Zawacki-Richter, O. (2020). Halb zog sie ihn, halb sank er hin... Covid-19 als Chance für die Digitalisierung von Studium und Lehre? *Das Hochschulwesen (HSW)*, *4+5*(68).

Zawacki-Richter, O. (2021). The current state and impact of Covid-19 on digital higher education in Germany. *Human Behavior and Emerging Technologies*, *3*(1), 218–226. https://doi.org/10.1002/hbe2.238

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