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Faculty Use of a Learning Management System During and After the COVID-19 Pandemic

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Abstract

This literature review compared faculty use of Moodle Learning Management System in the Caribbean with global practices to determine the impact of the pandemic on LMS adoption. The findings reveal that while there were similarities regarding access to devices and reliable internet, students at universities in the Caribbean and the developing world were at a greater disadvantage. In the developed world, there were also significant disparities in rural versus urban areas. The pandemic provided an impetus for using educational technology at universities; however, the digital divide and lack of devices, reliable internet, and electricity hampered the full use of LMSs.

Keywords: educational technology, higher education, learning management systems (LMS), digital divide, faculty challenges, student challenges, online learning, emergency remote teaching (ERT)

1. Introduction

1.1 How the Pandemic Affected Higher Education Institutions

The severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2) and its associated disease, COVID-19, emerged in Wuhan, China, in December 2019 and quickly spread to countries worldwide (Sahu, 2020). Rapid responses resulted in travel restrictions and the global closure of all face-to-face educational institutions (see Agormedah et al., 2020; Al-Nuaimi et al., 2022; Bryson & Andres, 2020). Most colleges and universities transitioned to online learning using LMSs and videoconferencing tools like Zoom (Bryson & Andres, 2020; de los Santos & Rosser, 2021; Oyedotun, 2020). Adov & Mäeots (2021) found that internet connection issues and students' lack of technology skills hampered technology use during the pandemic. Raza et al. (2021), found that social isolation and Corona fear affected students' use of LMS.

The COVID-19 pandemic exacerbated problems associated with adopting LMSs at higher education institutions. Since traditional colleges and universities were not online universities, structural issues may have affected transitioning to fully online delivery using LMSs (see Bishop-Monroe et al., 2021; Cutri & Mena, 2020; Smith & Haughton, 2021). However, D'Agostino (2022) observed that offering blended or hybrid instructional delivery encouraged LMS use, narrowing the gap between in-person and online learning.

1.2 The Situation in the Developed World

Adov & Mäeots (2021) found that for Estonian teachers, internet connection issues and students lacking technology skills hampered technology use during the pandemic. Raza et al. (2021), found that social isolation and Corona fear affected students' use of LMS. In Ontario, Van Nuland et al. (2020) found that the transition was less challenging for many universities already using LMSs to track documents, prepare reports, and deliver courses. However, university faculty and students in some urban areas needed more broadband and cellular service. Remote areas were most affected; there were "dead zones - pockets with no access to broadband internet service" (Van Nuland et al., 2020. p. 445). Internet connectivity affected educational technology use in developed and developing countries (de los Santos & Rosser, 2021; Tadesse & Muluye, 2020).

Ezarik (2021) reported on a survey by *Inside Higher Education* and *College Pulse.* The findings revealed that with a sample of 2000 students from 108 American colleges, 47% of the students rated their online learning during the pandemic as fair or poor (Ezarik, 2021, para. 3). In addition, students were dissatisfied because professors were "not teaching and using technology adequately" (Ezarik, 2021, para. 5). At one New York City university, faculty had difficulty using basic technology for teaching (Ezarik, 2021). In addition, students found that the virtual courses required more time for doing assignments, and the length of the online lectures made it difficult for

students to remain engaged and concentrate (Ezarik, 2021).

Moreover, Ezarik (2021) noted that other students were frustrated because break-out rooms did not work well. Peers did not turn on their cameras, and discussions were rarely related to the course material. Students quickly became bored; "Eight in ten students found it difficult to concentrate during remote lectures" (Ezarik, 2021, para. 15). It was evident that students and teachers grappled with emergency remote teaching as videoconferencing became the norm (de los Santos & Rosser, 2021; Ezarik, 2021). Diaz (2022), among other researchers, observed that social distancing resulted in impersonal teaching and learning loss (Diaz, 2022; Foster, 2020).

Washington (2019) used a qualitative narrative inquiry and interviewed twenty faculty members at a university in the USA to determine faculty use of the Blackboard LMS for blended learning. The results revealed low adoption levels. Only instructors with extensive knowledge of the Blackboard LMS used features and tools specifically for pedagogical purposes. Washington (2019) also found that some faculty members only used the announcement tool while avoiding complex instruments. This research methodology is worthy of emulating to investigate faculty perspectives regarding LMS use, mainly because it focuses on blended learning adoption.

1.3 The Situation in Some Less Developed Countries

The sudden transition to virtual teaching exposed instructional delivery weaknesses (see Agormedah et al., 2020). Though most research findings were based on student samples (Liu et al., 2020), some researchers, such as Oyedotun (2020) and Adarkwa (2021), found that faculty also experienced problems pivoting to the online mode during the pandemic. In addition, Maphala and Adigun (2021) noted that students' educational technology use depended on faculty use. Therefore, technology adoption is a two-way interrelated process for students and faculty. These research findings provide evidence for comparing learning technologies adoption in developed countries during the pandemic.

Agormedah et al. (2020) examined students' LMS adoption in Ghana during the pandemic and found additional challenges affecting a sample of 467. Though students knew about the university's LMS, they lacked orientation, training, and constant access to the internet. Furthermore, students could not afford internet access. The Ghanaian government provided monthly data for university students to alleviate this problem, but provisions were inadequate (Adarkwah, 2021; Hedding et al., 2020). Similar student issues affected technology adoption in the Caribbean and Guyana (Diaz, 2022; Livingstone, 2019; Oyedotun, 2020).

Investigating faculty technology adoption during the pandemic, with a qualitative study of twenty-six Indonesian faculty who taught Mathematics, Irfan et al. (2020) found that 82% of teachers used Zoom, Google Classroom, and Edmodo. Only 12% used the University's LMS (Irfan et al., 2020, p.150). The findings also revealed that the absence of Mathematical symbols, equations, and programming languages on the LMS contributed to faculty avoidance. Moreover, study findings revealed that Indonesian faculty avoided utilizing the university's primary LMS because Video Conferencing and assessment features were unavailable. Faculty members lacked technical skills and did not know how to edit video lectures. They only shared their PowerPoint presentations using Zoom. Similar problems existed at a Caribbean university in Guyana.

1.4 The Situation in Latin America and the Caribbean

Investigating how COVID-19 affected HEIs in Latin America, Hershberg et al. (2020) conducted a survey with officials at 50 universities. The results showed that 75% of the HEIs had transitioned to some form of online instruction (p. 2). Forty-three percent of the sample said Zoom was the most popular platform (p. 2). However, less than half of the universities took steps to address the problem of internet connectivity. Falcão et al. (2020) and Rosario-Rodríguez et al. (2020) used student satisfaction surveys to examine the situation in Brazil and Puerto Rico. In both studies, learners reported that the teachers lacked knowledge of working with online courses. In addition, there was a lack of responses from the faculty. Financial and technology resources were unavailable, classes were not well organized, faculty had poor technology skills, the online courses were more complex, and there was no social interaction. Students also experienced internet access problems.

A Caribbean university in Guyana experienced similar issues. Oyedotun (2020) found that having pivoted to online instruction using Zoom videoconferencing and Moodle LMS, "the challenges and inequalities [became] new realities" (p. 1). Oyedotun identified five significant challenges: poor infrastructure and slow internet, unreliable electricity, the lack of devices, lack of training for faculty and students, and reduced teacher/student engagement. There is limited literature on faculty experiences and perspectives at a Caribbean university in Guyana, except for Oyedotun's desktop survey. Such surveys provide fast, credible insights for understanding how social factors affected technology use at a Caribbean university in Guyana. In the absence of empirical research, Oyedotun's study is singular, and a significant gap in the literature existed. More qualitative research on

faculty use of LMSs in the Caribbean is needed, and this present qualitative study on faculty perspectives regarding their use of Moodle LMS at a Caribbean university in Guyana fills this gap.

The impact of COVID-19 on educational technology in the Caribbean was most severe and student satisfaction surveys provided evidence of problems associated with educational technology adoption. For example, Smith and Haughton (2021) examined how COVID-19 impacted emergency remote teaching (ERT) in the Faculty of Social Science at the University of the West Indies (UWI). From a sample of 115 students, 81% reported high dissatisfaction with student engagement, connectivity, and communication (Smith & Haughton, 2021, p. 26). Students were also dissatisfied with the feedback received from faculty, the use of online chat, and unreliable internet connection.

Pierre et al. (2021) also conducted a satisfaction survey with medical students at UWI Mona campus. They found that although medical students were enthusiastic, they experienced challenges accessing Wi-fi and staying connected. One-third of the sample was "satisfied with the content, communication, lecturer preparation, instructional material, and online learning activities (p. 46, 47). In addition, Pierre et al. reported that faculty members experienced problems using Blackboard Collaborate because they were unfamiliar with using videos and multimedia platforms. Since instructors were unfamiliar with online chats and breakout rooms, they used PowerPoint slides that became monotonous (see Pierre et al., 2021). The experiences at a Caribbean university in Guyana were similar; some students who lived in remote areas experienced unreliable internet access (Oyedotun, 2020).

These results from the Caribbean provided much-needed data on the trends occurring at Caribbean universities during the last five years. Moreover, research from the Caribbean provided scope for comparing how the pandemic affected faculty technology adoption. Notably, most of these findings relate to students and faculty adopting Videoconferencing tools instead of LMSs. Nevertheless, the results illuminated the problem in practice that the current research addressed - faculty hesitation to adopt innovative LMSs.

Some students could not participate in learning because they needed laptops or devices. The emergency transition caused faculty to use Zoom videoconferencing and other platforms for the online delivery of instruction (Oyedotun, 2020). The Zoom tool was an add-on to the Moodle LMS, and instructors made recorded lectures available by placing links in the LMS (Oyedotun, 2020). There was reduced student-teacher engagement as students did not participate in class discussions. Some students became "impolite to lecturers because of the stress" (Oyedotun, 2020, p. 3). There was also evidence of how the digital divide impacted on instructional delivery using LMSs during the pandemic.

2. Digital Divide and Disparities

2.1 In the Developed World

A significant social factor affecting faculty use of LMSs was the digital divide. Adarkwah (2021), Morales Dussan et al. (2021), and Tomczyk et al. (2019) found that students with dependable access to devices and reliable internet had a better advantage in learning with educational technologies than students with unreliable access. Such findings outlined the nature of the digital divide. The digital divide also affected vulnerable groups living in rural areas in developed countries such as the United States and Canada (de los Santos & Rosser, 2021; Van Nuland et al., 2020). Other vulnerable groups experiencing problems accessing educational technology were women, girls, and persons with disabilities (Morales Dussan et al., 2021). Technology and the internet are social, economic, and educational enablers.

In the USA, Garc á and Weiss (2020) reported that disadvantaged students at HEIs were less engaged in online learning during the pandemic; some had never engaged in online classes before. According to Garc á and Weiss, the pandemic "exacerbated well-documented opportunity gaps that put low-income students at a disadvantage relative to their better-off peers" (p. 2). Researchers Katz et al. (2021), Mpungose (2020), Sims & Baker (2021), Stewart (2021), and Wallace et al. (2021) agreed that access to devices and stable internet was a precondition for students benefiting from online learning. De los Santos and Rosser (2021) noted that "broadband availability for many rural regions was a significant barrier, along with affordability for monthly broadband costs, especially for students in rural areas of the United States" (p. 23).

2.2 In Developing Countries

According to a report from "The Economic Commission for Latin America and the Caribbean (ECLAC), "Even before the pandemic hit, the social situation in the region was deteriorating, owing to rising rates of poverty and extreme poverty, the persistence of inequalities, and growing social discontent" (CEPAL-UNESCO, 2022, p. 1). These social situations contributed to the widening digital divide, not limited to access to devices and the internet.

There was also the disparity among "skill sets needed to leverage the potential of Information and Communications Technologies (ICTs), which was uneven among students and faculty (p. 7).

Adarkwah (2021), Agormedah et al. (2020), Hedding et al. (2020), and Thomas et al. (2020) found that smartphones facilitated mobile learning. Nevertheless, the cost of data was often prohibitive for students in Ghana and sub-Saharan Africa (Adarkwah, 2021; Agormedah et al., 2021). Administrators at a Caribbean university in Guyana instructed faculty to move teaching to the online mode "using Moodle and other platforms without adequate . . . internet access, stable power supply, or licenses for online communications platforms" (Oyedotun, 2020, p. 2)**.**

Reporting on remote learning during the pandemic, Vegas (2020) noted that access to the internet, technologies, and devices allowed high-income countries such as Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States to provide 90% percent of broadcast and TV learning, with at least 60% using online platforms. In contrast, less than 25% of low-income countries, such as Sub-Saharan Africa, Latin America, Southeast Asia, India, and the Caribbean, provided students with limited TV and radio broadcast learning (para. 3). The pandemic exacerbated the digital divide.

3. Conclusions

The literature review revealed that most faculty at higher education institutions were reluctant to use LMSs. Student-teacher engagement was crucial for students' use of educational technology. The literature also revealed that students struggled with adjusting to ERT. Based on the literature reviewed, the following chart (see Figure 3) describes the different types of online learning that thrived during the COVID-19 pandemic.

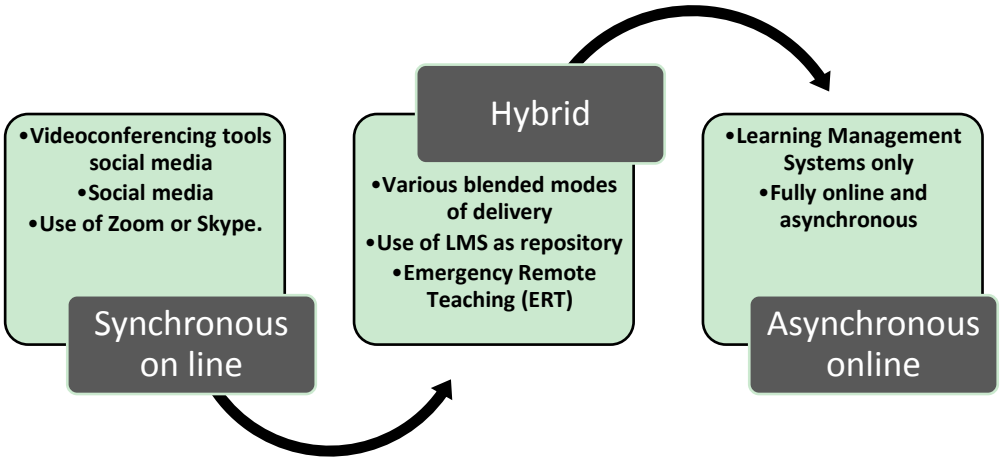

Figure 1. Chart showing types of online teaching during COVID-19

Three distinct types of online education occurred during the COVID-19 pandemic. First, synchronous online learning was the most frequently used adaptation. Second, faculty members practiced hybrid teaching where various types of blended learning were the norm, and faculty "replicated face-to-face teaching in the digital environment" (Morreale et al., 2021, p. 117). Third, fully asynchronous delivery using LMSs was the least practiced teaching mode (Hodges et al., 2020). The LMS became a repository for sharing materials with students (Bryson & Andres, 2020). Although the lines separating Emergency Remote Teaching and LMS online teaching were indefinite, Hodges et al. (2020) made the distinction that: "Well-planned online experiences are meaningfully different from courses offered online in response to a crisis or disaster" (Hodges et al. 2020, p. 1).

Therefore, despite LMSs being available during the pandemic, low availability of devices, unstable internet, and weak infrastructure impeded faculty and students' Moodle use. The digital divide exacerbated an already existing problem when the COVID-19 pandemic caused the closure of universities and schools. Despite moving to virtual

teaching during the pandemic, the hybrid mode of instructional delivery with the LMS as a repository continues to be the norm.

This review provided a background for investigating the challenges faculty and students experienced while hesitating to use Moodle LMS. This research also provided new knowledge regarding the challenges faculty experience using LMSs. The findings will benefit governing bodies for higher education institutions, ministers of education, principals, and other administrators. Stakeholders will obtain a more comprehensive understanding of the challenges faculty experience when using an LMS to deliver instruction, communicate with students, and manage a course.

References

Adarkwah, M. (2021). "I'm not against online teaching, but what about us?": ICT in Ghana post Covid-19. *Education and Information Technologies, 26*(2), 1665-1685. https://doi.org/10.1007/s10639-020-10331-z

Adov, L., & Mäeots, M. (2021). What can we learn about science teachers' technology use during the COVID-19 pandemic?. *Education Sciences, 11*(6), 255. https://doi.org.10.3390/educsi11060255

Agormedah, E., Henaku, E., Ayite, D., & Ansah, E. (2020). Online learning in higher education during COVID-19 pandemic: A case of Ghana. *Journal of Educational Technology and Online Learning, 3*(3), 183-210. https://doi.org/10.31681/jetol.726441

Al-Nuaimi, M., Al Sawafi, O., Malik, S., Al-Emran, M., & Selim, Y. (2022). Evaluating the use of learning management systems during the COVID-19 pandemic: an integrated theoretical model. *Interactive Learning Environments*. https://doi.org/10.1080/10494820.2022.2055577

Bishop-Monroe, R., Di Paolo Harrison, B., Knight, M., Corritore, C., York, A., & Rybarczyk, B. (2021). Preparing doctoral students to teach in an increasingly virtual world: A response to COVID-19 and beyond. *Online Learning, 25*(1), 166-181. Retrieved from https://eric.ed.gov/?id=EJ1287142

Bryson, J., & Andres, L. (2020). COVID- 19 and the rapid adoption and improvisation of online teaching: curating resources for extensive versus intensive online learning experiences. *Journal of Geography in Higher Education, 44*(4), 608-623. https://doi.org/10.1080/03098265.2020.1807478

Cutri, R., & Mena, J. (2020). A critical reconceptualization of faculty readiness for online teaching. *Distance Education, 41*(3), 361-380. https://doi.org/10.1080/01587919.2020.1763167

D'Agostino, S. (2022). Gap between online and in-person learning. *Inside Higher Education.*

de los Santos, W., & Rosser, W. (2021). COVID-19 shines a spotlight on the digital divide. *Change: The Magazine of Higher Learning, 53*(1), 22-25. https://doi.org/10.1080/00091383.2021.1850117

Diaz, J. (2022). The impact of online education on academic performance of beginners Spanish students at the University of Guyana during COVID- 19 pandemic. *International Journal of Open Schooling, 1*(1).

Dussan, S., Leon, M., Garcia-Bedoya, O., & Galpin, I. (2021). Exploring the Columbian digital divide using Moodle logs through supervised learning. *Interactive Technology and Smart Education.* https://doi.org/10.1108/TSE-03-2021-0052

Ezarik, M. (2021, June 21). How COVID-19 Damaged Student Success. *Inside Higher Education*.

Falcão, T., Mello, R., Rodrigues, R., Diniz, J., Tsai, Y., & Gašević, D. (2020). Perceptions and expectations about learning analytics from a Brazilian higher education institution. *Proceedings of the Tenth International Conference on Learning Analytics & Knowledge*, 240-249. https://doi.org/10.1145/3375462.3375478

Foster, M. (2020). Limitations to the virtual online learning experience. *Guyana Chronicle.*

Hedding, D., Greve, M., Breetzke, G., & Nel, W. (2020). COVID-19 and the academe in South Africa: Not business as usual. *South African Journal of Science, 116*(7-8), 1-3. https://doi.org/10.17159/sajs.2020/8298

Hershberg, E., Flinn-Palcic, A., & Kambhu, C. (2020, June 2). The COVID-19 Pandemic and Latin American Universities.

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference Between emergency remote teaching and online learning.

Irfan, M., Kusumaningrum, B., Yulla, Y., & Widodo, S. (2020). Challenges during the pandemic: Use of eLearning in Mathematics learning in higher education. *Infinity: Journal of Mathematics Education, 9*(2). https://doi.org/10.22460/infinity.v9i2.p147-158

Katz, V., Jordan, A., & Ognyanova, K. (2021). Digital inequality, faculty communication, and remote learning experiences during the COVID-19 pandemic: A survey of U.S. undergraduates. *PLOS ONE, 16*(2). https://doi.org/10.1371/journal.pone.0246641

Leacock, C., & Warrican, S. (2020). Helping teachers to respond to COVID-19 in the Eastern Caribbean: Issues of readiness, equity, and care. *Journal of Education for Teaching, 46*(4), 576-585. https://doi:org/10.1080/02607476.2020.1803733

Livingstone, K. (2019). The place of information and communication technologies in Curriculum Design and Development. *International Journal of Education and Development Using Information and Communication Technology (IJEDICT), 15*(4), 180-197.

Lund, B., Omame, I., Tijani, S., & Agbaji, D. (2020). Perceptions toward Artificial Intelligence among academic library employees and alignment with the diffusion of innovations' adopter categories. *College & Research Libraries, 81*(5), 865-882. https://doi.org/10.5860/crl.81.5.865

Maphalala, M., & Adigun, O. (2021). Academics' experience of implementing e-learning in a South African higher education institution. *International Journal of Higher Education, 10*(1), 1-13. https://doi.org/10.5430/ijhe.v10n1p1

Morreale, S., Thorp, J., & Westwick, J. (2021). Online teaching: Challenge or opportunity for communication education scholars?. *Communication Education*. https://doi.org/10.1080/03634523.2020.1811360

Mpungose, C. (2020). Emergent transition from face-to-face to online learning in a South African University in the context of the Coronavirus pandemic. *Humanities and Social Sciences Communications, 7*(1), 7-9. https://doi.org/10.1057/s41599-020-00603-x

Oyedotun, T. (2020). Sudden change of pedagogy in education driven by COVID-19: Perspectives and evaluation from a developing country. *Research in Globalization, 2*. https://doi.org/10.1016/j.resglo.2020.100029

Pierre, R., Trothman, H., & Garbutt, A. (2021). Evaluation of emergency remote teaching and learning in the MBSS programme, faculty of Medical Sciences, Mona, students; perspectives. *UWI Quarterly Education Forum, 25*, 38-50.

Raza, S., Qazi, W., Khan, K., & Salam, J. (2021). Social isolation and acceptance of the learning management system (LMS) in the time of COVID-19 Pandemic: An expansion of the UTAUT model. *Journal of Educational Computing Research, 59*(2), 183-208. https://doi.org/10.1177/0735633120960421

Rios-Campos, C., Campos, P., Delgado, F., Ramírez, I., Hubeck, J., & Fernández, C. (2021). Covid-19 and universities in Latin America. *South Florida Journal of Development, 2*(1), 577-585. https://doi.org/10.46932/sfjdv2n1-041

Rosario-Rodríguez, A., González-Rivera, J. A., Cruz-Santos, A., & Rodríguez-Ríos, L. (2020). Demandas tecnológicas, académicas y psicológicas en estudiantes universitarios durante la pandemia por COVID-19. *Revista Caribeña de Psicología, 4*(2), 176-185. https://doi.org/10.37226/rcp.v4i2.4915

Sahu, P. (2020). Closure of Universities Due to Coronavirus Disease 2019 (COVID-19): Impact on Education and Mental Health of Students and Academic Staff. *Cureus, 12*(4). https://doi.org/10.7759/cureus.7541

Sims, S., & Baker, D. (2021). Faculty perceptions of teaching online during the COVID-19 university transition of courses to an online format. *Journal of Teaching and Learning with Technology, 10*, 337-353. https://doi.org/10.14434/jotlt.v10i1.31621

Smith, T., & Haughton, S. (2021). Faculty of social science student satisfaction with emergency remote teaching at UWI during the COVID -19 pandemic. *UWI Quality Education Forum, 25*, 13-37.

Stewart, W. (2021). A global crash-course in teaching and learning online: A thematic review of empirical Emergency Remote Teaching (ERT) studies in higher education during year 1 of COVID-19. *Open Praxis, 13*(1), 89-102. https://doi.org/10.5944/openpraxis.13.1.1177

Tadesse, S., & Muluye, W. (2020). The Impact of COVID-19 Pandemic on Education System in Developing Countries: A Review. *Open Journal of Social Sciences, 8*(10), 159-170. https://doi.org/10.4236/jss.2028.810011

Van Nuland, S., Mandzuk, D., Tucker Petrick, K., & Cooper, T. (2020). COVID-19 and its effects on teacher education in Ontario: a complex adaptive systems perspective. *Journal of Education for Teaching, 46*(4), 442-451. https://doi.org/10.1080/02607476.2020.1803050

Vegas, E. (2020). School closures, government responses, and learning inequality around the world during COVID-19. *Brookings*. Retrieved from https://www.brookings.edu/research/school-closures-government-responses-and-learning-inequality-around-the-world-during-covid-19/

Wallace, W., Harry, A., Ramdass, R., & Salina, S. (2021). Transitioning to Online Teaching, Learning, and Assessment in the COVID-19 Era. *UWI (University of the West Indies) Quality Education Forum, 25*, 51-77.

Washington, G. Y. (2019). The learning management system matters in face-to-face higher education. *Journal of Educational Technology Systems*, *48*(2), 255-275. https://doi.org/10.1177/0047239519874037

Williams-Buffonge, N. (2021). COVID - 19 and education" the untold story of the barriers to technology adoption from a tertiary viewpoint. *Journal of Education and Practice*, *12*(10).