Long Paper

A Review of Educational Adaptation During the COVID-19 Pandemic via Online Learning

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Abstract

Purpose – This study explains how the educational sector adapts to become more effective in the long run regarding the COVID-19 pandemic has caused significant hardship for families, children, educators, and teachers. Learning has been adapting to the digital economy.

Method – The researchers employed the documentary method in this review article. Random sampling from reliable and valid sources was utilised in the first step and was analysed using content analysis from the selected papers adopting purposive sampling in the second step.

Results – The findings reveal that in most countries, the COVID-19 lockdowns have produced a blended learning model that combines face-to-face education with e-learning. This means that class sizes have been reduced, students and teachers must maintain social distance, and learning schedules are staggered. Moreover, students can continue their education using online resources such as language apps, video conferencing tools, and virtual tutoring.

Conclusion – Teachers have had to adapt to the educational world in distance education. Most teachers in schools and universities face this challenge, even though teachers lack the skills and equipment to provide adequate distance education in many developing nations. As governments consider reopening schools following the easing of quarantine restrictions, the safety of students and teachers should take precedence, and social isolation of students, access to personal protective equipment, and routine virus testing will be crucial.

Recommendations –The role of instructors must shift from knowledge educator to learning motivator and progress manager. Additionally, the investment in the Information and Communication Technology (ICT) infrastructure of the education service to improve educational outcomes should be considered.

Research Implications – The internet and technology in the classroom should be given serious consideration to becoming more competent. The government must improve and alter teachers' perceptions of educational technology integration. As teachers play a crucial role in ensuring that any new policy is implemented effectively and efficiently, they are essential in implementing any new initiative.

Keywords – Education, Adaptation, COVID-19 Pandemic, Communication, Technology

INTRODUCTION

Recently, digital transformation in the education sector has garnered considerable attention. The current education system is based on a structure institutionalized by the digital era age. Although education has experienced innovation since then, it is one of the sectors in which innovation occurs slowly, and therefore it does not meet the expectations and demands of the sector. Despite this, the coronavirus disease (COVID-19) pandemic is accelerating the digital transformation in education (Kang, 2021). The

pandemic of COVID-19 has caused an unprecedented crisis in every sector. This emergency has resulted in the massive closure of face-to-face activities of educational institutions in over 190 countries to prevent the spread of the virus and mitigate its effects (CEPAL, 2020). The development and improvement of information technology make it easier for educators to modify their teaching methods and generate new educational ideas. In addition, the global COVID-19 pandemic has created even more opportunities for widespread online education use (Siripipatthanakul et al., 2022). How institutions were able to provide knowledge during the Coronavirus pandemic was when institutions had to adapt their educational processes for online-only teaching and learning in a brief period. In this regard, we examined students' perceptions of online learning, their information-assimilation abilities, and their use of E-learning platforms (Coman et al., 2020).

Digitalisation in Higher Education institutions is an issue that many educators are concerned with. ICT skills are becoming increasingly important in all contexts, especially the workplace; as a result, one of the primary goals of universities has shifted to preparing future professionals to deal with problems and seek solutions, including digital competence as a vital skill set (Bond et al., 2018). In the contemporary world, digital technology is not only a tool but also a living environment that provides new opportunities for learning at any time, continuing education, etc. Having demonstrated the essence of digital education and the state of its implementation in contemporary society, this type of education must be analysed critically in terms of its benefits and risks for current students and the efficacy of the teaching and learning process in which they participate. The pros and cons of digital learning are essential to evaluate (Bilyalova et al., 2019).

LITERATURE REVIEW

Education Adaptation During the Digital Era

The development of the digital era is so rapid that they frequently necessitate new knowledge and skills from workers and a work shift. New competencies are required, primarily acquired directly on the job and independently (Litvinenko, 2020). All of this necessitates improved approaches to the implementation of supplementary education. The educational transformation contains the need for quality primary education as the foundation for constructing various additional programs (Arkorful & Abaidoo, 2015). The availability of a broader range of other education programs after graduation and during and after school; the expansion of training programs offered through online platforms; and the development of a decentralised system to deliver additional education (Danchenok et al., 2019). The new global knowledge, powered by information and communication technology (ICT), is not limited to universities. The erosion of universities' effective monopoly on knowledge creation and curation is an underappreciated aspect of the Internet's impact (Ivancheva & Garvey, 2022). As digital transformation trends

become increasingly sophisticated, service delivery and economic analysis improve across all sectors, including educational institutions. Thus, the function of science and education in digital technology is essential to discuss (Dzhavdatovna & Azimovich, 2020). Digital technology has enormous, largely unrealised potential for education improvement. The most important aspect of digital education is ensuring equal access to high-quality infrastructure. Improving everyone's access to technology and connectivity in education should be the starting point for eliminating disparities and transitioning to a digital era (Abduvakhidov et al., 2021).

The COVID-19 Preventive Protocols Impacting on Learning

Stopping the spread of COVID-19 is currently the most significant obstacle humanity faces. People must practice social interaction and health hygiene precautions, particularly those relating to social distance—the potential advantages of a preventive approach, the severity, and disease susceptibility. Additionally, authorities should create an environment where adopting preventive measures presents fewer obstacles for individuals (Sarwar et al., 2020). The preventive policies establish protocols that do not jeopardise public health, ensure the proper use of allocated funds, and establish surveillance systems that will be available to respond to future health emergencies with caution. In situations like the COVID-19 pandemic, it is crucial to improve preventive measures and develop a concrete plan to account for the possibility of another pandemic (De Vero et al., 2021). Considering the COVID-19 guidelines and the need for alternative solutions, it is crucial to investigate how the education sector is impacted and how it can respond to future challenges. Educational institutions should research to disseminate and document the pandemic's impact on the educational system. In addition, there is a greater need for educational institutions to strengthen the curriculum's practices and make it more responsive to the student's learning needs beyond the traditional classroom (Toquero et al., 2020). Online education is a topic of widespread interest in many countries today. In the mobile internet era, governments worldwide have made various successful attempts at online education. However, online education is primarily a supplement to school education, and large-scale average online education lacks cases. During the COVID-19 pandemic, the Chinese government launched the "School's Out, But Class's On" campaign and developed a large-scale, standard online education application (Zhou et al., 2020). However, there was no consensus on the criteria for the return to school of students who tested positive. The flexibility between attendance at school and remote education for high-risk children was frequently variable. The closing of schools was regarded as the absolute last resort for COVID-19 control (Lo Moro et al., 2020).

Online Learning During the COVID-19 Pandemic

The benefits of online education include remote learning, convenience, and accessibility, while the disadvantages have inefficiency and difficulty maintaining academic integrity. The obstacles include training faculty members to use online modalities and creating lesson plans with reduced cognitive load and increased

interactivity. The current study supports online education in medical and dental schools due to its numerous benefits. Online learning modes promote student-centred learning and are easily manageable during this lockdown (Mukhtar et al., 2020). This pandemic has successfully forced the global shutdown of several activities, including educational activities, resulting in massive online learning as a crisis response. The crisis challenges institutions, faculty, and students, challenges and opportunities. Online learning differs from emergency remote teaching. Online learning will be more sustainable, while instructional activities will become more hybrid if the challenges encountered during this pandemic are thoroughly explored and converted into opportunities (Adedoyin & Soykan, 2020). During the COVID-19 pandemic, it is suggested that the UTAUT model be adopted in English educational management due to its correlation with user satisfaction and the outcome of English learning intention via Netflix (English Subtitle). To increase individuals' intent to learn English through Netflix (English Subtitle), English program directors and marketers should facilitate conditions such as providing customer service to assist viewers when needed and ensuring Netflix applications for English learning are compatible with the technologies that most people use (Limna et al., 2022b).

The success of online learning during the COVID-19 Pandemic depended on technology compatibility with the national humanist curriculum and the support and cooperation of all stakeholders, including the government, schools, teachers, parents, and community (Aliyyah et al., 2020). The online education system implemented during the COVID-19 pandemic is efficient and ineffective. Effectively implemented due to the conditions that necessitate online study, but inefficient due to the higher costs incurred than traditional lectures (Bahasoan et al., 2020). However, numerous issues have been identified, including 1) the availability of facilities, 2) the use of networks and the internet, 3) the planning, implementation, and evaluation of learning, and 4) collaboration with parents. Online learning aids teachers during the COVID-19 pandemic, but most teachers are dissatisfied with its effectiveness. It was anticipated that this research would serve as an evaluation tool for various parties, including education policymakers, involved in implementing online learning. Furthermore, this research can assist other researchers in developing studies on online learning, particularly in elementary schools (Fauzi & Khusuma, 2020).

Onsite Learning and Blended Learning During the COVID-19 Pandemic

The COVID-19 vaccination and education are required for students. School administrators and teachers must encourage students' perceptions of COVID-19 knowledge, mainly that COVID-19 is more dangerous than influenza and that everyone must be vaccinated against COVID-19. The students' concerns about COVID-19 interfere with their schoolwork. In addition, the students are concerned that their peers and teachers could become infected with COVID-19 if they learn on-site. During the pandemic, the observable changes in student behaviour could be measured by requiring all students to wear masks, wash their hands, and use hand sanitiser more frequently. Consequently, it may aid school administrators, teachers, and students cope with students' perceptions

and concerns regarding COVID-19. Eventually, students' behaviours will alter to protect them from the COVID-19 pandemic at school (Limna et al., 2022a). The success of learning systems during the COVID-19 pandemic depends on comprehending the obstacles and factors that influence their users' adoption and utilisation. A Learning Management System (LMS) is utilised nationwide for teaching and learning. As it was the first time using learning management systems during the pandemic, difficulties were anticipated. During the Covid-19 pandemic, the challenges of using the LMS or the factors influencing its use will be investigated. It assists policymakers, researchers, and practitioners in public and private universities in understanding the implementation and use of LMSs during covid-19 and beyond (Mohammad et al., 2021). Blended Learning (BL) is an educational approach that combines face-to-face (F2F) instruction with information and communication technology (ICT) instruction. The term "technology" was interpreted to refer to all devices connected to any network. In this COVID-19 pandemic, the best New Normal solution for all educational stakeholders may be a BL model based on IoT. To prevent COVID-19, social distance forces traditional F2F interactions to evolve. Many technologies could be added to the classroom to create and enhance an intelligent learning environment, and portable devices could be utilised to achieve learning objectives (Siripongdee et al., 2020). Thus, blended learning is essential during the COVID-19 pandemic.

The Advantages and Disadvantages of Online Learning

As the popularity of online education continues to rise, numerous colleges and universities are interested in the optimal method for delivering course materials to online students. These students were more likely to engage in quantitative reasoning if they took more online courses. They were, however, less likely to engage in collaborative learning, student-faculty interactions, and discussions with diverse others than their counterparts in more traditional classrooms (Zounek & Sudicky, 2013). Students who took more online courses reported less exposure to effective teaching practices and poorer interaction quality. The correlation between these engagement indicators and the percentage of online classes suggests that an online environment may be conducive to certain types of engagement while acting as a barrier to others (Dumford & Miller, 2018). Online education appears to have numerous advantages for all parties involved. Cyberlearning has been given a positive spin, but some complications must be brought to light. Without proper comprehension, anticipation, and preparation, these disadvantages can be formidable obstacles (Fedynich, 2013).

Online and blended learning have become standard approaches to education in higher education. Specific fundamental concerns of teaching, learning, and assessment must be re-theorized by instructors in non-traditional settings. These concerns include perceptions of the validity and reliability of assessment in online environments about serving the intended purposes and an inability to comprehend how formative assessment operates in an online learning environment. Noteworthy is also the question of how formative assessment benefits both student learning and teaching within online

pedagogical strategies (Baleni, 2015). The advantages and disadvantages of online learning are shown in the SWOC analysis in figure 1 below.

STRENGTH	WEAKNESSES
1. Time flexibility 2. Location Flexibility 3. Catering to a wide audience 4. The wide availability of courses & content 5. Immediate feedback	1. Technical difficulties 2. Learner's capability & confidence level 3. Time management 4. Distractions, frustration, anxiety & confusion 5. Lack of personal/physical attention
OPPORTUNITIES	CHALLENGES
1.Scope for Innovation & digital development 2. Designing flexible programs 3. Strengthen skills: problem-solving, critical Thinking & adaptability 4. Users can be of any age 5. An innovative pedagogical approach (radical transformation in all aspects of education)	1. Unequal distribution of ICT infrastructure 2. Quality of education 3. Digital illiteracy 4. Digital divide 5. Technology cost & obsolescence

Figure 1. The SWOC Analysis of Online Education During Crises (Dhawan, 2020: 14).
Note. SWOC: Strengths, Weaknesses, Opportunities, & Challenges.

Figure 1 shows the SWOC analysis. The strengths of online learning are time flexibility, location flexibility, catering to a broad audience, wide availability of course contents, and immediate feedback. The weaknesses are technical difficulties, learner capability & confidence level, time management, distraction, frustration, anxiety & confusion, and lack of personal or physical attention. The opportunities are for instructors could scope for innovation and digital development, design flexible programs, improve problem-solving, critical thinking & adaptability, any age of learners, and digital transformation for education. The challenges are ICT infrastructure for equality, quality of education, digital literacy, digital divide, and technological cost (Dhawan, 2020).

COVID-19 has significantly altered the teaching process, with educational institutions worldwide adopting blended learning initiatives to ensure continuity and control the spread of the disease. Most institutions have maintained digital course delivery. Blended learning provides advantages and challenges of blended learning during the COVID-19 pandemic from students' perspectives in writing skills. It encourages them to search online, adapt to their circumstances, and be cost-effective. Students were confronted with technological issues, flaws in the instructor's performance, difficulties with online exams, attitudes toward online learning, and limited resources (Dahmash, 2020).

Teacher Satisfaction, Student Satisfaction and Effectiveness

In response to the current pandemic situation, the education system has recently implemented a modification involving the delivery of classes via the Internet. Considering COVID19, teachers' and students' perceptions and concerns regarding mandatory online courses are discussed. Teacher and student satisfaction with online courses is measured in the following areas: quality and timeliness of student-professor interaction, availability of technical support, structured online class modules, and modifications to accommodate the conduct of practical classes (Nambiar, 2020). The global COVID19 pandemic has disrupted the normal functioning of numerous activities, including education and learning. Numerous studies have focused on perceived learning outcomes and student satisfaction in a new learning environment because of the shift towards online education caused by the COVID19 pandemic (Baber, 2020). Institutional adoption of online learning increased exponentially during the COVID-19 pandemic. As institutions transitioned from on-campus to online learning, course satisfaction and student engagement became the foremost concern of professors. During the COVID-19 pandemic, this study aimed to determine the significant relationship between course satisfaction and student engagement in online learning—high levels of course satisfaction and student engagement with online learning delivery among students. Students are satisfied with the quality of online learning delivery, but their levels of online learning engagement vary by year. Also, online student engagement was significantly correlated with online course satisfaction. As student engagement in online learning constructs, skills engagement, emotion engagement, participation engagement, and performance engagement is mainly related to online course satisfaction (Baloran & Hernan, 2021). However, personal factors have no direct influence on online student satisfaction, while platform availability has the most significant impact on online student satisfaction. The online education platform is given to escalate the level of online education during the COVID-19 pandemic to promote the reform of information-based education (Chen et al., 2020). Accessibility, social, and academician capability were discussed as the three impediments. Accessibility was found to be the most significant barrier to the effectiveness of online learning. Thus, the roles of government, institutions, and technical communication are crucial for addressing the problems of internet access, high internet data costs, and a shortage of technology devices. Consequently, students' motivation and performance can improve online learning (Ramli et al., 2020).

Previous Studies of Educational Adaptation During the COVID-19 Pandemic and Digital Economy

Zalite and Zvirbule (2020) warranted the need to evaluate the impact of the COVID-19 pandemic on the European Union's higher education system and its adaptability to the transition from traditional to remote study formats regarding 1) to analyse the need to improve digital skills in the European Union by examining the results of the Digital Economy and Society Index, and 2) to evaluate the current digital environment of

Latvian public universities and conduct an in-depth study of the digital environment of Latvia University of Life Sciences and Technologies. It revealed the digital divide between the more developed Northern European nations and the less developed Southern and Eastern European nations. However, a detailed analysis of the situation in Latvia leads to the conclusion that Latvian higher education institutions have significantly increased the amount of digital content in both external and internal communication systems and can provide competitive educational services that meet the requirements of modern technology education.

Sá and Serpa (2020) concluded that there is a need to improve the sustainable digital development of teaching in higher education, which entails significant obstacles that higher education institutions must confront and overcome if they wish to be at the forefront of success in the international education market. It provides insights into the challenges and opportunities that COVID-19 poses to higher education when it must redefine its teaching methods, leadership models, and interaction channels by going digital to improve the sustainable development of its teaching.

Sutiah et al. (2020) suggested that during the prevention of the COVID-19 pandemic, there was an abrupt shift in learning. Distance learning is a viable alternative when face-to-face courses are no longer feasible. Students prefer face-to-face education over distance education. Students encountered numerous obstacles during distance education and were concerned about achieving learning outcomes. Distance education is a viable alternative to classroom instruction during the COVID-19 pandemic. Distance learning cannot replace the need for on-site and face-to-face instruction, but it can supplement traditional classroom-based learning models. Changes in individual learning readiness and the readiness of institutional facilities for blended learning are influenced by distance learning.

Rifiyanti (2020) indicated that shifting face-to-face learning to online learning, particularly for English classes, is also an effective method during the pandemic, that the accessibility of the internet in online learning is an essential factor that should exist during learning activities, and that students assumed positively that most lecturers know how to teach English online learning, and that listening is the most challenging skill to learn in online learning. Online learning is an effective alternative method for assisting teaching and learning in the pandemic; it considers the use of appropriate technology, quality, and instructors' expertise to enhance and motivate learners engaged in an online learning environment.

Zalite & Zvirbule (2020) concluded today's students anticipate that their university will not only provide them with a valuable source of practical knowledge but will also be prepared to offer appropriate distance learning opportunities both daily to diversify and enrich the study process experience and during global pandemic crises, which will likely be a part of their lives in the coming decades. The novelty and timeliness of this study are justified by the need to evaluate the impact of the COVID-19 pandemic on the European

Union's higher education system and its adaptability to switch from traditional to remote study forms considering the need to improve digital skills and the evaluation of universities with digital content in both external and internal communication systems.

Peimani and Kamalipour (2021) highlighted that the rapid transition from face-to-face to online teaching is based on the experience of education during a lockdown and the challenges and opportunities associated with learning and teaching activities, assessment, and feedback digital platforms. In the context of unprecedented global health crises, such as the COVID-19 pandemic, some critical considerations for developing more adaptive and resilient approaches to online instruction. It is essential to transcend fixed pedagogical frameworks to maximise the productive capacities of adaptive teaching.

METHODOLOGY

The definition of a review article is primarily qualitative synthesis. Introduction and application of content analysis for reviewing literature reviews published in English-language peer-reviewed journals (Seuring & Gold 2012). Qualitative documents and content analysis are used to quantify critical concepts and determine themes. Web pages were used to identify strategies and systematically search for relevant content (Sleeman et al., 2018). Qualitative research seeks to elucidate the contexts in which individuals or groups make decisions and behave in particular ways and to explain why the observed phenomenon occurred. Communication in both directions facilitates the acquisition of additional data through in-depth knowledge (Jaipong et al., 2022). The data was selected between the publication years 2013 and 2022. Thus, a descriptive evaluation of the body of the literature is followed by a content analysis based on a pattern of analytic categories derived from a typical research procedure from 302,000 results (random sampling) for thematic. Consequently, 50 papers (purposive sampling) were selected in this study using keywords as follows; Education, Adaptation, COVID-19 Pandemic, Communication and Technology. The literature and data were obtained from the English language on EBSCO, Google Scholar, Scopus, Web of Science, and ScienceDirect databases. All papers were peer-reviewed based on the information collected between April 15 and May 24, 2022. A list of educational adaptations during the COVID-19 pandemic and digital era-related documents was developed in this study.

DISCUSSIONS

EFFECTIVE LEARNING DURING THE COVID-19 PANDEMIC AND THE DIGITAL ERA

Effective online instruction depends on 1) well-designed course content, motivating interaction between the instructor and learners, and well-prepared and fully supported instructors, 2) creating a sense of online learning community, and 3) rapid technological advancement. Hopefully, this will spark an ongoing discussion of practical

strategies that can improve universities' and faculty's ability to transition to online teaching. The improvement of higher education and student enrollment and retention considering current debates regarding the cost and quality of higher education supported by Sun & Chen (2016). Social interaction relates to the efficacy of online learning. It is diminished in the presence of social distance norms, as individuals place a greater emphasis on continuous learning and saving lives than on socialising in the online environment supported by Baber (2021).

During the isolation period of COVID-19, the required equipment for the participants was rarely available at home while attending online classes, thereby reducing the number of physical education units that could be transmitted. This shifted focus from competition to underperformance, weight gain, and adverse psychological conditions. It is essential for online physical education learning to focus on various countries' cultural and educational characteristics and investigate the overall effectiveness of online physical education, as confirmed by Laar et al., 2021. Students with poor internet access, insufficient time due to other familial issues, inadequate working space at home, and male gender are more likely to be less effective in their online learning process. The institution's infrastructure for online activities reduces the likelihood that students will view online education as less effective, as supported by Roman and Plopeanu (2021).

However, perceptions of course quality by students continue to be a potential disadvantage of online instruction in the case of physical practices. Online course instructors' technological limitations and perceptions contributed to lower student satisfaction. After the Covid19 pandemic, educators should incorporate the lessons and curricula to improve students in the future, as supported by Thom et al. (2021). Internet connection stability and instructor familiarity with readily available internet-based teaching tools, such as video conferencing software, were identified as obstacles. During online classes, instructors must also find ways to improve student interaction and maintain student interest and engagement. Most students are satisfied with online education. The feasible and efficient alternative can be entirely adapted to online instruction. After COVID-19, additional hybrid instruction in higher education should be supported by Lapitan et al. (2021).

RESULTS AND CONCLUSIONS

During the COVID-19 pandemic and digital technology, online learning and classes are increasingly incorporated into the global education system. Online channels have made education more accessible and convenient for everyone. The education sector in India has been one of the world's largest and most dynamic industries. Though online and distance courses have existed for a long time, in the pandemic and digital era, the introduction of the online mode of taking classes instead of the traditional face-to-face classroom approach in schools, universities, and colleges has been considered. Blended Learning is an instructional method that combines face-to-face instruction with instruction using information and communication technology. The technology

encompasses all network-connected devices. In this COVID-19 pandemic, an Internet-based and Blended Learning model may be the best New Normal solution for all educational stakeholders to prevent COVID-19; social distance compels the evolution of traditional F2F interactions. Considering the COVID-19 guidelines and the need for alternative solutions, it is essential to examine how the education sector is affected and how it can respond to future challenges. Institutions and educators should research to disseminate and document the impact of the pandemic on the educational system. In addition, educational institutions must strengthen curriculum practices and make them more responsive to students' learning needs outside of the traditional classroom.

Due to the sudden global pandemic of COVID-19, many schools and institutions of higher education worldwide have resorted to online-only teaching and learning. As many educators and students braved the situation, and until a remedy is found to prevent the spread of this deadly coronavirus, it may be on the minds of many that online learning may be the future for college students in the wake of COVID-19. Although it is uncertain how COVID-19 will transform our society, the global pandemic is encouraging and accelerating innovation and progress. The effects of the COVID-19 pandemic on the education service sector are typically categorised as a service sector, especially in the digital economy.

The advantages of online education were remote learning, convenience, and accessibility, while the disadvantages were inefficiency and difficulty maintaining academic integrity. The obstacles are training faculty members to use online modalities and developing lesson plans with reduced cognitive load and increased interactivity. Due to its numerous advantages, the current study supports online education in medical and dental schools. Online learning modes facilitate student-centred education and are manageable during this lockdown. The disadvantages are technical difficulties, learner capability, confidence level, time management, distraction, frustration, anxiety, confusion, and lack of personal or physical attention. The opportunities for instructors include innovation and digital development, the design of flexible programs, the improvement of problem-solving, critical thinking, and adaptability for students of any age, and the digital transformation of education. The difficulties are ICT infrastructure for equality, the quality of education, digital literacy, the digital divide, and technological cost.

RECOMMENDATIONS

The recommendation to educators in the digital economy is to pay attention to service delivery and economic analysis to improve educational institutions. The digital economy trends have become increasingly sophisticated. Thus, it is essential to science and education in the digital economy. Education has enormous, largely unrealised potential to benefit from digital technology. Equal access to high-quality infrastructure is the essential component of digital education. Improving everyone's access to technology and connectivity in education should be the starting point for eliminating disparities and transitioning to a digital economy.

IMPLICATIONS

In response to the current pandemic situation, the education system has recently implemented a change involving Internet-based class delivery. Online classes are considered during the COVID19 pandemic. Teacher and student satisfaction with online courses is measured in the following areas: quality and timeliness of student-professor interaction, availability of technical support, structured online class modules, and adjustments to facilitate practical classes. The global COVID19 pandemic has disrupted numerous normal activities, including education and learning. The perceived learning outcomes and student satisfaction in a new learning environment because of the COVID19 pandemic-driven shift toward online education. During the COVID-19 pandemic, institutional adoption of online learning increased exponentially. As institutions shifted from on-campus to online education, course satisfaction and student engagement became the top priority for educators. During the COVID-19 pandemic, student course satisfaction and online learning engagement should be considered. High levels of course satisfaction and engagement with online learning delivery are essential. Students are pleased with the quality of online learning delivery, but their engagement with online learning varies yearly. Also, the relationship between online student engagement and online course satisfaction is essential to educators. The implication could be applied to any sector to improve satisfaction with webinars or online interaction during the COVID-19 pandemic and the digital economy.

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CONFLICT OF INTEREST

There is no conflict of interest.

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