

Examining Students' Flexibility in Online Learning: Exploring the Impact of E-Learning Adoption on Education During the Covid-19 Pandemic

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Abstract

The importance of Learning Management Systems (LMS) for self-directed learning called for a rapid shift from learner-centered to fully online learning due to COVID-19. This paper examines the effects of Covid-19 Pandemic on education. The study explores the advantages and disadvantages of online education and pertaining challenges that need to be addressed for its successful implementation. During the study, an online survey was used to gather insights on students' experiences and difficulties they encountered during the pandemic. During this survey, a total of 582 participants; the majority of whom were undergraduate students (68%) and were women (68%). While mobile phones were revealed to be the most popular e-learning tool (55%), 43% chose laptops or desktops. Importantly, it is worthy to note that 56% of respondents reported not having access to the internet, likewise 54% spend four to five hours daily on online learning. According to the study, for over a half of the participants, the shift to online classes equally led to a shift in their routines. Additionally, of the participants 10% found it challenging to balance between study time and personal time. Distractions at home and participation in other activities were the main causes of non-participation. The mean scores of 3.19 and 2.98, respectively, in the study underscores the challenges of obtaining online classes and the absence of in-person interactions. We therefore strongly recommend that future studies concentrate on these areas as they have the potential to produce even more precise and significant results.

Keywords: Students' flexibility, Covid-19 pandemic, Online learning, e-learning adoption

INTRODUCTION

The traditional academic methodology has been relying on various teaching models. These include, but not limited to, faculty lecturing in a classroom setting, students listening, notes taking, asking questions, and getting those questions answered as its backbone, just to name. Unfortunately, with the COVID-19 pandemic, this model of delivering courses has gone beyond face-to-face practices towards online and distance learning with the use of different tools. Some examples of those tools are computers, smartphones, and tablets, coupled with support of the internet.

By the end of 2019, Chinese Health Experts informed the World Health Organization (WHO) about the presence of numerous cases of an unknown pneumonia-like virus that presented similar to flu in Wuhan City, Hubei Province in China (Elizabeth, A. M., Kim, R. W., Barbara, Y. and Shannon, S. B., 2020). With no effective vaccine or treatment available, WHO declared COVID-19 a global pandemic. Subsequently, most governments around the world authorized extraordinary social containment measures including social distancing and the temporary physical closure of population. Consequently, various activities were paralyzed, and likewise the academic system got affected as well.

Furthermore, the disease forced various establishments to suddenly modify their workflow tactics and adopt new technologies. In most cases, these organizations did not get enough time to reflect upon how the new strategies and

the associated technologies should be introduced and integrated into their existing setup (Pinaki, C., Prabhat, M., and Manu, S. G., and Savita, Y., 2020). Besides, the pandemic not only made all of us locked down for self-security, but all the systems doubtful. As a matter of fact, more than 100 countries implemented nationwide closure; a decisive measure that approximately influenced 90 percent of the world's student population and threatened their future education rights (Selwa, E. F. Mohamed, L., Hind, K., Abdelali, R., Driss, G., and Larbi, E. F., 2020). Indeed, universities were initially not prepared for such a transition from classroom-based education to completely online education, due to the fact that many of them lacked infrastructure and strategies (Pinaki, C., Prabhat, M., and Manu, S. G., and Savita, Y., 2020).

Following the pandemic spread, lockdown and regional isolation measures taken, various universities adopted the online and /or blended learning approaches as the best way to continue delivering courses. This helped them to bridge the gap between, however, keeping up with these changes is necessary for the education system to cope with problems that may arise (Mustafa, K. M., Abdul, A. M., and Mohammad, H. H., 2021). In their paper's findings, these authors concluded that lack of E-learning policy, lack of appropriate infrastructure, and lack of skills in the use of E-learning among educators were the key barriers in the successful implementation of E-learning. Moreover, there is a lack of studies exploring how efficiently students can interact with professors and their peers using various online tools, as well as the effectiveness of online assessment techniques (Pinaki, C., Prabhat, M., and Manu, S. G., and Savita, Y., 2020).

During this period, videoconferencing and other social interaction platforms such as WhatsApp, Google Meet, Zoom, and Microsoft Teams, along with Learning Management Systems (LMSs) like Moodle, Blackboard, Canvas, and Google Classroom, play a pivotal role in organizing online teaching and discussion sessions. Besides, these platforms enable students to submit their assignments electronically, hence enabling professors to monitor and track students' progress.

Learning Management Systems (LMSs) plays an important role in organizing courses, accessing resources and providing additional learning materials to aid students' self and independent learning to better internalize the learning outcomes. During this COVID-19 pandemic, courses delivered in a learner-centered learning method were immediately moved to full E-learning (Lisa R. A., Ira, T., Diah, A. M., Yuniardini, S. W., Vera, J., Benso, S., and Ria, P., 2020). It is ideal, therefore, to provide students with personalized attention to help them easily adapt themselves to the new learning environment. To achieve this, social media and various group forums can be used to communicate with students. To make Online programs meaningful, educators are advised to design online instructors in such a way that they are creative, interactive, relevant, student-centered, and group-based. They should equally facilitate feedback from learners, make the latter ask questions and broaden their horizon for the course content (Shivangi, 2020).

Doris and Okeoghene (2021) ascertained that the use of social networks provides the opportunity for teachers and students to be in continuous contact transcending the conventional classroom and creating new teaching and learning spaces. Likewise, supporters argue teacher-student interaction through social networks only favors teachers and students' freedom of expression, but inevitably builds a phenomenon and pedagogical potential that tightens social networks.

Conversely, there are disadvantages of using these diverse online platforms for teaching. One hand, those using outdated technological devices might find it hard to meet up with some technical requirements of online learning. On the other hand, due to the digital transformation of instructional activities during this pandemic, students and instructors with low digital competence are liable to lag behind in online learning. Olasile and Emrah (2020) stipulate that students and faculty with low digital competence might find it difficult to make optimal utilization of the digital library. The goal of this study is to examine the impact of using online platforms for E-Learning on students' adaptability in the educational system amidst the Covid-19 pandemic. The study has employed data visualization techniques to analyze and illustrate the research findings.

LITERATURE REVIEW

This section houses a review of the previous research on online learning during the COVID-19 crisis. It also encompasses the other studies discussing the challenges of online learning and educational technology in broader perspectives.

In their paper entitled, *Adoption of Online Learning during the Covid19 Pandemic Lockdown by Universities in Garowe*, Tumwebaze and Omer (2021) examine the implementation of online learning and associated limitations during such a global pandemic like Covid -19. These researchers analyzed earlier studies and theoretical perspectives on online education. As a result, they found out that colleges in Garowe used online education as a crisis management strategy. They revealed that university administration, professors and students were all unprepared, and had no prior experience with such a new pedagogical approach. Finally, research results from a survey from Garowe concludes that this issue does still exist, necessitating a call for a thorough contextualized study in this field.

Isaac *et al.* (2022), in their study entitled “Exploring the E-Learning Adoption Intentions of College Students Amidst the COVID-19 Epidemic Outbreak in China”, examined the impact of COVID-19 on Chinese college students’ use of e-learning platforms. These researchers investigated the different factors influencing students’ intentions to adopt e-learning systems using a survey questionnaire. Isaac and colleagues discovered that perceived ease of use (PEOU) significantly influences students’ propensity to embracing e-learning systems, contrary to perceived usefulness that plays a minor role in the e-learning systems. They concluded that identifying and providing students with technical support enhances the value and simplicity of e-learning systems.

Furthermore, Li (2022), in his research titled “The Shift to Online Classes During the Covid-19 Pandemic: Benefits, Challenges, and Required Improvements from the Students’ Perspective” claims that many colleges and universities shut down their campuses and switched to online learning, following the outbreak of the Covid-19. This researcher emphasizes that the educational system was seriously disrupted. In his study, he investigated students’ perceptions about taking classes online during the pandemic, focusing on presented benefits, challenges, mindsets and possible ways of improvements. Li administered a survey to first- and second-year undergraduate students at Chinese institutions and 342 valid and comprehensive responses. As a result of the findings, the perceived advantages of online learning included building a community for digital learning communities, honing digital learning skills, and maintaining contact through challenging times, on one hand. Challenges faced by students in the online learning environment included difficulties with flexibility, time management, social media distractions, and technological barriers, on the other hand. For a smooth transition to the post pandemic era, students recommended a blended learning approach incorporating both in-person learning with physical interaction and online learning methods. Li’s study concludes with ideas for effectively sustaining online courses in the future.

In the same manner, Darren *et al.* (2021), in their article “Transitioning to E-Learning during the COVID-19 pandemic: How have Higher Education Institutions responded to the challenge?” examined a couple of challenges that higher education institutions (HEIs) faced as they shifted from in-person instruction to online instruction during the COVID-19 pandemic. In their study, five main issues were identified. These are: the integration of synchronous and asynchronous learning tools, technological access, teacher and student online competency, academic dishonesty, and privacy and confidentiality. Similarly, they explored tips, including but not limited to provision of e-learning training and building online learning communities, to effectively implement online learning. In a challenging situation, Darren’s study suggests a paradigm shift to having a technology enhanced learning hub for HEIs.

Lastly, we explored Mahyoob’s paper “Challenges of e-Learning during the COVID-19 Pandemic Experienced by EFL Learners.”. Mahyoob argues COVID-19 has not only disrupted the majority of industries, but made education



systems from various countries undergo and adopt an unanticipated shift to online learning. To assess the viability of virtual learning approaches, Mahyoob surveyed 184 students of English language learners at Science and Arts College, Alula, Taibah University, in Saudi Arabia, to investigate students' experienced difficulties that are associated with online learning. He mainly found technical, intellectual, and communication obstacles were prevailing challenges affecting EFL learning during the pandemic. Besides, Mahyoob's study concluded that the majority of EFL learners were not satisfied with online learning as it did not provide them with expected progress in their language competencies (Mahyoob, 2020).

In conclusion, various research studies have extensively explored the impact of the pandemic on education, focusing on both the advantages and disadvantages of online learning. These studies recommend addressing technical, intellectual, and communication barriers in order to have a successful online learning in place. It is with no doubt that, in the post pandemic era, education continues to be reimagined and reshaped. Therefore, the above discussed insights from various studies remain relevant to educators, policy makers, and institutions committing to improving online learning experiences.

METHODOLOGY

To understand the e- learning situation during the covid- 19, a dataset collected under the license of CC BY-NC-SA 4.0 DEED by the Creative commons explores and gives insights on for the understanding "*Mental States, Perceptions & Experiences of Teachers &Students, year after Covid*".

Through the use of an open-ended online questionnaire, the study used an exploratory survey to collect data, and examine the students' learning obstacles and experiences during the period of the Covid-19 Pandemic. As a matter of fact, on April 26th 2021, a google form was shared to students who were taking online courses due to the pandemic. Subsequently, 582 students from different states of India, institutes and age groups participated in this survey. Besides, various technological and resource-related topics including, but not limited to, internet connectivity, device accessibility, institutional amenities like e-books, ergonomic furniture, software and hardware resources, and technical support have been covered. The study also encompasses other forms of training such as workshops, webinars, Massive Open Online Courses, and Faculty Development Programs, to name a few.

Moreover, a series of questions focusing on emotional and behavioral aspects were provided. These mainly focused on exploring such aspects like how individuals get involved in social activities, the structure of their daily schedule, main emotional responses during the pandemic era, feelings at the end of a typical day after finishing classes, and key upsetting difficulties experienced during the online learning. Besides, social media usage, confidence in social media material, contrasts between in-person and online learning, personal changes related issues during the pandemic, and a message to the world after a year of the pandemic have all been all discussed.

After the data was structured, printed out and evaluated, it was then studied and examined qualitatively. A 5-point Likert-type scale, ranging from Strongly Disagree to Strongly Agree, was used to score the survey responses on student's involvement and social presence in online learning during the pandemic. In addition, the data was analyzed using both descriptive and inferential statistics. While inferential statistics was required to display data as frequencies and percentages, descriptive analysis involved computing the item mean. Lastly, we assessed respondents' mean scores on their perceptions of several elements of class attendance.

FINDINGS AND DISCUSSION

For better understanding, discussion of the survey findings about learning during the pandemic is supported by evidence. The demographic study of the participants and the series of queries are divided into two parts for examination and discussion of the results as follows:

a. Demographic presentation of the respondents

Table 1 - Age groups of respondents

Age groups following the level of study	Frequencies	Percentage
Middle School Students (aged 11-14 years)	13	2%
Post Graduate Students	42	7%
Research Scholar	9	2%
Secondary / Senior Secondary Students (aged 14-18 years)	58	10%
Undergraduate Students (Adults aged 18 years and above)	393	68%
Very Young Learners (aged 3-6 years)	22	4%
Young Students up to Class V (aged 6-11 years)	45	8%
Total	582	100%

The fact that the majority of participants (68%) they were undergraduate students demonstrates the substantial influence that e-learning has had on higher education. First, secondary and senior secondary students (ages 14–18) made up a sizable share (10%) of the sample, hence demonstrating the extensive use of online learning among students. Second, students in graduate and research programmes (9%) demonstrate how well higher education has adapted to digital platforms. Third, young students (3-11 years old) made up 12% of participation. The latter demonstrates the expanding significance of online learning as well. Finally, middle schoolers (2%) show the wide appeal of e-learning to all age groups.

Table 2 - Respondents distribution by gender

Gender	Frequencies	Percentage
Female	393	68%
Male	186	32%
Prefer not to say	3	1%
Total	582	100%

It should be noted that 68% out of the 582 total respondents identified as female, while 32% were men. Equally important, it is worth noting that a small percentage of respondents (1%) decided not to state their choice for gender; rather they chose “Prefer not to say.” This information sheds light on how gender is represented in the study and may be used to analyze how the Covid-19 pandemic’s use of e-learning has affected different gender groups, giving a crucial dimension to the research.

b. Enquiries section

Q1. Which device do you use most often to take online classes?

Table 3 - Mostly used devices when learning



Device mostly used	Frequencies	Percentage
Laptop/ Desktop	248	43%
Mobile Phone	320	55%
Tablet/iPad	14	2%
Total	582	100%

In the study of 582 students, 55% said their major e-learning tool was a mobile phone, while 43% said it was a laptop or desktop computer. In addition, less than 2% of people reported using tablets and iPads. These numbers point to a dramatic shift in favour of mobile learning, highlighting that, despite the pandemic, the majority of students have embraced the accessibility and convenience offered by mobile devices for their educational needs.

Q2. During this period do you have access to the Internet at your place of stay?

Table 4 - Access to internet during the COVID-19

Access to internet during the COVID-19	Frequencies	Percentage
No	326	56%
Yes	85	15%
Yes (but with bandwidth and connectivity issues)	171	29%
Total	582	100%

Surprisingly, 56% of the 582 respondents who took the study said they had no access to the internet. On the other hand, 29% of respondents said they have access to the internet but frequently experience connectivity and bandwidth issues. Only 15% of those surveyed said they had regular, continuous access to the internet. Therefore, the pandemic has resulted in a digital divide among pupils of whom the majority had trouble accessing online learning tools. Therefore, this has significant effects on educational equity and necessitates focused actions to guarantee that all students have equitable access to online learning opportunities.

Q3. How many hours of classes do you have in all per working day?

Table 5 - Class hours per working days

Class hours per working days	Frequencies	Percentage
2 hours	34	6%
3 hours	50	9%
4 hours	140	24%
5 hours	144	25%
Less than 2 hours	44	8%
More than 5 hours	170	29%
Total	582	100%

Around 54% of the sampled students showed a strong commitment to their education. These could spend four to five hours a working day learning online. Additionally, about 29% of the students attended virtual classes for more than

five hours per day, demonstrating their commitment to their studies despite challenging conditions. Less than two hours per day are spent on online learning by 14% of students, indicating access/engagement concerns. This variable adaptation during the pandemic underlines the need for customized support and interventions to guarantee fair outcomes for e-learning.

Q4. Do you have to miss your classes or adjust your schedule because you have to share this device with your family members or friends?

Table 6 - Missed or adjusted the usual schedule due to the online classes.

Adjust the usual schedule due to online classes	Frequencies	Percentage
No	248	43%
Yes	320	55%
Yes, but only Sometimes	14	2%
Total	582	100%

Out of the 582 respondents polled, a considerable 55% reported that the transfer to online classes required them to alter their daily habits, while 43% indicated they had to make no modifications. Additionally, 2% said they occasionally had to change their schedules. The findings highlight the significant impact of e-learning in education because most students had to change their regular schedules to accommodate remote study. This information suggests that the pandemic-related shift to online education had a discernible impact on students' daily life, highlighting the need for additional research on the unique challenges and benefits of this adjustment.

Q5. Has your school/ college/ institution provided any support so that you can easily attend classes during this pandemic period?

Table 7 - Any support to attend classes from the school/institutions

Any support to attend classes from the school/institutions	Frequencies	Percentage
Not at all	260	45%
Yes	177	30%
Yes, but insufficient	145	25%
Total	582	100%

The research revealed that a sizable percentage of students (45%) claimed their schools or institutions did not offer any support for taking online classes during the Covid-19 epidemic. Additionally, only 30% of students reported receiving enough support, while 25% of them said they did but thought it was insufficient. The findings show that a sizable percentage of students had trouble finding online resources and support during the epidemic, which may have had an impact on their academic experiences and successes.

Q6. How do you feel after your classes are finished and you are done for the day?

Table 8 - Feelings after finishing the class each day

Feelings after you finish you day class	Frequencies	Percentage
Confused	17	3%
Exhausted	171	29%

Feelings after you finish you day class	Frequencies	Percentage
Happy	75	13%
Joyful	23	4%
Overwhelmed	14	2%
Relieved	118	20%
Study goes on even after classes	61	10%
Tired	103	18%
Total	582	100%

Out of the 582 people surveyed, the two most common emotions were exhaustion (29%) and ease (20%), showing that many students may feel exhausted by online learning but feel relieved after it is through. Furthermore, a sizable minority of responders (18%) report feeling exhausted, highlighting how difficult online programmes are. 10% of students continue their studies after class, illustrating how there are no clear boundaries between personal study time and class time when learning online. This emphasizes the emotional and cognitive experiences of students throughout the pandemic-driven transition to e-learning and underscores the necessity for educational institutions to take these characteristics into account when creating effective online learning experiences.

Q7. What are the reasons that you do not participate in class?

Table 9 - Opinions on the reason to not participate in an online class

#	Statements	N	Mean
1	Teacher's camera is off so I can't see him/he	582	3.22337
2	I sometimes log into class and then do not attend	582	3.30069
3	There are distractions at home	582	3.38488
4	I get bored and rather want to do things I like	582	3.3299
5	Classes are very early or too late	582	3.27148
6	I am exhausted with online learning	582	2.96735

The data in Table 9 show that there are a variety of reasons why students are choosing not to participate in online courses during the Covid-19 outbreak. On a scale where 5 represents strongly agreeing with the assertions and 1 represents strongly disagreeing with them, the mean ratings vary from 2.967 to 3.384. According to the mean scores, being distracted at home (mean score: 3.38488) and choosing to engage in other activities (mean score: 3.3299) are the two most frequent causes for non-participation. Due to distractions at home and other alluring activities, online classes can be difficult for students to stay focused and involved in. In particular during the epidemic, addressing these issues is essential to enhancing student engagement and flexibility in online learning.

Q8. What is your experience about these opinions?

Table 10 - Opinions on the feelings of current classes compared to that of before pandemic

#	Statements	N	Mean
1	Do you miss seeing your classmates in person?	582	2.98282
2	Do you find these classes too much of a burden in lockdown?	582	3.19416

Students generally agreed to a moderate extent that losing in-person connections with classmates and finding online classes difficult during the pandemic were drawbacks. While the average score for finding online classes difficult was 3.19, the average score for missing in-person interactions was 2.98. These results imply that although some students may have found flexibility in online learning, it did not entirely take the place of the social and emotional components of traditional in-person education.

Q9. How has the pandemic COVID-19 changed you as a person? How has it changed your thinking process?

As educators, we work hard to comprehend our students' levels of comprehension and modify our instruction as need be. An essential skill for effective teaching and cultivating a passion for learning is the ability to interpret their responses. From a set of responses of 582 students participating in this research, ten responses were picked for understanding of the changes brought by the pandemic on students' habits. Following are answers:

"During the pandemic, I believe that I stopped studying and have become disinterested in it"

The student claims that the pandemic has seriously disrupted his or her involvement in school. This statement highlights a common sentiment among many students during the COVID-19 outbreak that the difficulties associated with the abrupt switch to online learning have caused a decline in their excitement and motivation to learn.

"It has given me time to spend time with myself, so I know myself better now"

This student emphasizes a crucial component of self-awareness and personal development. It suggests that the person has gone through a period of solitude or introspection during which they were able to examine their ideas, feelings, and sense of self. One may have a deeper understanding of their own values, objectives, and motives as a result of this introspective process. It implies that the person values self-discovery and is aware of the benefits of setting aside time for reflection. This response is in line with the idea that self-awareness is an essential component of personal growth and can result in a more meaningful and fulfilling existence.

"It made my mood swings worse Sometimes I feel like at all no feeling for anything then suddenly ok"

The student admits that they occasionally feel emotionally numb or apathetic (*"There are times when I don't feel anything at all"*), which is subsequently followed by abrupt swings in their emotional state (*"and then suddenly feel okay"*). The student seems to be discussing how something is hurting their mental and emotional health, but without more details, it's difficult to determine the precise cause or sort of mood swings.

"The pandemic has not changed me as a person, but fake news related to COVID-19 has pushed me to have panic"

The student feels that while the epidemic may not have had a significant impact on his or her personality or character, the distribution of false information regarding COVID-19 has had an impact. They have felt worry or anxiety as a result of being exposed to false information. The student is essentially stressing the significance of false information and how it can influence one's emotional and psychological responses during the pandemic.

"It brought us close to family, real friends, and made us content with ourselves"

The response addresses the question posed confirming that the pandemic has positively impacted the student's life, according to the response. They now feel happier and more fulfilled, and their relationships with family and genuine friends have improved as a result. Additional details regarding the question or circumstance that led to this answer would be required to fully comprehend its meaning.

"It has not changed me as a person but online classes are tiresome and boring"



The student's response suggests that while their core personality hasn't changed, the switch to online learning has led to tiredness and detachment because of how time-consuming and repetitive it is.

"I am exhausted from online classes and I do not want to do online classes"

The learner is clearly showing signs of fatigue and unhappiness with the current online learning environment. They may be expressing a strong need for change or relief from the virtual classroom environment due to issues like spending too much time in front of screens, not participating, or a need for more collaborative learning possibilities. In order to improve their overall educational experience, recognizing and managing their weariness may be essential.

"Before I had some plans and I was certain about what I am going to do but now I am not so sure"

There has been a change in the student's level of certainty as their former clarity and direction in regards to their future intentions have been replaced by ambiguity and doubt. This implies that the student may be going through a moment of introspection or transition with regard to their academic or professional aspirations, and it would be advantageous to speak with them to address their worries and offer support and guidance if needed.

CONCLUSION

In conclusion, a number of significant findings were drawn from studying survey data on how the COVID-19 epidemic has impacted students' learning experiences. The study's participant demographics by age and gender showed how popular e-learning is and how crucial it is to contemporary education. The popularity of mobile learning was also clear, demonstrating how versatile and eager students are to use technology to maximize their learning outcomes. However, there is still a digital divide that makes it hard for the majority of students to smoothly get online. Despite the difficulties, some students have demonstrated a strong commitment to online learning, while others have found it difficult to adjust.

The study shows that the pandemic significantly affected students' daily life, which calls for more research into the particular difficulties and benefits of this transition. The emotional toll of online learning and inadequate assistance from educational institutions must be addressed. Additionally, a range of student comments illustrate the various ways in which the pandemic has affected people, from chances for self-discovery and emotional changes to a loss in studying zeal. Overall, these findings highlight the complex and varied character of education during the pandemic, emphasizing the necessity for tailored techniques and support to guarantee equitable and fruitful online learning experiences for all students.

RECOMMENDATION

The research environment is constantly changing and very significant in the areas of data analysis, visualization, and their related study domains. Through statistical analysis, they have the ability to provide beneficial answers to society and facilitate reasoned decision-making. Future studies should focus on examining student use of e-learning tools and internet accessibility, as well as the difficulties associated with time management and distractions when learning online. Along with techniques to improve socializing and collaborative learning in virtual environments, research should be done on the long-term implications of online education on students' daily schedules and personal time.



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