

## THE OUTBREAK OF COVID-19 AND ONLINE EDUCATION IN PAKISTAN: TRANSFORMATION WITH DIGITAL MEDIA AND INFORMATION COMMUNICATION TECHNOLOGY

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### ABSTRACT

*The COVID-19 outbreak has compelled the globe to utilize virtual learning on a global scale. The present issue is unparalleled in scope, even though online and distant learning have been employed to ensure educational continuity in the wake of earthquakes in the past. It's now possible to speculate on the long-term impacts of COVID-19 and how education may change in the post-COVID age as a result of this pandemic, several higher education institutions throughout the world have decided to close their campuses permanently and move their academic responsibilities to online platforms. The universities were not prepared for such a transition, and their online teaching-learning process grew in stages over a period of time. This research performed a survey in which the researchers questioned the university students studying in public sector universities located in South Punjab Province of Pakistan about their perspective on numerous elements of online education during this prevailing epidemic. The researchers collected the answers from 365 students respectively. Although the teachers' online teaching skills have reportedly improved since the beginning of the pandemic, students believe that online education is still beneficial in the current climate of uncertainty. The software and online study tools that are being used to improve online education have received positive feedback from the students. Students, on the other hand, believe that online education is time-consuming and might be detrimental to their health and social life. These outbreaks have resulted in a greater acceptance of online education, and the insights we acquire now will be beneficial in the long run.*

**Keywords:** Online Education, Transformation, University Students, Punjab Pakistan.

### INTRODUCTION

The COVID-19 outbreak has prompted the closure of educational institutions all around the world, putting academic calendars in jeopardy. In order to maintain academic activities, the majority of educational institutions have switched to online learning platforms. As a result, there are still many issues regarding the viability of e-learning in developing countries like Pakistan, where the lack of bandwidth and suitable equipment makes e-learning a significant difficulty. Many nations have ordered the closure of all educational institutions due to the development of COVID-19, a new corona virus illness. Educational institutions have come to a stuttering stop as a result of the need to protect their students from viral exposures, which are likely in a highly social student population like that of nowadays (Martins Van Jaarsveld, 2020; Oliveira et al., 2021). Only a few nations, including China and a few others, were forced to stop their schools in the beginning of February 2020 because of the rapidly spreading pollution. By mid-March, more than 75 nations had executed or announced the shutdown of educational institutions. As of the 10th of March, one out of every five pupils in the world have been forced to miss class because to the COVID-19 shutdown. It is estimated that 73.8 percent of all registered students would be affected by the closures in 186 countries as of April 2020, according to UNICEF. The closure of educational institutions has damaged many students, despite the fact that

interrupting the transmission chain is the only way to stop the COVID-19 virus (Pokhrel & Chhetri, 2021).

Educational activities have been severely disrupted by the Covid-19 epidemic. A major challenge for instructors in under-resourced environments has been the difficulty of delivering educational content to students' homes (Simamora, 2020). As a result, instructors are unable to offer effective learning due to their lack of digital skills and lack of training on how to handle students' social, physiological, and psychological difficulties. Even while online technologies for teaching and learning have been widely used by higher education institutions throughout the world, poor nations like Pakistan lack the procedures and resources required to do so effectively. Developing-country university lecturers typically turn to employing available technology tools to deal with the obstacles and to enhance their teaching and learning (Dhawan, 2020a). When it came to online education, underdeveloped nations had a more difficult time than industrialized ones (Islam et al., 2020).

Schools and universities may stay closed indefinitely, but educators and students are experimenting with ways to fulfil academic requirements. These measures may have resulted in some discomfort, but they have also sparked fresh instances of educational innovation via the use of digital tools. Academic institutions are still stuck in the past, with millennia-old lecture-based teaching methods and outdated classrooms. This is an encouraging silver lining on a cloudy day. Despite this, COVID-19 has spurred educational institutions throughout the globe to come up with novel solutions in a short amount of time. Since this period, the majority of colleges have changed their teaching methods to online platforms such as Zoom, Google Meet and Microsoft Teams (Hussein et al., 2020).

Despite the fact that research shows that most students are able to participate in digital lectures, the preparation of these classes by instructors proves to be significantly more difficult (Aslan and Chang 2015). As a result, the vast majority of educational research on digital technology is focused on students as end users, even if instructors play an important role in providing effective knowledge using digital technology (Verawardina et al., 2020). It is still important for teachers to know how to use digital technology effectively and meaningfully in the classroom despite the fact that most of them are digitally knowledgeable (Wei & Chou, 2020). When it comes to incorporating digital teaching techniques into their curriculum, teachers typically lack confidence. Digital technology isn't seen the same way by everyone in the classroom. Student teachers' computer proficiency, attitude toward the use of computers in education, and future computer use seem to be associated. Teachers in their mid- and late-career stages, in particular, are progressively include technology use in their professional development plans (Yates et al., 2021).

As a result, a large portion educational institutions have now been moved to digital technology, wherever it is possible (Chakraborty et al., 2021). Zoom or other teleconferencing technology enables participants to remain at their home and participate in remote meetings from far regions throughout Pakistan. In actuality, as more and more schools and institutions transition to online teaching and learning, education is increasingly taking place in certain areas other than the traditional classroom (Chatterjee & Chakraborty, 2021). Because of the increased frequency and severity of Covid outbreaks, numerous institutions have opted to continue offering online courses in the aftermath of epidemics (Kruszewska et al., 2022; Müller et al., 2021). Thorough research must be conducted to evaluate the effects of online classes on lecturers' teaching approaches as well as curriculum development (Selvaraj et al., 2021).

As part of the country's pandemic response, the Pakistan Ministry of Higher Education has decided to discontinue all face-to-face lectures and has urged all higher education institutions to prepare for online learning. As a key alternative to the traditional face-to-face pedagogical method, several local institutions have developed online learning teaching and learning protocols (Yates et al., 2021). Changes in course content, delivery, and assessment techniques are all part of this process, but the course's aims remain unchanged. HEC which is responsible for overseeing academic programs in education institutions, was also in charge of curriculum changes and evaluations. Institutions faced another important problem in preparing teachers for online education. Students began returning to their homes in compliance with government directives, where Internet connectivity was either restricted or non-existent in certain remote locations of Pakistan. A massive online survey was performed to gauge the readiness of pupils for online learning from home to plan for future challenges. Synchronous online learning was often hindered by a lack of a stable Internet connection, as observed by several students. The circumstance presented a threat to the quality and equity of educational opportunities. We want to

provide light on how teachers and students handled this circumstance, as well as how digital teaching approaches might be integrated into the classroom (Oliveira et al., 2021).

In this article, based on a study of online learning of teachers and students in Pakistan, the authors examine how teachers and students prepare for the pedagogical shift, what challenges they face when using digital devices and artefacts to manage teaching and learning, and how limitations impact their ability to teach and learn. The use of digital technology in higher education will be addressed next.

### **Online Education and Covid-19**

UNESCO estimates that lockdowns in schools and universities have harmed more than 1.6 billion students in 170 countries. Consequently, universities and colleges have little choice but to switch to some kind of online learning in place of traditional classroom instruction. Pakistan is not an exception to this rule. Due to the nationwide lockdown, the government provided extra choices for educational institutions to ensure that students may continue their studies while away from campus. Google Classrooms, Zoom and WebEx are only few of the platforms used by commercial and international universities to migrate to digital technology (Adedoyin & Soykan, 2020).

### **Covid-19 Lockdown: Online Teaching**

Teaching has become more challenging because of the COVID-19 pandemic scenario. Until March 2020, the typical educational environment was characterized by students and teachers meeting in classrooms according to their schedules and lecturing on the customary topic of their courses. Students had to pay attention to their teachers, work alone or in groups, and recreate content for exams (Verawardina et al., 2020). There was very minimal use of digital technology in educational setup in Pakistan. Teachers, students, and parents all found themselves in a new situation as a result of the lockout (Hussein et al., 2020). It's only possible to keep on teaching and learning if you use different forms of education. Online training necessitated teachers to utilize a wide range of digital tools and resources to solve difficulties and use unique teaching and learning methodologies (Dhawan, 2020b). Instructors were also required to maintain regular contact with their pupils in order to promote social cohesion among their classes.

### **Systems Of Education Are Being Transformed By New Digital Technology**

COVID-19 has resulted in the change to online instruction was unexpected and rapid. However, it fits within a wider trend of educational institutions embracing digital technology (Mohammadi et al., 2021). In recent years, digitalization has taken on a greater role in the workplace. One of the main points of contention is that there is a "gap" between what students learn and develop in the classroom and what they need in order to succeed in today's "information economy" (Kulikowski et al., 2021). As a result, students should be provided access to cutting-edge digital resources that may be used for creative problem solving in a more integrated educational system (Selvanathan et al., 2020).

Pakistan, where the present study is taking place, has likewise recognized the need of training pupils for a digitally oriented society. The Ministry of Education, which mandates that all academic institutions train their students to be digital natives. Digital Competence Framework (DCF) is used to assess student skills (Khanna & Kareem, 2021). Debate on how digital technology can be used in the classroom has emerged despite these goals (Nash, 2020). Teachers and students may benefit from the use of digital technology, as shown by the increasing usage of digital technology in schools and universities over the last several decades (Damşa et al., 2021). Though the mere presence of computer technology gear may have an influence on education and student progress, it is not necessarily beneficial (Kulikowski et al., 2022). Instructors and students must be encouraged and supported in their usage of digital technology to be cohesive into educational environments. So far-reaching advantages like improved digital literacy among students may not be assured.

The study's objectives appear to be the articulation of educational ideas as well as the instruction of instructors on how to use technology in a methodologically proper way. A thorough examination of key teaching and learning ideas and how technology is used in educational contexts is essential (Khanna & Kareem, 2021b). The question of how to use opportunities to acquire digital competence (Rahiem, 2021) to improve pre-service teachers' abilities and prepare them for education digitalization remains unanswered in teacher education.

### **Proficiency Of Educators**

Recent empirical educational research has characterized educator competences as 'context-specific, cognitive performance dispositions that are functionally responsive to the distinctive situations and demands in diverse domains,' according to the definition (Martins Van Jaarsveld, 2020). Many studies

have been undertaken on generic models of professional competence that encompass both cognitive and affective-motivational dimensions (Oliveira et al., 2021), and these models have been widely used in the field. Kruszewska et al. (2022) categorization of teachers' knowledge has been used to make distinctions between teachers' content knowledge. Researchers commonly distinguish between instructors' content knowledge (CK), pedagogical content knowledge (PCK), and general pedagogical knowledge (GPK) (Maican & Cocoradă, 2021). To succeed, teachers must draw on this wide variety of professional expertise to address fundamental teaching challenges.

The knowledge categories for teachers have been expanded in response to the increasing importance of the digital technology transformation process in educational institutions (Selvaraj et al., 2021) to include the knowledge necessary to overcome the difficulties associated with integrating digital technology into classroom teaching and learning. Koehler and Mishra (2009) developed the most well-known technique, in which they defined teachers' technical knowledge (TK) in addition to content knowledge (CK), professional competence (PCK), and general proficiency (GPK). There are many distinct intersections of TK, CK, and GPK that are represented by their so-called TPACK-model, which is often shown by a Venn diagram (Koehler & Mishra, 2009).

COVID-19 demands not only knowledge and abilities, but also trust in online education. Consequently, we will focus on teachers' self-efficacy which has been identified as one of the most crucial components of teacher competence (Chatterjee & Chakraborty, 2021). When it comes to instructors' self-efficacy, is described to teachers' beliefs about their capacity to succeed in certain conditions. Whether or not educators take action, whether or not they put forth effort in a particular task, and how long they can tolerate possible barriers are all affected by their judgments of their own efficacy (Zalat et al., 2021). Therefore, we believe that teachers' self-efficacy is an important resource for instructors who must shift to online education during the COVID-19 school terminations.

#### **Opportunities For Teachers To Improve Their Digital Skills**

The design and quality of pre-service teachers' learning opportunities are inextricably linked to discussions regarding teacher competency. The notion of opportunities to learn (OTL) is utilized in empirical educational research to examine how pre-service teachers learn and improve (Scherer et al., 2021). Digital technology into the curriculum is a crucial issue, as shown by several teacher education programs across the world (Chakraborty et al., 2021; Lassoued et al., 2020). European educators' digital competence is defined by the European Digital Competency Framework for Educators, which was developed in response to ICT-related challenges (Coman et al., 2020). The national teacher education requirements that date back to 2004 were amended in Germany. It is expected that schools, instructors, and universities would adopt this approach to digital technology into the curriculum. However, despite the fact that these competence frameworks (as well as their translation into learning opportunities) have begun to take form, their systematic implementation is still in its infancy (Pokhrel & Chhetri, 2021).

#### **Theoretical Stand Of The Study**

The constructivist approach was used as the theoretical framework for this study, which tried to examine the perspectives of teachers and students on online education in terms of its potential advantages, challenges, and possible strategies to be incorporated during and after the pandemic COVID-19 in Pakistan's higher education. Online education must be interactive enough to allow for effective and successful teaching and learning to take place online. The rapid growth and development of information and communication technologies (ICTs) in teaching and learning has enabled the development of several methods such as problem-based learning, interactivity, case-based learning, and task-based learning that is based on constructivist theory. Constructivist theory-based methodologies and approaches are more student-centered, encourage group and pair work as well as project work that can help students improve their communication skills, and are process-based, focusing on inferring meaning, forming an opinion, and developing positive ideas.

#### **METHODOLOGY**

During and throughout the COVID-19 outbreak, higher education in Pakistan was severely impacted. Therefore, this current research intends to examine instructors and students' perceptions of the perks and challenges of teaching and learning via online mode of transmission. In addition, this research aims to get ideas from both practitioners as possible strategies for Pakistani online learning. This will be implemented in various schools, colleges, and universities of Pakistan. To meet the objectives, a quantitative online survey had been used. An online survey consists of a series of pre-structured

questions about a specific subject that participants answer by filling out a form on the internet. It's a simple method to get in contact with the community you care about, and it consumes less effort. There was no way to meet the research's needs without incorporating primary data into the study. For this study, students from the Islamia University Bahawalpur and Bahauddin Zakariya University, Multan in Pakistan's South Punjab province successfully completed survey questionnaire to gather the relevant information. The results' validity and reliability have been triple-checked using three different methods and sets of data. Due to time and budget constraints, it was not practicable to include all teachers and students in this research. It was critical in this case that the research is representative. It was thus necessary to randomly choose the sample of 450 students from two public sector universities in South Punjab Pakistan. Closed-ended questions created in Google form were sent to the participants and a link was distributed to the participants through Facebook messenger and student's email. Only 365 of the total participants actually answered the questionnaires. As a result, the study's sample size was 365 students. The researchers acquired and examined data from Google Forms, which were then entered into a database for further analysis. A preliminary statistical technique was used to gather all the responses before a descriptive analysis was performed and discussion ensued on the interpretations that emerged from this data analysis process.

### **Data Collection, Validity and Reliability**

No pre-existing questionnaire could be used to analyse teachers' expectations and experiences because of the unusual circumstances. Current concepts on aligning essential characteristics in the learning environment (Biggs & Tang, 2011; Prosser & Trigwell, 1999) creating competence and using surveys in remote education (Simamora, 2020), supported the construction of questions. It is the goal of this study to combine quantitative data in order to better understand the motives and underlying thinking of the participants in the study. Instructors had to make course adjustments during the pre-test period, therefore the surveys were kept short. The survey questions for both the pre- and post-test are the same. Seven specialists in educational research reviewed the survey questions and their alignment with the study's goals in order to improve the survey's content validity. One question was considered irrelevant after receiving written response and participating in a series of focused conversations. Digital technology tools have been defined in addition. The surveys were then subjected to face validity test, in which ten educators were asked to assess the surveys' alignment with the study's goals and the clarity of their questions. A few questions were reworded and clarified as a result of the feedback we received. A Likert five-point scale was employed for the rating questions in agreement with similar studies in this area of study (Biggs, 1999; van Merriënboer & Kirschner, 2017). Both instructors' expectations (pre-test) and teachers' experiences (post-test) were taken into account when calculating the reliability coefficient (post-test). Teachers' expectations and experiences were both found to be highly reliable (Cronbach = 0.78 and 0.80, respectively). Discussions helped to iron out the kinks.

## **DATA ANALYSIS**

### **Descriptive Results**

A total of 365 students responded to our study survey. The average age of those who answered the survey questions was 20.07 years (SD: 1.14). 138 of those who answered the survey's questions were female, while 227 were male. While the COVID-19 epidemic was underway, the students expressed a variety of opinions regarding online education. Sixty-four percent of students agreed or strongly agreed that learning takes place better in actual classrooms than via online education, while only 41.5 percent said that online education is preferable than participating in MOOCs (Massive Open Online Courses) or other online courses (Majority of students agreed or strongly agreed). Despite the fact that nearly 73 percent of students say that professors' online teaching abilities have improved since the epidemic started, they do not believe that online education is a viable option in the present context (78.7 percent). Faculty members employed internet resources and platforms to convey knowledge, which the students found to be very beneficial to them. The majority of students (74.3 percent) believe that appropriate study material is currently accessible on the internet. In addition, slideshows (54.8 percent) and note-taking applications (68.0 percent) were deemed useful in communicating information by the students in this study. Students (71.3 percent) are of the opinion that using online tools for problem solving, coding, and producing may improve the learning experience in the classroom.

The students shared their thoughts on how lectures should be made more participatory in the future. The majority of students (77.5 percent) believe that they can connect more effectively with



instructors in a traditional classroom setting. Students (76.2 percent) believe that instructors may make lectures more engaging by including technology such as a digital pen into the classroom. Surprisingly, just 38.0 percent of students agreed that having university teacher and learners reveal their faces during lectures would increase the engagement. In their opinion, contact between professors and students using a chat box during lectures will make them more participatory (77.6 percent). Almost half of the students believed that frequent evaluations may assist in the improvement of online education. It was discovered that 46.0 percent of students believed that online evaluations could accurately evaluate their expertise, and that 46.5 percent of students believed that weekly examinations helped to enhance the learning process.

Furthermore, a number of pupils thought that online education was a not very good alternative and having a negative impact on their health. 67 percent of students said that online education is leading them to be anxious about the possibility of losing Internet access. Overuse of digital gadgets is a problem which is seen by a huge majority of students (81.8 percent), and excessive screen time is perceived by 73.8 percent of students as creating stress and interfering with their sleep. Students (55.6 percent) also believe that online assessments give them more worry than conventional modes of evaluation do. The pupils also believed that online education had ramifications for society as a whole. We discovered that 65.8 percent of students believe that online education has an impact on their everyday lives, and that 64.3 percent of students believe that online education is showing the digital gap that exists between Pakistani students and the rest of the world, and they are correct.

### **Analytical Results**

A weighted sum of related manifest variables was used to estimate latent variables in this study, which was done using the measurement model based on the data. This section contains the findings of component loadings, variance and standard deviation extraction (AVE), and composite reliability tests, which were used to assess the internal consistency and construct validity of the variables under consideration. With the exception of C5, which had a loading of 0.599 and was statistically significant at the 5 percent significance level, almost all factor loadings on their respective constructs were found to be more than greater than 0.7 and statistically significant at the 1 percent level.

The strong factor loadings showed that the measures had convergent validity, which was supported by the results. Furthermore, the convergent validity of the model was assessed, and it was determined to be sufficient based on its high composite reliability ( $>.75$ ) for all of the constructs. The values for the AVE for the latent variables, which provide as evidence of convergent validity for the variables. Because the average variance of all components was more than the suggested minimum estimate of 0.50 (Chin & Newsted, 1999; Zikmund et al., 2003), this provided evidence of convergent validity. AVE was somewhat lower (0.476) than the minimum required value for the Interaction component (Creswell, 2009). The researchers did, however, discover that the composite reliability (0.783) was sufficient to maintain the convergent reliability. Finally, a conclusion may be drawn from the findings of factor loading, composite reliability, and average variance retrieved for each construct, which suggest that each construct has excellent internal consistency when measured by the indicators assessing their respective constructs.

### **DISCUSSION**

When the COVID-19 outbreak broke out, the researchers conducted a survey of students to find out what they felt about online learning. Researchers told participants to compare and contrast online education with conventional classroom instruction as well as instruction via Open Online Courses and other internet materials. The researchers recognize that the comparisons are a little skewed in several ways. It is impossible to reproduce the debates and collaborative activities that take place in a real classroom on an online platform, for example. Alternatively, Online Courses give students with knowledge on a broad variety of subjects as well as the most up-to-date technology, which may not be accessible at their respective institutions. Undergraduate students are often interested in participating in Online Courses on topics such as computer software development and system design (Coman et al., 2020; Pokhrel & Chhetri, 2021). Online education, on the other hand, has the potential to be more individualized due to the lower-class sizes and more homogenous backgrounds of the students. Faculty members' abilities to teach online have improved, according to the students who have noticed this change. Teachers are used to teaching in physical classrooms, and the majority of professors were unfamiliar with online instruction until the epidemic began to spread. In the previous six months, they

have learned new strategies and become used to online learning (Martins Van Jaarsveld, 2020; Oliveira et al., 2021). It is our opinion that academics will benefit from an occasional round of peer-to-peer debate on technologies and strategies for online education.

Professors often utilize presentation tools and note-taking applications to distribute material, according to our findings. If a lecturer wants to present a lecture in a set order, PowerPoint is the best tool for the job. It is appropriate for use by professors who do not want to adhere to a predetermined schedule of subjects but instead wish to make the session more participatory. OneNote may assist a lecturer and students in accumulating information in a collaborative manner. Educational technology must be capable of facilitating high-quality engagement (Scherer et al., 2021). Lectures may be made more human by using devices such as a digital pen. We were taken aback when we discovered that students prefer not to reveal their faces during lectures. We feel that this is due to their reluctance to fully engage in the class environment. The chat box may be used by professors to pose open-ended questions and request comments from students. Students may collaborate on problem-solving strategies, which is particularly useful in classes involving computer programming and circuit design.

Over time, digital technology in educational institutions has progressed and become more sophisticated. There are several sophisticated online education platforms available today, as well as numerous specialized educational resources for a wide range of subjects. Some online educational applications also allow for collaborative learning, which is beneficial (Chatterjee & Chakraborty, 2021). Self-reflection on the side of students, on the other hand, is tremendously crucial in online learning environments. Students believe that frequent evaluation is necessary in order to keep the teaching-learning process on track, according to the findings of this study. Professors may use cutting-edge technologies and approaches to do this. It has been discovered via empirical research that pupils are experiencing stress and worry as a result of the pandemic (Kulikowski et al., 2022). Professors should make every effort to accommodate the needs of students enrolled in their online courses (Khanna & Kareem, 2021b; Rahiem, 2021). We discovered that there are many houses with a restricted number of digital gadgets, and that more people need to utilize them at the same time in order to function properly. This is a new manifestation of the digital divide. The results of our structural equation modelling revealed that various constructs have an impact on the social concerns associated with online learning. An in-depth investigation of the social consequences of online education is required (Damşa et al., 2021; Khanna & Kareem, 2021a).

## CONCLUSION

Online education has been on the periphery of society for a long time, and it continues to exist on the periphery of society. The outbreak of COVID-19 brought it to the notice of the general public for the first time. According to the study findings, which was conducted as part of the COVID-19 pandemic response, undergraduate students at a Pakistani university were asked about their opinions about a variety of topics related to online education. When asked about online education, the students who took part in our study expressed their belief that it would be a feasible option given the present conditions. On the contrary, researchers believe that there is room for improvement, and we believe that the situation is dire. College instructors should make an effort to improve the acceptance of online education among undergraduate students by incorporating it into their courses. It is likely that tactics such as teaching methods, case studies, and gamification may be used in online education, and that the impact of these approaches will be thoroughly researched. Up until this point, the COVID-19 epidemic has prompted widespread adoption of online education on a large scale all around the globe, marking the first time this has occurred in history. It is conceivable that the lessons we learn about online learning will be valuable in other situations in the future as a result of this pandemic.

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