A Critical Study of Essential Prerequisites and Academic Impediments in Online Learning Modalities

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Abstract

After the devastating impact of the recent COVID-19 pandemic, there has been a swift transition to alternative learning modalities worldwide, predominantly relying on web-based platforms. Owing to the imperative safety measures amid the precarious coronavirus situation, educators and learners found themselves compelled to adopt online modes. Educational institutions, from primary schools to universities, swiftly migrated their classes to online platforms, and even corporate and government offices embraced online engagement with their workforce. Furthermore, the evolving global climate underscores the necessity to expand online curricula towards a sustainable, reduced carbon footprint model. Notably, there has been a marked increase in the enrollment of nontraditional students, contributing to the momentum of enhanced online learning

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modalities in recent years. Presently, three main types of online learning modes exist: remote, hybrid, and hybrid. This study aims to explore the predominant challenges faced in online learning during the recent pandemic. A sample of 16 faculty members specializing in STEM subjects across four prestigious universities in Lahore was randomly selected for an exploratory qualitative study.

Given the stringent lockdown conditions during the recent pandemic, the scope of this study may not offer a comprehensive overview of the subject. Nevertheless, it addresses the inquiry's need by tapping into the firsthand experiences of faculty members engaging with the online mode of teaching and learning. The results highlight that despite the opportunity to explore and adopt new technologies, educators encountered substantial challenges during online classes, surpassing the benefits. Issues such as inadequate arrangements and the unavailability of essential resources were significant impediments. The sudden onset of the pandemic placed the entire educational, corporate, and institutionalized interactive setup in a challenging predicament.

Keywords: Online Teaching, Online Learning, Challenges, Online Teaching Challenges.

Introduction

Coronavirus disease also referred to as Covid-19, is a widespread health issue that greatly impacts people's daily lives, jobs, and educational systems. In December 2019, Wuhan, China, saw its emergence of it. On January 30, 2020, and March 11, 2020, respectively, the World Health Organization (WHO) designated COVID-19 a global emergency and a pandemic. To stop the spread of this deadly infection, certain restrictions and measures, such as travel bans and the closure of restaurants, entertainment venues, recreational areas, and movie theatres, have occasionally been implemented. The absence of a face-to-face teaching-learning process is one of these limitations. This method of applying distance learning to education has started to be used in preschool through higher education. The COVID-19 pandemic has left universities, administrations, teachers, students, and parents unprepared for the remote education process. With the increased accessibility of technology, teaching through e-platforms has also increased. Colleges and school districts nationwide have quickly adopted online education (Gilbert, 2015). As schools move away from direct instruction methods and toward more indirect ones, they have been forced into a flow of

complicated and constrained learning (Raju, 2020). This process has benefited the institution, the instructors, and the students (Tondeur et al., 2017). Throughout this process, people have invariably encountered various difficulties and barriers in institutions.

Numerous public health measures have been implemented in response to the coronavirus disease 2019(Chen et al., 2020) that has spread globally. Students have experienced significant psychological effects as a result of sudden educational institution closures, a lack of necessary technology for online classes, being unable to access online learning resources from home, and being stranded at home for an extended period (Int. Perspect. Educ., 2008). Examining the inadequate technical infrastructure of educational institutions is another issue. Such factors severely hinder the success of the online educational program. Online learning resources are essential during this pandemic, but there are socioeconomic, educational, and technological barriers in underdeveloped nations like Pakistan. These difficulties could limit and complicate the E-learning process.

Issues must be recognized to succeed in an online teaching and learning environment. Identifying and highlighting these concerns is crucial to minimize, lessen, or eliminate obstacles in implementing future online educational systems. Teachers can also be forced to conduct their lessons online in their future employment. Their remote education experiences under this lockdown circumstance may affect their thoughts on the future of online education. Due to the prevalence of online learning, old-fashioned physical barriers are being broken down, and a whole new online culture is emerging. Currently, an online presence via the Internet may be more engaging and communicative than a physical presence. In other words, these two worlds—the actual and the online—rapidly combine their relative advantages. According to a study, people may occasionally perceive an online presence as far more personal than a physical one. An in-depth debate using a text-based discussion forum can be quite participatory, but attending a face-to-face lecture may involve one-way communication. However, we point out that the abundance of media and its technological advantages does not guarantee the excellence of online learning (Liang & Chen, 2012). Investigating the issues and difficulties encountered during the remote education process is crucial. The problems the teachers faced during this temporary online teaching time have yet to be thoroughly investigated. Understanding the experience, issues, and difficulties educators face in this situation would be helpful.

Online learning is typically associated with a heavy dependence on technical tools. The design of an online course could make or break a student's performance. Technical and non-academic skills hinder students' achievement in online classes (Raju, 2020). Finding the best teaching resources for online courses is the main goal of these academics. According to students, online courses are neither engaging, disciplined, nor practical. There was a sudden shift to alternative teaching strategies following this pandemic attack, many of which utilized the Internet. Since the coronavirus is unstable,

teachers and students must move to online mode for safety reasons. Most universities, colleges, and other organizations now offer their programs online. Even corporate and governmental institutions have started communicating with their employees online.

According to the rapidly changing environment, the world should expand its online curriculum to represent a more sustainable model with a lower carbon footprint. The recent significant increase in unconventional students has also cleared the path for a better online learning environment. The purpose of this study is to examine the issues and difficulties that teachers from higher education institutions encounter when delivering online courses as a result of the shutdown of schools due to the COVID-19 outbreak. The study also seeks to define and consider the functions of a teacher.

Different academic responsibilities must be connected. These obligations include helping students gain understanding, knowledge, self-awareness, moral development, and interpersonal skills. Teachers serve multiple roles simultaneously, including learning supervisors, curriculum designers, facilitators, counselors, examiners, and disciplinary authorities. A teacher adapts across positions to the best of his ability as he chooses and creates learning opportunities for all pupils, considering their individual and group needs (Harden & Crosby, 2000a).

The varied duties of a teacher frequently overlap. In practice, a teacher may handle several responsibilities at once. The basic objective of the instructor is to spread knowledge. A more interactive approach might be used, in which teachers impart knowledge while enticing students to interact with it and come up with solutions to the issues raised in the lecture. Due to the way s/he treats the content and the attitudes he displays; the teacher cannot help but serve as a potential role model for the students. Because there is no face-to-face connection during online learning, it can be difficult for instructors to communicate their goals clearly and give students the right feedback to help them meet their learning objectives. The way we connect with others may change due to this trend toward the convergence of offline and online presences. When pedagogical design effectively satisfies these requirements, learners have a strong desire to engage in educational activities (Kearns, 2012).

The teachers can successfully convey knowledge to the students by using the different accessible technologies for online classes. Students may also employ various media to get around the problems that are now present in online classes and meet the learning objectives of the courses they are taking. To reduce digital illiteracy, higher education institutions can develop a comprehensive guide that explains how to use various e-learning tools, how to access them, and how to cover important curricular themes. As the popularity of this new mode of education grows, it is imperative to study the design and delivery of online courses. By recognizing the challenges teachers face and showcasing the effective tactics they have developed for this situation, we may suggest methods that can be empirically tested (Kearns, 2012).

Statement of the Problem

This study undertakes a comprehensive examination of the challenges faced by university faculty members in the transition to online teaching, aiming to analyze their perceptions of these classes. The critical exploration of issues encountered during remote education is paramount for the success of online teaching-learning systems. Identifying and highlighting these challenges is essential for mitigating obstacles in future implementations of online educational systems. As teachers may increasingly be required to conduct lessons online in future employment, understanding their experiences during this lockdown circumstance becomes crucial. The investigation delves into issues and difficulties experienced by educators in higher education institutions compelled to shift to online learning due to the COVID-19 epidemic. This research encompasses aspects such as challenges in online learning, assessment strategies, the role of teachers, and the prospects for online education in developing nations like Pakistan. Thoroughly investigating the problems faced during this temporary shift to online teaching is vital for informing the future landscape of education.

LITERATURE REVIEW

The coronavirus, often known as COVID-19, is an infectious disease that has significantly impacted the global economy. This catastrophe has shaken the school industry, and, likely, terror will now permeate the entire educational system. Due to the severity and urgency of the COVID-19 outbreak in late 2019, suspending educational institutions is a standard pandemic preventive and control step. He claims that "Suspending courses has an impact on students' ability to progress, but resuming them might generate a second epidemic in schools" (Tondeur et al., 2017). A substitute for traditional classroom instruction will be needed to preserve academic growth and be recognized as an integrated learning approach even after the pandemic crisis has passed (Mapping et al., 2009). Not just in India but worldwide, the entire educational system has failed during the COVID-19 shutdown period, from primary to tertiary levels (Mishraet et al., 2020). The growth of online education has been one of the most noticeable trends in the higher education field in recent years. Students must be self-motivated, articulate, and have solid time management skills to succeed in online education. Some researchers claim that a course's structure might help or hurt a student's academic performance (Tondeur et al., 2017). These researchers think that a student's success and achievement in online courses depend on his technical and nonacademic qualities and are particularly focused on developing the most efficient online learning tools (Raju, 2020). Due to this epidemic, traditional teaching strategies are changing, and online education is replacing formal classroom instruction as the main mode of instruction. As a result of this change, new requirements for online education are being established, which must be complied with (Simamora, 2020). For platforms for online education, these all-present difficulties. These issues must also be addressed if we want to ensure our kids get a good education. Online learning environments not only provide students with new learning opportunities and critical support during a pandemic, but they also generate a lot of debate. To better understand the underlying disagreements,

examining how consumers' concerns changed before and after the outbreak is essential (Ramij & Sultana, 2020).

The role of a teacher has undergone a significant transformation in the wake of the world's largest online teaching initiative, necessitated by the phrase "school's out, but the class's on." Millions of educators and students rapidly shifted from offline to online teaching, prompting an immediate adjustment in teaching methods. This shift offers a valuable opportunity to scrutinize the dynamic interaction between teachers and technology in online classes, exploring how educators can support students in achieving educational objectives and enhancing performance. In times of crisis, technology proves indispensable for virtual communication and collaboration, affecting various aspects of daily life, with education being no exception. Technology is considered the cornerstone of economic growth, and its impact on education is profound, revolutionizing teaching and learning at all levels. Modern tools, such as cutting-edge learning management systems and global research collaborations, are equipping graduates for the contemporary information economy. However, the rise of online education also brings challenges, particularly in addressing academic dishonesty in the evolving landscape. Different categories of online learning environments, including web-based, hybrid, and traditional courses with online supplements, present diverse methods for teaching and learning. The flexibility of distance/online learning modes allows users to transcend conventional time and place constraints, facilitating various formats for course materials and encouraging interactive techniques for effective online teaching.

Objective of the Study
Following was the objective of this study:
1. To explore the challenges and issues teachers face during COVID-19 online classes.

Research Question(s)
The project will address the following research issues.
1. What difficulties do teachers have when instructing students online?
2. To create and implement a successful online educational model for a reinforced educational system in the future, what flaws and concerns in the current online course system need to be addressed and resolved?

RESEARCH METHODOLOGY
The present study adopts an interpretivist paradigm, employing a qualitative research approach in the form of an exploratory study. The focus is on interviewing instructors affiliated with various Higher Education Institutions (HEIs) that offer STEM (Science, Technology, Engineering, and Mathematics) educational programs. A semi-structured interview protocol, characterized by fewer open-ended questions, was utilized to enable interviewees to elaborate on their thoughts and responses, ensuring a comprehensive understanding of their perspectives (Magaldi, 2020). The process of data collection began with the formulation of the questionnaire, aligning with the study's aims and objectives. The draft was reviewed by research field experts, and their feedback was

incorporated into the final version. Respondents, comprising scholars and academics from research universities in Lahore, were approached through emails and phone calls to secure consent and schedule interview sessions, conducted either in-person or online based on their convenience.

Primary data was collected over one month through interviews with faculty members using the specific semi-structured interview questionnaire developed for the study. The flexibility of both in-person and online interviews, facilitated through platforms like Google Meet and Zoom due to the prevailing pandemic conditions, enhanced accessibility and exposure to the sample population. The study targeted scholars and academics in STEM disciplines within Higher Education Institutions chartered by the Provincial Government of Punjab and the Higher Education Commission. From the initial list of thirty-three universities, four were selected based on their charter status and the focus on STEM education programs. The purposive sampling technique was employed to select 16 faculty members who met the minimum qualification criteria of MS or M.Phil. The Higher Education Institutions included in the study are Information Technology University (ITU) of the Punjab, Lahore; Lahore College for Women University, Lahore; Superior University, Lahore; and University of Central Punjab (UCP), Lahore. This comprehensive approach seeks to delve into the experiences and perspectives of faculty members in STEM disciplines within the specified Higher Education Institutions in Lahore, contributing valuable insights to the broader discourse on online teaching and learning.

Data Analysis

The Thematic Analysis was done to identify the main problems and challenges faced by teachers about their teaching experience during online classes.

Themes and codes were revealed as a result of data analysis regarding the problems the teachers faced during online classes. The articles and codes displayed from data analysis are Challenges Due to Students' Behavior 09, Implementation Difficulties 08, Technical Problems 12, Course Redesigning Issues 08, and Examining and Assessment Problems 09.
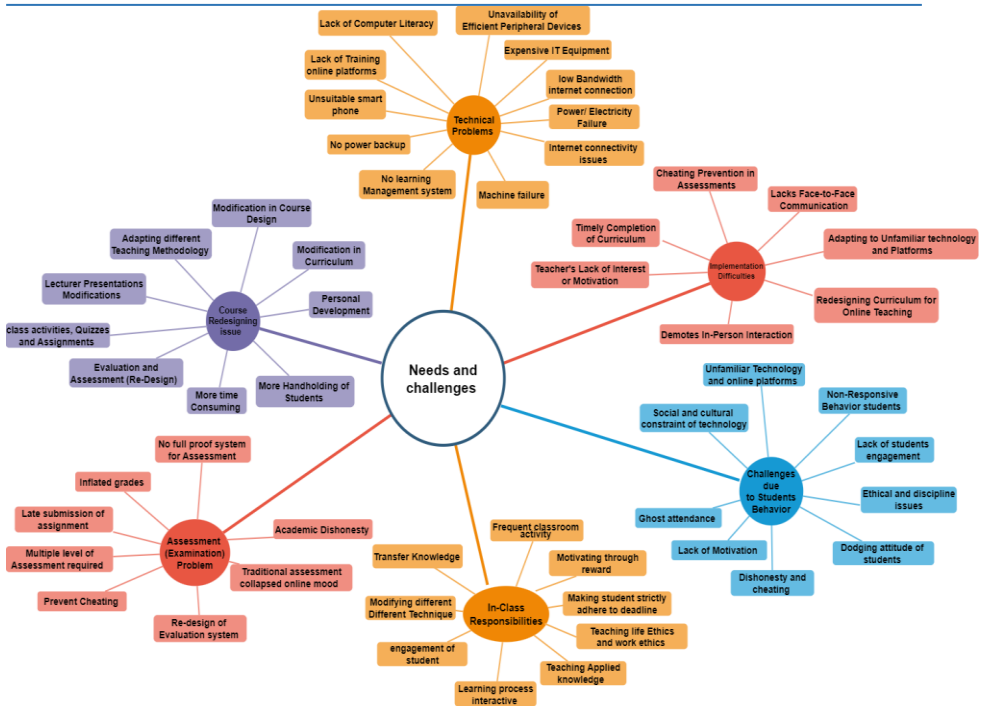
During the analysis, 06 themes and 44 codes were revealed. The themes shown in connection with the issues raised for the teachers can easily be divided into the following categories:

Problems of Teachers during Online Classes

1. In-Class Responsibilities
2. Challenges due to Students
3. Implementation Difficulties
4. Technical and Technology related issues
5. Courses Redesigning Issues
6. Assessment (examinations) Issues

I. In-class Responsibilities

Class Activities

A good number of participants believed that they could ensure discipline in the class by conducting classroom activities like surprise quizzes, calling out attendance randomly, giving small assignments in the class, etc.

Reward System

They also added that they use a reward system to encourage discipline and learning in the class. The rewards include bonus marks, appreciation, name on the honor list, and extra credit projects.

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Adherence to Deadlines

Some teachers shared that they maintain discipline in a class by making students adhere to timelines for submitting assignments. They claimed that this habit also helps students in their careers when coupled with teaching them life and work ethics.

Teaching Techniques Used

Some other inputs included teaching applied knowledge and modifying learning techniques to make the learning process interactive, interesting, and engaging for the students.

Transfer of Knowledge

The last point is supported by the next belief of the majority of the teachers, which revolves around their ability to identify the aptitude of their students for grabbing the knowledge shared. They suggested that they can only tweak the subject matter for the students if they have a good grasp of it.

2. Challenges Due to Students' Behavior

The teachers were asked a few questions about students' behavior during online classes; We requested them to share the issues they faced from the end of the students during online courses during the Coronavirus pandemic.

Unfamiliar Technology and Online Platforms

Most responses showed that teachers struggled with the technology and learning platforms used. This happened because most students were unaware of using online learning tools properly. This resulted in a lack of student' interest in online classes.

Student Behaviors

They also shared that they found it hard to make the students behave well in online classes, and their behavior was very discouraging.

Lack of Engagement

Some responses talked about the students' lack of engagement and participation even though the sessions were interactive. Despite using different student engagement techniques, the faculty members found it very hard to get students' attention during the class.

Dodging and Cheating

Teachers also came face to face with ethical issues as a lot of students were showing a dodging attitude towards online classes. The use of online platforms for teaching made it difficult for teachers to catch students while cheating. Teachers also found it difficult to ensure that students attended the class for the complete duration or left the course after marking the attendance.

Social/Cultural Constraints

Moreover, many students did not turn on their cameras and mic due to different cultural constraints hindering teachers from maintaining decorum during lectures. Many students could not turn their webcams on due to a joint family system, shyness, or lack of IT facilities.

No Real-time Feedback

Also, to add to teachers' difficulties, they could not get real-time student feedback to improve their lectures. Students avoid asking questions during online classes due to shyness or uninterested attitude.

3. Implementation Difficulties

Adapting to Unfamiliar technology and Platforms

Since the universities had to decide to shift to online classes in a forced situation, all the faculty members were new to this system. They had to face difficulties in adapting to the online class system. The teachers also had to familiarize their students with this system as well.

Redesigning Curriculum

The teachers also had to redesign their course plan and curriculum to make it suitable for the online teaching mode.

Demotes In-Person Interaction

During the interview, most of the teachers informed me that due to the absence of a physical classroom environment, online classes give a sense of isolation, resulting in a lack of engagement and interest during the course.

Cheating Prevention in Assessments

Teachers reported that preventing 100% cheating during online assessments is nearly impossible.

Timely Completion of Curriculum

Some faculty members shared their difficulties regarding the timely completion of their course plan, which they usually completed in their on-campus classes within the semester duration. They had to squeeze their syllabus due to the limitations of online courses.

Lack of Motivation

The feeling of isolation during online classes sometimes also resulted in a lack of motivation for the teachers.

4. Technical Problems/Technology-Related Issues

Most of the faculty members talked about improvements in infrastructure, including uninterrupted electricity, internet, and other related facilities. They also emphasized the need to provide high-quality IT equipment and relevant services to the instructors and the students to ensure a good online teaching-learning process. The technology-related issues included getting hands-on experience with unfamiliar technology and platforms, internet connectivity, and the availability of good machines. Since almost everyone had little knowledge about online media and online education systems, many instructors and students faced many issues adjusting to online class mode. These problems included technical and IT-related issues, which caused a great disturbance to online classes.

Device Failure

A lot of time, the teachers had issues like machine failure due to various reasons. Sometimes, the laptops got hung up or stopped working due to overload on the system. The students frequently reported the same issue to the instructors, which caused a great disturbance during online classes.

Power Failure

Since Pakistan is a developing country, power failure is an everyday thing, and many teachers were not able to attend some of their classes because of it. Even those with an electricity backup faced the same issues as UPS running out of charging in long hours of a power outage. The regular load-shedding schedule of different areas caused great difficulty for the teachers during online classes.

Lack of Computer Literacy

Computer literacy is one thing that students struggled with and took a long time to understand. Initially, teachers worked with online learning tools and education platforms (Google Meet, Zoom, and Google Classroom). There were no detailed guidelines regarding the conduct of online classes and no formal procedure for online course teaching. Hence, the teachers had great difficulty learning and teaching computer literacy.

Knowledge of Online Tools and Platforms

Since the teachers had no experience using online tools and platforms for holding online classes, it took them a lot of time to get the hang of them.

Expensive IT Equipment

Regarding the IT devices, teachers shared that they had to bear the expenses of buying computers and efficient peripheral devices like digital writing pads, mic, headphones, etc. The unavailability of machines with high specifications caused hindrances in the smooth conduct of online classes.

Internet Issues

According to the respondents, one of the main obstacles to taking classes online is not having a robust and reliable internet connection because the ones typically used at home are either too slow or have reached their limits. Some issues were faced while getting an internet connection of good bandwidth and frequent disconnecting of the relationship.

5. Courses Redesigning Issues

Shifting to online classes from on-campus classes also required major changes in curriculum. The participants openly shared their difficulties and challenges of modifying the curriculum.

Converting/Redesigning the Curriculum

The instructors shared that the shift in the teaching methodology was no less than 360 degrees as the curriculum made to teach face-to-face had a different structure and required a different teaching methodology. This curriculum now needs to be made efficient for online teaching. This affected their teaching style and required extensive modifications in course contents and design to a huge extent.

Editing Presentations

The lecture presentations had to be more explanatory and understandable for the students. Teachers had to add more graphical content in the videos and add examples, too. This took teachers extra time and a lot of energy as well.

Increased Class Activities

The teachers had to incorporate more class activities in daily lectures to keep the students active during the class. They had to conduct surprise quizzes and tests and design class activities to improve students' engagement during online courses.

6. Assessment Issues

Evaluation and Assessment

Accurately evaluating a pupil is essential to the educational process. Under typical conditions, tests and exams are administered on campus to students. Unfortunately, during the lockdown, that was not an option.

Evaluation and assessment of the students also became difficult, and teachers had to devise new methods for it according to online mode. It became nearly impossible for the teachers to catch students cheating and submitting plagiarized assignments.

Assessment Tools

Coming towards the tools and platforms, the suggestions received showed a lot of pressure on testing assessment tools before finalizing them. It was communicated that the majority of these tools have credibility issues that become a hindrance.

Academic Dishonesty

Academic dishonesty was one of the most reported issues during online assessments. Almost all the faculty members shared their grave concerns regarding online evaluations. Students' use of unfair means has been a huge problem during online education.

Multiple Question Papers

Moreover, smart problems and multiple versions of the question paper had to be made to prevent cheating. Another assessment method was added on top of assignments and quizzes to ensure students pass due to their efforts. Teachers had to conduct viva after every exam.

Restricting Cheating Instances

A few pupils attempt to take advantage of the simple route to success. They can now cheat more easily when utilizing online learning platforms. To prevent cheating, several techniques must be adopted to minimize the chances of infidelity among the students. This also results in increased complexity in the exam-checking process for the teachers.

Late Submissions by Students

Even after many struggles, teachers complained that the students became lazier in submitting assigned tasks. Teachers had to incorporate multiple activities to keep students motivated. However, it was observed that despite various reminders and teachers' support, a good number of students failed to submit their assignments on time.

Inflated Grades

Many teachers also mentioned inflated grades as an issue as well. A large number of cheating cases were reported during online examinations. Hence, the rates gained by the students failed to represent their actual knowledge and learning.

No Foolproof System for Assessment

Many teachers informed me during the interview that they had difficulty marking the students' exam papers and assignments. No assessment tools or applications were

available to ease the paper-checking process. Instructors had to spend plenty of time fairly checking and grading students' submissions.

SOLUTIONS, CONCLUSION AND RECOMMENDATIONS

Findings

The present study was conducted in a forced lockdown rather than a planned and designed distance learning program, which may explain why the results are somewhat consistent with those of earlier research. Any differences in faculty experience and outcomes between face-to-face and online teaching appear to be more dependent on the quality of instruction than the mode of delivery. One teacher may see a fast-paced classroom discussion as more engaging and fuller of opportunities for imparting new knowledge. Still, by another teacher, it may be intimidating and leave little room for developing a thoughtful response. Different faculty members generally have quite different experiences of the two class modalities.

It is impractical to advocate that every university professor go as far with student-centered learning as creating a unique learning plan for each student that considers their individual work/family obligations and personal traits. However, a blended learning strategy enables teachers to give students a variety of in-person and online assignments. Some of the problems and obstacles that have been identified during online teaching include maintaining student discipline, a lack of student motivation, redesigning the course for online classes, learners' participation, learners' engagement in online settings, issues related to course content; content development, teaching methodology for online classes, fair assessments and examinations, and setting timeframes and deadlines. The absence of sufficient IT resources and fast internet was also mentioned as a significant issue regarding online classes.

The findings suggest that even though teachers had the chance to explore and learn new technologies, their difficulties during online classes outweighed the overall advantages because the setup and accessibility of the necessary resources were substandard. This experience may have been made more difficult and frustrating by their lack of prior experience in online education, their teacher education program's lack of preparation, and possibly their teachers' and university supervisors' lack of subject matter expertise.

Suggestions

Participants in the study provide a comprehensive set of recommendations for improving various aspects of online education. Suggestions include enhancing teachers' IT knowledge, providing regular training for instructors, making IT equipment more affordable, and addressing budget issues related to device acquisition. Ethical and moral development of students is emphasized to ease the challenges of online learning. The participants advocate for improved IT facilities and laptops from educational institutions and propose the establishment of specialized e-learning labs for remote locations. Recommendations extend to modifying courses for adaptability, and enhancing assessment tools for maintaining exam integrity in online settings. Overall, the suggestions offer a multifaceted approach to address challenges in IT, training,

budgeting, student behavior, infrastructure, course design, and assessment in online education.

Conclusions and Recommendations

The study explores the impact of the global shift to online learning during the lockdown, particularly focusing on challenges and strategies in underdeveloped countries like Pakistan. It emphasizes the need for collaboration between the Higher Education Commission and institutions to develop effective policies for monitoring online education. Highlighting the importance of ICT literacy in teacher curricula, the study calls for adequate preparation and support for teacher candidates. It also advocates for institutions to reevaluate academic schedules and actively gather information on students' online teaching experiences for enhanced educator effectiveness. The potential benefits include a deeper understanding of teachers' perspectives, aiding administrators in addressing challenges, and serving as a resource for entrepreneurs establishing online degree programs. However, the study acknowledges limitations, conducted primarily in Lahore-based universities, and notes that faculty perspectives may not represent those of teachers in various institutions across Pakistan due to differing experiences, perceptions, available resources, and teaching circumstances.

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