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DIGITAL TRANSATION IN HIGHER EDUCATION: A QUALITATIVE INQUIRY INTO TEACHERS' PERSPECTIVES ON ONLINE TEACHING COMPATABILITY IN ISLAMABAD, PAKISTAN

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Article Info

Abstract

The aim of this research was to explore teachers' perspectives on compatibility with online teaching at the higher education level and to identify the challenges they encountered while adapting to online instruction. To achieve this objective, a qualitative research design was employed for data collection. The sample comprised of six participants were selected thorough convenience sampling technique. Six semi-structured face-to-face interviews were conducted to examine teachers' perspectives on their compatibility with online teaching in higher education. The data underwent inductive analysis; responses were coded and categorized based on emerging patterns, and the findings were presented thematically. To ensure data credibility, member checking was conducted, whereby key informants reviewed and confirmed the findings. Additionally, an audit trail was maintained, consisting of a detailed and chronological record of all research procedures and data analysis decisions, which was presented to two independent reviewer researchers. The findings revealed that traditional, in-person teaching methods emphasizing immediate feedback, real-time interaction, and active student engagement were deeply ingrained in higher education educators as they transitioned to online instruction. Although conventional approaches such as lectures, whiteboard explanations, guided questioning, and practical exercises formed the foundation of their teaching identities, the shift to online environments required substantial adaptation rather than direct transfer. The teachers also highlighted significant challenges, particularly technical difficulties in distance education and complications related to online evaluation and assessment. The study recommends the organization of regular workshops to enhance teachers' proficiency in utilizing online platforms, managing virtual classrooms, and designing engaging digital lessons. Furthermore, universities should adopt a blended approach that integrates face-to-face instruction with online resources, using each format where it is most effective to improve teaching compatibility and student engagement. Participants emphasized that for online education to function as a reliable and effective complement to conventional teaching methods, it is essential to strengthen technical infrastructure, enhance teachers' digital competencies, and develop secure and practical assessment tools.

Keywords: *Teachers' Perspectives, Online Teaching Compatibility, Higher Education.*

Introduction

In 21st century, rapid technological advancements and the increasing need for adaptable, learner-centered approaches have caused major changes in the higher education landscape in the twenty-first century. The broad use of online teaching and learning model was one of the most noteworthy developments. Globally, higher education institutions were already progressively integrating digital education, but the COVID-19 pandemic suddenly sped up this process, making online learning not only a viable option but also a requirement. In conventional classroom methods continue to be extensively employed, notwithstanding the prevalence of online learning prior to the plague. The transition from conventional to online learning has presented significant challenges for colleges in Pakistan. Both instructors and learners encounter obstacles when attempting to implement online learning (Khan & Ali, 2024). The opinions of educators regarding their own suitability for online instruction offer important insights into the opportunities and difficulties faced in this changing educational environment. On the other hand, higher levels of compatibility have been associated with elements like prior experience using digital tools, favorable attitudes toward technology, and institutional support.

For online learning to be implemented successfully, teachers were essential. The quality of instruction and student outcomes were directly impacted by their compatibility with online teaching, which includes technical proficiency, pedagogical adaptability, attitudes toward technology, and motivation. At first, the phrase "online teaching" was used to refer to a variety of communication channels between instructors and students, such as the use of digital platforms and services to facilitate any kind of interaction in order to give lectures, review assignments from students, hold official meetings and conversations, and make sure that the teaching and learning process continues unhindered in spite of any challenges (Kulic & Jankovic, 2022).

Teachers' opinions regarding their suitability for online instruction have grown in significance in this changing educational environment. In this way, compatibility goes beyond simple digital literacy; it shows how comfortable, competent, and supported teachers feel when modifying their teaching methods for use on digital platforms. Technical proficiency, pedagogical flexibility, attitudinal openness to change, and the availability of peer and institutional support networks were just a few of its

interconnected dimensions. To ensure the efficacy and sustainability of digital learning in higher education, it was essential to comprehend how educators view their alignment with the demands of online teaching. Online educators who can work more effectively and actively in a virtual environment Higher education institutions' expansion and prosperity depend on their environment (Vlachopoulos & Makri, 2021).

The degree to which teachers' abilities, dispositions, convictions, and life experiences mesh with the requirements and capabilities of online learning was known as compatibility. It has several facets, such as emotional fortitude, cognitive openness, pedagogical flexibility, and technological competence. For online learning to be successful, teachers' viewpoints and adapt-abilities were crucial, even though platform usability and technological infrastructure was also crucial. The academic discourse has mostly concentrated on student engagement, technological infrastructure, and the efficacy of digital tools, despite the growing interest in online learning. In order to provide instruction to pupils, practically all educational establishments were necessary to adopt platforms and technologies for online instruction (Gurung, Chapagain, Baral & Bhandari, 2022).

Broader institutional and contextual factors, such as the availability of technical support, professional development opportunities, administrative policies, and the innovative culture within educational institutions, all have an impact on teachers' compatibility with online teaching. Online learning environments that facilitate collaboration, exploration, and easily accessible content updates were efficient, scalable, and reasonably priced. Simultaneously, online education encounters challenges related to adaptation, the requirement for self-control, further teacher training, technical problems, and increased screen time (Jiang, Ruan, Feng & Jiang, 2023). It aimed to guide professional development programs, influence institutional policy, and advance a more inclusive, teacher-supported method of online education.

Prior studies have demonstrated that a teacher's lack of confidence and preparedness can seriously impair the efficacy of online learning, even in cases where the required infrastructure was in place. Concerns regarding inadequate training, decreased face-to-face interaction, problems with student evaluation, and technology fatigue were frequently voiced by educators. The purpose of this study was to thoroughly investigate how higher education level teachers perceive their suitability for online instruction. It

aimed to comprehend the function of institutional support, identify important facilitators and obstacles from the perspective of educators, and investigate the ways in which organizational, technological, and personal factors interact to shape online learning environments. The research aimed to offer practical insights that can direct the development of future training initiatives, policy choices, and tactics for sustainable digital education in higher education institutions by firmly establishing the study in both empirical data and theoretical knowledge.

Statement of the Problem

Higher education has undergone significant change as a result of online learning becoming a common teaching method in post-secondary institutions. An educator's compatibility with online teaching is greatly influenced by a number of factors, including technological literacy, pedagogical flexibility, institutional support, prior experience with e-learning, and attitudes toward digital education. Even though online learning was becoming more and more popular, little research has been done on how higher education's instructors view their own preparedness, comfort level, and capacity to provide high quality instruction online. The creation of focused interventions to improve the efficacy of online instruction was hampered by this gap. This research aimed to explore the to explore teachers' perceptions on compatibility towards online teaching at higher education level and also identify the challenges faced by teachers in adapting online teaching at higher education level. By exploring teachers' perspectives and identifying the challenges, this study sought to provide valuable insights into how online teaching strategies enhancing instructional quality, teacher satisfaction and student success in digital era.

Research Objectives

1. To explore teachers' perspectives on compatibility towards online teaching at higher education level.
2. To identify the challenges faced by teachers in adapting online teaching at higher education level.

Research Questions

1. How do higher education level teachers perceive the compatibility of online teaching with their established instructional methods?

2. What are the main challenges faced by higher education's teachers in adapting to online teaching?

Significance of the Study

The study of teachers' perspectives on compatibility towards online teaching at higher education level was significant because it explores how well university instructors have adopted to teaching online, specifically with regard to their technological skills, pedagogical approaches and attitudes. Higher education institutions improved the quality and sustainability of online education by identifying training, infrastructure, and policy support gaps with the aid of an understanding of their viewpoints.

This study was particularly significant for following:

***For Teachers*:** This study was important for educators because it gives a clear picture of their experiences, difficulties, and readiness levels when it comes to adjusting to higher online instruction. With this knowledge, educators can more successfully manage the transition to online learning environments, improve their efficacy as educators, and gain confidence in their ability to provide high-quality instruction in a virtual setting.

***For University Administration*:** Administrators at universities can better allocate resources and create training programs by using this study's highlights of faculty needs and difficulties with online instruction. Comprehending the viewpoints of educators' aids administrators in creating infrastructure and policies that promote the success and general quality of online learning.

For Policymakers: This study provides valuable insights for education policymakers by highlighting gaps in faculty readiness and institutional support for online teaching. The findings guided the development of national policies and digital education frameworks that strengthen teacher capacity, promote equitable access, and improve the quality of online higher education in Pakistan.

Operational Definitions

***Digital Transition*:** Digital transition is the process of adopting digital technologies to move from analog or traditional systems toward digitally enabled processes, improving performance and productivity in organizations and activities. (Rosário, 2022). In this study, it is defined as a process to move from traditional methods to the use of digital technologies and online tools.

Teachers Perspective: Teachers' perspective refers to educators' beliefs, experiences, and interpretations of teaching, learning, and classroom practices, which shape their instructional decisions and responses to educational changes (Näkk & Timoštšuk, 2024).

Compatibility: According to Wang, Zaho and Cheng (2022), compatibility refers to the degree to which a new technology or innovation is perceived as consistent with the existing values, past experiences, and needs of its users, influencing their acceptance and use of that technology. In this study, it refers to degree to which, two or more such as tools methods or system work together. In the context of teaching, compatibility refers to how well a given teaching method or technology fits with a teacher's instructional goals, content needs, teaching style, and the learning environment.

Online Teaching: It is defined as instruction that occurs through digital devices and is mediated through a screen, where the teaching process is carried out via computers or other digital technologies rather than in traditional face-to-face settings (Williamson, 2025). In this study it is defined as, the process of using digital platforms and internet-based technologies to engage students and deliver educational instruction is known as online teaching.

Higher Education Level: In this study it defined as, higher level education refers to formal post-secondary education programs offered by accredited institution such as public universities, aimed at providing learners with advanced academic knowledge and professional skills beyond the higher secondary school level.

Literature Review

In 21st century, online teaching has become more and more integrated into higher education, especially after the COVID-19 pandemic compelled universities all over the

world to switch from traditional classrooms to virtual ones. The term "online learning" refers to an electronic learning environment that was opposed to traditional education, where peers were not physically present, and the students were given time and space freedom (Haleem, Asim & Manzoor, 2021). The following ideas serve as examples of online teaching: (1) The instructor and Students were geographically separated from one another; asynchronous learning does not take place simultaneously location or time, and synchronous learning happens when student groups study simultaneously, (2) Technology and shared documents provide access to educational resources, (3) Communication between occurs through computer-technology media between the instructor and the student (4) The instructor offers support port to the student via email, phone calls, discussion boards, live chats, and video chats (Akram, Aslam, Saleem & Parveen, 2021).

Teachers playing a key role in educational settings and their views about online learning affects students' attitude towards learning. The perspectives of the teacher were equally significant because if they were dissatisfied as educators and think the online mode was inadequate, then the foundation of education itself deteriorates (Nambiar, 2020). According to the Karimi, Bani Hashem and Biemans, (2023), Teachers' perspectives on technology impacts both the adoption of technology as a helpful tool and its incorporation into instruction. When educators show greater enthusiasm for online education, they have more intentions to use it behaviorally, teachers' favorable opinions of online education also benefit the students to use technology in the classroom.

How well online instruction fits with their sense of professional identity also affects how teachers view it. Physical presence, instant feedback, and unplanned interaction are all factors that many educators believe are associated with quality teaching (El-Soussi, 2022). By making education accessible to students from geographically disparate locations, students for whom travel time or expense was a barrier, and those who were unable to commit to synchronous on-campus education because of work schedules or personal circumstances like illness or caring for significant others, the use of online and frequently asynchronous teaching activities can lower access barriers (Verstraeten, Leunis, Scheepers, Nederhand, Koning & Deen, 2025).

There was a lot of interest in using new technologies in education. Consequently, theories and models of technology adoption and acceptance were frequently used to

inform studies conducted in educational settings. Such an environment was distinguished by a wide range of potential users of the different kinds of technology used in the learning process teaching, learning, and evaluation (Granic, 2022). Accordingly, the efficiency of during the pandemic, online education remains dubious as there were certain distinctive features of online learning at this time, For instance, the absence of planning, the abrupt and unplanned change, the enormous implementation scale and social distancing measures (Meng, Yu, Liu, Pan, Pang, & Zhu, 2023).

Institutional facilitating conditions, such as consistent internet access, dependable learning management systems (LMS), and ongoing technical support, have a significant impact on compatibility perceptions (Feng, 2025). Teachers believe that online teaching was incompatible with their professional standards when institutions offer insufficient professional development, unclear policies, or inadequate infrastructure. On the other hand, specific institutional support improves compatibility in both perception and reality (Granić , 2022). In the context of online teaching compatibility includes whether the platform or mode fits regular classroom work flows, respects time constraints, aligns with presumptions about student access and engagement, and supports instructors' pedagogical goals. Compatibility was referred to the degree to which innovation was perceived as being consistent with the values that existing, needs and prior experiences of potential adopters (Kemp, Palmer, Strelan & Thompson, 2021). While perceived incompatibility leads to resistance, anxiety, and lower teaching quality, a strong sense of compatibility promotes adoption (Granić , 2022; Feng , 2025).

Digital Transition

Digital transition refers to the systematic shift from traditional face-to-face teaching to technology-enabled learning environments, involving not only digital tools but also new pedagogical approaches, teacher readiness, and institutional restructuring. Earlier research by Abid (2021) reported that online teaching in Pakistan during the COVID-19 crisis revealed a tension between pedagogical aims and technological capability. Teachers struggled with content design, interaction, and engagement in virtual settings, underlining the complexity of digital transition beyond mere technology adoption.

Akhtar and Khurshid (2023) explored how higher education departments perceive and manage the shift to online teaching. Their qualitative research indicated that while institutional leaders recognize the need for digital transition, structural issues such as inadequate teacher training and lack of clear digital policies hinder effective implementation.

Dimension of Compatibility

Compatibility depends on context and has multiple dimensions. According to the previous researches there were three main dimensions that affecting teachers' perceptions.

Pedagogical Compatibility: The term "pedagogical compatibility" describes how well teachers' instructional philosophies and online teaching resources mesh. Online learning environments are frequently more suitable for educators who prioritize adaptability, introspection, and student independence (Ahmed, 2023). However, because lab work and in-person collaboration were difficult to replicate in online environments, teachers in practice-based fields (medicine, engineering, and performing arts) report lower compatibility (Meng, 2024).

Technical Compatibility: Access to dependable platforms, internet connectivity, and intuitive user interfaces are all components of technical compatibility. Lack of integration, sluggish internet, and unstable platforms are common obstacles mentioned by faculty (Feng, 2025). Teachers in developing nations view online instruction as incompatible with institutional realities due to a lack of adequate digital infrastructure (Ahmed, 2023).

Institutional Compatibility: The degree to which online teaching requirements align with university policies, cultures, and administrative frameworks is known as institutional compatibility. Teachers report greater compatibility when their institutions offer incentives, workload modifications, and formal recognition (El-Soussi, 2022).

Theories Supported Compatibility

Teachers' perspectives on compatibility towards online teaching is very important. Several theories about teachers' perspectives on compatibility towards online teaching are:

Diffusion of Innovation Theory: According to the Landau, Rozanov and Ungar (2022), the process of innovation diffusion was conceptualized by the well-known empirical framework diffusion of innovation theory, which can also be applied to the process of innovation adoption, specifically to the adoption of educational technology in the field of education. Diffusion of innovation theory was most recently used to study the adoption of live-in-labs for experiential learning and online proctored exams during the COVID-19 pandemic. It was important to note that while different theoretical frameworks consider innovation adoption, they all conceptualize the elements that influence the innovation's use or acceptance, while the focus of this study was on the innovation adoption process as a whole.

Technology Acceptance Models: According to Kharabesh, Alghyaline, and Awaisheh (2024), the Technology Acceptance Model (TAM) was developed to help software developers evaluate newly created computer-based systems prior to implementation or deployment in new contexts. TAM identifies the primary determinants of user acceptance of a proposed system, emphasizing two key factors: perceived usefulness (PU) and perceived ease of use (PEU). Perceived usefulness refers to the belief that a system enhances productivity and work quality, whereas perceived ease of use reflects the extent to which the system requires minimal effort, thereby increasing efficiency and user satisfaction. Both PU and PEU influence users' attitudes toward using technology (ATUT); higher levels of perceived usefulness and ease of use lead to more positive attitudes and greater acceptance.

Theoretical Framework

The theoretical framework of the study was based on technology acceptance model presented by Kharabesh, Alghyaline and Awaisheh, (2024), The technology acceptance model (TAM) was defined as an information systems theory that explains how users are encouraged to accept and utilize new technology, focusing on two key determinants: perceived usefulness and perceived ease of use. The model suggests that higher adoption rates occur when users believe an application will enhance their performance and requires less effort to use. Technology acceptance model (TAM), a famous model for adopting and using technology. Technology acceptance model proposes two cognitive beliefs: perceived usefulness (PU) and perceived ease of use (PEOU). Acceptance of technology was described as a person's mental condition with respect to

his or her purposeful or voluntarily chosen use of a specific technology. Within technology acceptance model, the behavioral intention to use and actual system usage are the primary dependent constructs or factors whereas attitude, perceived utility, and perceived usefulness are the primary independent constructs or factors simplicity of use. The self-intention of a specific entity is explained by Davis's technology acceptance model theoretical framework user or the individual's internal conduct when using new technology (Figure 2). This Self-perceived usefulness (PU) and perceived ease of use serve as the foundation for intention the new technology's PEOU.

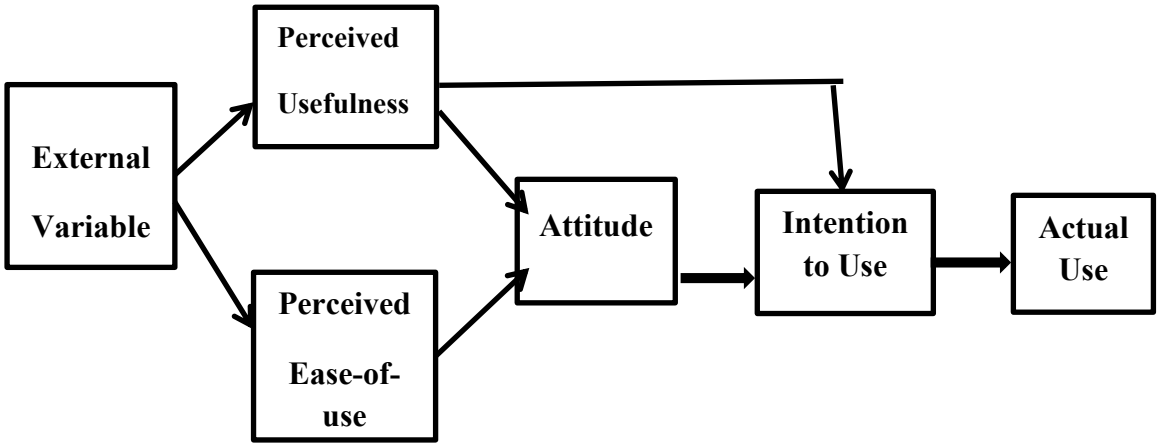

Figure No 1. *Technology Acceptance Model (Kharabesh, Alghyaline &Awaisheh, 2024).*

Research Methodology

Research Approach: For this research, the researchers used a qualitative approach. Qualitative Research entails gathering and examining non-numerical data, such as audio, text, or video) to comprehend ideas, viewpoints, or personal experiences. It applied to produce fresh research ideas or to obtain in-depth understanding of an issue. According to its definition, qualitative research was the study of the nature of phenomena, which includes their quality, various manifestations, the context in which they appear, or the perspectives from which they can be perceived (Ugwu & Eze, 2023). Qualitative research approach includes interviews, focus groups, discussion and observations, which allows the researcher to collect data from participants in their natural setting. The qualitative research approach chosen due to its ability to provide an in-depth teachers perspective on compatibility towards online teaching at higher education level.

***Research Design*:** The nature of this research was phenomenological. Phenomenology requires an in-depth understanding of participants' thoughts and perceptions (Creswell & Poth, 2018). The researcher may investigate and comprehend the lived experiences and individual viewpoints of educators concerning their flexibility and suitability for online teaching approaches due to this design. The study identified the difficulties, attitudes, and perceived preparedness related to online instruction at the higher education level by concentrating on the subjective experiences of teachers. Semi-structured interviews used to gather data, allowing participants to thoroughly express their opinions. As the study aimed to understand teachers' perspectives in the context of higher education in Islamabad, this approach was particularly suitable because it places a higher priority on insight and meaning-making than on quantitative measurement.

Research Population: A population is a complete set of people with specified characteristics (Thacker, 2020). The population for the research was the teachers of National University of Modern Languages (NUML), International Islamic University (IIU) and Allama Iqbal Open University (AIOU), Islamabad.

Participants: The participants were teachers from the Faculties of Social Sciences and Humanities at NUML, IIU, and AIOU, located in Islamabad.

Sampling Techniques: In order to collect data, convenience sampling was used. Convenience sampling consists of selecting respondents based on their convenience to the researcher. Convenience sampling was a method used in qualitative research that entails choosing participants based on their accessibility and availability to the researcher (Etikan, Musa & Alkassim, 2016). Instead of being selected at random from a larger population, those who used this tactic were chosen because the researcher can easily access them.

***Sample Size*:** The sample was three male and three female teachers. All the teachers were permanent employees.

***Research Instruments*:** Semi-structured interviews were used to know teacher's perspectives on compatibility towards online teaching. The semi-structured interviews were helpful in collecting qualitative information for the study. Because of the semi-structured format's flexibility, the interviewer can clarify unclear statements or delve

into new ideas while still being consistent throughout all interviews. In order to better understand the challenges influencing teachers' compatibility with online teaching at the higher education level, this structure guarantees the collection of thorough, comparable, and contextually grounded insights.

Data Collection Procedure: The researcher visited various departments of NUML, IIU, AIOU, Islamabad and met different male and female teachers and told them briefly about the research. The researcher took appointment from the participants for the interviews. After that, the researcher met with participants at scheduled time. Before taking the interview, the researcher took the permission from the participants for recording the interview and organized and described the data set in detailed.

***Data Analysis*:** The data underwent inductive analysis, with responses coded and categorized based on emerging patterns, and the results were presented thematically.

- ***Transcription:*** Audio recording of focus group interviews was initially transcribed to get meaning of the whole data.
- **Coding:** After transcription coding of qualitative data was done. Coding was a convenient process to analyze qualitative data because it offered valuable information from participants data.
- ***Generating Themes:*** Themes were derived from coded data in order to analyze the data. While deriving themes, research questions were kept in mind.
- ***Member Checking:*** Cresswell and Miller (2000) stated that member checking involves taking data back to the participants, in this way Participants can approve the credibility of the data. I believe member checking facilitated me in data analysis stage; as member checking helped me to understand the narrative through the lens of participants. After transcription of interviews and making the codes of qualitative data, researchers went back to study participants for verification of the codes.
- ***Audit Trial:*** Researchers have done open coding, analytical coding, axial coding and selective coding of interviews. Once the coding was done, researchers consulted two other researchers to go through the original and translated transcription for assessing the authenticity and appropriateness of research data. Afterwards categories, subcategories and emergent themes were finalized which were further supported with the relevant quantitative data during analysis.

***Ethical Consideration*:** During the process of this research, the secrecy of the participants was considered. Permission was taken from the participants who participated in research. There was no emotional harm to the subject. As part of research, norms were in consideration, the researcher explained the purpose and objectives of the study. Researcher explained to participants; they are free to participate on their own and can withdraw without giving explanations. Researcher showed their interview guide to participant so they feel ease and don't get confuse. Researcher made sure that they felt secured and comfortable in participating in the research. Consent form from all participants also signed before starting interview.

Data Analysis

Table 1: ***Demographic Table of Participants***

Sr #	Name	Qualification	Experience	Institute	Department
1.	Participant A	Ph.D. in Education	08 years	IIU, Islamabad	Education
2.	Participant B	M.Phil. in Media and Communication	16 years	NUML, Islamabad	Media and Communication
3.	Participant C	M.Phil. in Psychology	5 years	AIOU, Islamabad	Psychology
4.	Participant D	M.Phil. in Business Administration n	15 years	AIOU, Islamabad	Business Administration
5.	Participant E	Ph.D. in English	04 years	NUML, Islamabad	English
6.	Participant F	M.Phil. in IR	7 years	NUML, Islamabad	International Relationship (IR)

Themes Derived from Participants' Responses

Classroom Based Practices in Traditional Classroom Instruction Prior to Digital Transition: Higher education level instructors mostly relied on traditional, classroom-based teaching strategies that prioritized face-to-face communication and immediate engagement with students prior to the transition to online learning environments. Lectures, in class discussions, group projects, and practical or experiential learning assignments like lab work and demonstrations were the foundation of many educators' pre pandemic teaching methods. These in person techniques gave teachers the opportunity to watch students' reactions, make impromptu instructional adjustments,

and keep a close eye on students' progress practices they believed were critical to good teaching. Their teaching methods also included verbal questioning, frequent in person evaluations, and prompt feedback. Teachers used these techniques as a baseline for evaluating the suitability of online platforms because they were ingrained in their teaching identities. The degree to which digital tools could duplicate, reinforce, or contradict these well-established pedagogical practices frequently influenced their early opinions of online instruction.

> *"Prior to going online, I mostly used interactive and student-centered techniques like group projects, guided questioning, class discussions, and real-world examples. In order to preserve clarity, promote involvement, and offer continuous feedback, I also employed brief presentations and frequent formative evaluations".*
>
> *(Participant A)*

> *"To be honest, my approach to teaching was very straightforward and in-person prior to the advent of online learning. I used to have class discussions, ask questions, provide examples, and explain the lesson on the board. I liked to go around the classroom, look over each student's work, and mentor them individually. When necessary, I also used handouts or printed notes. Because I could see how the students were responding, I was able to modify my teaching style on the spot, making it more interactive".*
>
> *(Participant B)*

> *"Online teaching is generally seen by higher education level educators as useful supplemental tools that provide flexibility and resource accessibility. However, many feel that they are not entirely compatible with traditional methods, mainly because of perceived shortcomings in interactive communication, student engagement, and practical assessments".*
>
> *(Participant C)*

> *" As a higher education level teacher, I believed that before switching the online teaching strategies , traditional teaching strategies are a challenge for a teacher to attract the attentions of students. Usually I used white board,*

lecture method , Q A method and discussion method to engage the students in a proper way".

(Participant F)

"My main teaching strategy was traditional in person lectures, I relied heavily on whiteboard, explanations, spontaneous class discussion and group activities right in classroom".

(Participant E)

According to the statements made by the participants, prior to the transition to online learning, teachers primarily used traditional in person teaching methods like lectures, whiteboard explanations, class discussions, group projects, and printed materials. These methods were frequently enhanced by student centered approaches like guided questioning, real-world examples, and one-on-one mentoring. Teachers were able to closely monitor student engagement, encourage interaction, and provide real-time feedback thanks to these methods. They did, however, agree that moving to online teaching brought with it certain difficulties, including lower student engagement, less interactive communication, and challenges with practical assessments. Despite the flexibility and ease of access to resources that online tools provide, most educators felt that they were unable to fully replicate the efficacy and immediacy of traditional classroom methods.

Adaptability of Traditional Teaching Methods in Online Environments: Participants clarified that rather than just transferring their traditional teaching methods to online settings, careful modification was needed. Even though lectures, organized discussions, and guided explanations were still essential components of their teaching identities, many educators discovered that these techniques needed to be modified to work with the digital format. For example, lectures that previously relied on in-person attendance and prompt feedback were replaced with recorded videos or live sessions, which some felt diminished interaction and spontaneity. In a similar vein, class discussions had to be converted into chat rooms or breakout spaces, necessitating more careful facilitation to keep students interested. Teachers stated that even though online teaching offered resources like screen sharing, discussion boards, and virtual whiteboards that could support these traditional methods, the experience frequently felt less dynamic than in-

person instruction. As a result, how well online features allowed them to maintain the core of their traditional approaches explanation clarity, real time student interaction, and the capacity to assess comprehension in a digital learning environment determined how compatible they felt.

> *"Due to their natural alignment with online tools, lectures, presentations, and resource sharing were the easiest to modify. Managing group activities with the same spontaneity as in traditional classrooms and maintaining student engagement were the more difficult parts. These difficulties became easier to handle with systematic planning and platform familiarity".*
>
> *(Participant A)*

> *"Because I could simply upload files or display slides, some tasks, like sharing notes or giving presentations, were simple to move online. Interaction, however, was the challenging aspect. While many students in online classes remain silent, turn off their cameras, or are reluctant to ask questions, in-person students react promptly. It became difficult to assess students' comprehension. There was also a lack of classroom discipline. Thus, while it was simple to explain, it was difficult to ensure that they understood".*
>
> *(Participant F)*

> *"Replicating the complex, human-centered aspects of teaching which call for emotional intelligence, hands-on interaction, and real-world contextual understanding presents the biggest obstacles. Replicating Empathy and Human*
>
> *Interaction. Resolving Technical Problems and the "Digital Divide"*
>
> *Maintaining Academic Honesty in Evaluations"*
>
> *(Participant C)*

> *"The most challenging task in online teaching online teaching is to keep the interest of students to a long time. The best solution to engage the students is provide different activities to students and students perform those activities".*
>
> *(Participant D)*

> *"The simplest part to adapt was to delivering the lecture content itself. I could just do that through a live video call or recorded presentations the most challenging part was recreating the in-class discussion and group activities. It is hard to get same energy and interaction online".*
>
> *(Participant E)*

Overall, participants concurred that delivering lecture content was the simplest part of switching to online instruction because sharing slides, uploading resources, and presenting information were all naturally supported by digital platforms. Nonetheless, they consistently stressed that the biggest obstacles were keeping students interested, simulating face-to-face communication, and overseeing group activities with the same spontaneity and vigor as traditional classrooms. Because many students stayed silent, turned off their cameras, or were reluctant to ask questions, teachers found it challenging to assess their comprehension, which resulted in less interaction and poorer classroom management.

Educators' Perspectives on the Instructional Affordances of Online Teaching Technologies: The perceived affordances of online teaching were crucial in determining how well they align with instructional practices from the viewpoint of higher education level educators. Features like integrated assessment modules, real time communication tools, and used friendly interfaces were frequently assessed not only for their functionality but also for how well they support educational objectives. Platforms that provide clear affordances actions that were easily comprehensible and attainable more likely to be adopted and used by teachers, enabling them to deliver content, track student progress, and promote interaction without requiring a lot of technical troubleshooting. On the other hand, platforms with complicated or unclear features might be seen as obstacles, which would discourage complete curriculum integration and lower the perceived compatibility with current teaching work flows. In the end, how well platform features match teachers' instructional needs and teaching philosophies has a significant impact on their willingness to adopt online teaching.

> *"My teaching style is supported by video-conferencing tools because they allow for instantaneous clarification, real-time interaction, and visual engagement. Discussion boards encourage critical thinking and extend*

learning outside of the classroom. Online assessment tools facilitate the organization of tests, assignments, and prompt feedback, improving the structure and transparency of the learning process".

(Participant F)

"Because they were most similar to a traditional classroom, video-conferencing platforms like Zoom and Google Meet worked best for me. I could see students, communicate, and share my screen. Students who missed class also benefited from lectures being recorded.

Additionally, I found that students felt more comfortable asking questions in WhatsApp groups or discussion boards. Online tests were occasionally useful, but only when the internet was reliable".

(Participant B)

"My "teaching style" as an AI is focused on retrieving and synthesizing information in a clear, thorough, instantaneous, and interactive manner. This strategy is best complemented by the following online platform features and tools:

Justification for Enhancing AI Instructional Methods"

(Participant C)

"There are many online tools in this digital era to keep to engaged the students. I mostly used video conferencing tool which greatly supported my teaching style".

(Participant D)

"I found live video conferencing links zoom to be the most helpful. I allowed me to maintained that direct real time connections with students which is important part of my teaching style. I also starting online quiz tools for quick informal checks".

(Participants E)

Participants consistently identified video-conferencing tools like zoom and Google meet as the most supportive of their teaching styles because they allow for real-time interaction, instant clarification, visual engagement, and a classroom like environment. Additionally, these platforms made features like screen sharing and lecture recording possible, which benefited both in person and remote learners. Participants also emphasized how discussion boards and messaging apps extended learning beyond the in-person session and encouraged students to ask questions more freely. Overall, the results demonstrate that synchronous video resources best complemented and improved teachers' teaching strategies when combined with discussion boards and digital tests.

***Technical Difficulties in Distance Education*:** From the perspectives of participants, the compatibility of online teaching with their instructional practices is severely hampered by technical issues. Problems like erratic internet connections, software bugs, restricted access to necessary hardware, and platform malfunctions interfere with the delivery of lessons and hinder student interaction. In addition to taking up important teaching time, these challenges have an impact on instructors' self-assurance and readiness to completely incorporate digital resources into their lessons. Recurrent technical issues cause frustration and diminished perceived alignment with pedagogical goals, even in cases where platforms offer promising features. Teachers frequently stress that for online teaching to continue to be a successful and long-lasting form of instruction in higher education, technical dependability, institutional support, and prompt troubleshooting are crucial.

> *"At first, I experienced sporadic software bugs, sluggish system performance, and erratic internet connectivity. Additionally, some students' participation was impacted by device limitations. Over time, these disruptions were reduced by better equipment and backup plans".*
>
> *(Participant A)*

> *"Internet issues, whether they were on my end or those of the students, were the main problems. Occasionally, the platform logged out, the voice broke, or the video became stuck. Many students joined using mobile phones because they lacked adequate devices, which made it difficult for them to view the slides. Platforms like Zoom and Google Classroom occasionally took a while*

to load, which resulted in delays. At first, managing several apps at once was also a little stressful".

(Participant B)

"The need for dependable hardware and software, problems with online assessment platforms, and insufficient internet connectivity for both teachers and students are the main technical challenges teachers face".

(Participant F)

"There are many challenges which tertiary level teachers faced. The most challenges faced by me during online teaching are net connectivity, less knowledge about different tool".

(Participant D)

"The biggest issues were internet connectivity which cause my video to freeze or dropout. Also, some students faced problems with their devices or learning how to use these platforms which slowed things down".

(Participant E)

Unreliable internet connectivity, which resulted in platform log outs, audio interruptions, video freezes, and delays that impacted both teachers and students, was the most prevalent technical issue among participants in online instruction. Many students also had trouble with device limitations; they frequently joined via cell phones, which made it challenging to fully participate or view slides. Navigating and troubleshooting technical issues was made more difficult by a lack of familiarity with online teaching. However, with time, some of these problems were mitigated by better tools, more platform expertise, and backup plans.

Difficulties with Online Evaluation and Assessment: Online evaluation and assessment present serious obstacles to the integration of digital teaching with conventional teaching methods, according to higher education level educators. Ensuring academic integrity, creating meaningful assessments, and accurately measuring student understanding through virtual formats were challenges that educators frequently encounter. Restrictions like limited monitoring capabilities,

technical difficulties during tests, and the absence of standardized online assessment tools lead to uncertainty and lower confidence when assessing student performance. Perceived compatibility may also be impacted by the additional time and effort needed to modify current assessment techniques to conform to digital platforms. Many educators stress that platforms must offer dependable, adaptable, and pedagogically sound assessment features that support both fair evaluation and insightful feedback in order for online instruction to be successful.

> *"Ensuring academic integrity, identifying plagiarism, and confirming independent work were the primary obstacles. Compared to traditional exams, creating authentic, meaningful assessments and ensuring fairness require more preparation. These difficulties inspired me to employ more formative and ongoing methods of assessment."*
>
> *(Participant A)*

> *"To be honest, the hardest part was the assessment. Determining whether students were completing the work themselves was challenging. Many students copied answers from Google or from one another when taking tests or quizzes. Because all of the assignments came in various formats pictures, files, or typed text checking them also took longer. Giving feedback wasn't as easy as it was in traditional classroom settings. When i was in person, I could point out errors right away, but when I was online, I had to send additional messages and upload comments. In general, evaluating actual learning seemed more difficult when done online."*
>
> *(Participant B)*

> *"Ensuring academic integrity, sustaining student participation and engagement, and resolving technical and accessibility issues are challenges in assessing online student performance. The absence of face-to-face interaction, modifying tests for online settings, and the possibility of delayed feedback are additional challenges."*
>
> *(Participant C)*

> *"While evaluating students teachers face lot of problems, specially while assessing the online assignment. The inclusion of AI has a positive effect as well as negative effects on learning. The creative work of students is also difficult to evaluate while using the different software."*
>
> *(Participant D)*

> *"The main challenge was ensuring integrity. It was difficult to prevent plagiarism in assignments and cheating during online exams. Grading become also more time consuming because it was all digital".*
>
> *(Participant F)*

The main issue with online assessment, according to participants, was maintaining academic integrity. This includes challenges with avoiding plagiarism, confirming independent work, and discouraging exam cheating. Because of the limitations of digital platforms and the variety of submission formats (typed documents, images, files), evaluating students' actual learning and creative work was more difficult than in traditional classrooms. It also took longer to provide timely and useful feedback because mistakes could not be fixed right away. Additionally, the use of AI tools brought both opportunities and challenges in evaluating student work, and modifying assessments for online environments required additional planning to ensure fairness and authenticity.

Discussion

According to the statements made by the participants, prior to the transition to online learning, teachers primarily used traditional in person teaching methods like lectures, whiteboard explanations, class discussions, group projects, and printed materials. These methods were frequently enhanced by student-centered approaches like guided questioning, real-world examples, and one-on-one mentoring. Teachers were able to closely monitor student engagement, encourage interaction, and provide real-time feedback thanks to these methods. They did, however, agree that moving to online teaching brought with it certain difficulties, including lower student engagement, less interactive communication, and challenges with practical assessments. Despite the flexibility and ease of access to resources that online tools provide, most educators felt

that they were unable to fully replicate the efficacy and immediacy of traditional classroom methods. This finding supported by the Ahmed, Anane, Alzaatreh and Saboor (2023) which stated that, maintaining student engagement and interaction remained a top concern when delivering courses remotely. Instructors find it difficult to replicate the interactive, real-time dynamics of face-to-face teaching in an online format.

Overall, participants concurred that delivering lecture content was the simplest part of switching to online instruction because sharing slides, uploading resources, and presenting information were all naturally supported by digital platforms. Nonetheless, they consistently stressed that the biggest obstacles were keeping students interested, simulating face-to-face communication, and overseeing group activities with the same spontaneity and vigor as traditional classrooms. Because many students stayed silent, turned off their cameras, or were reluctant to ask questions, teachers found it challenging to assess their comprehension, which resulted in less interaction and poorer classroom management. This finding is supported by the study of Adsiz and Dincer (2025) , that low student participation in live online classes was the most commonly mentioned issue. Teachers referred to online classes as "a gallery of blank screens," where it was difficult to maintain student engagement and effectively manage class activity due to a lack of non-verbal cues (such as eye contact and gestures) and a lack of classroom presence.

Participants consistently identified video conferencing tools like zoom and Google meet as the most supportive of their teaching styles because they allow for real-time interaction, instant clarification, visual engagement, and a classroom like environment. Additionally, these platforms made features like screen sharing and lecture recording possible, which benefited both in-person and remote learners. Participants also emphasized how discussion boards and messaging apps extended learning beyond the in-person session and encouraged students to ask questions more freely. Overall, the results demonstrate that synchronous video resources best complemented and improved teachers' teaching strategies when combined with discussion boards and digital tests. According to Lukashe, Chigbu and Umejesi (2024), a different recent study, students' engagement, active participation, and satisfaction in online courses were greatly

increased when synchronous online lectures (which include interactive lectures, polls, and live Q&A) were combined with group projects, discussion, and multimedia content.

Unreliable internet connectivity, which resulted in platform logout, audio interruptions, video freezes, and delays that impacted both teachers and students, was the most prevalent technical issue among participants in online instruction. Many students also had trouble with device limitations; they frequently joined via cell phones, which made it challenging to fully participate or view slides. Additional problems that teachers mentioned included software bugs, sluggish system performance, and the strain of juggling several digital tools at once, particularly in the early phases of online instruction. Navigating and troubleshooting technical issues was made more difficult by a lack of familiarity with online platforms. However, with time, some of these problems were mitigated by better tools, more platform expertise, and backup plans. This finding supported by the work of Sahito, Shah and Pelser, (2022). According to that, beyond devices and connectivity, research also reveals inadequate institutional support for infrastructure and training: many teachers and students were unfamiliar with online platforms and software, or they lacked the necessary hardware (computers, webcam, stable setups), which made e-learning less successful.

The main issue with online assessment, according to participants, was maintaining academic integrity. This includes challenges with avoiding plagiarism, confirming independent work, and discouraging exam cheating. Because of the limitations of digital platforms and the variety of submission formats (typed documents, images, files), evaluating students' actual learning and creative work was more difficult than in traditional classrooms. It also took longer to provide timely and useful feedback because mistakes could not be fixed right away. Additionally, the use of AI tools brought both opportunities and challenges in evaluating student work, and modifying assessments for online environments required additional planning to ensure fairness and authenticity. According to Bukhari, Saleem, Ishaq and Butt, (2022), these studies point out that it is particularly difficult to assess deeper learning or creative abilities online; tasks that call for the demonstration of practical or higher-order thinking were frequently substituted with simpler, recall-based questions, which may not capture true learning or critical thinking. Additionally, many educators report that creating online tests, grading a variety of submission formats (such as files, images, and typed text),

and providing insightful online feedback require more time and resources than traditional assessment methods.

Conclusion

In conclusion, the findings indicate that higher education teachers' perceptions of online teaching were strongly shaped by their deep-rooted commitment to traditional, face-to-face instructional practices. Methods emphasizing immediate feedback, real-time interaction, and active student engagement such as lectures, whiteboard explanations, guided questioning, and practical exercises formed the core of their professional identities. Although digital platforms enabled efficient content delivery through screen sharing, uploaded materials, and recorded lectures, educators found it challenging to recreate the spontaneity, interpersonal connection, and dynamic interaction characteristic of physical classrooms. Concerns about limited student engagement, passive participation, camera-off behavior, and difficulties in assessing comprehension further reinforced the view that online teaching required thoughtful adaptation rather than direct replication of conventional methods.

Recommendations

In the light of finding and conclusion of the study, following recommendations were made:

1. Improve internet dependability and supply required digital devices. To reduce interruptions during online instruction, universities should guarantee dependable internet access and offer devices or equipment support for instructors and students.

2. Put in place ongoing digital training initiatives for educators. To help teachers become more adept at utilizing online platforms, running virtual classrooms, and creating engaging digital lessons, regular workshops should be held.

3. Create safe and organized online evaluation systems. To preserve academic integrity and guarantee fair evaluation, institutions must implement plagiarism-detection tools, randomized question banks, and authentic assessment techniques.

4. Boost technical support services for institutions. Create specialized IT help desks to provide prompt support during live classes, troubleshoot platform problems, and assist instructors in handling technical difficulties.

5. Use blended learning models to balance online and conventional instruction. To increase teaching compatibility and student engagement, universities should combine in person instruction with online resources, utilizing each format where it works best.

Limitations

1. The study's narrow focused on Islamabad's higher education level instructors limits how broadly the results applied. Due to differences in institutional support, training, and infrastructure, perspectives from other areas or organizations may be different.

2. Teacher reflections and interviews, which rely on participants' honesty and self-perceptions, were used in the study. The accuracy of the results could be impacted by social desirability, selective memory, or personal bias in such self-reported data.

3. The study only looked at compatibility from the perspective of teachers. The perspectives of institutional administrators, IT staff, and students were not included, which could have given a more thorough understanding of the difficulties and efficacy of online instruction.

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