

**STUDY OF READINESS OF STAKEHOLDERS FOR
ADOPTING BLENDED LEARNING: DEVELOPING A
FRAMEWORK FOR HIGHER EDUCATION INSTITUTIONS**



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This thesis is submitted for the partial fulfillment of the requirements for the
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147-FSS/PHDEDU/S18

This thesis has been accepted by the Department of Teacher Education, Faculty of Education, International Islamic University Islamabad in partial fulfillment of the degree of **PhD Education**.

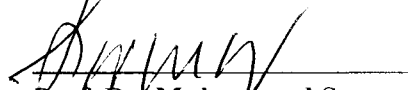
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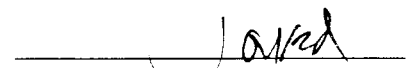
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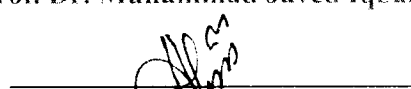
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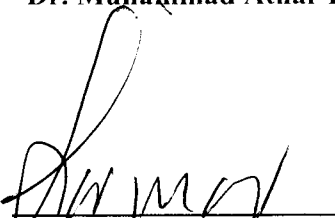

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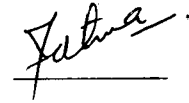

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Dedication

*I dedicate this P.H.D. to My Husband, Muneer
Ahmed, My Son, Muhammad Abbas, and My
Daughter Mehak Fatima for Their Endless
support and love.*

AUTHOR'S DECLARATION


I, Fatima Muhammad Qassim, Regd. No. 147-FSS/PHDEDU/S18 as a student of Ph.D. in Education at International Islamic University, Islamabad hereby declare that the thesis entitled "Study of Readiness of Stakeholders for Adopting Blended Learning: Developing a framework for Higher Education Institutions" submitted by me for the partial fulfillment of Ph.D. in Education is my original work, except where otherwise acknowledged in the text, and has not been submitted or published earlier and shall not be submitted by future researchers for obtaining a degree from this or any other university or institutions.




Fatima Muhammad Qassim

SUPERVISORS' CERTIFICATE

This thesis entitled "Study of Readiness of Stakeholders for Adopting Blended Learning: Developing a framework for Higher Education Institutions" by Fatima Muhammad Qassim Reg. No. 147-FSS/PHDEDU/S18 in partial fulfillment of the requirements of Doctor of Philosophy in Education, has been completed under our guidance and supervision. We are satisfied with the quality of the student's research work and will allow her to submit her thesis for further processing as per IIUI rules and regulations.

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Fatima Muhammad Qassim

ABSTRACT

The development of Information Communication Technology (ICT) has changed the communication style of society, the business world, and educational organizations. The emergence of ICT in education has opened many avenues to achieve academic goals smoothly and quickly. In higher education institutions, internet accessibility, internet availability, and connectivity are helping teachers to adopt the latest pedagogical content and technological knowledge. Blended learning is one of the latest methods in the teaching-learning process. In blended learning, instruction is combined with online resources and face-to-face instruction. Blended learning has many faces in which different techniques are used to make learning more effective. The current study was conducted to assess the perception and readiness of stakeholders to adopt blended learning at Higher Education Institutions. For this reason, the researcher conducted mixed-method research, and the data were collected in quantitative and qualitative research designs. For the quantitative data collection process, the researcher used a proportionate sampling technique for students enrolled in (B.S) and Bachelor of Education (B.Ed.) programs. The researcher developed a closed-ended questionnaire to collect data from 435 students. To understand students' perceptions, challenges, and awareness of blended learning, the researcher analyzed the data using SPSS. The researcher used proportionate sampling technique to select participants to assess teachers' current skills using a blended learning method to meet the various needs of the students. For this reason, fifty-one teachers and twenty-seven academic administrators working in a blended learning environment were considered for this study. The respondents were learning and working together to improve teaching and learning through the effective use

of technology. Understanding the perceptions of faculty and administrators involved in online and blended pedagogical practices to meet the needs of all learners best can theoretically benefit both students and teachers. The cumulative results of data collected through a blended methods approach indicate that students, faculty, and administrators are ready to implement a blended learning approach at their institutions. However, several issues need to be resolved before implementing blended learning, such as internet connectivity, lack of training, shortage of electricity, instructional designs, and hardware issues. The Researcher proposed a framework to ensure blended learning to effectively implement this approach at higher education institutions based on the research findings.

Keywords: Blended learning, Higher Education Institutions, Readiness, Perceptions, awareness, stakeholders.

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LIST OF ABBREVIATIONS AND ACRONYMS

BL	Blended Learning
BS	Bachelor of Science
B.Ed.	Bachelor of Education
HEIs	Higher Education Institutions
IIUI	International Islamic University Islamabad
SDGs	Sustainable Development Goals

CHAPTER 1

INTRODUCTION

The development of Information Communication Technology (ICT) has changed the communication style of society, the business world, and educational organizations. The emergence of ICT in education has opened many avenues to achieve academic goals smoothly and quickly. In higher education institutions, internet accessibility, availability, and connectivity are helping teachers to adopt the latest pedagogical content and technological knowledge (Behlol & Khan, 2016). Blended learning changed the role of teachers, and the way students learn. Macdonald (2008) says that teachers' job has become more demanding in blended learning; teachers are supposed to design course material for online and traditional face-to-face classes. Their role is more active in developing, evaluating, and giving feedback. Students should also become more involved in writing online assignments and discussion boards in face-to-face and online classes. In Pakistan, 67% of women live in rural areas, and to enable access to education for those women blended learning approach provides a great chance to educate them.

The Christensen institute (2012) defined blended learning as in three-part. 1. Blended learning is a formal program where students have control over their learning. 2. Blended learning combines different learning modalities to create an integrated learning experience. 3. Blended learning takes place in a supervised brick-and-mortar school. Blended learning combines face-to-face and computer-aided learning in a particular teaching and learning atmosphere (Gaol & Hutagalung , 2020). Cloud-based computing, the open-source and open-content movements, social networking, and mobile technologies

convert how society can work, learn, and connect in higher education. Educational technologies both facilitate and involve new teaching, learning, and assessment methods beyond hierarchical, industrial-based content supply models that have exemplified the campus practice for the past century. Google, Wikipedia, Moodle, Blogger, Ning, YouTube, Twitter, Facebook, iMovie, iPad, iPod, and iPhone support planning new ground in rapid, collective, creative, and cooperative knowledge-based communities (Jacobsen, 2011).

Blended learning was from the University of Illinois back in 1963; Stanford devoted resources to their video network in the 70s and 80s; “Blended Learning” The first Learning Management systems (LMS) were introduced in the 1980s. Blended learning has traveled worldwide to be a part of our modern lives. Blended learning is an appropriate way of combining instructions given in traditional face-to-face with different learning technologies, known as a Learning management system (LMS) with open access to the content and an open-source system, Moodle. Blended learning in HEIs improves pedagogy and enhances effectiveness. Access to knowledge increases, social interaction also increases, and blended learning improves learning by adopting different learning strategies, high-quality online content, and customized offline classes (United Nations Educational, Scientific and Cultural Organization, 2017). According to Oliver (2010) blended learning rapidly developed in Higher Education as a popular method for personalized instruction to improve students’ learning. Teachers use blended learning to blend online and brick-and-mortar experiences to provide student-centered learning opportunities for all pupils (Staker, 2013). Teachers use technology to fulfill students’ learning needs by providing online content and instructions and delivering lectures face-to-face (Verma, 2015). Teaching and

technology can be implemented to improve the academic levels of the classroom. Teachers can use blended learning to increase personalized learning (Fisher, 2019; Powell et al., 2015). Fisher (2019) suggests that teachers can design A blended learning methodology based on students' academic learning needs.

A great teacher always tries to adjust to the learner and feels responsible for preparing students for the future workforce, designing content according to the future needs of the students (Alijani et al., 2014). With the help of Information Technology, students and teachers have easier access to literature and other academic resources. Students can download huge files in a minute and do not need to frequently visit the library to issue the books and renew or return them in a limited time. In the same vein, teachers transfer their content material to their students before coming to the classroom for a lecture (Chew & Jones, 2010). Nowadays, most teachers send content to their students through email. Teachers and students can and want to benefit from the educational opportunities ICT can deliver (Bliuc, Goodyear, & Ellis, 2007).

This current study assessed blended learning readiness, perception, and practices at higher education institutions by keeping all the benefits in view. This study also explored how many facilities are provided to the institutions and the challenges prevailing. Therefore, this study could shed light on why a blended learning approach is not applied in higher education institutions' social sciences departments, particularly in education (Coltea, 2022).

Universities could also support rigorous evaluations to see if these technologies complement or substitute for human interaction with traditional school mentors. Finally,

foundations could invest in an accurate assessment (e.g., randomized field experiments) to test the effectiveness of new school models in low-resource settings – compared with traditional public schools – and identify the ingredients driving these effects. Education plays a dynamic role in building human resources. The government of Pakistan is to meet Sustainable Development Goals (SDGs), primarily focusing on Goal 4, which aims to provide good quality education and lifelong learning opportunities for all citizens. It emphasizes improving education by adopting the latest technology trends (Kuenkel, 2021). Throughout history, Pakistan failed to achieve the Millennium Development Goals (MDGs) that demanded upgrading the educational system. SDGs Goal 4 requires equitable education and education of good quality for the country (SDG, 2016).

Today, university students' enrolment in Pakistan is rapidly increasing, according to the Finance Ministry of Education Survey report in 2017-2018. They reported a total number of universities, 186, with 59.9 thousand teachers serving in those universities in the country and 1.6 million enrollment rates of students during those years. This enrolled population comprises the youth of this country. In the last decade (2010-2020), enormous changes can be seen in Information and Communication Technology; higher education institutions are equipped with the latest technologies. In Pakistan, the education system is not uniform. While some students succeed, almost 25 million fail to obtain the necessary life skills. (Education System In Pakistan: Some Flaws And Recommendations, 2022). To prevent students from dropping out, a higher educational standard is needed that meets international criteria and keeps up with the rapid integration of technology in this field.

The more active role of students and teachers in blended learning seems to have many educational advantages. The study of Jumani (2018) presents the views of teachers

and students, which confirm the positive aspects of blended learning practice. E-assessments and feedback improved students' understanding of the content via a learning management system (LMS). Different models are available for adopting blended learning in the education system. First is the replacement model; in this model, lectures are public online that can be put online both partially or entirely, and the class time for lecturing and meeting is reduced. This model allows students to watch videos and read the content before class. Secondly, there is a supplemental model; in this model, students must attend regular courses and access technology-based content as an additional resource. Commercially available resources such as web-based communication applications can be utilized for this model. In the third model, the emporium model, students purely learn material online with the help of instructors or teaching assistants. The last model is the buffet model, and this model adopts both the techniques of face-to-face and online formats (Zhao, 2013).

1.1 Rationale of the Study

The potential for blended learning to improve learning outcomes is not fully realized, as the approach has not been widely adopted in productive ways. According to the World Bank project, Higher Education Development in Pakistan (HEDP, 2019), component 3 prepares students and universities for recent, up-to-date technology to improve Pakistan's teaching, learning, and research environment. According to the project, 800 new blended learning programs should be offered in the next five years. Therefore, preparing a further Information and Communication Technology (ICT) strategy for the higher education sector and laying down the overall vision for using technology is essential. Therefore, for conducting this research, the following reasons are considered:

- i. The government has decreased the budget of universities.
- ii. Access to Higher Education is increasing, and there are limited facilities and a limited Infrastructure.
- iii. Primary, Secondary, and Higher Secondary education are expanding, and so is the HE
- iv. The government has conducted a Successful Digital Skills project on freelancing in Pakistan with the use of an ICT-based platform which shows the potential of Blended Learning.
- v. Blended learning helped in improving the quality of education for existing students
- vi. The Pakistan Education Research Network (PERN) is given to 223 universities, which means state-of-the-art hardware, software, and high-speed Internet are available.
- vii. The Knowledge generation is growing exponentially, and it is time to deliver full content through lectures, readings, etc.
- viii. The teacher needs to be trained with ICT skills to deliver full content and provide a platform to peers for discussing and sharing the experience.
- ix. There is a need to develop content and assessment for a blended learning model, which may contain weekly, monthly, and quarterly milestones.
- x. As most females cannot move smoothly and frequently too significant cities, blended learning is their only ray of hope.

1.2 Statement of the Problem

It was essential to conduct this study to get an accurate picture of the scenario; what are the reasons behind not adopting this method? The question was whether there was a problem with facilities, students' perception, willingness to select this method, or faculty members' capacity. The stakeholders asked these and other similar questions, resulting in a framework for blended learning that was proposed based on the findings. Blended learning approaches may include flexible learning in higher education, improved student engagement, and self-structured learning (Finlay & Tinnion, 2022). The government can play an essential role in the professionalization of blended learning. According to the report on improving the educational system of the Organization for Economic Co-operation and Development (OECD, 2019), the government should focus on training and capacity building of teachers. Simultaneously should be put on developing new models using technology, such as “blended learning” or mentoring professional development and training opportunities for principals, teachers, and administrators.

Universities adopted the blended learning approach in bits and parts but not systematically. The Pakistan Education and Research Network (PERN) connects universities and research institutes through high-speed Internet bandwidth. The primary purpose of this network was to facilitate researchers and students in sharing data. However, communication with each other through video conferencing is not being fully utilized. For those reasons, this study addressed several problems associated with this non-optimal use of blended learning. Whether the faculty members understood the concept of blended learning or not. Did students accept and observe the context of blended learning? Did the institutions provide the facilities for adopting blended learning by conducting this study? A

framework was proposed that ultimately may improve the employability and quality of graduates by addressing some solutions for the challenges institutions face in adopting a blended learning methodology at their institutions. This study assessed the readiness and preparedness of stakeholders for adopting blended learning in Higher Education Institutions by using a mixed-method research design. For assessing readiness researcher used following indicators to measure readiness of stakeholders such as, awareness about BL, practices of BL, facilities for BL and challenges stakeholders facing for adopting blended learning at Higher education institutions.

1.3 Objectives of the Study

This study aimed to assess the readiness of stakeholders for blended learning. To achieve this aim, the objectives of the study were to:

1. examine the awareness of a blended learning approach among university students, teachers, and administrators regarding three areas: resources, education, and the environment.
2. explore the current facilities available for adopting blended learning at Higher Education Institutions
3. assess the practices of a blended learning approach among university students, teachers, and administrators.
4. determine the factors that were associated with blended learning practices at Higher Education Institutions

5. develop a framework of blended learning by identifying the challenges that stakeholders experience and refrain them from adopting blended learning at Higher Education Institutions

1.4 Research Questions

The main question of this study was: To what extent are stakeholders ready to adopt blended learning? To find out the answers, the following research questions were made for the study:

1. To what extent were students, teachers, and administrators aware of adopting the blended learning approach in Higher Education Institutions?
2. Which kind of facilities are available for students, teachers, and administrators to adopt the blended learning approach in Higher Education Institutions?
3. How effectively are students, teachers, and administrators practicing the blended learning approach in Higher Education Institutions?
4. What kind of challenges students, teachers, and administrators are facing in adopting the blended learning approach in Higher Education Institutions?

1.5 Research Hypothesis

H₀₁ There is no significant difference in awareness of a blended learning approach in university students from private and public institutions.

H₀₂ There is no significant difference in the availabilities of facilities for adopting a blended learning approach for university students from private and from public institutions,

H₀₃ There is no significant difference in blended learning approach practices in university students from private and public institutions.

H₀₄ There is no significant difference in readiness for the blended learning approach between male and female university students.

1.6 Delimitations of the Study

The current study was delimited to the federal universities having a social sciences department, i.e., Education. Study objectives were based on teachers, students, and administrators, readiness and perception, practices and facilities, and challenges for adopting blended learning. Secondly, this study was also delimited to Islamabad universities and B.Ed. and (B.S.) Bachelor of Education students. Data were collected from universities offering blended learning: International Islamic University, Allama Iqbal Open University, National University of Modern Language, Federal Urdu university of arts, sciences and technology, Muslim-Youth University. Another delimitation of the study was that the proposed framework could not be tried at a trim level due to time and resource constraints.

1.7 Significance of the Study

It was important to conduct this study to get an accurate picture of the scenario that what are the reasons behind not adopting this method. The question was whether there was a problem with facilities, students' perception, willingness to select this method, or faculty members' capacity. The stakeholders asked these and other similar questions, resulting in a framework for blended learning that was proposed based on the findings. Blended learning

approaches may include flexible learning in higher education, improved student engagement, and self-structured learning (Finlay & Tinnion, 2022). The government can play an essential role in the professionalization of blended learning. According to the report on improving the educational system of the Organization for Economic Co-operation and Development (OECD, 2019), the government should focus on training and capacity building of teachers. Simultaneously should be put on developing new models using technology, such as “blended learning” or mentoring professional development and training opportunities for principals, teachers, and administrators.

The current study benefits all the stakeholders, such as students, teachers, and the administrators. This study helps policymakers understand if stakeholders are ready to adopt blended learning; on that basis, new educational policies can be introduced. This study also helps to sensitize the growing need for blended learning in traditional or formal and distance education. All educational institutions can benefit from this study, irrespective of any department. They could better understand the problem and if there is an issue with access to basic technological resources. Financial barriers may hinder the adoption of blended learning models in educational institutions.

This study can benefit teachers because they can interact with students more efficiently. Sharing content, assigning tasks, and giving feedback would be less time-consuming. Students are concerned with using contemporary technology in their learning. They can access the content material on their self-pace, submit their assignments, share their ideas in the teacher's presence, and relate to their classmates online. Many technological tools can be adopted, such as Microsoft Teams, Skype for business,

Microsoft forms, WhatsApp, etc. The administrators would be able to monitor attendance, share content, assign tasks, and start discussions.

1.8 Operational Definitions:

The operational definitions are used to define the terms used for this study. To convey the relevance and meaningfulness of this study, it is essential to understand these definitions:

1.8.1 Blended Learning

Blended learning is an approach in educational institutions that combines traditional face-to-face teaching-learning with technology-mediated or computer-aided teaching and learning processes. In this study, blended learning is meant to adopt all the web 2.0, such as web-oriented architecture, rich web applications, web-oriented applications, social media websites, and the extension on the internet like web 3.0 with social media applications to help the students learn.

1.8.2 Stakeholders

In this study, Higher education Institution's stakeholders comprise the student, faculty members, heads of the department and universities, and administrators (vice-chancellors, Deans, Directors)

1.8.3 Higher Education Institutions

All those higher education institutions that offer degree programs specifically in the field of Education study are the population of Islamabad universities.

1.8.4 Readiness

Thorndike's Law of readiness refers to preparedness on the part of a learning organism. It spots out that an individual learns only when (s)he is ready in all mental or physical aspects (Thorndike, 1932). In this study, the researcher tried to assess the readiness of students, teachers and administrators by adopting using four indicators of readiness, 1) awareness about BL, 2) Practices of BL, 3) Facilities for BL, and 4) Challenges of blended learning mixed-method research approaches; quantitative and qualitative data were collected to check the readiness and preparedness of the stakeholders. Students' attitudes towards six aspects of learning, namely learning flexibility, online learning, study management, technology, classroom learning, and online interaction, can influence their readiness for blended learning (Tang, 2013).

1.9 Theoretical Framework

The E-learning readiness model served as the baseline of the study. For this study purpose, Psycharis (2005) proposed six views divided into three major categories that are the components of every organization. The proposition of using this model was to check stakeholders' readiness to include an e-learning component with formal face-to-face classroom activities.

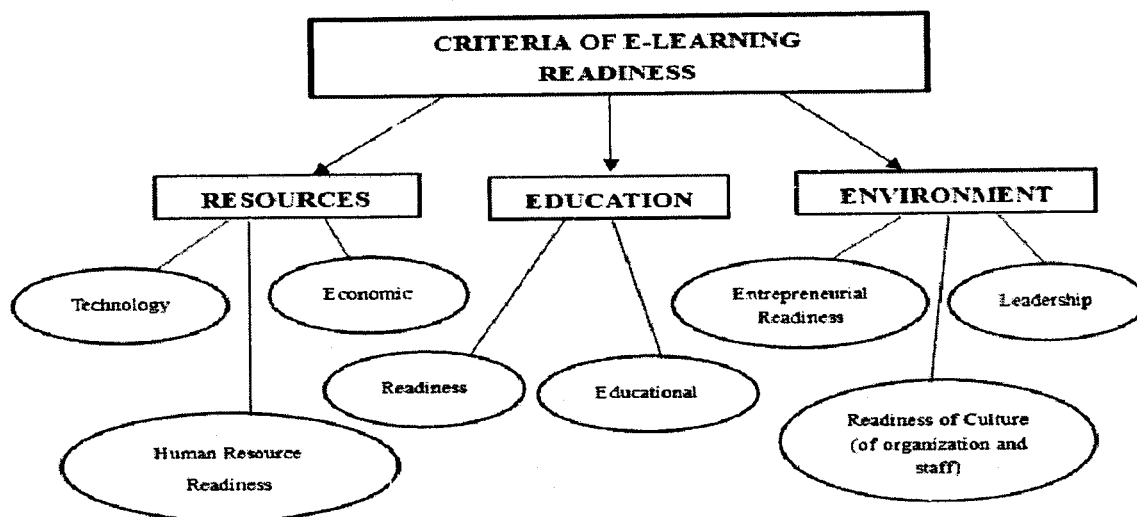


Figure 1.1 Model of Readiness

The following categories are essential in the model of Readiness.

1.9.1 Resources

Technological, economic, and human resources readiness are investigated in this category. In this part of the model, the Researcher would like to know about the facilities, such as bandwidth internet connectivity, laptops, wireless internet connections, and human resources readiness, such as students, teachers, service providers, and finance providers are ready and willing to arrange for adopting blended learning at higher education institutions.

1.9.2 Education

For adopting e-learning or blended learning in higher education, content readiness is essential, such as institutions' readiness for providing personalized learning, personalized teaching, and the efficacy of content. Teachers and other administrative staff's readiness to design e-learning content with face-to-face instruction is included in this category.

1.9.3 Environment

This category includes administrators' readiness, examines the organization's structure, and practices that affect blended learning, the readiness of atmosphere and the culture, and assesses administrators' ability to implement a blended learning environment in their institutions.

1.10 Summary

The Researcher explained the purpose and reason for conducting this research, formulated research objectives, questions, and hypotheses, and presented the study's significance and limitation.

CHAPTER 2

LITERATURE REVIEW

2.1 Background of blended learning

In the current age of information and communication technology, blended learning is one of the approaches to raising the worldwide competitiveness of a nation (Bliuc & Goodyear, 2007). To implement and adopt blended learning at higher education institutions, stakeholders such as students, teachers, and administrators' readiness are essential. In higher education institutions, the teaching-learning process is not static; changes are occurring daily, and the concept of adopting and practicing a blended learning approach is also growing (Kaisinath, 2020).

Nevertheless, whether university teachers, students, and educational and academic administrators are ready to adopt blended learning in higher education remains. The twenty-first century has seen a trend in reconsidering the purpose of instruction and knowledge, primarily based on present teaching and learning approaches using technology-enhanced teaching and learning. Higher Education Institutions (HEIs) integrate technology to progress teaching and use significant resources to assimilate technical setup into existing classroom facilities. Students' desires are endlessly changing, and some technology-rich and flexible learning prospects (Jonathan Bergmann, 2012).

For assessing the readiness of a blended learning approach at higher education institutions, it is essential to understand the key ideas and values of blended learning. However, it is essential to know the background and historical highlights of blended

learning to understand these. Before the advent of blended learning, distance education or distance learning was first introduced by Sir Isaac Pitman in the 1840s by teaching his students' shorthand courses 1 through the post. After that, in the 1960s to 1980s, mainframe computer-based training named Plato (Programmed Logic for Automatic Teaching Operations) was introduced. It was the first time the instructor provided training to a broad audience without having print material and face-to-face interaction. Employees could get training by just logging in to the character-based terminal. From the 1980s to 1990, blended training strategies evolved with the increase in advanced technology. CD-ROMs for video and sound were used in the schools to promote more collaborative learning experiences, and learning management systems (LMS) were introduced. In this era, computer-based instruction was used. In this phase, institutions, with the help of LMS, could monitor eLearning course completion, enrollment data, and user performance (Barbour, 2018).

Blended learning emerged in 1998 with the first generation of web-based instruction. Households and companies bought personal computers for their family members and employees to work on them independently. Blended learning can make it possible for administrators to track students' records and access teaching instructional material (Pappas, 2015). According to Graham (2013), blended learning is an approach where face-to-face and computer-assisted instruction are carried out with variations and differences in the time duration. First, it is essential to understand that the blended learning environment falls within different varieties. For example, 20 percent of the instruction can be given online in one semester, and 80 percent of the work is done through face-to-face interaction between teachers and students. Perhaps, it can be reversed in another semester with a few credit hours being taught face-to-face and the rest of the course material, course

instructions, student assignments, and assessments being done online. Oliver and Trigwell (2005) state that blended learning is teaching rather than a learning approach. By adopting a blended learning approach in teaching, pedagogies provide better and more accurate meanings of concepts of any content.

2.1.1 Early History of blended and online learning

It is impossible to understand blended learning without analyzing the emergence of distance education. In the early days of 1873, Illinois Wesleyan University created a degree program. Then, in 1881, the Chautauqua College of Liberal Arts in New York offered correspondence classes (Douday & Janak, 2018). In the 1920s and 1930s, distance learning emerged in rural high schools in Nebraska and North Dakota, commonly known as correspondence classes, as students communicated via postal mail with their teachers and instructors (Barbour, 2018; Schewirske, Vashaw & Watson, 2018). It was the first-time rural learners had access to classes. Because of this? It means they were more flexible in timing in completing the course. For correspondence, purpose radio became an essential technology to them (Cleveland-Innes & Wilton, Guide to Blended Learning, 2018).

For the first time, with the dawn of radio broadcasting scope, the distance learning mode evolved with emerging technology (Dousay & Janak, 2018). Due to post office correspondence, rural area students must wait a long for their post of correspondence classes. Since the emergence of the radio in education, rural students could easily access it at home. From the early 1910s till the 1930s, the radio broadcast gained its highest popularity in higher education and ask-12 education. Educational research also predicted that the radio could replace the textbook (Apple & Beane, 2007).

Nevertheless, many other educational researchers denied that radio-based distance learning is less efficient and supported than traditional face-to-face schooling (Dousay & Janak, 2018; Moore, 2003). Seles, Fullerton, Berry, and Horn (2004) indicated in the 1930s that "the government announced air channels as the public property and established Federal Communication Commission (FCC) to legalize radio system" (p. 252). In the 1930s, radio learning was ended with commercial interests and new federal radio requirements. Then another phase started, and that was television.

2.1.2 Television

Like a radio broadcast, television significantly impacted formal and informal modes and commercial and noncommercial teaching and learning. The University of Iowa's first educational television broadcast started in 1933, but instead of limiting students at the university, it rapidly extended to teaching the general population (Steel et al., 2004). After World War II, television learning reached its level of popularity not only in educational programming but also in public broadcasting networks. The public and the Researcher both welcomed televisions more positively than radio (Moore, 2003). Just as the radio and television followed the same pattern, in 1950, the Federal Communication Commission (FCC) reserved 242 television channels for noncommercial, educational broadcasting (Neuman, 2011). In late 1952, television gained popularity and introduced modern technology like videotape recorders and cable television. Because of this reason, research extended to make access to education possible.

Therefore, the term "the medium is the message" was famously coined by McLuhan (1964) during the 1960s. Before television, early distance education classes were

developed as online and blended learning stereotypes, predicting theoretical issues with distance learning. These technologies were proven to be the source of quality education in distance learning mode, and students' access to education was more effective with these technologies (Gunawardena & McIsaac, 2004). After the 1960s, the major shift in distance learning can be evident in the eighties.

2.1.3 The Eighties

Federal policies during the 1980s developed theories that reshaped public schools and equipped distance learning with the latest technology. All the roads lead to online and blended learning. Public school leaders educated their students while simultaneously being criticized for discrimination against students and charged to remove deficiencies of learning imposed by federal education policy in the 1980s. It was the first-time distance learning began to closely assess access and equity education (Apple & Beane, 1995). For the first time, distance education was provided with emerging technology, and this transformation of distance learning impressed many educators. In contrast, technology in education was the talk of the town. At that time in the 1980s, if someone looked through the lens of blended learning, there were some issues came in front: The policy of federal education policy named *A Nation at Risk* by (the National Commission on Excellence in Education, 1983), major theories, research, and debates were happening about the use of technology in the field of education, and it highlighted three issues:

2.1.4 A Nation at Risk

Nation at Risk in 1983 was released by the U.S. Secretary of Education (National Commission on Excellence in Education, 1982). This policy was most significant for

blended learning as that policy specifically introduced technology-based classrooms to prepare for the future career and included advanced technology that led the way to blended learning. A Nation at Risk title shocked all of America (Ozman, 2012). As the students in America performed at low sea level in the international students' tests, combined with a slow-moving economy, the perception arose that Americans would not compete in the global economy (Rice & Skelcher, 2018).

Beane and Apple (2007) "As public schools were educating the children, yet economical and social gapes were also blamed on them, by reducing this gap can improve the quality of education" (p.3). This Nation at Risk (National Commission on Excellence in Education, 1983) initiated a back-to-basics movement and demanded school leaders focus more on reading, writing, and mathematics students. Similarly, the report required increasing technology in the classroom to prepare students for the future jobs market (Rice & Skelcher, 2018). The federal policy positively impacted blended and distance learning by equipping technology in the classroom and considering mandatory parts to prepare students for high-stakes testing (National Commission on Excellence in Education, 1983). Regardless of the negative consequences of testing, the federal education policy announced the possibility of distance and blended learning by including technology in the classroom, computers, and other necessary technology to prepare students for qualifying post-secondary success at the federal level.

2.1.5 Framing the Debate: Neil Postman and Seymour Papert

In the late 1970s and 1980s, a major noticeable division was seen by educational experts in the debate on the role of technology and its impact on education students'

learning. For this purpose, Postman (1985, 1996) and Papert (1980, 1988, 1993) presented their opinion about the role of technology in education. Postman was a writer, and his famous book *Amusing Ourselves to Death: Public Discourse in the Age of Show Business* (Postman, 1985). Being a social critic and professor in education, he mainly taught at New York University. He presented some side effects of television on Society; he believed Society's capability of thinking would revert because of television, specifically on people's communication and rational thinking. Meanwhile, he showed that technology and economics in education motivated him to write more books conclusively assessing the impact of technology on American schools and culture; in the book *The End of Education: Redefining the Value of School*, he showed his fear that the use of technology in education could change the meaning of education (Postman, 1996).

Meanwhile, it is evident from his work that Postman (1996) was not wholly opposed to technology, but he always wanted educators and people to analyze technology critically and carefully in education. Likewise, Winner (1980) offered another critical voice concerning technology and media now that artifacts have political beliefs. Winner (1980) advised before including technology in any field, particularly in education, one must understand the political, economic, and historical aspects of the emergence of that technology. On the other hand, Papert (1980, 1988, 1993), the founder of the Media Lab at MIT, responded to the opposing views of authors on technology and presented his stance in the 1960s. Being an educationist, theorist, and computer scientist, he was also one of the researchers in education who supported computers and thought that instead of teachers' control, computers must be used for student-centered instruction.

In his book *Mindstorm: Children, Computers, and Powerful Ideas*, he suggested that students should master computers; this way, their expertise in understanding how to use a computer can help them improve their communication skills and gain easy interaction among teachers and students. Papert also viewed computers as a change agent for Society, particularly for students and teachers; by effectively using computers, students and teachers can enrich their learning and understanding by increasing strong imagination and enhancing better capacity toward learning. Similarly, Papert (1993) supports teachers in taking the opportunity and adopting new technology in education. In the 1980s, the era of personal computers changed significantly, and schools were equipped with computers and television (Kafai, 1995; Papert, 1993). As a result, new free computer programs were offered for the teachers, like San Diego State, which highlighted the opinion that technology must be student-created technology, unlike the common teacher-created and operated technology of the time (Papert, 1993).

2.1.6 Emergence of Distance Learning Theories

In the 1980s, distance education was keenly noticed in higher education. Perhaps the scholars were asked to develop a theory for the distance learning approach (Barbour, 2018; Keegan, 2013). Even though many scholars felt that theory was necessary, many did not feel the theory was much needed. Consequently, scholars and researchers-maintained writing with personal interest but ignored the development of more educational theories or frameworks in the wake of distance education (Keegan, 2013). Despite personal interest in distance education, online and blended learning remains an issue; however, two seminal theories were developed 1) guided didactic conversation and 2) transactional distance

education (Keegan, 2013; Moore, 2007). The Sweden researcher developed the guided deductive theory as a foundation of distance education.

This guided didactic conversation theory was the foundation of distance learning developed by the Sweden researcher (Holmberg, 1988). During the 1980s, another significant theory of transactional distance learning was developed by Moore (Barbour, 2018, Keegan, 2013; Moore, 1980). Both theories were equally beneficial for the students' and teachers' connection to improve student learning and help personalized learning. These theories remain significant for online and blended learning. After the 1980's now, it's essential to see how blended learning was understood in the 1990s'.

2.1.7 The Nineties

The era of the 1990s' was a bridge from the old distance education world to the new internet-based learning. The significant growth of that time was internet-enabled distance education, with which professional educational organizations, technology, and computers made distance learning more effective with email for correspondence. The Society of Information Technology (SITE) Foundation 1990 became an essential organization for educators. In the first annual conference, 42 research papers were published; in 2001, more than 1000 papers were included in the annual conference. This organization helped teacher educators to use and support technology in K-12 education. Distance learning, online, and blended learning played a vital role in this Society (Clark-Madison, 2003).

2.1.8 Telecommunications Infrastructure Fund

At the beginning of 1995, many programs were initiated, and the Texas legislature-funded program was one of them; for the growth and development of education, educators

were facilitated to include technology in the school, such as computers, software, and the Internet. Because of this successful program, Texas House Bill 2128 was passed, funding technology in public and community schools, colleges, rural health centers, libraries, and institutions of higher learning. About \$1 million was appropriated to equip all educational institutions with basic technology (Clark-Madison, 2003). These funds helped educators and other members of Society to provide community service-oriented professionals to invest money for making technology-oriented education. SITE and TIF offered an excellent opportunity to introduce new distance learning, online, and blended learning programs.

2.1.9 Distance Learning Changes: Snail Mail to Email

Students belong to rural areas because they cannot afford conventional education programs; therefore, they receive education in distance learning programs (Schwirzke et al., 2018). Communication mode was either mailing or prerecorded radio or television programs. Still, after the growth of technology during the 1990s to 2000s, distance learning, online and blended learning programs shifted to emails, learning management systems, and other social media platforms for the learning process. However, due to smartphones, Wi-Fi, tablets, and laptops, students can download and submit their assignments anywhere they want to (Rushkoff, 2010).

2.1.10 Educational Technology: The Debate Continues

As discussed earlier, the 1990s brought many changes in teaching and learning. With the revolution of Information Communication and Technology, prominent growth and development are seen in formal and non-formal teaching-learning processes (Oppenheimer, 1997). This development in enhanced education provided a shift in the

decade from the 1990s towards 21st-century skills in blended and online learning.2.1.12
the 2000s to Present Day

At the beginning of the 2000s, a rapid increase in technology and access to technology was seen (Keegan, 2013; Schewirzke et al., 2018). The Internet transformed into a communication platform, and smartphones and Wi-Fi became the norm in Society. The concept of accessing everything in the 20th century is completely changed. Community colleges introduced online classes, and universities started Massive Open Online Courses (MOOCs); not only enrolled but everyone who can access the Internet can join these courses (Barbour, 2018). This passion for technology in education strengthened schools as well as higher education. New federal and state policies adopted technological changes that promoted online, distance, and blended learning (NCLB, 2002; ESSA, 2015). These technological changes opened several paths for blended learning, but the aspect of research in this field remained less than required. The training programs for educators using technology were also not as effective as they should have been (Moore, Shaughnessy & Fulgham, 2008).

2.1.11 Enormous Technological Changes Overflow

In the 21st century, a massive change in ICT occurred, particularly in education, and online learning is a feasible option on a large scale. Much new software and different features of social media with Web 2.0 are included to grow accessible education Arora (2014). Internet connections make everything easily accessible, from content to official meetings, anywhere you are (Keegan et al., 2013). The introduction of Mobile phones and smartphones transformed the students' learning styles. Wi-Fi, internet cable devices, and

packages made teaching-learning more innovative and accessible (Slumkowski, 2012). Philip and Garcia (2013) believe incorporating new technologies, such as iPad initiatives and computers, into student learning may widen rather than narrow the educational gap. On the other hand, they also believe that K-12 schools with devices can contribute to distance, online, and blended learning growth. The development of blended learning goes hand in hand.

2.1.12 Massive Online Open Courses (MOOCs)

At the beginning of the 21st century, MOOCs were initiated by community colleges and attracted many students to take blended learning and online courses by attempting non-traditional platforms (Bischel, 2013). In 2008 MIT, Harvard, and Stanford offered many online classes with free MOOCs for those not enrolled in any institutions (Allen & Seaman, 2014; Harven, 2014). Bruff, Fisher, McEwen, & Smith (2013) believe that MOOCs' popularity fell due to the completion of low rates. While MOOCs courses offered by prestigious universities for higher education helped in many ways for students, they also worked well for capacity building of faculty members to adopt online and blended learning.

The term first appeared in 2008 and is based on a connective distributed peer learning model. In 2011, a few more educational videos were developed by professors from Stanford University and released through open online platforms. These videos were supported with free resources, such as web resources. Many people started using MOOCs (massive open online courses) this year. The number of people using MOOCs continues to grow each day. Later, they established Coursera as an independently profitable technology company in early 2012. The same year, other independent non-profit initiatives such as

Udacity and Udemy were founded. After MIT and Harvard implemented their MITx platform into EdX, other universities followed suit. Other options are days to approach this problem (Baturay, 2015).

2.1.13 The Emergence of Blended Learning

Understanding blended learning terms in one definition is not universally agreed upon (Osgerby, 2013). Blended learning combines traditional learning, like face-to-face instruction and online learning (Butz, Stupnisky, Peterson, & Majerus, 2014). In blended learning mode, students meet their teacher in the institution during a scheduled class time with material provided to them online. This is also the finest way of the face-to-face teaching-learning process in the conventional classroom. With the growth of the blended learning program, students get a rich experience of both the worlds, online and physical classes (Drexler, 2018; Othman, Pislaru, & Impes, 2013).

The rising educational trend for future education in the 21st century demands highly skilled communication for interactive, personalized classrooms with the integration of online and physical classrooms (Kist, 2015). In blended learning, personalized learning is gaining more focus in this century, teachers need more flexibility in the delivery of content, and students' engagement in learning is more appreciated (Kist, 2015). Blended learning brings the best from face-to-face and online instructions to make students' learning environments unique and creative (Lokey-Vega et al., 2018). According to Graham and Dziuban (2008), in blended learning, more focus is given to a holistic approach to learning and giving students a voice and choice rather than just focusing on the method of instruction.

2.2 Conceptual framework of Blended learning

Blended learning combines face-to-face teaching with online teaching, incorporating online learning materials or online learning strategies with in-person contact between teachers and students (Online Distance Learning (ODL) Policy, 2021). In different contexts, Blended learning holds a different meaning. Margaret Driscoll gave three general concepts in 2002, and the BL definition was then simplified by Graham (2012). He proposed 1) blending instructional modalities, 2) blending online and face-to-face instruction, and 3) blending instructional methods (Driscoll, 2002). Blended learning is being adopted in many schools, colleges, and universities worldwide. It is defined as the combination of face-to-face and online learning; blended learning is a "new normal" or "new traditional model" of teaching in which students take some part of instruction online and some in brick-and-mortar. Blended learning integrates almost all learning techniques, such as laboratory sessions, reading material, assignments, and projects.

Blended learning is simply a combination of online and traditional face-to-face teaching. Students can interact with computer-mediated communication skills through asynchronous written messages or emails, while they can also interact directly with teachers and peers in synchronous mode (Hew & Cheung, 2014, pp. 10,11). Allen, Seaman, and Garrett (2008) presented their view that blended learning is a mixing of online and traditional classroom activities; likewise, 1-29 percent of the content delivered online is considered to be web-facilitated (Oliver & Stallings, 2014). Blended learning is a complex term to define with hybrid learning, integrated learning, distributed learning, and flexible delivery content are some of the multiple definitions. Still, the most commonly agreed-

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upon and used definition by different authors is that this approach helps learners learn content material from home or the classroom.

Blended learning is more challenging for instructors because they have to convert teacher-centered activities into student-centered activities; teachers should design activities that students can easily access. Graham (2005) highlights the six complexities of the course designers, which are: (1) students centered and self-regulation, (2) training and support models, (3) balance innovation and production, (4) students' role in live interaction, (5) cultural aspect (6) dealing with digital resources. It is the responsibility of institutions to provide digital facilities and training to the instructors to develop a blended learning course.

2.3 Blended learning in the curriculum of teacher education

To combination of face-to-face instruction and online learning with the use of multimedia and online discussion to deliver a module in the teacher education program received positive feedback from the trainee teachers; this approach is beneficial when:

- Face-to-face tutorials are activity-based.
- Materials given in the CD-ROM are authentic and contextually relevant.
- Marks are allocated to encourage optimum online participation (Khine & Lourdusamy, 2003).

Similarly, Impedovo and Malik (2019) stated that "there is a need to raise awareness of the different and distinctive national and institutional contexts teacher educators are working in and how they affect their practices as well as their opportunities

to develop professionally" (p.10). The quality of teacher-educator training in different parts of the world – in this case, Pakistan - could take advantage of a continuous connection between people, knowledge, and communities, opening new discussion spaces and valorizing learning.

2.4 Blended learning readiness according to a different organization

2.4.1 The United Nations Educational, Scientific, and Cultural Organization

According to UNESCO, since the 1950s, higher education has been striving to reinvent itself, preparing students for succeeding in the job market; twenty-first-century institutions are trying hard to prepare students' competencies in education. In this report, in which several different case studies of various countries were used, it is mentioned that blended learning in higher education institutions looks very easy from a theoretical point of view, whereas, practically, it is complex. First, the institutions mention the vision and philosophy of blended learning; then, a curriculum for blended learning needs to be designed to implement the curriculum. Institutions should have the proper infrastructure, competence, and readiness of students and teachers to adopt this approach must be ensured so that for appropriate implementation of this approach, they must understand how to solve the upcoming challenges in implementing and organizing blended learning at their institution.

Research and evaluation should be considered a priority in a blended learning approach. In addition to all these professional programs, some necessary criteria must be met. Workshops should be regarded as, and infrastructure facilities such as wireless networks, technology-enhanced learning, and digital learning devices should be available

to introduce a bring-your-own-device strategy for teachers and students. To achieve these measures, proper policy & guidelines for higher education institutions, HEI must be presented (UNESCO, 2018).

2.4.2 The Economist Intelligent Unit

The Economist Intelligence Unit has published an annual e-readiness ranking of the 60 largest economies since 2000. It reports about the future political, economic, and business scenarios, and with these reports' publication, many organizations benefit. In 2009, it was the first time that the Economist Intelligence Unit (EIU) analysts provided an e-learning readiness ranking of 60 countries, indicating the use of the Internet in learning in formal and informal education modes. Sweden ranked number 1 out of 60 and achieved the highest score of 8.42. Canada, the US, Finland, and South Korea ranked among the top 5 countries. Whereas Pakistan's stood at 66 number in the ranking, scoring 3.50. This learning readiness ranking was based on four major categories:

- 1) Connectivity; the fast quality and speed of internet infrastructure for e-learning readiness. This category includes whether the Internet is readily available in a society, including rural areas. Also, it fits if people can use mobile phones and broadband connections and if personal computers are readily available to all.
- 2) Capability reflects the country's willingness and ability to e-learning readiness.
- 3) Content reflects the excellence and extensiveness of online learning materials.
- 4) Culture, behaviors, views, and institutions that support e-Learning expansion within a country (The Economist Intelligence 2009).

2.4.3 *Blended Learning in Commonwealth Organization viewpoint*

The Commonwealth of Nations is a group of countries that are all former territories of the British Empire. The commonwealth organizations are based on fifty-six independent member countries in Africa, Asia, the Americas, Europe, and the Pacific. It helps in countries' economic The Commonwealth is home to one-third of the world's population and includes both advanced economies and developing countries (wikipedia.org, 2022).

The Commonwealth of Learning produced a detailed guide to blended learning for teachers. In 1999 a simple learning management system (LMS) was introduced in a very initial stage. In 2000, information and communication technology were carefully infused, and computers were used to meet the everyday needs of education. Blended learning provides an opportunity to interact with students to students, students with teachers, and students with content. Garrison and Vaughan (2008) defined blended learning as a careful combination of face-to-face and online material. The same students enrolled in an in-person class attend a physical classroom and learn some material provided to them online at their own pace and pace space. Students enrolled in any academic blended learning program can take some subjects entirely online and some topics of that program completely online (Martha Cleveland-Innes, 2022).

Technology integration is not per se blended learning, such as synchronous and asynchronous are not necessarily blended learning. The instructional designer must be aware and skilled in designing the activities program safety. Security is also essential to keep in mind while designing a blended learning course, with Student readiness, internet connections, devices, and the use of ICT. Blended learning readiness relates to the learners' readiness. This overall evaluation of the institution for adopting technology-integrated or

blended learning readiness includes the resources institutions must-have for this approach: blended learning approaches and designs in higher education (Cleveland-Innes & Wilton, 2018).

2.5 Blended learning approaches and designs in higher education

Blended learning in Higher Education offers a vision and roadmap for higher education faculty to understand the possibilities of combining face-to-face and online learning for a successful and meaningful learning experience. Blended learning is defined as the means to connect face-to-face and online learning. Due to rapid changes in information and communication technology, the learning demands of the new generation have changed. The new generation understands concepts differently. And it doesn't seem easy to make them choose between conventional or online learning. Therefore, blended learning is the best option, and traditional concepts can be taught using information and technology. Blended learning is not an addition of expensive layers to educational experiences. However, the written components can be communicated online through the Internet, whereas, for oral communication and discussion, the face-to-face session will help understand complex concepts (Garrison & Vaughan, 2008, p.26).

Macdonald (2008) stated in her book that with web 2.0, distance technology in higher education has grown fast. Teachers can access the limitless resources of the web. Blended learning allows students to connect with the electronically supported community instead of working isolated. Blended learning and blended teaching strategies are not confined to the traditional brick-and-mortar online but to online media internet connections asynchronous such as emails, wikis, blogs, and forums. Also, it meets synchronous

purposes such as skype, chats, and other direct online interactions that can be used for teaching-learning purposes (2008, p. 4,5). Similarly, Graham, Allen, and Ure (2005) stated that blended learning improves pedagogy, flexibility, and cost-effectiveness.

It is evident that moving some class hours is time-saving blended learning promotes individualized learning, students learn at their schedule, and the chances of revision and remedial of complex concepts are increasing. Cost efficiency is also an important part that cannot be denied. Blended learning is a valuable model for integrating technologies and a more flexible engagement of teachers and students. Remote learners from remote areas or some other countries can access classroom activities that increase the learner's involvement. Internationalization and globalization have changed the students' learning needs and demands, and the blended learning approach is the best way to fulfill this need (Kitchenham, 2011).

Kitchenham (2011) presented a blended learning model for high flexibility and fidelity (minimum face-to-face interaction, maximum text-based online instruction), emails, mobile-based instruction, or blogs. Any asynchronous activity increases flexibility and loyalty if there is ultimate face-to-face teaching and a minimum of online teaching. The third level is when commitment and flexibility are high, i.e., when asynchronous videos of the same lessons are available to students alongside face-to-face classes. Blended learning is significant for higher education institutions as adult learners are occupied with fulfilling family responsibilities, work burdens, and other personal assignments. Therefore, mixing traditional classroom learning with online learning increases the success rate. Furthermore, it is evident from different sources that purely online courses or distance

mode is less successful because, in the online method, students cannot access the instructor (Kenneth Nwanua Ohei, 2019).

Therefore, blended learning is the most effective as students can ask about any query from their instructor (Hew & Cheung, 2014, p.13). When designing blended learning courses in higher education, these three considerations can be made (1) Contextual considerations, including the appropriateness of topics and subjects that match students' learning abilities. Teachers design content, set objectives, and provide instruction to facilitate differentiated learning, which requires a high degree of creativity and organization of activity. It also requires teachers to understand the blended learning models they need to incorporate into their instructional design. (i) the rotational model, (ii) the flex model, or (iii) the a la carte model to be used for instructional design in blended learning courses, (2) instructional strategies and didactic considerations, and this component requires teachers to move from traditional classroom instruction to blended learning, where teachers are required to make instruction student-centered and to incorporate learner-based activities such as case-based, problem-solving and task-based learning into the blended learning environment.

Another benefit is communication tools, such as writing material on assigned wiki pages, twitter-like tools. The whole communication and interaction need to fulfill specific learning goals. A blended learning environment enhances community interaction; teachers give small group forums to build teams for discussion, and students help meet deadlines. Such as Garrison and Vaughan (2008) introduced a community of inquiry framework to; design elements; enabling discourse; traditional instruction; and assessment, and (3) technology consideration; in this age of technology, teachers need to be aware of the

challenges and opportunities of adopting different technological tools in teaching-learning process (Oliver & Stallings, 2014). Similarly, Akaslan and Law (2011) use information communication technology (ICT), including any technological tool such as computers, television, Internet, radio, etc., to disseminate, control, or manage or store information electronically.

ICT use is spreading in every field, from social to business, especially in education. Blended learning is the careful integration of ICT in the field of education, such as mixing pedagogical methods and philosophies, including technology or without technology; various styles and instruction delivery and methods; a mix of face-to-face with technology; supplementing traditional with online instruction; systematic scheduling and face-to-face with online integration using technologies (Torrissi-Steele & Drew, 2013). Integrating technology into the classroom is not easy for every teacher and learner. Therefore, using online tools for educational purposes, designing content, managing time, monitoring students' work, training teachers, and building capacity is the most crucial element in the blended learning environment. (Linjawi & Alfadda, 2018).

According to Ohei and Brink (2019), the framework of adopting social software for blended learning gives support to the teaching-learning process, not a replacement for traditional instruction. In higher education institutions, HEIs, with the emergence of information communication technology such as web 2.0 and web 3.0, teachers and students gain more knowledge to use ICT for teaching-learning purposes and help teachers and students attain learning and instructional goals quickly. Information and communication technology in education is called Learning Management systems (LMS) which helps students learn at their own pace and time. It provides flexibility, self-directed activities,

accessibility, skill-building, and increased availability to enhance students' learning experiences and motivate them. The learning management system allows students to solve learning problems independently; academics' role changes from "Sage-on-Stage" to "guide-from-side." Where there are uncountable benefits, there are many challenges in adopting a learning management system, such as academic unpreparedness being a frustrating element in using (LMS) (Psycharis, 2005).

Wills (2015) indicated that using the learning management system in higher education institutions' the readiness of stakeholders such as(teachers, students, and academics) is essential. Academic readiness is the willingness and preparedness of students, faculty members, and other supporters in institutions to use technology tools in teaching-learning activities. Another challenge in using the learning management system is university readiness; are they equipped with the infrastructure (server) needed to adopt blended learning or use the learning management system in HEIs? Is there a better bandwidth (internet connectivity) available? Then there is student readiness, a big challenge that they lack experience using LMS, and a lack of technological expertise creates hindrances in completing the learning task on time (Dlalisa & Govender, 2020).

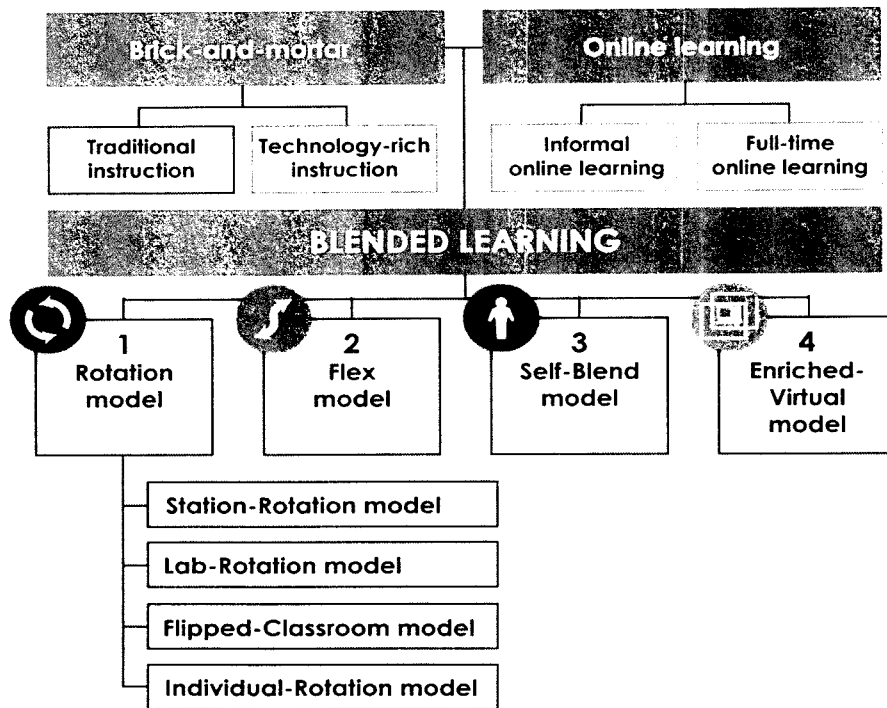
Student teachers' and administrators' readiness, content, human resources, and financial and security readiness are essential and significant in blended learning instructions (Darab, 2011). In a systematic review, Naveed, Muhammad, Sanober, Qureshi, and Shah (2018) suggest that institutions may recommend technology-based instruction for active learning. As in the millennium development goals, more focus on quantitative education, such as more schools open, more teachers recruited, and a maximum enrollment of the students, was ensured. However, in the later stage, the Sustainable development

goals focused on quality education rather than quantity education. Therefore, keeping the relevancy in view, quality education can only be ensured when the traditional content is merged with the latest instructional technology, and blended learning is one of the best ways to increase the quality of education (Garcia, 2013).

This literature review shows that the blended learning approach does not create hindrances but eases the teaching-learning process. The blended learning approach could connect the students with teachers in Pakistan, and content and peers can also be attached. The latest tools are available on every student's laptop Microsoft team, and teachers can use that tool in synchronous and asynchronous ways. With these and other instructional tools, teachers can guide the students because it is now challenging to escape education from technology. Few universities in Pakistan adopt this approach, but many do not know the importance and benefits of blended learning. This study may focus on the causes of not implementing or taking a blended learning approach to higher education institutions (Jumani, Samina, & Humaira, 2018).

This study assessed the preparedness of the students and teachers to produce a blended learning environment that addresses students' values, priorities, and needs in higher education institutions. A review of previous research and theories relevant to this study can provide a foundation for understanding how blended learning is significant and how it increases pedagogical qualities and learner outcomes in a blended language learning environment. In this chapter, the literature is reviewed in the three-dimension, (1) Readiness of teachers and Students, (2) and Blended learning in higher education, (3) Background of blended learning, (4) Blended learning concerning a different organization.

2.6 Models of Blended Learning



© Innosight Institute, Inc.

Figure 2.1 Blended Learning Models (Innosight Institute, Inc. 2012)

Blend of face-to-face and online learning can be taken in many ways; some standardized models for adopting blended learning by the commonwealth organization suggest three main models such as 1) blended presentation and interaction, 2) Blended block model, and 3) entirely online. In the first model, primary stress is put on face-to-face interaction with some online learning materials provided to the students. It is also flipped classroom concept. In this model, personalized and individualized learning can be done; students can access the material independently and study to aid their classroom lectures. The second blended block model is also called the program flow model, in which, with face-to-face classroom learning, fixed tutorial classes are conducted, which is also blocked-

in respect to time and pace. The third model is fully online blended learning, such as combining synchronous (direct online tutoring) and asynchronous (online discussions, emails, etc.) classes (Martha Cleveland-Innes, 2022). Four incredibly significant instructional models of blended learning (Horn & Staker, 2015; Powell et al., 2015).

2.6.1 Rotation Model

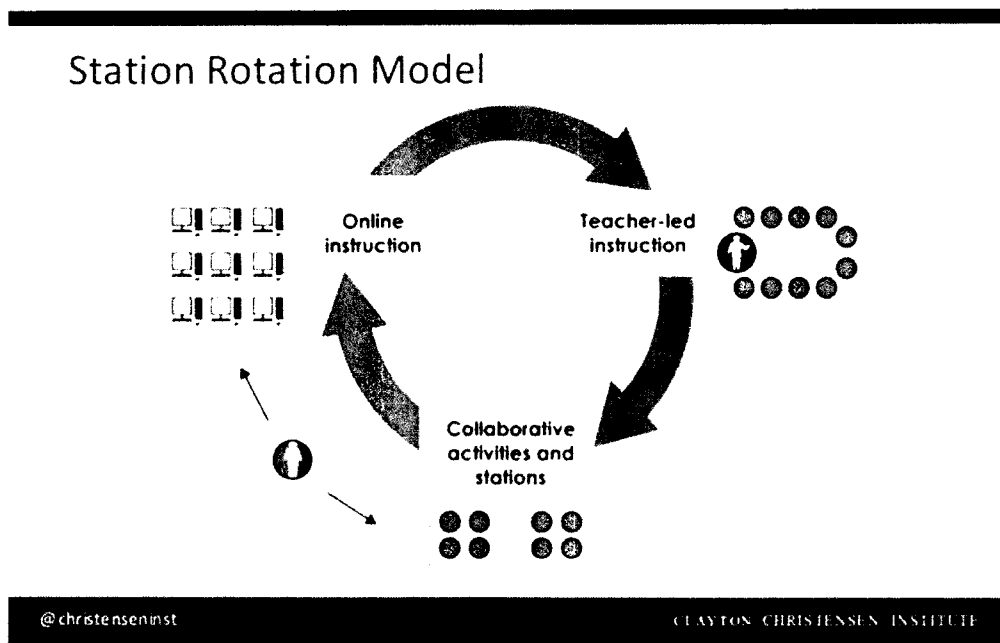


Figure 2.2 Blended Learning: Rotation Models (Innosight Institute, Inc. 2012)

In this model, student learning rotation is a teacher's responsibility (Christensen Institute, n.d.; Horn & Staker, 2015; Kieschnick, 2017; Powell et al., 2015). In addition to the online component, the teacher uses whole-group-based instruction, small-group, one-on-one, peer group, activity-based and project-based, and paper-pencil activities. The teacher decides all the above-stated modes and who can be included in which group. The teacher controls the number of time students spends in each way of learning. This is a teacher-centered model in which the teacher decides for all instructional designs' methods

and content, which content should be online, and which content shall be group or individual instruction-based (Horn & Staker, 2015; Wills, 2015).

Whenever students need to adapt online material, teachers utilize technology-enabled adaptive learning experiences. For k-12 schools, four types of rotation models are famous: This rotation is the preplanned lesson of the teacher to enhance students learning experience in a single classroom or multiple content areas through defined, assigned activities (Christensen Institute, n.d, et al.,2015). In the rotation model section, four sub-sections or models are provided; 1) Station Rotation Model, 2) Lab-rotation Model, 3) Flipped Rotation Mode 4) Individual- Rotation model.

2.6.1.1 Station Rotation Model

The Station Rotation Model is the most familiar blended learning model in K-12 schools and is as good as how teachers, mainly those in primary grades, have organized learning facilities for years (Christensen et al., 2013; Horn & Staker, 2015; Kieschnick, 2017; Powell et al., 2015; Prouty, 2014). Students rotate over-scheduled learning practices within single or multiple classrooms centered on a subject matter (Christensen Institute, n.d.; Horn & Staker, 2015; Kieschnick, 2017; Powell et al., 2015; Prescott et al., 2018; Wills, 2015). Learners rotate through the allocated events when the instructor declares or suggests that it is the moment to step up to the next activity (Christensen Institute, n.d.; Horn & Staker, 2015).

2.6.1.2 Lab-Rotation Model

This model is designed mainly the same as the Station Rotation Model, apart from learners putting away the physical space of the classrooms for the online segment (Christensen Institute, n.d.; Horn & Staker, 2015; Powell et al., 2015; Wills, 2015). This model necessitates a different workforce position to administer pupils in the computer lab but reduces the sum of students in the classroom operating through other rotations with the instructor, independently or in groupings (Horn & Staker, 2015). While another organization member in the lab is directing learners, classroom instructors still take advantage of data from the online part to take command across sense modalities (Horn & Staker, 2015; Powell et al., 2015). Access to technology has grown, and teachers in numerous school localities rely on computer labs to incorporate technology (Christensen Institute, n.d.; Horn et al., 2011; Horn & Staker, 2015). A Lab Rotation Model of BL requires the learner to rotate from the classroom to a computer lab for online learning practices (Christensen Institute, n.d.; Horn & Staker, 2015).

2.6.1.3 Flipped Rotation Model

The flipped classroom is a sub-model of rotation where learners flip on a fixed plan between face-to-face teacher-guided projects on campus throughout the regular school day and online transfer of content and teaching of the same subject from a distant position, mostly at home after school (Staker & Horn, 2012). It is a very widespread sub-model in institutions today. This sub-model guarantees that with the more demanding school features, the learners work on assignments and projects with instructor support. Christensen (2017) identifies the Flipped Classroom, where the traditional association between

classwork and homework is flipped. In a flipped classroom, students are expected to learn online coursework and lectures at home as the time spent at the school aims at directed practice and projects. Therefore, the classroom atmosphere moves away from delivering conventional teaching techniques. This blended learning approach is mixed with an independent study via technology with face-to-face interaction.

Before coming to class, students watch pre-recorded videos at home and are equipped with questions that give them some background knowledge of the content being taught at the institution (Bishop & Verleger, 2013). The flipped classroom concept expands learners' access to the teacher in person. In contrast, the videos at home and over again in the classroom give them the opportunity for personalized learning and more careful direction for learning. In this model, students learn under the guidance of an instructor while having access to content on their own. (Bishop & Verleger, 2013). In the Flipped Classroom Model, instruction is designed to give more explicit instruction content outside class and provide content online so that students pay attention to the practice or projects provided by the teacher (Bergmann & Sams, 2012; Christensen Institute, n.d.; Horn & Staker, 2015).

Using the flipped rotation model, teachers flip the tasks so that content delivery takes place outside the classroom while applying precious class time to engage learners in realistic learning activities (Bergmann & Sams, 2012; Horn & Staker, 2015). Learners in a flipped classroom setting take part in online learning or lectures separately and utilize the time in the classroom for face-to-face teaching and assistance (Bergmann & Sams, 2012; Horn & Staker, 2015; Powell et al., 2015; Wills, 2015). Learners have gained access to the digital material required to focus on their personalized learning requirements and work on

their own time to attain mastery (Horn & Staker, 2015). The teacher's role inside the classroom is teaching and instructing (Bergmann & Sams, 2012; Horn & Staker, 2015).

2.6.1.4 Individual Rotation Model

The individualized rotation model is the sub-model of the rotation blended learning model. This model allows students to take different types of classes. Instructions can be with the teacher inside the classroom, online learning, or collaborative learning; this rotation can be remote or classroom based. In this model, students learning tasks are scheduled, indicating which learning task to be taken and when it could be done, and on that schedule, students can rotate identifying lessons to be done from the playlist (Staker & Horn, 2012). The Individual Rotation Model is more customized for learners since they do not rotate through the same learning capabilities across the institution's day (Christensen Institute, n.d.; Horn & Staker, 2015).

Pupil learning practices are specifically geared to their individual needs, so they have a specific playlist of tasks created (Horn & Staker, 2015). Instructors or adaptive software produce personalized playlists for learners to rotate over the school day (Horn & Staker, 2015; Powell et al., 2015). Each student has an exclusive daily program built on their current learning needs (Horn & Staker, 2015). Students will likely carry out personalized tasks within the rotation (Powell et al., 2015; Wills, 2015).

2.6.2 Flex Model

Flex model: This blended learning model is well suited for institutions serving many non-traditional or at-risk students. The course content is principally given online,

with teachers being offered on the spot to help as required. However, learning is predominantly self-guided. Learners learn individually and perform new ideas in the digital world. This approach is integrated into the institutions focusing on learners' behavior and educational and socio-economic challenges (Christensen Institute, n.d.; Horn & Staker, 2015; Powell et al., 2015; Wills, 2015). In these institutions, students spend a lot of time on computers in a learning lab, following a qualified teacher. The teacher is offered to support and improve students writing and reading in small-group work.

2.6.3 The Self-blend Model

The third blended learning model is titled the self-blend model. In this model, learners take one or more programs online to add to their conventional programs and the teacher-of-record of the online instructor (Staker & Horn, 2012). This blended learning model is essential because it is not an institutional experience - only individual learners or programs are registered - and they pay some time on campus and at home. Self-Blend Model Common in high schools, this blended learning model allows pupils to get classes beyond what is previously presented at their institution. These students could attend a conventional school environment and can also be decided to aid their learning through online courses given. For this blended learning model to succeed, students' motivation matters more.

2.6.4 The Enriched-virtual Model

The final blended learning model is called the enriched-virtual model. An enriched-virtual model is a complete-school event in which, within each program, learners separate their time between attending a brick-and-mortar campus and learning slightly using online

delivery of content material and teaching (Staker & Horn, 2012). Many schools now utilizing this model started as entirely online schools but want to offer services and support that would require a brick-and-mortar location. The Individual Rotation, Flex, A La Carte or Self-blend, and Enriched Virtual models are good examples of distracting models of blended learning (Christensen et al., 2013; Horn & Staker, 2015). The Station Rotation, Lab Rotation, and Flipped Classroom models of blended learning support hybrid revolutions because they include traditional face-to-face and online learning (Christensen et al., 2013; Horn & Staker, 2015). Along with these models, a few more models are used for blended learning.

2.6.5 Online Lab Model

Online Lab Model As schools cope with progressively more challenging resource limitations, the online lab model of blended learning is a feasible opportunity for helping students achieve course objectives. In this model, pupils learn completely online but travel to a committed computer lab to carry out their work. Adults regulate the lab and permit learners to work at a pace and in content that fits them with no impact on the learning situation of other students. (Horn et al., 2011; Horn & Staker, 2015; Powell et al., 2015).

2.6.6 Online Driver Model

In this model, students take their courses entirely online. The online program can provide a way of interaction between the student and the teacher. The Online Driver Model is perfect for students who demand a high level of flexibility and individuality. Additionally, there are many modifications to blended learning models. A blended learning method is like a hybrid car that can be effective but still be called a hybrid car (Horn et al.,

2011). Researchers discovered that courses were incredibly diverse in how learners experienced their learning through numerous factors, including planning or scheduling, delivery methods, teachers' role, and physical aspects.

Graham (2009) suggested that blended learning can be implemented in a wide variety of contexts and depends on the purposes for applying and implementing Blended learning at different levels, such as (1) the program level, (2) the course level, and (3) activity level and (4) course level. Hence, "models at the course and activity level have teacher participants mainly involved in learning efficiency and output. In contrast, blended learning at the program and institutional levels usually have supervisor investors who are often focused on problems of expense usefulness and developing learning approaches to untouched viewers" (Graham, 2009, p. 376).

2.7 Impact of Blended Learning on Student Engagement

The use of blended learning influences student engagement and achievement. The use of blended learning influences student engagement and achievement. Whether the content is science or mathematics, blended learning improves student engagement and demonstration, learning objectives and assessment, and the purpose of the devices - no significant results were found. Nevertheless, their statistical analysis showed no negative relationship between the course strategy and student work. Suppose a teacher's layout of a blended learning course is purposefully concentrated on the four standards reviewed in the Jagers and Xu study. In that case, improved student work and employment probability can happen.

According to Ozman (2012), diminishing to provide quality education to all, even by chance, is a "moral failure" that "will have dire effects on the American economy" (p.1). In the rapid growth of demographics of America for the American economy" (p. 1). With the fast-growing demographics of color in America, reducing the success gaps between these intensifying groups can increase not only in the current educational world but also in the future of Society. For greater sustainability and to lower the gap in achievement among student-teacher, administrators, and educational leaders, educational reformers should use the blended learning method (Yair, 2000; Castle and McGuire, 2010). Extensive work has been done to bring educational reforms; still, social and institutional elements are included that reproduce in an academic setting (Yair, 2000).

2.8 Role of the Higher Education Commission (HEC)

In Higher Education Commission Development in Pakistan, a project is a World Bank-endorsed project (USD. 400 million). It supports HEC in necessary strategic fields of research and development, developing higher education quality and funding to affiliated colleges, leveraging technological resources, and capacity building of faculty/ staff across the National Academy of Higher Education (NAHE). Project Development Objectives are to support research quality in tactical areas of the economy. To improve teaching-learning, strengthening It/ governance in the higher education sector. There are six components, and component 3 is to equip students and higher education institutions with modern technology (US\$ 52. 70 million). Following the creation of HEC, importance was laid on the optimal use of information technologies to improve chances for higher education. Taking benefit of these developments, a group of aspiring programs of computerization, networking, service

delivery, application development, etc., are proposed around the panel in the higher education sector in Pakistan. To address this, Component 3 will level up the IT programs of HEC and the higher education sector and endeavor to achieve the targets stated in the vision 2025 document. A key feature is to acquire the latest higher education technology and make it available to universities in Pakistan at a reduced cost. These systems will significantly improve the efficiencies of these institutions. Below are the key activities under this component:

1. Update policy framework for ICT, online learning, and cyber security.
2. Establish High-Performance Computing Services (HPC).
3. Expand cloud services.
4. Develop blockchain and Identity and Access Management (IAM) systems.
5. Acquire Learning Management Systems (LMS) for Higher Education Institutions (HEIs).
6. Upgrade of ERP solution at HEC.
7. To implement the data warehouse and Business Intelligence platform.
8. Implement a blended learning tool, including developing a central MOOCs (Massive Open Online Courses) platform. (Higher Education Development in Pakistan (HEDP), 2022).

2.9 Pros and Cons of Blended Learning

Blended learning provides the learner with various benefits, such as working collaboratively, conveniently, and flexibly with instructors and learners from diverse fields of education. Educational institutions took advantage of the internet facility and made their content material available for the learners; the assessment process was conducted online. From 2000 till today, blended learning has increased its utility in education (RiceShannon & Skelcher, 2018). Despite many scholars' disagreement on the benefits of technology (Reevas, 1998), many educators believe that technology helps teachers improve pedagogy for learning, not teachers' replacements. Blended learning is a brilliant fusion of online and face-to-face learning experiences. Blended learning combines online, face-to-face instructions and practical resolutions for individual cases, helps work students, promotes self-directed learning, and brings greater equality to education (Nikolopoulou, 2022). Blended learning gives many opportunities, including collaboration, flexibility, interaction, and virtual citizenship.

In blended learning, technology is integrated with traditional classroom teaching, with its essential benefits to teachers' and students' creativity, flexibility, convenience, and independence. Osguthorpe and Graham (2003) indicate that by adopting blended learning, several benefits can be gained like: pedagogical richness, social interactions, individual agency, cost efficiency, and revision. However, the drawbacks of blended learning are also there, such as (a) Implementation cost, the cost of developing a setup and implementing a blended learning approach, the cost of placement of an online program may be high, (b) lack of IT skills, (c) more work for teachers, (d) chances of misusing online platform, and (e) work disturbance are some of the cons of adopting blended learning at educational

institutions. Along with this, some disadvantages were mainly regarding technical issues, internet connection, and infrastructure issues (Alfalahi, 2022), feeling of anxiety and boredom, limited internet connections, lack of lab sessions, and little university support (Iqbal, Ashiq, Rehman, Rashid, & Tayyab, 2022). Nikolopoulou (2022) says that Blended learning requires better-prepared teachers, a sometimes very confusing program of studies, a lot of difficulties in organizing the classroom, and a lack of familiarity with technology are some of the drawbacks of this BL approach.

2.10 Summary

Chapter 2 consists of a literature review, including descriptions and definitions of the main concepts, a historical background, and a discussion of different models of blended learning to address the needs of twenty-first-century learners. Major points discussed in this chapter were definitions of blended learning, the chronological sequence of emergence of blended learning, and models such as the online driver model, online lab Model, Flex model, and enriched virtual Model.

CHAPTER 3

RESEARCH METHODOLOGY

This study aims to assess the readiness of students, teachers, and administrators for blended learning at Higher Education Institutions in Pakistan. This chapter outlines the numerous techniques and actions utilized to achieve the study's goal. The section in this chapter develops the research plan while considering factors such as sample selection, sampling techniques, and questionnaire development for data collection. This chapter also briefly summarizes the quantitative and qualitative procedures used to analyze the data. For the data collection process, the researcher required approval for this study from the International Islamic University, Islamabad. Written consent was obtained from the Supervisor and the co-supervisor (Annexure I). The researcher confirmed that the data were analyzed confidentially.

3.1 Design of the Study

This study employed both a qualitative and a quantitative data collection method. A qualitative research process allows researchers to increase a general overview of the research's perspective and describe data based on numerous contributions. It deals with research methods, such as grounded theory, ethnography, case studies, narrative research, and phenomenological research (Creswell, 2009). Because the current study used a mixed method, the results of the data were triangulated in conclusions.

3.2 Population of the study

The study population consisted of students, teachers, academic heads, and administrators of education departments from public and private sector universities in Islamabad. Table 3.1 below shows the total number of people in the population of the Education faculties in the universities of Islamabad, limited to the federal universities having an education department' B.S Education and B.Ed. programs students to assess readiness and perception, practices and facilities, and challenges for adopting blended learning. International Islamic University, National University of Modern Language, Muslim-Youth University, and Allama Iqbal Open University.

Table 3.1

Total Population Size

Population	Size
Students	32038
Teachers	292
Administrators	50

3.3 Sample & Sampling Technique

A sample of students and teachers was drawn from the universities having a department of education. The administrator data were collected from the administrators of public and private sector universities in Islamabad. Selecting a suitable population that provides meaningful data for addressing the research questions is essential. The researcher, therefore, selects an appropriate sample to answer the research questions well. This study

used a proportionate sampling technique, the most suitable technique that articulates and supports “proportional and significant” collection between the population (Teddlei & Yu, 2007).

This study was conducted in all public and private universities and affiliated colleges with education departments to assess stakeholders' readiness for blended learning. The target population for this study consisted of Students, Teachers, and Administrators. The study employed proportionate sampling technique. Based on their study program, a proportionate sampling technique was used to draw from the students enrolled in the Bachelor of Science (B.S) and Bachelor of Education (B.Ed.) programs. According to Pickard (2013), proportionate samples are assumed to be closer to the mean score of the population, and therefore it is appropriate for this research. A proportionate sampling technique was used to select a sample of students and teachers at the universities chosen by using the “Rule of Thumb” by John Curry. The formula that determined the size of a sample was as follows.

Table 3.2

The sample size for the study

Study Groups	Population	Sampling technique	% of sample	Sample size
Students	32038	Rule of Thumb	5% $n/$	435
Teachers	292	Rule of Thumb	20%	58
Administrators	30	Proportionate Sampling		30

3.4 Instruments

The researcher developed a closed-ended questionnaire for students in the quantitative research part of the data collection. The questionnaire consisted of two parts; first portion consisted of taking demographic information of the students. The other four sections were constructed to understand students readiness through' perceptions, awareness, practices, and facilities and challenges of blended learning. For the construct the instrument seven items were constructed to understand the awareness of blended learning, nine items were included in the questionnaire focusing on the practice of blended learning, and five items were added to find out how much support they have received in implementing blended learning. Seven items were included in the questionnaire to understand the challenges they face in not implementing blended learning properly. (Appendix No. III). The interview guide was developed for teachers' readiness for blended learning. In the same way, the researcher constructed an open-ended questionnaire (interview guide) for faculty members and administrators to understand their perception, facilities, funding, capacity-building programs, and technological facilities in their institution to adopt blended learning (see Appendix No. IV &V).

3.4.1 Participation in Qualitative Research

A proportionate sampling sample was used for the qualitative part of this study to investigate teachers' and administrators' views of blended learning as a teaching method. The proportionate sampling technique is used to understand an in-depth phenomenon for this qualitative research study. According to Patton (2015), smaller sample sizes used in

qualitative research are decisively selected by researchers to use a detailed examination of a particular phenomenon.

3.4.1.1 Description of Sample

The participants in this study were male and female students from all the Islamabad universities in Pakistan. The researcher collected data by personally visiting the institutions and using google Forms for online data collection. A total of 435 responses were received. There were 205 male participants and 230 female participants in the sample. Of 435 respondents, 319 were from a bachelor's program, and 116 were from a master's program. Also, 235 respondents were from public institutions, and 200 were from Islamabad's private institutions (see table 4.1). The researcher constructed an interview guide for of 51 teachers and 27 administrators. Each interview was scheduled at a convenient time and location for the participant and lasted from 20 to 30 minutes. All interview participants followed the open-ended questionnaire. The researcher approached some of them personally, and for some respondents, Microsoft teams, google meet, Google Docs, and zoom interviews were taken.

Table 4.1

Numbers and percentages of respondents

Category	Respondents	Frequency total No. 435	Percentages out of 100%
Gender	Male	205	47.1
	Female	230	52.9
Institution	Public	235	54.0
	Private	200	46.0
Program	Bachelors	116	26.7

3.4.1 Reliability and Validity of the Instrument

3.4.1.1 Reliability

According to Creswell (2009), the term reliability refers to whether scores for the items on a questionnaire are internally reliable, whether they are consistent over time, and whether there is consistency in test administration and scoring (p.233). In this study, the researcher conducted a pilot study of thirty randomly selected respondents from universities in the Rawalpindi division of Pakistan to ensure the internal reliability of the instrument. This calculation was based on the overall questions. In this study, the researcher conducted a pilot study of thirty randomly selected B.Ed. Student respondents from universities in the Rawalpindi division of Pakistan to ensure the instrument's reliability. The Cronbach's Bach alpha reliability score was .837.

This pilot study was based on overall questions. The questionnaire developed for this study was administered at the public and private sector universities of Islamabad of 435 participants. The reliability of the survey instrument used in this study was evaluated by calculating the internal consistency coefficient (Cronbach's Alpha). The Cronbach's Alpha for all the items was .863. Since there were four subsections in the survey, Perception, Practices, Facilities, and Challenges, the researcher calculated Cronbach's Alphas separately for each dimension to measure the consistency of scores across items within each dimension.

The Cronbach's Alpha coefficient calculation for the perception section was .801, and for the practices, the section was .826. It was possible to increase the values of Cronbach's Alpha coefficient for facilities and challenges of blended learning in the sub-

sections of the questionnaire by removing some specific items. Still, the researcher decided to keep all items included in the survey because the overall Cronbach's Alpha coefficients values were already high. It shows that there is sufficient consistency among the questionnaire items. Cronbach's Alpha coefficients were low for the facilities and challenges sections, respectively .568 and .564. It was unexpected because the availability of facilities and challenges are not a reflection of a one-dimensional underlying construct.

Table 3.3

Current Reliability Coefficient

Sections of Questionnaire	No. of Items in Questionnaire	Cronbach's Alpha
Perception & Awareness of BL	7	$\alpha=.801$
Practices of BL	9	$\alpha=.826$
Facilities of BL	5	$\alpha=.568$
Challenges of BL	7	$\alpha=.564$

A five-point Likert-type scale was used for this questionnaire, and it was arranged from SA=Strongly Agree=1, A=Agree= 2, Neutral=3, to SD=Strongly Disagree=5. The lower the score, the more optimistic participants' attitude toward the readiness for blended learning. The response options ranged from 1 to 5, allowing enough adaptability to generate reliable results.

Table 3.4

Reliability of the Questionnaire

Reliability Statistics	
Cronbach's Alpha	N of Items
.863	28

3.4.2 Validity

The term validity is used for drawing meaningful and valuable inferences from scores on specific instruments (Cresswell,2009). Frey (2006) defines validity as how the instrument measures what it is supposed to measure. The instrument used in this study was based on content validity from several types of validities. Content validity examines how the questionnaire items measure the content domain (DeVellis, 2003). An expert reviewed the research and survey design instrument used for this study. The experts gave the researcher some helpful feedback and suggestions on different sections of the instrument to improve the quality of the items in the questionnaire. Experts in survey methods offer blended learning reviewed the items adequately and validated the questionnaire's items. Based on the experts' opinion, the researcher modified and changed some instruments and removed some items suggested to her. Both the quantitative and the qualitative questionnaires were validated for content and construct validity by an expert in blended learning. The questionnaires were then disseminated for the final data collection.

3.5 Data Collection

The data collection process of this mixed-method research study consisted of two modes; First, a Closed-ended questionnaire was used to collect data from students. All students enrolled in B. Ed 1.5, 2.5, and 4-year programs were considered the population for this study. Quantitative data were collected from all public universities of Islamabad with social sciences, specifically the education department. The data collection was online, and the researcher visited to get responses. Secondly, open-ended questionnaires were used to collect data from teachers and administrators. Also, some respondent interviews were taken online using google meet and Microsoft Teams. To collect data from teachers and administrators, the researcher conducted online google Forms, synchronous meetings, and personal visits.

3.6 Data Analysis

This Quantitative data were analyzed by adopting the Statistical Package of Social sciences (SPSS version 22). Whereas for the qualitative data analysis Atlas. Ti. Version 22 software for qualitative data were adopted.

3.6.1 Quantitative Data

Quantitative research deals with quantity and numbers to describe the study's findings. This method uses descriptive analysis and inferential statistics, such as calculating mean scores and standard deviations, comparing means with two variables, a t-test and two variables ANOVA, and conducting correlation and regression analysis (Creswell, 2003). Until the late 1990s, researchers discussed the authenticity and validity of combining qualitative and quantitative data to analyze research questions (Tashakhori & Teddlie,

1998). Currently, this approach has significantly been accepted, and the use of a mixed-method approach has been commonly utilized in the field of social sciences (Creswell, 2015). This study aimed to assess the blended learning readiness among stakeholders at higher education institutions.

This aim needs a holistic vision and guides us towards using a mixed-method research approach to comprehend better the perception, readiness, practices, and challenges of adopting blended learning. A mixed-method research approach leads us to conclude effectively rather than adopting only a single research method (Creswell, 2015). On the other hand, due to the Covid scenario, teachers and administrators were hardly present at the campuses. Therefore, online interviews were recorded; some were through google forms, and some were taken via google meet and Microsoft teams. In this study, quantitative data were gathered through a survey method, and data were collected on a single constructed questionnaire. At the same time, the qualitative data were gathered through an open-ended questionnaire for teachers and administrators.

The mixed-method research design focused on collecting, analyzing, and interpreting qualitative and quantitative data in a single study to understand the research problem better. Data were collected using online resources such as google docs and others. The study included online questionnaire circulation and personal visits from the various participants. For data collection, prior permission was taken from the institutional heads. According to the Rule of Thumb (mentioned above in table 3.2), before the data collection, the intended students' sample size consisted of 435, and the intended teachers were 58. Almost 80% of the responses were received online, whereas personal visits gathered only 20% of responses.

During data collection, most students were not present on campus, and online access to all students proved to be more fruitful as the maximum number of students responded, and the sample of students surveyed was increased, resulting in a total of 435 students responding to the questionnaire. The researcher used a proportionate sampling technique for students from bachelor's programs enrolled in B. Ed 1.5, 2.5, and 4 years for the quantitative data collection process. Programs were selected. The researcher developed a closed-ended questionnaire to collect data from 435 students. The researcher then analyzed the data using the SPSS version to understand students' perceptions, challenges, and awareness of blended learning.

3.6.2 Qualitative Data

This mixed-method study aimed to understand stakeholders' perceptions of blended learning as an instructional methodology for addressing the needs of numerous students. The growth in technology in universities has impacted education dynamics in the 21st - century. Many teachers are not prepared to integrate technology to conduct pedagogical practices that can offer personalized learning. (Greer et al., 2014; Harasim, 2017; Horn, 2010; Means et al., 2010, 2013). Blended learning is an instructional method that has rapidly become common, with Higher education instructors adopting this approach for quality education (Means et al., 2010; Powell et al., 2015; Suprabha & Subramonian, 2015; Wills, 2015). A qualitative research design is suitable for learning teachers' experiences' essence as they improve pedagogical practices to support 21st-century learners (Patton, 2015).

This design allowed the researcher to study teacher practices focused on providing a student-centered learning method by a blended learning instructional approach. Investigating the teacher's perception throughout the whole procedure, from professional development to classroom application, permitted the researcher to understand better how teachers use instructional methods for individualized learning. On the other hand, qualitative research techniques do not consist of statistical calculations or numbers. They are closely connected with words, sentiments, thoughts, and other aspects that cannot be quantified. The primary source of data collection for this study was conducting individual interviews with teachers and administrators based on the research questions guiding this study. "Interviews produce quotes from respondents about their feelings, knowledge, views, perception, and experiences" (Patton, 2015, p. 14).

Along with the face-to-face interviews, the researcher also used google forms to collect the data from the respondents; due to the Covid-19 pandemic scenario, many teachers were not available on campus; therefore, the researcher also collected data through Google Forms. The researcher constructed an interview guide with an open-ended questionnaire during the interview process (Patton, 2015). Each interview was scheduled at a convenient time and location for the participant and lasted from 20 to 30 minutes. All interview participants followed the open-ended questionnaire. The analysis began with transcribing the interview data collected from participants during the interview process. Deductive analysis of the interview data allowed the researcher to discover patterns and themes from the interview data collected in this study (Patton, 2015).

The consistency of patterns that emerged from the different data sources and reasonable explanations to explain the differences when they occur contributed to the

credibility of the findings in this study (Patton, 2015). The data were analyzed by documenting the initial responses and followed by a coding process to investigate the data for the everyday lived experiences of the respondents. Preliminary codes were grouped to classify common themes from the qualitative data.

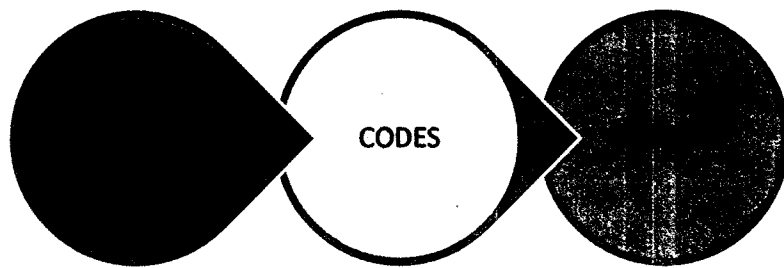


Figure 3.1 Thematic Analysis

3.6.3 Summary of the qualitative data

The researcher used a proportionate sampling technique to select participants to assess the current skills of teachers applying a blended learning methodology to meet the various learning needs of 21st-century students. For this reason, the data were collected from fifty-one teachers and twenty-seven administrators involved in a blended learning environment. The interview participants were learning and working collectively to enhance teaching and learning through the practical usage of technology. Understanding the perceptions of teachers and administrators involved in online and blended pedagogical practices to meet the needs of all learners best can theoretically benefit both students and teachers.

3.7 Summary

Chapter 3 highlighted the research methodology and design of the study. This study consisted of a mixed-method research design, in which quantitative data collected from students were analyzed with descriptive statistics and inferential tests such as Analysis of variance (ANOVA) mean score for objectives No 1 and 3. The qualitative data were collected from teachers and administrators using an open-ended questionnaire to analyze this data Atlas. Ti software was used. Qualitative data were converted into themes following codes to understand teachers' perceptions about blended learning at higher education institutions.

CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

In chapter 1, the researcher focused on providing information on the blended learning readiness of students in undergraduate degree programs, focusing on the criteria of resources, education, and environment. Likewise, the researcher wanted to assess the role of administrators and teachers to identify their readiness for the requirements mentioned earlier.

In chapter 2, the researcher provided a literature review describing how blended learning emerged, its theoretical background, and blended learning models. Moreover, in chapter 3, the researcher presented a logically selected mixed methods methodology using closed-ended questions for the student survey and open-ended questionnaires for the teachers and administrators. Chapter four results of the data analyses could be presented straightforwardly. The chapter is divided into two parts first part is quantitative analysis, and the second part is qualitative analysis. Interviews were conducted to analyze the perceptions of teachers and administrators to identify common themes from the data. The researcher transcribed each interview to begin the process of coding.

The researcher developed codes from the data, and in the following analysis, the researcher constructed themes from those codes. Data were collected from fifty-three interviews with teachers and university administrators. An open-ended questionnaire was used to collect data from the respondents to understand their perception of adopting blended learning in bits and parts. The participants answered open-ended questions based on a semi-structured interview protocol.

4.1 Quantitative Analysis

This quantitative part of the study aimed to investigate the perception, awareness, practices, and challenges that affect students' readiness to adopt blended learning at Islamabad universities. This first part of the chapter describes the data's population, sampling percentages, and descriptive statistics. The second part tested the hypotheses associated with the research questions, and a chapter summary can be given.

4.1.1.3 Perception of Students about Blended learning

Table 4.2

Percentages of responses in students' perception of blended learning

S. No	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	BL Training for Teachers and students	34.5%	49.7%	10.1%	2.3%	3.4%
2	Blended learning reinforces learning	23.4%	52.0%	14.0%	6.2%	4.1%
3	BL encourages self-directed learning.	18.2%	47.8%	19.5%	11.5%	3.0%
4	In BL, useful material is used.	17.0%	52.9%	20.7%	6.7%	2.8%
5	BL improves integration skills.	12.0%	33.3%	22.1%	25.3%	7.4%

6	BL is more effective than a conventional Mode.	12.0%	31.0%	22.8%	26.7%	7.6%
7	In BL, academic tasks are more efficiently done.	14.0%	43.2%	20.7%	18.2%	3.9%

The responses of 83.9% of the participants agree that teachers and students need training regarding blended learning. Of the participants in the study, more than 75.4% agreed that the material used in blended learning is more effective than in the online classroom. Similarly, 66.0% think that blended learning encourages self-directed learning, and 69.9% responded that useful material is used in blended learning. 45.3% of respondents say blended learning improves their integration skills. 43.0% say that blended learning is more effective than conventional learning. And 57.2% say that academic tasks such as teaching-learning are done more efficiently in blended learning mode.

4.1.1.4 Students' perception of Practices of Blended Learning

Table 4.3

Percentage of Practices of Blended Learning

S.No	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	BL makes responsible for self-learning	23.2%	50.3%	19.1%	6.2%	1.1%
2	BL helps get self-knowledgeable	19.8%	55.9%	15.2%	6.7%	2.5%
3	Students are experienced in exploring information from the web	14.0%	39.8%	23.0%	18.4%	4.8%
4	Learners find BL easier than a conventional method	14.0%	46.2%	21.4%	14.7%	3.7%
5	BL helps in getting mastery of the subject matter.	15.4%	36.6%	21.8%	21.6%	4.6%
6	Learners in BL classes are more interested than in conventional classes	10.8%	46.0%	21.4%	18.6%	3.2%
7	University provides satisfactory services for BL	10.8%	46.0%	21.4%	18.6%	3.2%
8	Learners are satisfied with BL activities.	12.2%	49.4%	22.1%	13.3%	3.0%
9	With BL, time is					

efficiently managed 16.1% 49.7% 15.4% 13.6% 5.3%

73.3% of the respondents stated that they possess essential resources for practicing blended learning at their institutions, and 75.7% also confirmed that blended learning encourages them to learn more actively. 53.8% of the respondents also perceive that experiencing blended learning improved integration skills. And then 60.2% of the respondents say blended learning is more effective than conventional learning, that it helped put perform. 52.0%, BL is easier than conventional. 56.8% of respondents say they understand the subject matter knowledge more through blended learning. Similarly, 61.8% of respondents favored blended learning 65.8% of respondents believe that in the blended learning model of instruction, time is efficiently managed for learning activities.

4.1.1.5 Facilities in the institution for adopting blended learning.

Students were asked about the facilities included in blended learning, such as whether they are satisfied with the technology used in online learning, such as the learning management system. Are they satisfied with the use of different software and hardware? Do they feel they get sufficient learning material while conducting a blended learning program? Administrators must provide the teachers with the required technical support to adopt a blended learning approach at higher education institutions.

Table 4.4

Facilities available at institutions for blended learning

S.No	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	Online learning tool satisfaction among students	14.0%	54.3%	16.1%	12.4%	3.2%
2.	Additional learning material is provided in BL	2.5%	53.6%	23.0%	8.3%	12.6%
3.	LMS is user friendly	12.4%	53.6%	20.7%	9.7%	3.7%
4.	Teachers provide technical support	14.0%	43.0%	23.9%	12.6%	6.4%
5.	Essential resources for BL are available at the institution	37.0%	40.2%	11.5%	6.4%	4.8%

The data shows that many people have all the facilities required for blended learning. More than 70% of the respondents are satisfied with the technology and software they use for online/blended learning. Then more than 50% of the respondents indicated that they had been provided with the additional material required for conducting blended learning. More than 80% of the respondents agree that they have been provided with sufficient technical support by their teachers and administrators.

4.1.1.6 Challenges for Adopting Blended Learning

Table 4.5

Challenges to adopting blended learning.

S.No	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	Slow internet connectivity	14.3%	38.6%	29.7%	13.6%	3.9%
2.	Outdated Material	18.2%	46.0%	22.5%	9.9%	3.4%
3.	Factor creating anxiety among students	15.6%	45.3%	23.0%	13.1%	3.0%
4.	BL is more challenging than face-to-face	9.4%	46.4%	26.4%	15.2%	2.5%
5.	The issue in course designing for BL	11.7%	34.5%	22.5%	25.3	6.0%
6.	Superficial Deadlines	15.4%	39.3%	24.4	17.9%	3.0%
7.	Only the Lecture Method is used	50.8%	18.9%	11.3%	9.4%	9.7%

There are many challenges to conducting a blended learning program, like communication, available funding, digital infrastructure, security problems, teacher and student well-being, and time management. In the questionnaire, some related questions were asked to the students about learning in blended learning mode. The question about slow internet connectivity revealed that this is a real problem; 52.9% of the students responded that they face significant challenges in online classes or learning and uploading material online.

Students were asked about the quality of the learning resources, and 64.2% of the respondents agreed and strongly agreed that outdated learning resources are utilized.

The researcher also asked students whether the non-availability of teachers during discussion forums creates anxiety. Results show that 15.6% of the students agree with this statement, while 46.4% of respondents strongly agreed that without a teacher/lecturer, students' anxiety levels increased. Students were asked whether the practice of blended learning is more demanding than conventional learning, and 9.4% agreed, and 46.4% strongly agreed that this is the case. Students were asked about superficial deadlines in blended learning activities that cause failure, and 15.4% agreed, while 39.3% strongly agreed. Also, 50.8% agreed, and 18.9% strongly agreed that usually, course content is not appropriately arranged in blended learning. Teachers only use the lecture method, and that creates the element of boredom.

4.1.1 Inferential Analysis

Preliminary analyses: In this part of the quantitative analysis, the researcher presents the inferential analyses with correlation tests and analyses of variance (ANOVA). The data analysis collected for the quantitative part entailed using inferential statistics on the numerical data produced by the five-point Likert scales for assessing students' readiness. First, the researcher calculated composite scores for the subscale's awareness ($N = 44$, $M = 2.46$, $SD = .67$) and practices ($N = 435$, $M = 2.46$, $SD = .68$). (See table 4.7).

Table 4.6

Correlation of Awareness and Practices of Blended Learning

Correlations			
		Mean Awareness	Mean Practices
	Pearson Correlation	1	.712**
Mean Awareness of BL	N	435	435
	Pearson Correlation	.712**	1
Mean Practices of BL	N	435	435

** . Correlation is significant at the 0.01 level (2-tailed).

The Pearson Product Moment Correlation was the statistical test used to inspect the relationship among these subscales. There was a significant correlation between students' awareness and practices, $r(435) = .71; p < .001$. It means that students who were more optimistic about blended learning in general also indicated that they practiced it more often. A two-way ANOVA with awareness of blended learning was performed to study the differences in awareness between men and women and private and public institutions.

Table 4.7

ANOVA Between Gender and institution for Mean awareness of BL

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	.305 ^a	3	.102	.225	.879
				501	
Intercept	2264.435	1	2264.435	2.51	.000
				5	
Gender	.114	1	.114	.251	.616
Institution	.023	1	.023	.051	.821
Gender * Institution	.198	1	.198	.439	.508
Error	194.707	431	.452		
Total	2563.679	435			
Corrected Total	195.012	434			

a. R Squared = .002 (Adjusted R Squared = -.005)

Results of table 4.8 show that the interaction effect between gender and institution for the awareness of blended learning was not significant ($F(1,44) = .44, p = .51$). Also, the main effect of an institution and the main effect of gender was not significant ($p = .508, p = .61$). There are no differences in mean awareness based on gender or the institution's affiliation. In Figure 4.1, this lack of effects is visible. All groups score relatively low on the awareness scale, meaning there is no significant difference between public and private institutions for adopting blended learning.

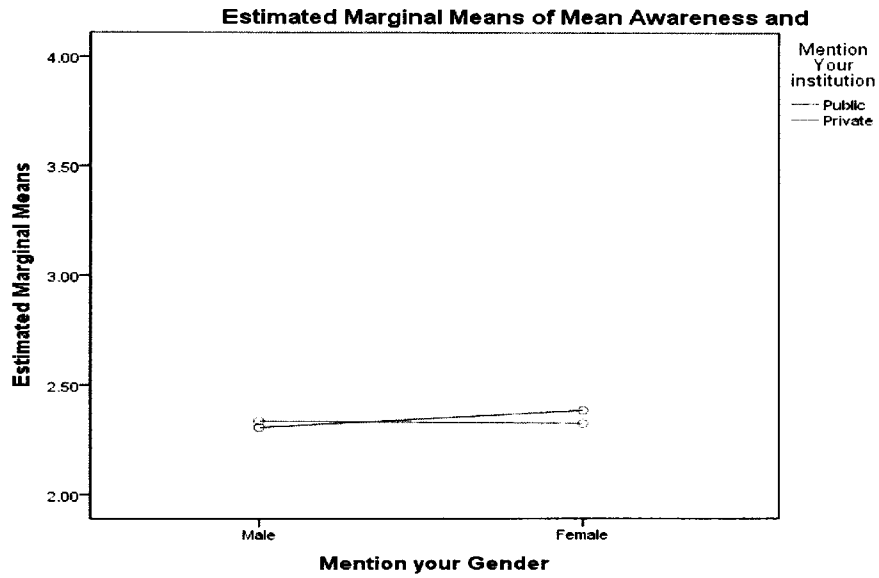


Figure 4.1 Mean of awareness in Two-way ANOVA between gender and institutions

Table 4.8

Mean Practices of blended learning Two-way ANOVA Between-Gender and institution

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	.311 ^a	3	.104	.221	.882
Intercept	2501.922	1	2501.922	5333.649	.000
Gender	.268	1	.268	.571	.450
Institution	.070	1	.070	.148	.700
Gender * Institution	.023	1	.023	.048	.826
Error	202.175	431	.469		
Total	2831.160	435			
Corrected Total	202.485	434			

a. R Squared = .002 (Adjusted R Squared = -.005)

Results of table 4.9 show that the interaction effect between gender and institution for the Practices of blended learning was not significant ($F(1.44) = .049, p = .148$). Also, the main effect of an institution and the main effect of gender was not significant ($p = .82$). There are no differences in mean practices based on gender or the institution's affiliation.

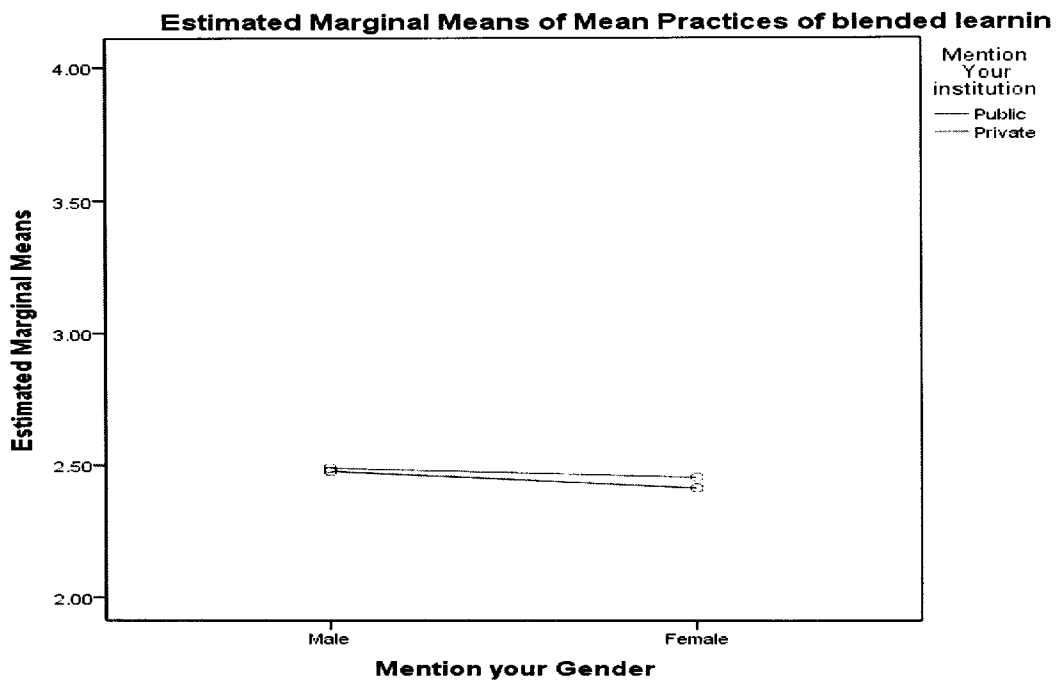


Figure 4.2 Mean of Practices in Two-way ANOVA between gender and institutions

4.2 Qualitative Analysis

A proportionate sample of 51 teachers participated in this study. There were 15 Female and 37 Male Teachers. There were 20 Lecturers and 15 Assistant professors, whereas 16 were Associate professors at Higher Education Institutions.

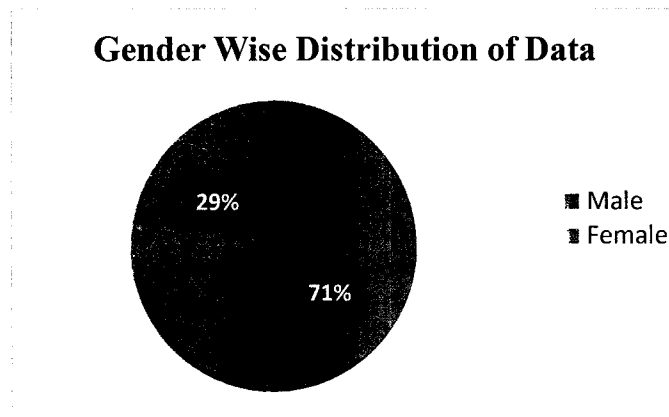


Figure 4.3 Teachers' Participation in Qualitative Research

The data collected from administrators show that a description of a proportionate sample of 27 administrators from higher education Institutions was collected for this study. Data shows that there were only six female and 21 male administrators that responded to this research study of the administrators; for the qualification category, 55.6% possessed doctoral degrees, 14.8% of administrators were post-doctorate, 22.2% were MS/MPhil degrees, and only 7.4% administrators had bachelor's degree, see Figure 3.3.

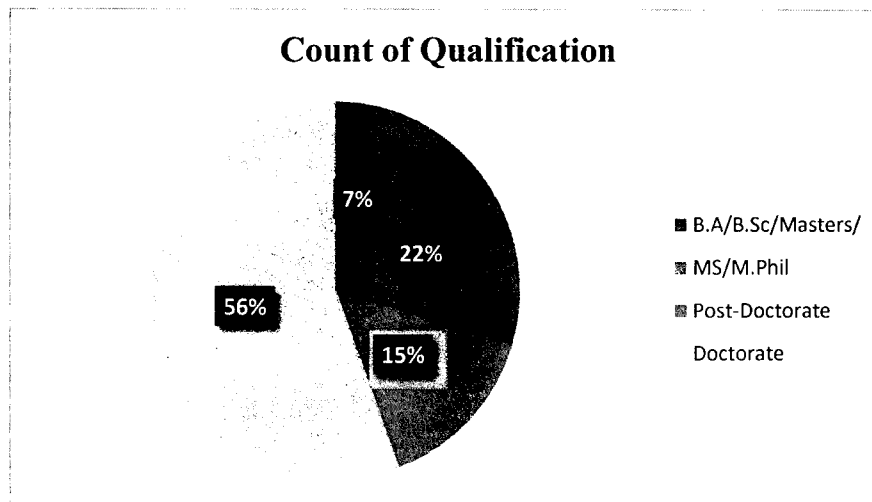


Figure 4.4 Administrators' Qualifications for Qualitative Research

4.2.1 Perception of University Teachers of Blended Learning

The Records of fifty-three research interviews and open-ended questionnaires were imported into Atlas. T. I (version 22) to be able to code the qualitative data. This software supported the organizing and interpreting of the data. The transcriptions were coded to find theoretical potentials shared in the interviews. During the coding process, any related opinions that come to mind about the data or research question are documented in the form of Microsoft Word and imported into Atlas T.I. to be coded as well.

There were 14 codes identified from the obtained data. The open-ended qualitative data received from teachers were divided into facilities, Perceptions, Factors, and Practices. Those responses which did not indicate the proper codes were marked as Unclear codes. The primary codes of blended learning are listed below, together with their roundedness, concentration, and code groups. As every code created offered relevant information,

fourteen codes were generated. Five primary codes and nine supporting codes were examined more closely.

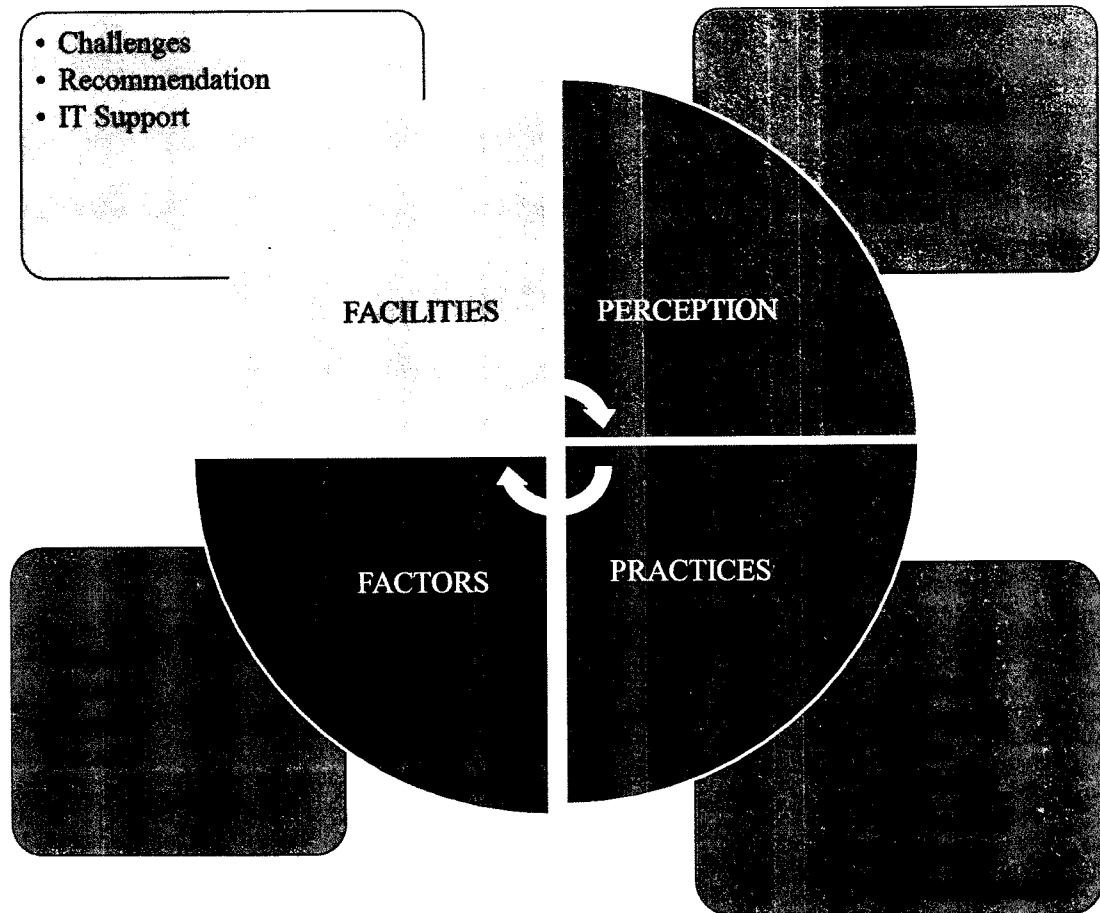


Figure 4.5 Perception of University Teachers of Blended Learning

4.2.2.1 Theme: Perception of Blended Learning

Item 1: What is your perception of professional learning experiences using a blended learning methodology?

1. Code: Benefit

Item 1: What is your perception of professional learning experiences using a blended learning methodology? Teacher participants responded to this question by describing their experiences adopting blended learning practices at their institution. Teachers indicated that blended learning enhances proactiveness in teaching methods as they must prepare lectures before their actual delivery in class. Moreover, they also say that is blended learning method benefits the students by enhancing personalized learning and is an excellent alternative to teaching huge classes. Also, it is timesaving. Both teachers and students regularly interact through the Learning Management System. For example, one of the teachers responded: *“Blended Learning, in particular, helps students increase their interactions, communication skills, self-confidence, and self-awareness.”*

Some other teachers showed their views: *“My experience is good because I have learned new modes of online teaching and got familiar with the use of Google Meet and similar software.”* Similarly, another teacher shared her view: *“It is flourishing and will be used with more zeal and Zean in the future.”* Teachers also feel that blended learning helps students learn in several ways; one of the teachers said, *“It can Promote deeper learning, reduce stress, and increase student satisfaction.”* Teachers also noted that it is a suitable methodology for working professionals as it allows participants to explore the material and results in meaningful discussions. In general, teachers shared their positive perceptions of blended learning. They viewed blended learning as facilitating and effective for learning, and some viewed it as the need of the hour. Whereas some teachers view blended learning as an asynchronous learning method, others think blended learning is a hybrid mode of learning.

Some teachers were optimistic and indicated that blended learning would improve with time as it has the advantage of greater flexibility over traditional classrooms. One teacher shared her experience that the method focuses on developing both parties (teachers and students). For example, this teacher is also quite satisfied with this approach:

“My experience with the blended learning methodology is quite good. However, I faced problems during the Spring of 2020 but was quite well adapted in the later semesters. It is a great opportunity for the teachers to learn online teaching skills as this will be the teaching method in the future”.

It is evident from the responses that teachers also talked about the (lack) of available resources along with the benefits and positive aspects of blended learning. They feel that there is a need to improve the system of time and resources. For example, one teacher said,

“In the present situation, blended learning is good, but the time I have available to plan such activities is limited, and as a teacher, I would certainly opt for it if the resources were available on both sides - students and teachers.”

Most teachers responded that blended learning saves time, cost, and resources and enhances understanding. It is a good option, and teachers said blended learning is the future; even if we keep living in the past, we plan to opt for this opportunity. Do teachers indicate? That At least 3 to 4 sessions should be conducted online. Students must use the best resources available on the LMS. Some teachers shared their experiences: *“Our institution was the first to provide tablets to teachers teaching quantitative subjects since spring 2020. The institution is ready to provide all facilities to the faculty in this regard”.*

Teachers responded that this methodology rescued teachers and students from educational gaps by teaching and learning online during COVID-19. Some say that this approach may be employed for broader coverage of students. It is a highly regarded and renowned form of learning that ensures professional learning. They say this methodology has become a mandatory part of the teaching profession. Some emphasize this: *“In this era of technological innovation, employing technology-driven teaching approaches helps teachers effectively learn students. This significance of blended learning has become more vital, especially in the pandemic.”*

Teachers also shared that during COVID-19, face-to-face instructions were shifted to online learning. Some of them said that it has the advantage of greater flexibility over traditional classrooms. In teachers' perceptions, they say: *“Blending learning is a new technique coupled with traditional classroom teaching and Online activities to enforce the learning. Using modern technologies makes teaching and learning easier and more interesting.”* However, some teachers view blended learning as a shift from face-to-face education to an online mode. Therefore, they say that this methodology was only an option during COVID-19.

Many teachers say that teachers can visualize and track each student's progress with blended learning. This process can make it easier to identify signs of a student struggling or signs of students with specific strengths. Teachers can then act upon them accordingly. The learning methodology employs both traditional and non-traditional approaches during the teaching and learning processes. One of the teachers shares that blended learning is one of the best modes for professional learning experiences: *“I believe that blended learning is more economical and efficient than face-to-face learning, especially for the professional*

development of working-class teachers. They may enhance their knowledge and skills through this medium.” Similarly, a teacher says:

“My experiences with MOOCs and GOCs have suggested using this approach to foster professional development and learning. It was good at the university level, not like physical, but still good enough to be used alternative mode in such situations. Digital media and traditional instructor-led classroom activities give students more flexibility to customize their learning.”

On the other hand, some teachers believe that blended learning could be helpful for the current scenario during the pandemic. Still, in the long run, this methodology is not much effective for physical science or vocational degree programs. And they think they could shift to traditional classroom teaching. They also feel *“It will take some time, maybe 7/8 years, to adjust to this change”*. But some teachers consider blended learning very effective. They say online activities, exercises, quizzes, information gaps, and vocabulary games can make this approach more compelling.

One of the teachers shares his experience:

“I have worked in a blended model for quite some time and feel that you can direct and plan the development for yourself. If you are technologically advanced, then you can smoothly impart blended education. And this is good practice in a country like Pakistan where teaching loss due to certain reasons could be compensated by arranging classes via video tutorial”.

Also, shifting from traditional learning to a mixed method is suitable for teachers and students and saves time. It is ideal for reinforcing the taught or shared concepts or

ideas. Most teachers believe that blending learning helps students explore technology and use different tools or techniques for learning, for example, PowerPoint, Virtual classrooms, Video lectures, etc. The teachers deem blended learning improves the quality of education and information assimilation while making teaching more efficient and productive. For example: *"With blended learning, teachers can visualize and track each student's progress. I believe both teacher and students will benefit from this experience internationally, and this practice is widespread; we are developing courses in blended learning."* In the views of blended learning as professional learning, teachers say that using blended learning is fine if the learner can keep up the pace of the taught skill.

Teachers believe capacity-building events and a manual for students and teachers are needed for the hour. However, they got used to and trained to deliver a hybrid teaching mode with time. It is only suitable when the teacher keeps all students engaged in reading, writing, discussion, etc. Teachers also believe that as it's the need of the era so students should be involved in multiple platforms to learn things. Teachers need to have interactive boards to teach science subjects and professional degrees.

This activity keeps students engaged and makes them think about all aspects. They say that it is suitable for teachers and students. In the future, every institution will benefit. One of the teachers shared his view: *"The Future Ready Skills activities, especially when deploying Phase One of the Three Phases of Blended Learning. Future Ready skills include creating, collaborating, communicating, connecting, and using critical thinking skills."* Moreover, teachers say that teaching any course in the same routine can be daunting. BL can eliminate this issue and can bring more fun to it.

2. Code: Personalized Learning

Regarding whether a blended learning approach helps students develop a personalized learning experience, teachers say that students prefer self-paced guidance nowadays. Students are provided with personal accounts for interaction. For example, one of the teachers responded: *"In virtual classrooms, students get a chance to learn in a self-paced, access the content, prepare for assignments, and understand concepts properly. Teachers can monitor the progress of the students in online as well as face-to-face classes."* Teachers also think it depends on how well the teacher is prepared and trained. They further added that blended learning enhanced the personalization of degree programs and improved learning experiences. Some believe integrating different online tools can provide personalized/individualistic learning. Many students are taught traditionally in the classroom or with a blended learning approach. Online materials so they can learn at their given time. They further talked about the unclear contribution of the IT field. There probably needs to be a focus on the tools/ systems used for Blended Learning.

One of the teachers responded that: *"Blended learning specifically helps students increase their interactions, communication skills, confidence, and self-awareness, and encourage discussion and collaboration with their instructors and classmates and course materials, resulting in an overall positive experience."* Combining both teaching methods, a ratio of 50-50 (classroom-online) can build self-study ability among students and teachers. Regular feedback is crucial to maintain engagement and gauging learner progression. Teachers' views are that regular interaction over the LMS in queries and questions could engage students in in-depth learning and make them more involved in their studies. Teachers say that because blended learning is not time-bound, classes can be taken

anytime with the agreement of teachers and students. In other words, blended learning enables students to access materials from anywhere while enjoying the benefits of face-to-face support and instruction. One of the experienced teachers replied that”

“The blended learning technique incorporated several notable qualities. Worked on distance education programmers, conducted and attended workshops, and assisted in the BL-Tea project. University education greatly impacted blended learning in which teachers share handouts, videos, and students add materials through a learning management system (LMS).”

Most teachers say that it requires the physical presence of both teacher and student in blended learning, with some elements of this approach in student control of time, place, and path. Blended learning has many advantages, with greater flexibility in arranging students’ activities. However, not every student has access to these devices, and not everyone that stays at home can connect to the internet and learn their work.

“Similarly, another teacher believes that apart from the physical class teaching approach, I also use Microsoft WhiteBoard for online teaching. I found most of the students remained focused during online lectures. Besides technical, like many areas where more theory is evolved, was ok”.

Most teachers think blended learning offers learners the opportunity to demonstrate and apply their learning capacities. The opportunity for learners is possible with the collaboration of online and face-to-face meaningful activities and regular feedback

to maintain engagement and gauge learner progression. Some believe blended learning class activities could be based on experiential learning and that it is good when students are given orientation about using the different resources, i.e., LMS, etc.

3. Code: Professional Learning

To understand teachers perceive blended learning as an aid to professional learning in general, teachers responded that the idea of Massive Online Open Courses (MOOCs) and Global Online Courses (GOCs) is to use blended learning to enhance professional development o. Some say that online assessment tools, which provide flexibility to take exams and manage files, are necessary. Explain Also, many teachers think online delivery mechanisms enhance student interactions. Most of the teachers believe that “blended learning can be an engine that accelerates data-driven instruction to new heights” teachers hold different understandings about the integration of technology into education such as some teachers believe that a) preparation of video lectures and b) computer skills, c) using technologies, and d) connecting other world getting new ideas, and d) context fosters professional learning among students.

Some of them told us that it is a significant advantage if it is properly adopted and the teacher is in touch with new devices and their uses, thus enhancing her professional development. Teachers adopt Microsoft Office tools and professional training sessions on blended learning; professional courses and professional development programs can be offered for professional education. Some teachers believe that research and further studies can strengthen professional knowledge by keeping track of online learning sessions. Most teachers think blended and online learning helped them continue the teaching-learning

process during COVID-19. Because of the blessings of technology, nations around the globe could continue their education system properly. For example, one teacher says:

“I think the future will be online learning. So, I have experienced and gotten ready to shift to online mode at a moment's notice. I learned video conferencing as an opportunity, and I immediately shifted to online meetings for research students who cannot visit the office due to job/distance issues.”

This approach is convenient for teachers' and students' professional development.

4. Code: Challenges

ITEM 2: Which professional learning opportunity do you feel had the most significant impact on using blended learning? Some of the major challenges teachers encounter in adopting blended learning electricity failure, poor internet connectivity, and online teaching methodology are some of them. In the responses to challenges, teachers said that *“blended learning is not equally beneficial for both entities lonely teacher is putting effort and students getting all the stuff (they are not explaining things, etc. It is difficult for the teachers to manage with current institutional support, and it needs drastic changes”*.

As a teacher says, *“I found class activities difficult to convert to assignments and in professional degrees, i.e., MBBS, DVM. Pharmacy, BS (Hons.) In Poultry Science, students must be equipped with practical knowledge and be provided with hands-on training, which is not possible through online methods. Secondly, student's response is feeble in online classes”*. Some say that sometimes, internet/network issues, technology expenses, and inadequate training are also significant problems.

4.2.2.2 Theme 2: Perceptions of Teachers for Currently Available Facilities for Conducting Blended Learning Classes

1. Code: Support

When asking teachers what support they require for blending learning, most responded that the institutions must provide technical support and fast-speed internet availability. Also, technological literacy and updates regarding the Learning Management System and the availability of a tablet for teaching assistants may be helpful. This technological support can help them conduct online activities and manage proper virtual classrooms. Some teachers also require training for learning to implement blended learning in their classrooms. Teachers also said that network training and basic skills regarding training need to be assured by the institutions. Some teachers said, *"Training session on using learning environments is the basic prerequisite of this method."*

To effectively implement this program in higher education, this training should contain practical sessions on instructional designing for blended learning programs, sessions for learning assessment techniques, and techniques to involve and engage students with follow-up activities. Furthermore, teachers also need high-speed internet and computers, laptops with high-speed processing power, and display devices such as multimedia. One teacher said: *"Further, there must be a mechanism to check the active participation of learners during an online session."* On the other hand, some faculty members say they have a good internet connection and sufficient facilities. They feel they get full support in IT infrastructure.

"To do blended successfully, you have to trust your students to take ownership and become a part of their learning in a way they might otherwise not be doing. I've gotten to know my kids so much better than I ever have in the past."

Teachers also said it could have been better *"if we had practiced online teaching earlier. We shifted to online without proper practice, which caused a disturbance"*. The teachers' responses found that students need proper fast-speed internet connection availability. Further, there must be a mechanism to check the active participation of learners during an online session. In offering offline, networked experiences, blended schools can ultimately evolve from a model that has closed students off from the outside world to one where students have unprecedented opportunities to connect with experts and mentors.

Teachers said that teachers need to *"Be Creative, Provide Relevant Study Materials, Accept All Students and Stay Up to Date"* for conducting a blended learning program. To implement blended learning in higher education institutions, teachers should know all the proper techniques and tricks to handle online exams. Sometimes the students need help downloading or uploading the content material; the teachers should ensure that they help them do their tasks properly. Some of the teachers need support in many areas. The teachers stated their requirements: *"I think student engagement and access to peer support, training, PCs, connections, alternative options, etc., in delivering lectures, providing flexibility to students and assessing students is only possible with proper support from the institutions."*

Teachers also use relevant study materials and various teaching methods to achieve learning goals. For instance, the teacher said, *"it depends on teachers and students. I learned and benefited a lot. I put all my lectures on YouTube, accessible to all public"*. Along with other necessary support, teachers said. Projectors should be available in every classroom. Overall, the respondents said learner interest, Constant 24/7 Technical support, IT support, administrative support, hardware availability, students' and teachers' consent awareness program, and availability of resources might be ensured. Teachers said teachers must be trained and informed beforehand to efficiently conduct a blended learning program.

2. Code: Challenges

To understand the challenges teachers face in facilities, teachers were asked to identify their challenges. For this reason, teachers presented their challenges in different types of responses. Most of them shared their experience that they face difficulties with the stability of the internet in the online mode. For example, one of the teachers said. *"The major issue I faced in a blended learning environment was internet connectivity."*

Similarly, they also say that internet connections are a huge issue from the remote area students' side, with many interruptions and noises. For example, another teacher said: *"In face-to-face classes, it is possible; however, in online teaching, internet access is the main issue for most students."* The teacher said that internet connectivity and lack of resources such as projectors, equipment, power cuts, hearing problems, weak networks, lack of technical resources and adaptation of intuitions, and lack of teachers' technical knowledge poses a significant challenge to the institutions in adopting blended learning

approach. Such as one teacher said: *"The major issue I faced in a blended learning environment was internet connectivity, network issues, and I also think my lack of knowledge of certain technologies makes the blended experience more difficult."*

Then some teachers think managing and accessing Learner progress in blended learning is a problem for them. Some of the teachers also face issues with the software, and due to unprofessional attitude, lack of seriousness, and familiarity with the use of technology also remained an obstacle. Hardware availability, which every student does not have access to. Some teachers and students don't know how to use computers for the teaching-learning process. Regarding student readiness, teachers say that most students lack interest and are nonserious to some extent, adversely affecting the quality of student learning. One teacher highlighted *the "absence of students from an online class. The novel and innovative behavior of the students like unavailability of net, electricity, telephone signal, etc., lack of concentration and careless attitude hamper the effective use of blended learning approach."*

Moreover, the teachers believe that lack of peer support and expected response from students, familiarity with the use of technology also remained an obstacle. Teachers feel that along with the lack of other facilities, awareness and training sessions for blended learning methodology and student feedback and dissatisfaction may be considered for the awareness and readiness issue. They said students are not regularly reading content and discussing it over the discussion board. For example, a teacher expresses her experience in this way. *"In my opinion, this methodology is short term and could be used during a pandemic scenario; however, it is not the permanent solution. I am totally against blended learning methodology"*.

3. Code: Recommendation

Item No. 12. Based on your experience, what advice or recommendations can you give to promote academic performance in Blended learning courses?

Moreover, it was suggested that experienced teachers be hired for blended learning. To practice and operate the system, to get benefits of learning at all levels, either teacher or students. Teachers, students, and parents must be on the same page, and the content should be more engaging. They also said there should be recorded lectures with embedded questions (like Coursera online courses). There should be attractive software (like games) for learning. But it would be difficult for engineering students. First, teachers should update themselves and ensure hardware resources are available on either side. Initial training of both teachers and students is necessary.

4.2.2.3 Theme 3: Practices of Blended Learning

1. Code: pedagogical content knowledge

To seek the answer to the university teachers' current practices of the blended learning approach, the researcher extracted pedagogical content knowledge themes from the responses for the code of blended learning practices. Teachers responded that a theoretical framework has recently emerged to guide research on teachers' use of ICT, namely, technological pedagogical content knowledge (TPACK), as initial research findings suggest that a newer TPCK (technological, pedagogical, and content knowledge) approach/model is most appropriate for implementing the blended learning approach. Moreover, some teachers said that *"today's teacher, in addition to traditional learning and knowledge from books, must also be able to handle and become familiar with the*

increasing modern technology to make it user-friendly." They also responded that teachers should have knowledge of LMS and instruction design along with rubrics for assessment usage of E-learning technique, online forums, blogs, case study approach, and online seminars.

Teachers also expressed that blended learning is increasingly being used at all levels of the education system. It includes learners participating in real-world activities, building on their prior knowledge and experience, developing relevant skills and independence, working with teachers as facilitators rather than instructors, and using formative assessments to inform future learning. In addition, they view blended learning as building on their prior knowledge and experience, developing relevant skills and independence, working with teachers as facilitators instead of instructors, and using formative assessments to inform future learning needs. Their practice said they use flipped learning in a classroom with lecture come demonstration method using technology Content + Professional Knowledge. The students and teachers view that students should not rely upon only content knowledge, so to engage them, a teacher must use a decentralized approach rather than an authoritative one.

Teachers also think Pedagogical content is a universe; a teacher must have a personal interest or be trained/guided by education providers to have some searching techniques. Universities should formally train their faculty members to acquire the right resources. It cannot be left to teachers to decide the right pedagogical content. Departments and faculties have to offer help in terms of technology or updated course content with digital learning resources. Some teachers use the blended learning approach for conceptual and practical purposes both. For example, one teacher said, "I think a teacher should be

able to coop with the continuously changing environment, and the teacher must be aware of the student's feedback and learning comfortability regarding blended learning. Their opinion is worth carrying because they are at the receiving end. It could help teachers to adopt and maneuver blended learning approach in an easy and mutualistic environment". Another teacher's views regarding blended learning practice were: *"I would guess content and technological knowledge in understanding of students' conceptions of the subject and the learning and teaching implications that were associated with the specific subject matter knowledge, paper setting knowledge, hardware knowledge, etc."* furthermore, the teachers also said that *"first of all we should understand this blended mode is different from physical, less interactive mostly one-sided so a teacher should try to involve students in the process."*

Moreover, some teachers think along with text, teachers must know about visual programs and content Using technology—an in-depth understanding of contemporary demands and a diplomatic approach toward students. In addition, the teacher may have technological access and training, knowledge of the subject, utilizing blended mode, best practices, assessment techniques, etc. The up-to-date knowledge is based on the latest research and used with the software environment and issues during this experience. Many say that adopting blended learning properly uses the best technology instead of relying only on intelligent boards. They also emphasize that computer and internet skills are essential tools, with a command of the subject and command of the use of technology.

2. Code: Personalized learning

For the theme of personalized learning, teachers believe that every student has a different aptitude, mindset, and approach. It has not been easy to diagnose student learning experience in a blended mood. It may take time to identify the individual needs of students. Furthermore, they say that to some extent, and not all students can absorb the full content of the shared knowledge via BL; however, it can personalize them as fast and multi-task-oriented personalities using up-to-date modern tech services. One teacher said, "In my experience, most students are satisfied with physical learning, but the student experience can be personalized by increasing the proportion of physical learning or by teaching only the theoretical part of the courses online and the practical part physically and by allowing a variety of sensory input. Related, another teacher shared, "I have successfully used videos and video cases. Teachers say that the instructor should categorize students and assign the work separately for each one to increase personalized learning among them.

Moreover, they also think there's a lot of buzz around personalized learning (a personal way to learn) that is first and foremost about the learner; it is learner-centric, helping learners drive their learning. It can be personalized through different courses in certificates and short courses. Some teachers said that by learning from the experience of the ongoing Covid-19 pandemic and reliance on Online learning, institutions might employ this methodology during disasters. But a less-talked-about phenomenon is the possibility of blended learning multiplying the sources of content and experiences students turn to, including adults and experts, beyond the four walls of the classroom. It can be induced in young minds through vicarious reinforcement and motivation. There is considerable

awareness and motivation for students to use the latest technology and strict check and balance.

The students can develop a plan for how they attend sessions. One Allama Iqbal open university teacher, thought AIOU had employed this approach for its students' undergraduate and graduate programs. Such activities engage students in lesson learning, feedback response, and environmental awareness—management of synchronous sessions and planning and self-pacing asynchronous activities. Students must allow coming up with ideas should improve and modify courses in strategies to adapt effectively to personalize students learning experience. Some teachers think that using google images, YouTube videos, and ppt available on the web is. It is easy for a teacher to give individual attention to every student. A recorded lesson can be used again to understand even offline and by keeping a record of their learning progress.

Blended learning provides a personalized learning experience to learners at a fraction of the cost and time, leveraging technology to engage and support each learner's unique learning needs. In other words, blended learning is more a "pathway" to support personalized learning than a learning strategy. Personalization of students' learning experience may be possible when an instructor allows students to explore the variety of information and possibilities available via ICT. Although, such must be done with the instructor's guidance. Students interested in different themes may be given assignments of their interests using learning information systems/databases to be the best source for personalized learning.

3. Code: Challenges of practice

There are some challenges in the perception, facilities, and similar teacher practices about blended learning. In response to the challenges you face in practicing blended learning, teachers responded that the only factor they can imagine is the lack of understanding from both sides (teacher and student) on using blended teaching effectively. Students have different learning needs; some prefer online materials, while others want more in-person interaction. One of the teachers said, *“Since most of our students are used to in-person learning, which resultantly seems to be preferred if online materials are accumulated and organized well by a teacher, it will reduce the in-person requirement of students.”* Moreover, teachers say various measures and parameters should be adopted to analyze the student's learning, but unfortunately, training and technology cannot attain the desired result in Pakistan. Also, students have become more stagnant; they lost their interest in studies and started their education non-seriously. Up to a specific limit, a blended learning methodology can be used, but this methodology is not attractive in the long term.

4. Code: Recommendations

For the recommendations for how blended learning can be practiced effectively, teachers recommended motivating the students, helping students maintain focus, creating a sense of community, making discussions meaningful, increasing student engagement, and addressing equity issues. Student capacity for gathering data and analyzing the same can be enhanced. Some other teachers said many institutions have already opted for that as per its convenience. Still, it needs to be portrayed on a government scale so institutions can go for

BL in the future, irrespective of emergencies. Every change needs time to be embedded in any culture. Teachers must gain knowledge of how to grasp the audience through video lectures.

4.2.2.4 Theme 4: Practices of Blended Learning

1. Code: Positive Factor

How did teachers consider blended learning? For this question, the teacher's response was encouraging. Most believe that a teacher is equipped with the latest technology and easily transfers it to a blended learning methodology in the modern era.

It was good and promoted deeper learning, reduced stress, and increased student satisfaction. Some said, “learned videoconferencing tools, modified content, added more visuals. Interest in a methodology is key; teachers and students should be poised to have positive dividends from a methodology. Secondly, the good aspect of this learning methodology is that it is an excellent option to continue learning in emergency scenarios”. Also, they found that students who have superior reading skills tend to perform better in blended settings. From some teachers' viewpoints, teaching is less expensive, more affordable, and saves time.

Moreover, some think that blended learning offers flexibility in terms of availability. In other words, blended learning enables the student to access the materials from anywhere at any time while enjoying the benefits of face-to-face support. This approach has facilitated learning and teaching by cutting across boundaries. However, another teacher believes that a dire need is felt to devise and implement specific ethical guides to avoid the detrimental factors of blended learning. Some teachers responded that If

a teacher regularly provides feedback to the Students through LMS, students could be motivated to use reading material, discussion forums, and attempt quizzes; otherwise, it is a passive activity. Moreover, some teachers also say that technological literacy is positive and that the accurate ratio of in-person and online matters a lot. And the attitude towards learning, access to technology, support to faculty, and technological literacy.

Many teachers say blended learning is about willingness to use technology, access to quality hardware, e.g., a decent laptop, and good Internet connectivity. Therefore, it significantly impacts teachers and students in positive contextual professionalism. Many teachers believe it is timesaving and more learning-oriented; students are involved in other activities during lessons. Blended teaching and learning approaches have positively reshaped traditional teaching and learning methods.

Teachers also remember how in Covid-19, utilizing blended mode was essential to awareness among teachers and students. Also, students can easily access knowledge if they are far away or miss some lectures. The handicapped situations, a positive thing is that there is time to track student performance for each class. Teachers also paid attention to finances and skills to use technologies, with proper use of these methods. They also say that with high-speed internet and computers with high-speed processing power, display devices such as multimedia and interactive screens. Teachers and students' readiness, provision of facilities, and training enhanced the blended learning. Both are good, but students' adaptability to the system and limited resources in laptops/pc/cell phones don't allow learning online. For the positive factor of the blended learning approach, teachers said that blended learning affects student engagement, student achievement, and student perception.

2. Code: Negative Factor

This part of the above question discusses which negative factors teachers encountered while using blended learning. Most teachers said that teachers who lack technical knowledge might avoid using the blended learning mode; however, senior teachers experience many difficulties adopting this methodology. Also, the roughest aspect of blended learning is the student's distraction while switching from one mode to another.

Some teachers said that there is difficulty in analyzing whether students have learned. Students don't ask questions in online mode. For example, one teacher said, "The positive aspect of face-to-face teaching is seeing the students' attention and testing them accordingly. This factor is missing in blended learning, especially online lectures, and discussions. It is impossible in online classes, especially in Pakistan, where students may not use webcams.

Teachers also say there is an excellent chance of cheating in blended learning and plagiarism. Most people are on different levels of blended learning. It may create some challenges, such as time management, and teachers' laziness is a drawback of this approach. In addition, some teachers responded that the recent experience of blended learning during the pandemic raised the issue of the availability of internet services in remote areas. Some said that the rise of online learning marked the first phase of disruptive innovation relative to traditional classes. Another negative aspect was that teachers say due to the lack of infrastructure to manage an increasing volume of students, especially for new HEIs. The negative impact is that students may get too much net oriented.

Teachers reflected on some issues in their response, such as an approach to an internet facility and students' speed/non-serious attitude toward pre-lecture understanding. Disturbance due to electric supply, internet fluctuations, and lack of student interest hinder the process. The problem with the hybrid approach is that it derails focused learning if unattended and unguided by instructors, especially in an age of overloaded information. On the other side, students who are more reliable in technology didn't learn the concepts but are more focused on the idea of copy-paste. Teachers say that they miss a live session with their students. One of the teachers also said,

"I think these professional learning opportunities had no impact as students are not altering letting things seriously. Secondly, you have no idea whether they (students) are getting you. Through facial expressions, it's easier to understand whether they are interested or not. Most stated many factors, such as lack of technology, training, and skills. The lack of coordination of administrative staff is impacting students negatively as students are losing interest.

One of the teachers also said, *"I believe that blended learning methodology has failed, and it is the week for the students, and the cheating issues ratio is high."*

4.2.2 Perception of University Administrators of Blended Learning

The open-ended questionnaire filled out by university administrators is shown in Appendix 3. The Themes that were designed from the data were: a) Facilities, 2) Funding, 3) BL implementation, and 4) Perception of administrators about blended learning, and the codes that were based on these themes are given in the figure below:

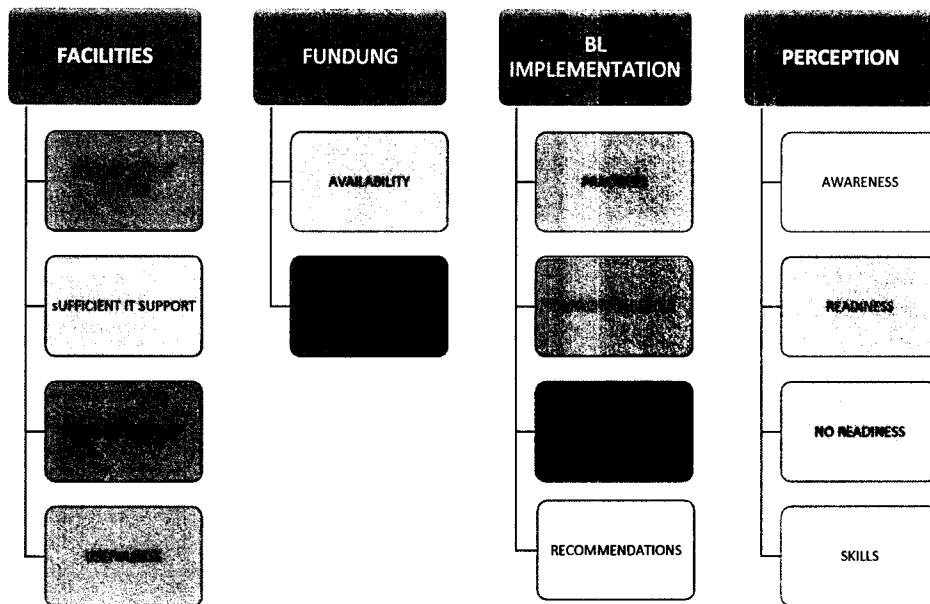


Figure 4.6 Perception of University Administrators for adopting blended learning

4.2.3.1 THEME 1: FACILITIES

1. Code: Sufficient Facilities Available

Almost every administrator agreed that they have sufficient facilities available at their institution for conducting a blended learning approach

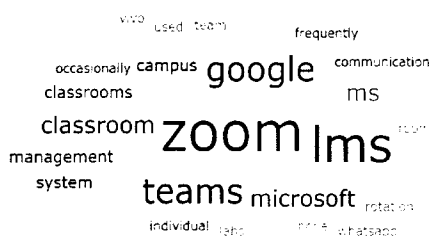


Figure 4.7 Facilities Available for Conducting Blended Learning at Higher Education Institutions

The types of facilities 27 administrators confirmed: Microsoft Teams, Google Classroom, Zoom, Campus Management System, WhatsApp, Vivo, and Google Suite communication tools.

2. Code: Usefulness of Facilities

In general, most of the administrators said that teachers mainly use Zoom and Google classroom for conducting blended learning classes. Still, it might be the case that they also use other software/technologies. For example, one of the administrators responded, "Based on our experience, pre-recorded lectures/sessions are unsuccessful. Therefore, live classes and learning exercises are successful, and Google Classroom, Microsoft Teams, and Zoom are the best for blended learning". For the delivery and recording of lectures, lecturers have used MS teams and an LMS system to deliver quizzes, assignments, and exams. Similarly, another administrator said that LMS and Zoom are the most widely used technologies.

Moreover, a mix of different technologies is viable for successfully implementing blended learning. Similarly, administrators believe that "LMS, Zoom, I think zoom is most successful mean for implementation. flipped classrooms, virtual model, and individual rotation". Finally, some other administrators think that, most importantly, indigenously developed LMS and Google classroom both are the need of the hour.

4.2.3.2 THEME 2: FUNDING

1. Code: Available

When administrators were asked if they have sufficient financial resources to provide technology to teachers for blended learning programs, many said this was the case; all required IT infrastructure is available and being used, please. Yes, for a proportion only, as these tools are expensive. Partially - due to the cost associated and limited university resources. Most responded that there were limited resources, but LMS has been developed, and sufficient infrastructural support has been ensured. Moreover, they say that IT backup is very weak in their area. They also noted that financial constraints are always an issue; however, we are doing our best to ensure the successful utilization of the resources.

Some also highlighted that practical resources are available; however, that could not be considered sufficient. Most administrators agreed that support from HEC is required for full implementation. And yes, we have teachers, but access to the Internet is an issue for students due to a limited network (3G, 4G connectivity). They also said they have sufficient financial resources to provide technology to teachers. Also, they have offered intelligent devices to teachers, especially those related to Math. Partial funding from HEC or other agencies is needed. One of the administrators said that in the public sector, funds are always short.

2. Code: Support

Are your institutions' financial providers (HEC, University) ready/ willing to arrange and adopt blended learning? And every administrator agreed that they have full support, and HEC has already provided funds for Covid-19 to move on to blended learning.

4.2.3.3 THEME: IMPLEMENTATION

1. Code: Practices

Administrators were asked how their staff members utilize technologies to promote blended learning. Most administrators said that during the COVID-19 pandemic times, all classes were conducted online. Now that the university has resumed on-campus activities, all classes are face-to-face. For example, another administrator said, *“During the Pandemic, 100% majority of the staff members effectively used and tried this approach during the pandemic. Many say that the three is maximum utilization of blended learning, but now with face-to-face interaction, it might have reduced”*. Most say that their entire system is through LMS, and technology is our university's fundamental aspect of teaching. Learning management systems and other IT-based Applications are frequently used judiciously for creating training modules.

Moreover, some said they are Fully utilizing but still, whenever needed, gave percentages like at least 30% of teaching through blended methods or less than 20% of staff members also use Zoom & MS Teams. Furthermore, all staff members are well conversant with IT skills since a paperless environment is already being implemented in an institution. For instance, one administrator said, *“we have maximum utilization of the technologies at our university.”* Some responded that they were about to get themselves converted to it. Similarly, some said they are using a blended learning approach to a reasonably good extent, almost middle level, and sufficient. But some administrators shared that the use of this approach is just average. Most of them need digital literacy. They

have not deployed it extensively, so staff is not using it either. Majorities are not using technology due to insufficient resources.

2. Code: Capacity Building

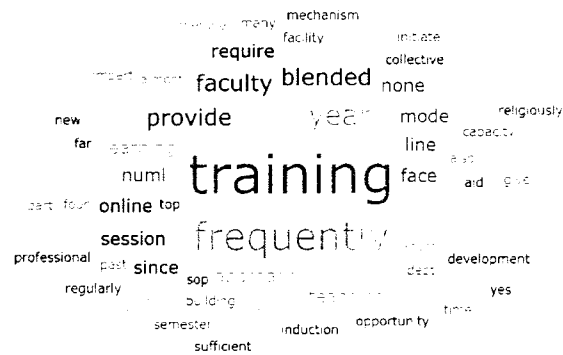


Figure 4.8 Suggestion for Conducting Blended Learning at Higher Education Institutions

Administrators on the question of how often your institution provides training facilities for your faculty members concerning blended learning and most of the administrators said they are providing sufficient training through the cascade model. Similarly, another administrator added that, Yes As and when required. For example, one of the administrators said, *"Since covid 19 blended approach has been adopted, they have been provided with training frequently"*. Few administrators agreed that their institution frequently arranges training sessions for faculty members. Also, once a year, most institutions initiate multi-layered training and capacity-building mechanisms to enhance the skills of a blended teaching model. Some of them were saying 2-3 times a semester.

Most of them said that as part of Professional Development, the young faculty and new induction are given training. They also added, *"seven collective and many other departmental pieces of training have been conducted in the last two years."* Another

administrator shared that *"teachers have almost always been provided with first-class teaching aids and facilities for online teaching."* On the other hand, some administrators feel that their faculty members receive very little training. One administrator said, *"None - most training focuses on face-to-face teaching and rarely addresses the blended learning approach."* And some administrators see blended learning as purely online instruction.

3. Code Challenges

Most faculty members responded that using blended learning during practice faced many challenges at the beginning of Covid-19. Students & faculty alike must be convinced that BL or Online education is a tremendous opportunity, not a joke; then, an online examination was misused. Some of them said this; *"a) Infrastructural support, lack of proper infrastructure in terms of educational technologies, e-classrooms and Recording rooms (b) Lack of learning material for blended learning."* Also, many other administrators believe that faculty are not trained to use it, and professional training, especially assessment training is a great challenge to shift syllabi on this medium. Many said that access to the Internet is limited bandwidth and mobile network coverage (3/4G network is not available in more than 90% of the area). Most of the administrated shared that there were problems, like since it was new, all factors, including faculty resisted standards, must be compromised as it is not a perfect alternative to face-to-face interaction—slow and unreliable internet connectivity, particularly at the students' end. Infrastructure, teachers, and students are not proficient in using technology.

4. Code: Recommendation:

To solve the challenges faculty and institutions face for not effectively adopting blended learning, administrators gave some crucial suggestions to overcome this issue. For most administrators, it is suggested that implementing a blended learning approach at higher education institutions suggests that digital literacy adoption of education 4.0 techniques for the students to make them comfortable with online or blended learning. They also said they need sufficient financial resources to fully adopt the advanced technology to implement blended learning. One of the administrators suggested “a) *Budgetary support from HEC/Government to establish required educational infrastructure.* b) *Nationwide plan of transitioning from On-campus to Online/Blended learning in policy implementation*”.

Moreover, they added that Special internet packages for students and HEIs should first be facilitated with better network connectivity. Students also need better network connectivity. They also believe in strict vigilance and control to ensure the standard. Some administrators also said that creating videos on LMS or Zoom Recorded videos until such specific times to train faculty, and provide advanced technologies and equipment, including software for faculty and students, is essential. Training programs must be offered for continuous motivation and encouragement to boost students' willingness and preparedness. Proper Training programs for teachers, support of tools, up-gradation of infrastructures, especially the internet, online exam proctorial systems to be procured, special tools and apps for math-intensive courses that need to be solved on board in face-to-face classes, Infrastructure, professional training, model institutions with at least five years of BL experiment & related research.

They say that faculty and staff are primarily ready to adopt, but the resistance comes from the student's side. Some of them think that since it was new, all factors, including faculty resistance and standards, must be compromised as it is not a perfect alternative to face-to-face interaction but has no remoteness and poor IT backup. Most serious issues are related to students' readiness. High-speed internet facilities should be provided to the students at affordable rates. Its effectiveness & utility should be publicized a trained human resource to a more considerable extent and logistics, including equipment. New Technology infrastructure is not required and cannot achieve the same results. Moreover, most of the teaching faculty needs specific training—the provision of undisturbed internet and higher broadband for the internet. A blended learning education program can be successful only if teachers and students are proficient in computer technologies and infrastructure and the training needs are fulfilled.

4.2.3.4 THEME 4: PERCEPTION

1. Code: Awareness

To understand the administrators' perception of blended learning, the researcher conducted online interviews and google doc form. Most respondents responded positively to this approach and said blended learning is the need of the hour now. Even after the pandemic, blended learning should continue, and in the future, more innovations are expected in the blended learning approach. Moreover, one administrator said, "I strongly believe in its effectiveness & utility, especially for low-income students, provided that HEIs meet minimum technological and infrastructure requirements. Seems feasible and better for smooth provision of quality education". Some responded in one word like

Positive, effective, and Need. Excellent. Most administrators believe that an essential aspect of teaching online is the teacher's ability to do so effectively, as it is the most crucial practical approach in the current era. Also, this is an excellent approach to keep students & Teachers in contact, but it is felt that students do not take it seriously to attend lectures online.

However, Teachers are putting in the best of their efforts to deliver the best. Some think it is a good solution for non-engineering and non-medical fields of education. Its excellent approach requires efficient, effective, and result-oriented teaching, learning, and research. However, some administrators felt that it is better than a pure "Online System" but in no way an alternative to face-to-face learning. Also, blended learning can only work if students access the internet and online sources. It is good and highly demanded. For example, an administrator said that the "Blended Learning approach is very beneficial after Covid-19 and BL has great potential, keeping in view the emergencies like Covid-19. In a COVID environment, it's good, but I think face-to-face education impartation has considerably more impact than online". Also, under the current circumstances of the COVID-19 pandemic and the availability of technology, a blended learning approach at HEIs is most desirable. They also said that it is the core requirement of today's education system. It is a good experience and has become imperative in the post-pandemic era.

One of the administrators said, "NUML has already adopted a blended learning approach. All classrooms are equipped with HD CAMs with a sound system. 50% of students attend while sittings in classrooms whereas others sit at remote locations to attend lectures". Furthermore, the blended learning methodology is a way to break down the traditional teaching walls and is a new innovative pedagogical approach using present-day

technologies and resources to enhance the learning process. In Pakistan's administrators' views, blended learning facilities and their mechanisms are poorly designed. It takes time to make a universal blended system for each level. A helpful approach to ensure continuity in learning approaches. It requires proper training of the faculty and learners with a changed mindset. It is a very innovative approach. The higher education system should adopt this approach for the professional development of faculty and students.

2. Code: Readiness

The administrators responded to how ready your faculty members and students are to adopt a blended learning approach. They said that yes, for nonmedical faculty but no for medical and health sector faculty. Yes, we have conducted a series of faculty development workshops on blended learning; therefore, the faculty is ready to adopt it. Yes, they are always proactive. Moreover, the Pandemic and subsequent capacity-building measures at University and HEC levels have already made faculty and students IT Savvy and sensitized them to adopt e-learning approaches. Some said that more than 50% of administrators are ready to adopt BL.

An administrator from International Islamic University Islamabad said, *"IIUI University faculty is already trained and adopted a blended learning approach. Faculty at our institution is ready to adopt this approach"*. However, most teachers are comfortable with face to face based teaching since it has been practiced and mastered for a long time. However, transitioning to online education, even for some part of the course, could need proper training as it involves upgraded teaching methodology, learning new pedagogy, and being able to design curriculum and teaching material that is not only easy to teach online

but also easy for the students to grasp the concepts outside the class. In contrast to this, some of them say that No. There's doubt, lack of knowledge & willingness to adopt it, especially among senior faculty. Partially ready, still resistant to change the behavior of most senior faculty members. Yes, but it needs to develop through training.

3. Code: Skills

Administrators responded to the skills their faculty, students, and staff required to conduct blended learning at their institutions. They responded that they had been trained during the pandemic and after with more coaching and capacity building. More emphasis is given to teaching faculty capacity building needs the training to update their skills. Some believe this blended learning approach is just a slight change in teaching mode; the rest is the same. Another administrator said that *"while there is the capacity for most of the part, teachers will need the training to understand the challenges associated with online teaching and the best practices to overcome the challenges. Improving competence is already needed"*. However, they also said that there is no limit to learning skills. But no, Teachers need more training and skills to adopt BL as they are not fully capable of using it. They say that teaching staff should need the training to update their skills. They also feel that the learning management system (LMS) has been in our institution for a long time, and most of the teaching staff uses LMS. They have sufficient skills to implement a blended learning approach.

4.3 Summary

This chapter presents the results of both the quantitative and qualitative data. Data analysis and interpretation were made in two parts. Part one introduced an analysis of quantitative data and a description of the quantitative study, a description of the sample, description of questionnaire items; along with that, for inferential analysis, different tests has been incorporated. In part two of this chapter, qualitative data were analyzed using thematic analysis.

CHAPTER 5

SUMMARY, FINDING, DISCUSSION, CONCLUSION & RECOMMENDATION

5.1 Summary

Educational experts use high-quality educational experiences, digital resources, and innovative tools to improve student learning. Blended learning is one of the best educational approaches that teachers can use to develop goal-oriented learning environments that are more effective and interactive for learners at academic levels in learning and communicating (Allen, Seaman, & Garrett, *Blending In: The Extent and Promise of Blended Education in the United States*, 2007). This mixed-method study aimed to assess stakeholders' readiness, such as students, teachers, and administrators, to adopt blended learning at their institution. For this purpose, a questionnaire was used to gather quantitative data from the students. Qualitative data were generated to assess teachers' and administrators' perceptions of blended learning from the public universities of Islamabad. The data were collected using a proportionate sampling technique to select students, teachers, and administrators. The researcher personally visited teachers, administrators, and students to collect the data to understand stakeholders' perceptions.

Four hundred thirty-five students filled out a questionnaire, and 51 teachers and 27 administrators were willing to answer the open-ended questions. Individual interviews were conducted with teachers and administrators practicing blended learning. The participants answered open-ended questions based on a semi-structured interview procedure. The students who responded to the questionnaire described their experience in

online and face-to-face instructional practices and how effectively technology is used in a blended learning environment. Teachers who participated in an interview unfolded their teaching experience in successfully adapting instructional practices to utilize technology in a blended learning approach. Teachers shared their precise professional development practices and described their effect on their skill in applying blended learning to address the requirements of all students within their classroom. They discussed some instructional strategies and the effect those approaches had on student learning. Teachers shared classroom and management strategies for applying, sustaining, and supporting a student-centered blended learning environment. Similarly, administrators described their academic and administrative experience in adopting a successfully blended learning methodology at their institutions.

In the first part of this study, the questionnaires were analyzed. The distributions of the items in the questionnaire were inspected, and percentages were reported. Also, hypotheses were tested by calculating mean scores and standard deviations of students' perception, awareness, readiness, practices, and challenges about blended learning. The researcher designed a 5 Likert scale with four indicators components for the study's quantitative part. Personal visits and online google forms collected data. Data were analyzed by SPSS version 20. The open-ended questions and responses were analyzed in this study's second part. Based on data analysis, several findings, conclusions, discussions, and recommendations were drawn, which are as follows:

5.2 Findings

5.2.1 Findings Based On Quantitative Data Analysis

5.2.1.1 Awareness of blended learning

1. For indicator awareness of blended learning, 84.2% of students strongly agree that teachers and students need training to effectively use a blended learning approach. Also, most students feel that the material used in blended learning is more effective. Students also understand that blended learning encourages personalized learning. Blended learning approach material is more valuable and practical than conventional learning (Table 4.2).

5.2.1.2 Practices of blended learning

2. 73.3% of the respondents stated that they possess essential resources for practicing blended learning at their institutions. They also confirmed that blended learning encourages them to engage in more self- and active learning. Do the respondents also perceive that experiencing blended learning improved them? Integration skills. Most respondents say they understand the subject matter more through a blended learning model. Similarly, many students responded that teachers efficiently manage their time tasks in blended learning mode and attain instructional goals (Table 4.3).

5.2.1.3 Facilities for adopting blended learning

3. Most of the respondents (70%) are satisfied with the technology and software they use for online/blended learning. Findings also reveal that (50%) of the respondents indicated they had been provided the additional material required for conducting blended learning. Most respondents (80%) agree that they have been provided with sufficient technical support by their teachers and administrators (Table 4.4).

5.2.1.4 Challenges of blended learning

4. There are many challenges to conducting a blended learning program, The respondents of this study were asked about learning in blended learning mode, and more than half of the students (52.9%) reported that slow internet connectivity is a real problem and that they face a great challenge for taking online classes or learning and uploading material online. Students were asked about the quality of learning resources, and 64.2% think that outdated learning resources are utilized (Table 4.5).

5.2.1.5 Findings based on inferential analysis

5. There was a significant correlation between students' awareness and Practices, $r(435) = .71; p < .001$. This means that students who were more optimistic about blended learning also indicated that they practiced it more often (Table 4.6).
6. There are no differences in mean awareness based on gender or the institution's affiliation. Table 4.7 shows that the interaction effect between gender and institution for the awareness of blended learning was insignificant. Also, the main effect of an institution and the main effect of gender was not significant.
7. The interaction effect between gender and institution for blended learning practices was not significant. Also, the main effect of an institution and the main effect of gender was not significant. There are no differences in mean patterns based on gender or the institution's affiliation (Table 4.8).

5.2.2 Findings based on Qualitative Data Analysis

5.2.2.1 Perception of Teachers for adopting blended learning

The researcher explored teachers' perceptions of adopting a blended learning approach to address the student's learning needs by posing the following research question.

1. Apart from the perception of teacher's benefits, most teachers talked about the benefits of blended learning as they say that it has the advantage of greater flexibility over traditional classrooms. It is perfect, and I think it is very beneficial in this modern era of technology—easy access to a wide range of learning materials (Code 1).
2. Related to teachers' perception of personalized learning, teachers believe through blended learning, students' class activities can be based on experiential learning (Code 2).
3. Teachers can offer Microsoft Office tools and professional training sessions on blended learning. Professional courses and professional development programs can be provided for professional education. Some teachers believe that professional learning can be done through research and further study by keeping track of their online learning sessions (Code 3).
4. Teachers' perception regarding different challenges they face in adopting blended learning is that some say that sometimes, internet /network issues, the expense of technology, and inadequate training are also significant problems (Code 4).

5.2.2.2 Perception of Teachers for adopting blended learning

5. The finding shows that the teachers think that the support they need from administrators is internet accessibility projectors (Theme 2).
6. The finding shows 1) Internet connectivity issues, 2) technological Issues, 3) network issues, 4) Electricity Issues, and 5) teachers' and students' readiness issues. (Theme 2 from the facility)
7. Findings from the part of research facilities theme recommendation faculty members recommended a need for standards for all blended learning activities. Good practices of successful blended learning at universities can be adopted opportunities for teachers and students. The 21st century is more technology-oriented and knowledge-based, so they must focus on increasing and promoting blended learning in various subjects.
8. The data shows that Mostly teachers are practicing a blended learning approach using the Pedagogical content knowledge approach.
9. Finding code practice about pedagogical content knowledge revealed that If personalization is the goal, then blended learning is the means to that goal.
10. Finding from the practice challenges says that teachers must be equipped with skills and knowledge and trained about the system.
11. Findings from the code of factors affect blended learning, so in positive it is seen that the positive aspect of the blended learning approach, teachers said that blended learning creates an effect on student engagement, student achievement, and student perception.

12. They found the code factor negatively affected adopting blended learning. Some teachers said that there is difficulty in analysing whether students have learned. Students don't ask questions in online mode.
13. Almost every administrator agreed that they have sufficient facilities available at their institution for conducting a blended learning approach (code 1, theme1).
14. Finding out which technological tool they use to adopt blended learning revealed that most administrators used Microsoft Teams, Google Classroom, Zoom, Campus Management System, WhatsApp, Vivo, and Google Suite communication tools.
15. The finding shows that every administrator agreed that, yes, sure, they have the full support, and HEC has already provided funds for Covid-19 to move on to blended learning.
16. From the administrators' responses, it is found that in their institution, they are using a blended learning approach to a reasonably good extent, almost middle level, and sufficient. But some administrators shared that this approach is just average; most need digital literacy, but they have not deployed it extensively, so staff is not using it either. Majorities are not using technology due to insufficient resources.
17. The administrator shared that Almost top of line training aids and facilities for online classes have been provided to faculty very religiously and frequently (finding
18. finding says that administrators have challenges in adopting a blended learning program effectively, such as Infrastructural support, lack of proper infrastructure

in terms of educational technologies, e-classrooms, and Recording rooms (b) Lack of learning material for blended learning.

19. From administrative perceptions, they consider it an excellent approach. It is required for efficient, effective, and result-oriented teaching and learning and research for nonmedical faculty but not medical and health sector faculty.
20. Findings of the data say that, however, transitioning to online teaching, even for some part of the course, could need proper training as it involves upgraded teaching methodology, learning new pedagogy, and being able to design curriculum and teaching material that is not only easy to teach online but also easy for the students to grasp the concepts outside the class.
21. Administrators responded to the skills their faculty, students, and staff required to conduct blended learning at their institutions. They answered that they had been trained during the pandemic and after with more coaching and capacity building.

5.2.2.1 Cumulative Finding

As the design of the study was mixed methods study; therefore, on this view point the constraint of mixed methods. This study employed Mixed-Methods research and adopted a convergent parallel design. Triangulation of findings made to add and compare the stakeholders' responses of the study. Cumulative perception of students, teachers and administrators revealed that for adopting blended learning at higher education institutions are:

- Blended learning is more useful and promotes in personalized learning to connect students in more self-and active learning.

- It has the advantage of better flexibility over conventional classrooms.
- Favourable in this modern period of technology easy access to a large array of learning materials.
- Teachers can offer Microsoft Office tools and professional training sessions on blended learning.
- The 21st century is more technology-oriented and knowledge-based, so they must focus on increasing and promoting blended learning in various subjects.
- Findings revealed that if personalization is the goal, then blended learning is the means to that goal.
- Findings showed that almost every administrator agreed that they have sufficient facilities available at their institution for conducting a blended learning approach.
- Teachers said that blended learning creates an effect on student engagement, student achievement, and student perception is the positive aspect of the blended learning approach at higher education institutions.
- From the administrators' responses, it is found that in their institution, they are using a blended learning approach to a reasonably good extent, almost middle level, and sufficient.
- The administrator shared that almost top of line training aids and facilities for online classes have been provided to faculty very religiously and frequently.
- Finding discovered that institutions use Microsoft Teams, Google Classroom, Zoom, Campus Management System, WhatsApp, Vivo, and Google Suite communication tools for adopting blended learning.

- Findings of the data say that, however, transitioning to online teaching, even for some part of the course, could need proper training as it involves advanced teaching methodology, learning new pedagogy, and being able to design curriculum and teaching material that is not only easy to teach online but also easy for the students to grasp the concepts outside the class.
- Finding says that institutions have challenges in adopting a blended learning program effectively, such as Infrastructural support, lack of proper infrastructure in terms of educational technologies, e-classrooms, and recording rooms, lack of learning material for blended learning.
- Slow internet connectivity is a genuine problem and that they face a serious problem for taking online classes or learning and uploading material online.
- the expense of technology, and inadequate training are also significant problems network issues, electricity issues.
- Some teachers said that there is difficulty in analysing whether students have learned. Students don't ask questions in online mode.

The finding shows that every administrator agreed that, yes, they have the full support, and HEC has already provided funds for Covid-19 to move on to blended learning. Therefore, it higher education institutions should work for training their teachers and students and equip them with necessary technology and network tools for the successful implementation of blended learning at their respective institutions.

5.2.3 Proposed Framework to Ensure Blended Learning Approach at HEIs

Objective 5: Develop a framework of blended learning by identifying the challenges that stakeholders experience and refrain them from adopting blended learning at HEIs

Research Question: How can a blended learning approach be implemented effectively at higher education institutions?

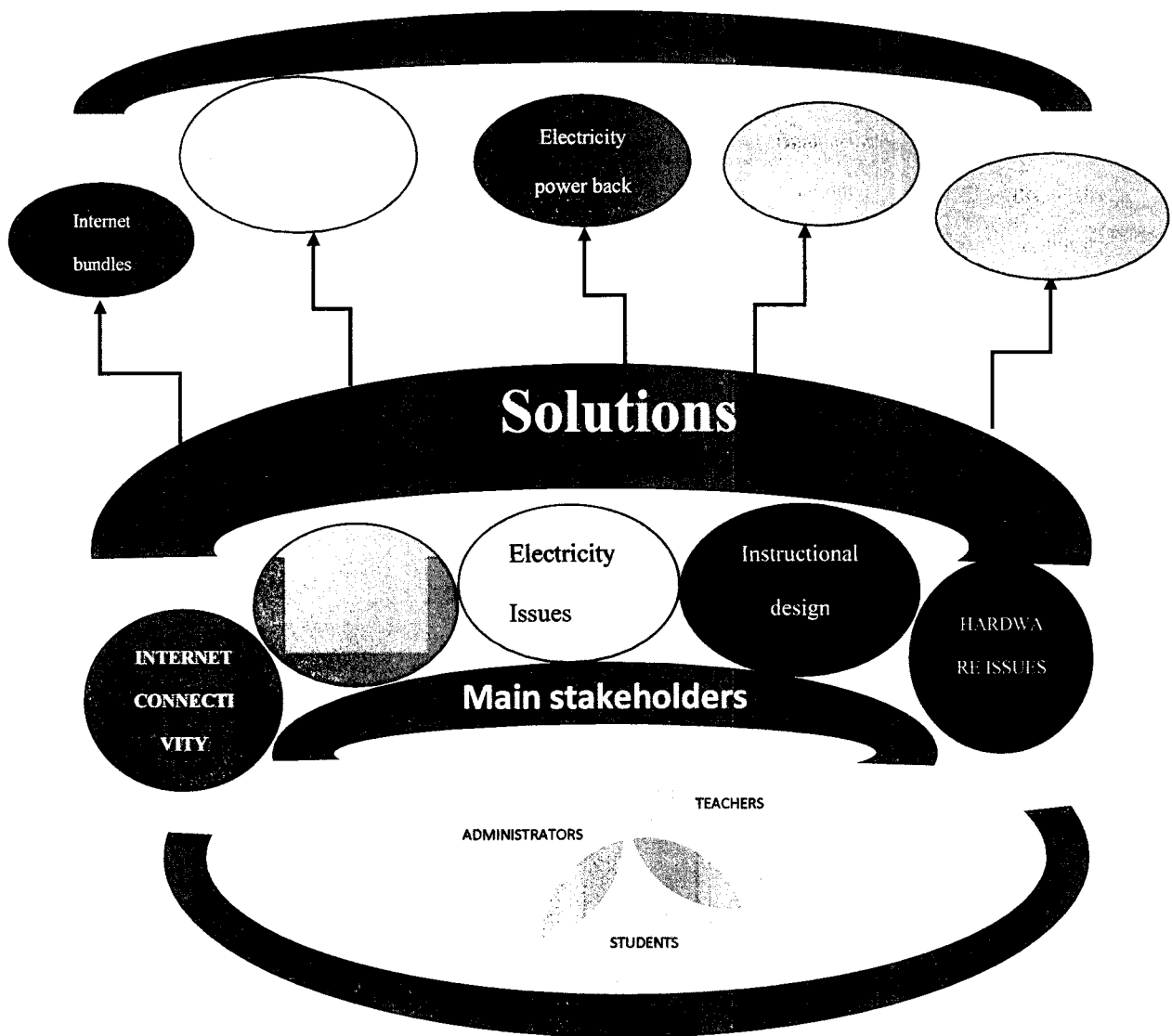
This objective and research question was addressed by getting help from a literature review and data collected from university students, teachers, and administrators. To develop a framework to ensure a blended learning approach at higher education institutions, the researcher first identified the perception and practices of the blended learning approach at higher education institutions. Afterward, different challenges stakeholders face in implementing a blended learning approach, and lastly, the best possible solutions were suggested to reduce the challenges stakeholders face in adopting blended learning.

5.2.3.1 Validation of Framework:

The expert validated the proposed framework, and after some amendments, this final framework was proposed based on research findings. See Appendix 2.

5.2.3.2 Description of Framework

The final Draft of the proposed framework to confirm the blended learning approach contains four major sections: 1) perception, 2) usage, 3) challenges, and 4) possible outcomes.



<p>PERCEPTION</p> <ul style="list-style-type: none"> • The need of the hour • Most significant 	<p>USAGE</p> <ul style="list-style-type: none"> • LMS, • Zoom, • MS Teams
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Figure 5.1 Framework to implement Blended Learning at HEIs

Since the literature review, the data collected from stakeholders (quantitative and qualitative) researchers proposed a framework for implementing a blended learning approach at Higher Education institutions. A detailed description is as follows:

5.2.3.2.1 Perception of stakeholders for adopting blended learning

The objective is to assess the stakeholders' perception of potential misconceptions, training requirements, components, and tools required to implement Blended Learning in the Universities. Based on their feedback, relevant possible solutions are proposed.

5.2.3.2.2 Use of Blended learning approach by Teachers or Students:

The Blended Learning approach requires a Learning Management System to host course content, discussions, quizzes, and other online activities. The assessment and formative feedback are also given through it. Students may be actively engaged in peer discussions and socialization through LMS. The weekly or monthly targets for reading materials can also be set.

5.2.3.2.3 Challenges for adopting blended learning at HEIs.

a) Internet Connectivity Issue

Most respondents face internet connectivity issues from the quantitative and qualitative data responses. They observe that they face internet instability during their classes and other online activities. If somehow, they get the internet connection, they experience a weak network, internet interruption, and noise issues.

b) Hardware Issues

Most of the faculty members and students are facing network issues such as Power grid blackouts, server hardware failure, outdated equipment, incompatible firmware upgrades, overheating, and human cost of network failures.

c) Training Issues

All the stakeholders of this study consider training an essential component for adopting blended learning. Administrators' and students' perception is that teachers must be trained to conduct a practical blended learning approach at their institutions. Most students view the blended learning approach as challenging because they say their teachers are not fully prepared. As per administrators' students are not willing to adopt this approach. So, for the successful implementation of blended learning, teacher training is essential.

d) Instructional design Issue

Most students are concerned about the outdated content, teaching methodology, and lack of proper online classes. There is a lack of management in blended learning classes, assessing students' work, and providing feedback. Lack of crafting the art of communication, and most respondents are not fully aware of using the latest technological tools for conducting proper blended learning classes.

d) Electricity failure Issue

In Pakistan, energy crises are underdeveloped and poorly managed. Presently the country is facing severe energy supply crises. Due to this reason, electricity failure was the second most crucial issue of the stakeholders of this study for the unsuccessful adoption of the Blended learning approach at Higher Education institutions.

5.2.3.2.4 Possible solutions for adopting blended learning suggested by the researcher

a) Internet Connectivity Issue

Most teachers and students face internet connectivity issues in different ways, sometimes slow internet, facing the difficulty of internet stability in online mode, and weak networks. During the COVID-19 Pandemic, the Telly communication service providers offered temporary internet bundles to help conduct proper online classes. Therefore, institutions should provide multiple internet services to solve this internet problem. If one server fails, another option should be there to run the teaching-learning process more smoothly. Another proposed solution is for university administration to provide low-cost internet bundles to their teachers and students to conduct an effective blended learning process.

b) Training Issues

To overcome training issues, university administration should focus on providing suitable training programs for their faculty, and this training session should be comprised of the following matter:

- Teachers need to be trained to use the learning management system effectively.
- Training for preparing lesson plans for conducting blended learning mode.
- Higher education institutions may arrange training for their faculty members about student assessment strategies and techniques.
- Teachers may be trained to use the latest technology adequately to conduct a blended learning approach. So that teachers can upload audio, video, and written material for their classes.

c) Instructional design Issue

Most students and administrators view blended learning as boring and non-effective because of instructional design issues. To solve this issue, teachers must design their instructional design in three primary areas planning, implementation, and improvement. Teachers play a crucial role in learning by imparting knowledge to their students' lives. This role has become more evolving when it comes to blended learning. Teachers may design blended learning courses to increase students' knowledge and interest in learning by including research and development, guidance, and integration. Teachers may consider the following points before going to adopt blended learning approach.

- I was preparing a course planner which gives students a complete program detail. Dates and times may be mentioned for the classes and activities.
- Schedule weekly videos, audio, and lecture notes that may be uploaded beforehand.
- To make students active and attentive, teachers can assign some videos, audio, or written material mandatory so that they should be ready to answer and participate in classroom discussions.
- A formative assessment technique may be used to understand students' level of content understanding.
- To keep students' attention span longer, teachers must be prepared to engage students in different activities beforehand.
- Teachers should also be available for students learning needs.

This solution can benefit teachers in adapting effective instructional practices to reach all learners online and face-to-face.

d) **Electricity failure Issue**

For the problem of electricity failure, many options can be adopted; some proposed solutions are:

- Installing solar panels
- Backup/stand-by generators may be arranged
- Uninterruptable power supply (UPS) may be organized

5.3 Discussion

This section comprises the present study's research findings with the finding of other studies done in the context of blended learning perceptions and awareness. In the present study, participants were asked about their perceptions of blended learning, practices, and challenges of adopting it. They responded that blended learning benefits students' personalized learning in higher education institutions and teachers' professional development. It has positively impacted all the stakeholders of higher education institutions. Significant work has been done in education in various methods; however, this research focuses on assessing stakeholders' perceptions about the blended learning approach at higher education institutions.

The main objective of this study was to examine awareness and practices of blended learning at Higher Education institutions. The factors that are associated with blended learning practices. And to develop a framework for implementing blended learning in Higher Education. In the present study, it was observed that teachers believe that blended learning is more beneficial and significant for students and teachers. Pappas (2015) indicated that educational institutions took benefit of the internet facilities and made their

content material available for the learners; the assessment process was conducted online. Blended learning from the year 2000 till today increases its utility in education. From online, readily available content material to arranging/ attending webinars, video conferencing, and teacher-student interaction has become easy and flexible.

Blended learning, along with students and teachers, benefits the administrators by tracking students' records and teaching instructional material. Likewise, Reeves (1998) believed that many educators believed that technology helps teachers improve their pedagogy for learning, not the replacement of teachers. In the present study, teachers' perception was explored in blended learning benefits, blended learning for professional development, and blended learning to enhance students' personalized learning. Similarly, Graham, Allen, and Ure (2005) stated that blended learning improves pedagogy, flexibility, and cost-effectiveness. It is evident that moving some class hours is timesaving; Blended learning promotes individualized learning, students learn at their schedule, and the chances of revision and remedial of complex concepts are increasing.

Cost efficiency is also an important part that cannot be denied. Likewise, Kalantarrashidi, Mohammadpour, and Sahraei (2015) studied the social benefit of information communication technologies efficiency that provides capabilities for effective learning. In this present study, observation was carried out that all the stakeholders are well aware of the term, methodology, and benefits of blended learning. Still, they feel that with the training and capacity building of teachers, this can be implemented more efficiently. Similarly, Impedovo and Malik (2019) state a need to raise awareness of the different and distinctive national and institutional contexts teacher educators are working in, how they affect their practices, and their opportunities to develop professionally.

Also, Christensen Institute et al. (2017) & Horn and Staker (2015) indicated that students rotate over-scheduled learning practices within single or multiple classrooms centered on a specific subject matter. Pupil learning practices are explicitly geared to their individual needs, so they have a particular playlist of tasks created. The current study found that there are many challenges teachers and students face many challenges in implementing blended learning at higher education institutions. Where there are uncountable benefits, there are many challenges in adopting a learning management system, such as academic unpreparedness being a frustrating element in using (LMS). Using the learning management system in higher education institutions' the readiness of stakeholders such as(teachers, students, and administrators) is very important.

Likewise, Oliver and Stallings (2014) also revealed that technology consideration, in this age of technology, teachers need to be aware of the challenges and opportunities of adopting different technological tools in the teaching-learning process. This current study assessed the readiness of stakeholders by adopting a mixed-method approach. This study showed that most stakeholders are ready to adopt blended learning. Bergman (2012) also said that the question remains if university teachers, students, and administrators are prepared to embrace blended learning in higher education. The twenty-first century has seen a trend in reconsidering the purpose of instruction and knowledge, primarily based on present teaching and learning approaches using technology-enhanced teaching and learning.

Higher education institutions (HEIs) integrate technology to progress teaching and use significant resources to assimilate technical setup into existing classroom facilities. Students' desires are endlessly changing, assuming technology-rich and flexible learning

prospects. Graham (2005) highlights the six complexities of the course designers, which are: (1) students centered and self-regulation, (2) training and support models, (3) balance innovation and production, (4) students' role in live interaction, (5) cultural aspect (6) dealing with digital resources. This study shows that the stakeholders need relevant facilities for blended learning, such as fast-speed internet, electricity power, technology assistance, etc. It is the responsibility of institutions to provide digital facilities and training to the instructors to develop a blended learning course. Similarly, UNESCO (2018) says that research and evaluation should be prioritized in a blended learning approach. Several necessary criteria need to be met with all these professional programs.

Workshops may be considered, and infrastructure facilities such as wireless networks, technology-based learning, and digital learning devices may be available; with this, teachers and students can adopt a bring-your-own-device strategy. HEI may be introduced with proper policy & guidelines for higher education institutions to achieve these measures. The current study also indicated that the stakeholders need an appropriate system of support for blended learning instructional designing, and likewise, the study of Cleveland-Innes & Wilton (2018) said to integrate the technology properly; the instructional designer must be aware and skilled in designing the activities program safety and security also a vital aspect to keep in the mind while designing blended learning course, with Student's readiness, internet connections, devices, and the use of ICT. Blended learning readiness relates to the learners' readiness. This overall evaluation of the institution for adopting technology-integrated or blended learning readiness includes the resources institutions must-have for this approach: blended learning approaches and designs in higher education.

5.4 Conclusions

The following conclusions were drawn from the findings.

1. Although students show a positive awareness of blended learning in general; they strongly believe that blended learning material is effective and that it encourages student-centered learning; there is a great emphasis on the fact that teachers, as well as students, need training for conducting practical blended learning approach (Finding # 1).
2. The blended learning approach is used in a partial manner Students think there are essential resources at institutions to conduct blended learning; it helps them learn things very actively. The findings concluded that the blended learning experience improved the integration skills among students (Finding #2).
1. The findings (findings #4&5) conclude that students are satisfied with the availability of technology and software. The results also indicated that students were happy with the learning material used in blended learning. Many challenges have arisen, such as lack of communication, non-availability of funding, security problems, and current digital infrastructure for blended learning programs. The finding showed that the biggest problem that the study reported was slow internet connectivity. With this challenge, students could neither attend online classes nor could they submit their assignments on time.
2. In Islamabad universities, blended learning methods are becoming increasingly common. It concerns to approach and pedagogy more than technology integration. The purpose of blended learning and the reasons for adopting it as an instructional method is more important for students' future learning than technology infusion.

Blended learning assessments must be kept in mind. Those students practicing blended learning at their institution are positively aware of the method and technology used in this approach (Finding#6).

3. The current study aims to understand the difference between male and female awareness and practices and between public and private) awareness and practices of blended learning. The findings of the two-way- ANOVA concluded that there are no differences between male and female students on mean awareness and practices. Also, there are no meaningful differences in awareness and practices between public and private institutions students. Finally, also no interaction effect has been found. (Findings # 7&8).

5.4.1 Perceptions of Teachers for currently available facilities to them at their institution.

5.4.1.1 Conclusion of qualitative data analysis

1. The good practices of the commonwealth and other such consortia may be referred to for standards (Finding 1).
2. It is concluded from the finding that teachers are very positive and hopeful, and to improve personalized learning, there is a need to link blended learning and the IT components. (Finding 2).
3. To enhance professional learning among students, teachers said that our institution had developed LMS and an online attendance system, online result submission, etc. It could be more efficient in the future (finding 3).

4. It is concluded that teachers' perception of blended learning about expected challenges says the internet is the big issue and electricity is a big issue for them to conduct blended learning programs at their institutions (finding 4).
5. It is concluded that the teachers need facilities because they want fast speed internet facility to adopt a blended learning approach at their institutions (finding 5).
6. It is concluded that the blended learning approach should be through the constructive process, participation, accountability, parents' involvement, and autonomous structure to make this approach successful at Higher education institutions (finding 6-7).
7. Blended learning is a good mix of conceptual and applied knowledge that would work best. Availability of digital resources, an expert in IT, know PowerPoint well and other software (finding 8).
8. Blended courses offer a way to move beyond a midterm and a final. By combining the benefits of online instruction with the advantages of face-to-face instruction, you might improve learning in your course in ways that are impossible to achieve using only face-to-face meetings or online resources (finding 9).
9. To successfully adopt a blended learning approach, administrators must work on the capacity building of their teachers and equip them for adopting this model (finding 10).
10. Factors affecting blended learning positively are student engagement, student achievement, and student perception. For the negative aspect of this code, teachers do not have the proper teaching capacity to conduct this approach (finding 11-12).

11. All the respondents have sufficient facilities available at their institution for conducting a blended learning approach; they should properly utilize it and make it more effective (finding 13).
12. Most faculty members use Microsoft Teams, Google Classroom, Zoom, Campus Management System, WhatsApp, Vivo, and Google Suite communication tools revealed by the administrators (finding 14).
13. Higher education commission provides sufficient financial resources. Therefore, its administrators must work on utilizing the funds at par (finding 15).
14. Institutions use a blended learning approach to a reasonably good extent, almost middle level, and sufficient. Majorities are not using technology due to insufficient resources. Therefore, administrators can provide relevant resources to their faculty members (finding 15-16).
15. Administrator shared that Almost top-of-line training aids and facilities for online classes have been provided to faculty very religiously and frequently (finding 17).
16. Administrators have challenges in adopting a blended learning program effectively, such as Infrastructural support, lack of proper infrastructure in terms of educational technologies, e-classrooms, and Recording rooms (b) Lack of learning material for blended learning (Finding 18).
17. Perceptions are an excellent approach for efficient, effective, and result-oriented teaching, learning, and research (Finding 19).
18. Administrators believe this approach is only for social sciences. Whereas if fully trained staff use it, this is the most effective method for every discipline (Finding 20).
19. For blended learning, teaching and non-teaching staff and students must be trained (Finding 21).

20. Administrators responded to the skills their faculty, students, and staff required for conducting blended learning at their institutions. They answered that they had been trained during the pandemic and after, with a little more coaching and capacity building (Finding 22).

5.5.1 Triangulation of Data

Objective 1: Examine The Awareness Of A Blended Learning Approach Among University Students, Teachers, And Administrators Regarding Three Areas: Resources, Education, And The Environment

1. Blended learning is more useful and promotes personalized learning to connect students in more self-and active learning.
2. It has the advantage of better flexibility over conventional classrooms.
3. Blended learning is more useful and promotes personalized learning to connect students in more self-and active learning.
4. Favourable in this modern period of technology—easy access to a large array of learning materials.
5. Students, teachers, and administrators show a positive awareness of blended learning in general; they strongly believe that blended learning material is effective and that it encourages student-centered learning.

Objective 2: Explore the current facilities Available For Adopting Blended Learning At Higher Education Institutions

1. The administrator shared that almost top of line training aids and facilities for online classes have been provided to faculty very religiously and frequently.

2. Findings of the data say that, however, transitioning to online teaching, even for some part of the course, could need proper training as it involves advanced teaching methodology, learning new pedagogy, and being able to design curriculum and teaching material that is not only easy to teach online but also easy for the students to grasp the concepts outside the class.
3. The finding shows that every administrator agreed that they have full support, and HEC has already provided funds for Covid-19 to move on to blended learning.
4. Most faculty members use Microsoft Teams, Google Classroom, Zoom, Campus Management System, WhatsApp, Vivo, and Google Suite communication tools revealed by the administrators.

Objective 3: To assess the practices of a blended learning approach among university students, teachers, and administrators

1. Teachers said that blended learning creates a positive effect on student engagement and student achievement.
2. Some teachers said that there is difficulty in analyzing whether students have learned. students don't ask or respond to questions in online mode.
3. Blended learning experiences improved the integration skills among students. students are satisfied with the availability of technology and software at their institutions.
4. In Islamabad universities, blended learning methods are becoming increasingly common. It concerns approach and pedagogy more than technology integration.
5. Blended courses offer a way to move beyond a midterm and a final. By combining the benefits of online instruction with the advantages of face-to-face instruction,

you might improve learning in your course in ways that are impossible to achieve using only face-to-face meetings or online resources.

Objective 4: To determine the factors that were associated with blended learning practices at Higher Education Institutions

1. There is a great emphasis on the fact that teachers, as well as students, need training for conducting an effective blended learning approach.
2. Many challenges have arisen, such as lack of communication, non-availability of funding, security problems, and current digital infrastructure for blended learning programs.
3. It is concluded that the biggest problem that the study reported was slow internet connectivity.
4. Factors affecting blended learning positively are student engagement, student achievement, and student perception.
5. Teachers do not have the proper teaching capacity to conduct this approach.

5.5.2 Conclusion of objective No. 1

The first study objective was to examine the awareness of a blended learning approach among university students, teachers, and administrators. Blended learning combines face-to-face and online instructions for students learning improvement. In this instructional approach, the students learning process combines brick-and-mortar (classroom) instruction with online (computer-based) learning. In the face-to-face part, students interact with other classmates and teachers. In virtual classrooms, students can

learn in a self-paced, access the content, prepare for assignments, and understand concepts properly. Teachers can monitor the progress of the students in online as well as face-to-face classes.

For the objective of this mixed-method study, the researcher collected three different data sets: quantitative data were collected from students using a closed-ended questionnaire, an open-ended questionnaire was used to collect data from teachers, and an open-ended questionnaire was used to collect data from administrators. The researcher developed a closed questionnaire to assess students' awareness of blended learning. More than 84.2% of students strongly agree that practical and helpful material in a blended learning approach helps them to encourage personalized learning. But they also indicated that they strongly agree that teachers and students need the training to adopt a blended learning approach at higher education institutions.

5.5.3 Conclusion of objective No. 2

Most students (73.3%) strongly agree that the blended learning approach they are allowed to learn from online content makes them more independent, enhancing self-directed learning skills. The survey reports found that students enjoyed online learning but experienced challenges when performing self-directed learning. The positive results of applying online/blended learning can inspire higher education institutions across the globe to continue to test these methods, producing their selections on whether to adopt or not online/blended education. For university students, blended learning with mixed web-enhanced programs is often seen as very effective, given the enhanced chances to communicate face-to-face with the teacher and other students.

5.5.4 Conclusion of Objectives No.3 &4

Most recently, blended learning helped teachers and students to share instructional material online by sending “email, messages, planning interactive zoom meetings, and giving computer-based instructions.” The researcher found that despite having some facilities, many challenges remain in participating in a blended learning program in higher education institutions. For example, there is insufficient training for blended learning course design and only using a lecture or discussion method. The researcher also found that Pakistani students face challenges in adopting blended learning with these facilities. The most critical challenges are a) the lack of proper technological infrastructure, b) isolation and lack of social interaction, and c) the lack of proper support from teachers. The researcher also asked students whether the non-availability of a teacher during a discussion forum creates anxiety. Of all students, 15.6% indicated Agree, and 46.4% strongly agree that students' anxiety levels increased without a teacher/lecturer. The Researcher found that many students have all the facilities required for participating in blended learning. More than 70% of the students are satisfied with the technology and software they use for online/blended learning. More than 50% of the respondents indicated they had been provided with the required material. The researcher also concluded that 80% of the students agreed that they received sufficient support from their teachers and administrators.

5.5 Recommendations

1. To promote a blended learning awareness at higher education institutions among students, more blended programs need to be offered. For the effective use of a blended learning approach, students and teachers may be given a training program for

- promoting educational and technological knowledge and capacities among learners (Conclusion 1).
2. The collected data revealed that students do not have adequate resources for adopting blended learning programs. Therefore, it is recommended that more research is done to understand how learning approaches affect students' engagement in the blended learning situation. Moreover, it is also recommended that for the effective development of blended learning at higher education institutions, a shared vision is necessary among students and educational leaders across the institutions (Conclusion: 2).
 3. The findings disclosed that although students are familiar with the technology, most face challenges in adopting blended learning. Elements of cheating and duplicating the work are also a problem. Therefore, it is recommended that teachers thoroughly understand students' issues and make sure they are available in students' discussion sessions. Teachers must also change their routine lecture method into an interactive one to effectively use a blended learning approach (Conclusion: 3).
 4. A recommendation for all higher education institutions is to implement an equal amount of face-to-face and online components to the blended learning courses. This balance has been shown to improve learning experiences for all the students at higher education institutions, and it helps them feel encouraged and supported (Conclusion:4)
 5. Another recommendation is to provide universities with strategies for adopting blended courses into their learning environments. There are no rules at higher education institutions on how blended courses should be given. Universities conduct these learning situations in many ways, and it would be beneficial to have a contract on how

- the blended courses are run. If each teacher shows the period differently, there will be no consistency, and students may not benefit optimally (Conclusion:5).
6. The main technological mechanisms of these problem-based learning approaches are based on the Learning Management System (LMS), web 2.0, web 3.0 technologies, and social media recommended systems. This system includes numerous options, including non-compulsory learning activities, peer-collaborative assignments, suitable web 2.0 and web 3.0 tools, individual or group advice, and social media applications. (Conclusion:6).
 7. Blended learning allows teachers to deliver instructions in different and better ways. Teachers' direct instruction practices may change to better meet the student's needs. Therefore, teachers should Practice direct instruction in smaller chunks and try to gear it toward students learning needs (Conclusion:7).
 8. It is recommended that teachers also believe that the blended learning methodology is unique because it offers excellent insights into developing new learning and teaching methodologies. Blended learning can create new environments for disseminating knowledge (Conclusion:2).
 9. Researchers recommend that blended learning maybe continues with more facilities. With limited facilities available to teachers and students, it isn't easy to be involved in blended learning institutions that offer blended learning courses. They should ensure stable internet connectivity between teachers and students and arrange awareness and training sessions for teachers and students to use it more effectively (Conclusion 3,4,5&6).

10. Most teachers recommend blended learning best for students who cannot attend regular or F2F classes. Some said training and motivational programs must be ensured before and during blended learning courses (Conclusion 7 to 9 & 14).
11. It is concluded that administrators agreed that they have sufficient funds from HEC and other sources; therefore, it is recommended that they make strategies to utilize that fund properly (conclusion 10).
12. Blended learning is a fruitful method that helps and is easy for both teachers and students, and it is expected that blended learning will throw a significant impact in the future and be part of all institutions. More interactive classes, various ads- and software, training teachers and students, and follow-up activities (Conclusion 11&12).
13. To solve the challenges faculty and institutions face for not effectively adopting blended learning, administrators gave some crucial suggestions to overcome this issue (Conclusion 13).
14. The instructors may be trained to give their best while preparing and delivering lectures, and adequate training may be provided to meet the standards. The policies and programs in the education structure may be improved to achieve higher achievement standards and goals. It is also recommended that the quality of work must be improved. They have something they can compare their work to and identify their learning gaps. This helps to show where students need improvement, and students become more motivated about learning and confident in their abilities (Conclusion 14-17).
15. The most redeeming feature of blended learning is greater flexibility and control over knowledge. This must be further tailored to the needs of students. Many teachers recommended that teachers adopt different teaching pedagogy than what they use in

face-to-face teaching. For this, the institutions may provide proper training to their faculty. Some suggested that sufficient funds must be allocated and well spent for all necessary infrastructure, be prepared, and use the right technology tools (Conclusion 18-21).

5.5.1 Recommendations for Future Researchers

1. The study was conducted at the federal level with students, teachers, and administrators at Higher Education institutions. In the future, similar studies may be conducted at the provincial level with primary and secondary-level students, teachers, administrators, and parents. There is a dire need to assess readiness for adopting blended learning at the primary level.
2. The study adopted questionnaires for assessing blended learning readiness, whereas, for future studies, observation techniques and focus-grouped discussions may also be adopted.
3. Recommendation is to provide universities with strategies for adopting blended courses into their learning environments. There are no rules at higher education institutions on how blended courses should be given. Universities conduct these learning situations in many ways, and it would be beneficial to have a contract on how the blended courses are run. If each teacher shows the period differently, there will be no consistency, and students may not benefit optimally.
4. It is recommended that a blended learning approach may be considered necessary in the curriculum for the student teachers and administrators due to the COVID-19 Pandemic. It may be the new normal for all educational institutions.

5. It is a recommendation for all higher education institutions to implement an equal amount of face-to-face and online components to the blended learning courses. This balance has been shown to improve learning experiences for all the students at higher education institutions, and it helps them feel encouraged and supported.

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APPENDICES

Appendix 1 Permission Letter (For Supervisors at University)



INTERNATIONAL ISLAMIC UNIVERSITY

ISLAMABAD – PAKISTAN

Faculty of Social Sciences

Department of Education

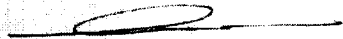
P.O. Box.12-43 Telegram: ALJAMIA Telex.54068 HU PK, Fax 9257929
Tel: 051-9258008

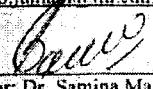
Dated: November 5th, 2021

TO WHOM IT MAY CONCERN

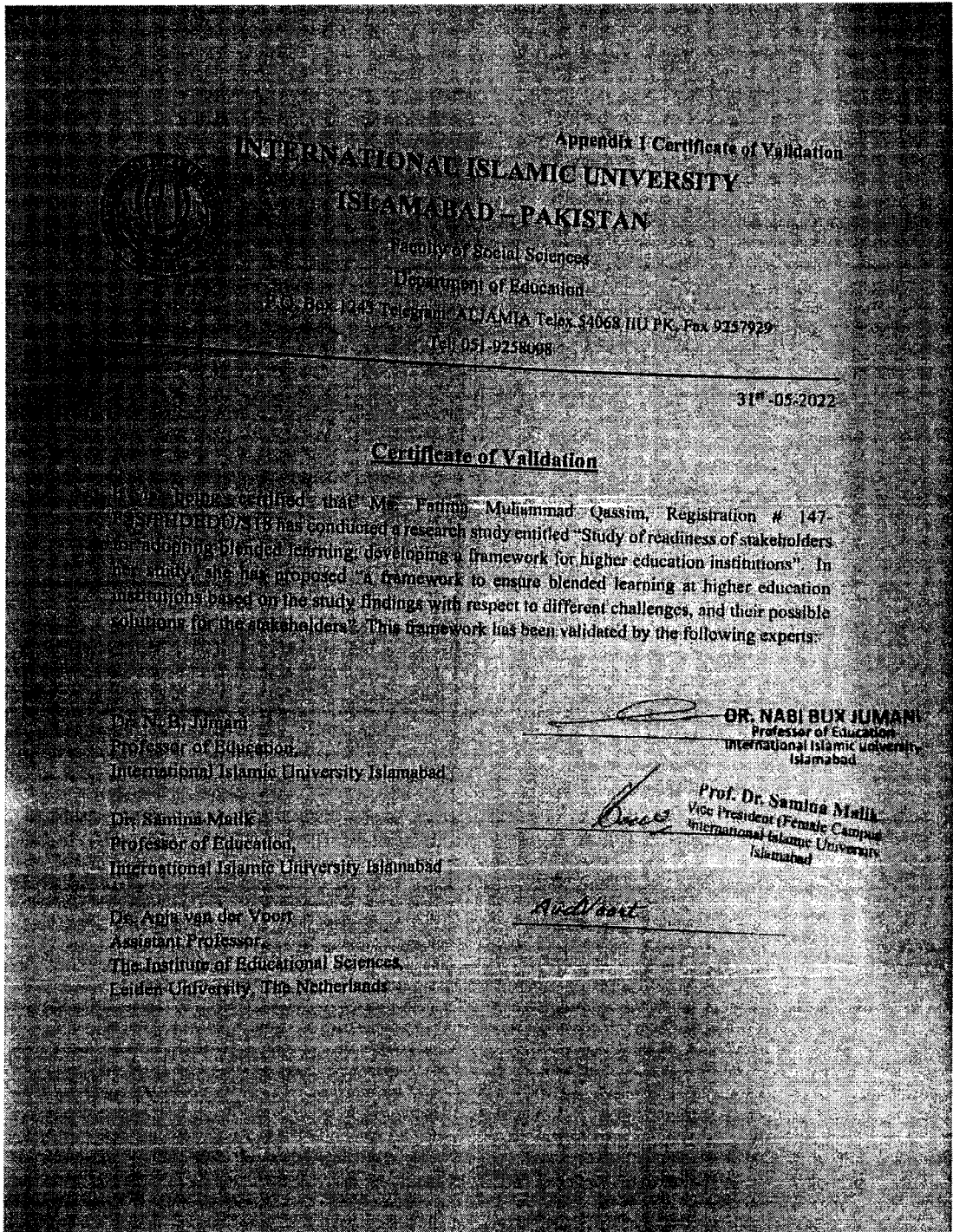
It is being certified that Ms. Fatima Muhammad Qassim, Reg# 147-FSS/PHEDU/S18 is working on her PhD dissertation entitled "Study of Readiness of Stakeholders for Adopting Blended Learning: Developing a Framework for Higher Education Institutions" under our supervision. For addressing research objectives, she is required to collect data from administrators, teachers and students of your institution. The collected data will be kept confidential and only be used for research purposes. Your cooperation will be highly acknowledged. You are requested to kindly facilitate her in data collection.

Copies of data collection instruments are attached with this letter.


Supervisor: Dr. N. B. Jumani
Professor of Education
VP (Administration, Finance & Planning)
International Islamic University, Islamabad
Email: nb.jumani@iiu.edu.pk


Co-Supervisor: Dr. Samina Malik
Professor of Education
Former Dean Faculty of Social Sciences
International Islamic University, Islamabad
Email: samina.malik@iiu.edu.pk

Appendix 2 Validity Certificate for Framework



Appendix 1: Certificate of Validation

INTERNATIONAL ISLAMIC UNIVERSITY
ISLAMABAD - PAKISTAN

Faculty of Social Sciences
Department of Education

P.O. Box 1245 Telegram: ALIAMI Telex: 54068 III PK. Fax: 9357929
Tel: 051-9258068

31-05-2022


Certificate of Validation

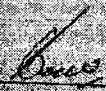
It is hereby certified that Ms. Fatima Muhammad Qasim, Registration # 147-... has conducted a research study entitled "Study of readiness of stakeholders in adopting blended learning: developing a framework for higher education institutions". In the study, she has proposed "a framework to ensure blended learning at higher education institutions based on the study findings with respect to different challenges, and their possible solutions for the stakeholders". This framework has been validated by the following experts:

Dr. Nabi Juman
Professor of Education
International Islamic University Islamabad

Dr. Samina Malik
Professor of Education
International Islamic University Islamabad

Dr. Anja van der Voort
Assistant Professor
The Institute of Educational Sciences
Eindhoven University, The Netherlands


DR. NABI BUX JUMAN
Professor of Education
International Islamic University
Islamabad


Prof. Dr. Samina Malik
Vice President (Female Campus)
International Islamic University
Islamabad


Anja van der Voort

Appendix 3 Interview guide for Administrators

Study of Readiness of Stakeholders for Adopting Blended Learning:

Developing a Framework for Higher Education Institutions

TO WHOM IT MAY CONCERN

Greetings

Dear madam/sir

It is hoped that you must be doing well. Your good self is aware that for the improvement of the education system worldwide, many transitions and innovations emerged, and blended learning is also one of those. Therefore, this study will address the problem of whether the faculty members and administrators understand the concept of blended learning or not. What facilities are provided to the institutions for adopting blended learning? By conducting this study employability and quality of graduates are improved. This study will assess the readiness and preparedness of teachers and administrators for adopting blended learning in Higher Education Institutions.

I invite you to participate in this research consisting of some open-ended statements/questions, which would take approximately 20-30 minutes to complete. I assure you of the confidentiality of your responses which will be used only for the current research and will not be disclosed elsewhere for any other purpose. I would be delighted to share the findings, conclusion & recommendations of our research, if desirable.

Thank you for your support and assistance

Regards

Fatima Muhammad Qassim
Ph.D. Scholar IIU, Islamabad

Demographic Information

Name: _____

Age: _____

Designation: _____

Gender:

Male:

Female:

Qualification:

Masters:

MS/M.Phil.

Doctorate:

Post-Doctorate :

Experience:

Below 5:

5 years:

Above 5:

Any other: _____

Experience in Educational Sector: _____

Area of Work: _____

1. How do you see at Blended Learning (BL) approach at Higher Education Institutions (HEIs)?

2. Do you think the faculty at your institution is ready to adopt this approach (BL)?

3. Do you think your teaching staff has sufficient skills (capacity) to implement blended learning effectively?

4. How often your institution is providing training facilities for your faculty members regarding blended learning?

5. What technologies (LMS, Google Classroom, zoom, etc.) would you think are most essential for implementing Blended learning?

6. Which technologies of Blended learning are you frequently employing at your institution?

7. Do you have sufficient financial resources to provide technology to teachers for blended learning programs?

8. To what extent your staff members are utilizing technologies to promote blended learning?

9. Do you think your institution's available technological infrastructure supports adopting blended learning?

Yes

No

Any other:

10. Are finance providers (HEC, University) ready/willing to arrange and adopt blended learning at your educational institutions?

Which kind of challenges are you facing for implementing blended learning in your institution?

11. What strategies do you suggest for improving blended learning implementation at HEIs?

Thank You So Much Respected Sir/Madam, for Your Precious Time

Appendix 4 Interview guide for Teachers

Study of Readiness of Stakeholders for Adopting Blended Learning: Developing a Framework for Higher Education Institutions

TO WHOM IT MAY CONCERN

Greetings

Dear madam/sir

It is hoped that you must be doing well. Your good self is aware that for the improvement of the education system worldwide, many transitions and innovations emerged, and blended learning is also one of those. Therefore, this study will address the problem of whether the faculty members and administrators understand the concept of blended learning or not. What facilities are provided to the institutions for adopting blended learning? By conducting this study employability and quality of graduates are improved. This study will assess teachers' and administrators' readiness and preparedness for adopting blended learning in Higher Education Institutions.

We invite you to participate in this research consisting of some open-ended statements/questions, which would take approximately 20-30 minutes to complete. We assure you of the confidentiality of your responses which will be used only for the current research and will not be disclosed elsewhere for any other purpose. We would be delighted to share the findings, conclusion & recommendations of our research, if desirable.

Thank you for your support and assistance

Regards

Fatima Muhammad Qassim

Ph.D. Scholar IIU, Islamabad

Demographic Information

Name: _____

Age: _____

Designation: _____

Gender:

Male:

Female:

Qualification:

Masters:

MS/M.Phil.

Doctorate:

Post-Doctorate:

Experience:

Below 5:

5 years:

Above 5:

Any other: _____

Experience in Educational Sector: _____

Area of Work: _____

1. What are your perceptions of professional learning experiences related to using a blended learning methodology to personalize learning?

2. What professional learning opportunity do you feel had the greatest impact on using blended learning?

3. What knowledge, skills, and resources do you feel teachers need to transition to a blended instructional approach?

4. What other factors have you seen impacting (positively or negatively) the uptake of blended teaching and learning approaches?

5. I received the technical support I needed during this course.

6. What support would you like to have had before and during your blended teaching experiences?

7. What are the advantages of using Blended learning as a learning method?

8. This Blended learning experience has improved my ability to access and use the course content

9. The online and face-to-face components of the Blended learning environment work together.

10. I have problems using technologies in a Blended learning environment.

11. Do you think an advantage of blended learning includes greater flexibility in arranging student class activities?

12. What do you expect in the future regarding blended learning at your institutions?

13. How stressful do you find teaching remotely during the COVID-19 pandemic?

14. Would you consider using blended teaching with your students next year? Why yes/not?

15. Based on your experience, what advice or recommendations can you give to promote academic performance in Blended learning courses?

Thank you so much, respected sir/madam, for your precious time

Appendix 5 Questionnaire for Students

Study of Readiness of Stakeholders for Adopting Blended Learning:

Developing a Framework for Higher Education Institutions

Purpose Statement:

This questionnaire explores students' readiness for adopting blended learning at higher education institutions. Based on the findings, the study will develop the framework. It is requested to kindly take a few minutes to record your opinion on each question.

Gender

Male: Female:

Degree Program

BS/B. A^{4th} Semester

Department: _____

Institution: _____

Below are some statements under the topic “Study of readiness of stakeholders for adopting blended learning: developing a framework for higher education institutions.”

Each statement has a five-point scale, and you are requested to choose one of them.

Strongly Agree: **S.A**, agree: **A**, Neutral: **N**, disagree: **D**, Strongly Disagree: **S.D**

S.	Statements	S.	A	N	D	S.
No		A				D
Awareness/Perception of Blended Learning						
1.	Teachers and students need training regarding the blended					

	learning mode.					
2.	Face-to-face lectures and online material/PowerPoints reinforce the concepts in a better way.					
3.	Blended learning encourages me in more self and active learning.					
4.	The material provided in blended learning is relevant and useful, and adequate.					
5.	Blended learning experiences have improved integration skills					
6.	Blended learning is more effective than traditional classroom learning.					
7.	Blended learning helps to carry out academic tasks more efficiently.					
Practices related to Blended Learning						
8.	Blended learning encourages learners to take responsibility for their learning.					
9.	Blended learning helps learners become self-knowledgeable.					
10.	I am experienced in accessing information from the web.					
11.	I find blended learning more convenient than conventional learning mode.					
12.	Blended learning helps me to think in-depth about a subject					

13.	I take more interest in attending classes in blended learning mode than conventional.					
14.	The services that the university provides in blended learning courses are satisfactory					
15.	I am satisfied with the activities which take place in the blended learning environment					
16.	Blended learning offers the possibility to manage time efficiently					
Facilities for Blended Learning						
17.	I am satisfied with the technology and software I am using for online learning					
18.	Additional material is provided in the blended learning environment					
19.	The learning Management System is very user friendly					
20.	Required technical support is provided by teachers/administrators					
21.	Essential resources to practice blended learning are available at my institution					
Challenges of adopting Blended Learning						
22.	Slow internet connectivity is a problem in blended learning					
23.	In blended learning programs, outdated learning resources are generally utilized					

24.	Lecturers' non-availability during live discussion forums creates anxiety among students					
25.	The practice of blended learning is more demanding than conventional learning					
26.	Superficial deadlines in blended learning activities cause failure among students					
27.	Usually, course content is not arranged properly in blended learning					
28.	Teachers only use the lecture method, and that creates the element of boredom					

Thank You So Much for Your Participation in This Research

