Assessing University Students' Preparedness for Online Learning Amidst the COVID-19 Pandemic: Insights from Punjab, Pakistan

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The objective of this study is to evaluate the preparedness of university students in Punjab, Pakistan for the implementation of online classrooms in light of the Coronavirus pandemic. This investigation delves into the assessment of higher education students' readiness for online learning. It focuses on understanding the extent to which students are equipped to engage in remote education. Through a comprehensive evaluation, this study aims to identify factors that influence preparedness, such as technological proficiency and infrastructure support. The research employs quantitative methods, utilizing surveys or questionnaires to gather insights into students' perceptions and abilities regarding online learning. Results indicated initial readiness in technical and academic skills, albeit with noted deficiencies in interest, remote education readiness, and time management. Following the course, improvements emerged, although challenges persisted in motivation, distance learning inclination, and time management. Comparative analysis among non-resource users revealed similar readiness trends. Statistical tests unveiled associations between training, self-directed learning, and preparedness, underscoring their impact on online education. The research emphasizes effective time management strategies, self-directed learning enhancements, and teacher training to optimize online education experiences. Insights gleaned provide actionable recommendations for institutions to enhance students' preparedness and improve online learning in higher education.

Keywords: Remote Education, Non-Resource Users, Technical and Academic Skills.

Introduction:

The landscape of higher education has witnessed a seismic shift with the widespread adoption of online learning, catalyzed further by the global pandemic. As universities navigate this digital transformation, it becomes pivotal to evaluate the preparedness of higher education students for this transition. This evaluation is particularly crucial in ensuring equitable access, effective engagement, and successful learning outcomes in the realm of remote education. Distance learning, commonly known as remote learning, encompasses a variety of educational methods where learners and instructors or educational institutions are physically separated.

It includes traditional approaches like correspondence and modern technological means such as video conferencing, satellite broadcasts, and other technology-enabled communication platforms. This mode of learning can occur either synchronously or asynchronously and may or may not involve the use of online tools and resources. It is closely associated with online learning, also referred to as e-learning, which delivers education through digital platforms like learning management systems, web conferencing tools, and educational applications. Online learning is seen as an evolution of distance learning, enabling students to access course materials,

engage in discussions, and complete assignments regardless of geographical barriers using internet connectivity. This format can take place synchronously, allowing real-time interactions between students and instructors, or asynchronously, allowing students to progress at their own pace. The landscape of online learning in higher education has experienced significant growth over recent decades. In the United States, for instance, a notable percentage of students in 2019 within degree-granting postsecondary institutions engaged exclusively in distance education. However, these proportions vary across countries. Some nations have shown a substantial percentage of students exclusively enrolled in distance HE programs, while others have had minimal enrollment in such programs. In Mexico, during the 2019–2020 academic year, a considerable number of university students were engaged in distance or non-schooled careers, excluding those primarily attending in-person classes but incorporating one or more online courses.

As universities closed and social distancing became crucial, distance learning became the standard for numerous students and educators. This transition was made possible by digital advancements. The pandemic underscored the pros and cons of online education. It highlighted how technology can offer adaptable and convenient learning options, especially for students unable to attend classes in person. However, it also underscored the importance of in-person interactions and the emotional elements of learning that are challenging to recreate online. The platform demonstrates features such as collaboration, interactivity, expansiveness, and flexibility. The Internet serves as a tool connecting students, faculty, and colleagues within and outside the institution [1]. The concept of institutional readiness to embrace and implement distance learning refers to the state in which an institution is mentally and physically prepared for this mode of education. This includes the institution's ability to integrate online classes into their regular academic schedule using virtual platforms like Zoom or Skype [2]. Numerous studies have demonstrated that preparedness stands as the paramount determinant for successful engagement in online learning within the realm of higher education. Their study put out a conceptual framework aimed at evaluating the preparedness of educational institutions for the adoption of e-learning. The researchers identified various elements that might potentially impact the successful implementation of an e-learning system, emphasizing the need to consider these factors in order to develop a feasible and effective e-learning project [3]. The primary dimensions considered in the model of online learning include content, pedagogy, technology, culture, and awareness. The author of the paper emphasizes that the readiness of students, teachers, technology, and the environment is crucial in developing a cohesive and effective strategy. The topic of online learning or e-learning in Pakistan has been a subject of ongoing discussion for several years. Previous research has identified both the advantages and drawbacks of the subject under investigation [4].

The primary obstacles to the implementation of e-learning in Pakistan have been identified as a limited education budget, as reported by the Economic Adviser's Wing of the Finance Division of the Government of Pakistan in 2011, and a lack of access to up-to-date computer technology, resulting in an inability to properly utilize such resources, as highlighted the most prominent barriers to online learning were identified as English language proficiency and electricity failure. Hence, a recent scholarly investigation proposed the implementation of hands-on training workshops specifically targeting the faculty members of educational institutions. Initiatives aimed at facilitating online education were initiated with the founding of the Virtual University in 2002. In a study conducted statistical evidence was discovered about the readiness of students for online learning. Additionally, a conceptual model was created by the researcher to assess the communication and technical competencies of students in relation to their retention in online learning [5].

In a study, it was shown that students regarded online preparedness competencies as very relevant, indicating their recognition of the importance of these skills and abilities.

Nevertheless, students consistently assigned high ratings to the majority of competencies, indicating a strong sense of confidence in their online learning skills. Additionally, their high ratings in technical competence suggest that they possess the necessary abilities for online learning, likely acquired via prior experience. A significant proportion of learners at the upper level, specifically 41 %, perceive a lack of connection, communication, and involvement as a prevailing issue. According to a study, there is a limited correlation between students' familiarity with technology, age, and self-regulation and their adoption and acceptance of online learning in developing countries. Additionally, the study found that students who are highly familiar with technology may or may not hold positive perceptions towards e-learning when making the decision to adopt it. A significant proportion of students struggle to meet the requirements of higher education due to their limited technological proficiency [6] [7].

Asserted that competencies and qualities are the primary factors that exert a significant influence on one's preparedness for engaging in online learning. The readiness for implementing e-learning projects in higher education institutions worldwide is determined by several factors and requirements. These factors include a positive attitude towards technology and computers, the ability to learn effectively using technology, the skill to manage time efficiently with a belief in self-direction, and the willingness to embrace innovation [7]. The study examined the exploration of university-level teachers' preparation to teach online, specifically focusing on their perspectives on communication, confidence, and responsibilities. This refers to the extent to which colleges are well equipped to facilitate an online learning environment and the manner in which teachers conduct themselves in this context. It is evident that a significant portion of students from low-income backgrounds in the United States lack the necessary preparedness to excel in higher education [8]. The primary variables that contribute to a learner's preparation for e-learning, which is fundamental to the online learning environment, have been identified as time management, self-guidance skills for fostering motivation, and the ability to engage in meaningful learning experiences. In order to attain this objective, various elements, in addition to the dissemination of course content, contribute to the advancement of learners in terms of their acquisition of knowledge and proficiency in communication. The principles of self-regulated, autonomous learning, and self-directed learning are influential aspects within the context of online learning environments. One of the responsibilities and goals of teaching is to facilitate the development of students' skills necessary for comprehending and engaging with these concepts, fostering their active participation in the learning process [9][10]. The academic performance of students can be enhanced by possessing a strong passion for learning and exhibiting a high level of self-directedness and self-education. Therefore, this ultimately results in achieving academic success. There exists a direct correlation between self-directed learning and the academic achievement of learners in higher education. Furthermore, emphasized that self-directed learning holds greater significance than technology skills in this context [11].

In the study, an examination was undertaken to investigate four key attributes associated with self-directed learning. These attributes include independence, whereby self-directed learners assume complete responsibility for analyzing their own learning experiences. Additionally, self-management is highlighted, as learners in this context are responsible for identifying their learning objectives and effectively managing their time to accomplish their tasks. Furthermore, motivation for knowledge acquisition is emphasized, as learners are driven to acquire knowledge in order to achieve their desired learning outcomes. Lastly, problem-solving skills are identified as an essential attribute, enabling learners to address deficiencies and overcome obstacles encountered during the learning process [12]. The notion of self-directed learning encompasses the integration of four distinct traits that enable individuals to take control of their own learning process. In the context of online learning, university educators employ instructional strategies that promote self-direction in order to foster self-education among students and assist in the effective implementation of e-learning. Therefore, in order to address

the issue of motivating students to fully engage in the e-learning process, it becomes imperative to devise methodologies that can assess students' preparedness for transitioning into higher education-level e-learning [13].

The Higher Education Commission (HEC), which is accountable for ensuring the provision of high-quality higher education, also aimed to build an efficient online learning system. As part of this effort, the HEC implemented the "Online Lecturing and Net-Meeting using IP-based Video Conferencing System." The project initially involved the participation of 18 public sector universities (Pakistan Institute of Development Economics, 2020). In 2006, researchers from several disciplines conducted online lectures covering a wide range of subjects. In addition, lectures that were previously filmed at international universities were disseminated through broadcasting channels [14]. In 2007, the establishment of the National ICT R&D Fund aimed to facilitate the acceleration of e-learning initiatives in Pakistan. As a result, the adoption of e-learning is gaining momentum in Pakistan. In recent times, it has become increasingly common for universities to develop online student portals, with distinct portals being established for private and ordinary students. Additionally, faculty portals have also been implemented by certain universities. This technological advancement allows for the online submission of assignments and facilitates the detection of plagiarism, hence contributing to the growing recognition of these practices [15]. Currently, several universities in Pakistan, namely Bahauddin Zakariya University in Multan, COMSATS, University of Karachi, and University of Peshawar, have implemented online learning as a mode of education. The enhancement of current skills is imperative for advancement in the modern world. This is the reason why the government has implemented initiatives such as Digi-skills and the President's Initiative for Artificial Intelligence and Computing. Both of these initiatives have effectively been equipping a large number of individuals in Pakistan with contemporary skills [16].

The coronavirus, officially known as COVID-19, first gained public attention in December 2019 and rapidly disseminated worldwide. The sudden imposition of stringent lockdown measures brought life to an abrupt halt, with the primary objective of curbing the future spread of the infection. However, the occurrence of an epidemic. The global education sector has been significantly affected by the detrimental consequences of the Coronavirus pandemic. Based on the findings of UNESCO, it has been determined that a significant global impact has been observed among students, including a total of 1.4 billion individuals across various educational institutions such as schools, colleges, and universities [17]. The current state of affairs in Pakistan regarding the provision of higher education is more concerning since it lags far behind its neighboring countries, namely India and Bangladesh. Due to the observed decline in economic advancement, the government's ability to allocate a larger budget for education has been constrained, resulting in the continuation of customary budgetary allocations. The allocation for education in the Federal Budget of Pakistan for the financial year 2020-2021 did not witness any substantial augmentation, as the cultural values of collectivism and respect for authority in Thailand have a significant impact on the preference for group work, resulting in the development of passive learners and the promotion of rote learning. This stands in direct contrast to the principles of e-learning, which rely on learners' self-motivation and self-regulation. Consequently, the cultural and societal values of Thailand are not well-aligned with the implementation of e-learning [18].

One additional problem faced by e-learning in Pakistan pertains to capacity building and the availability of up-to-date information technology instruments at the receiving end. According to a survey conducted in 2013, the research findings revealed that a mere 8% of the total population has internet accessibility, with computer literacy being very low [19]. In the year 2020, protests by students against the absence of internet services persisted in certain regions of the country. Based on the findings of the Inclusive Internet Index 2020, Pakistan ranks 76th out of 100 nations and 24th out of 26 Asian countries in relation to the accessibility and availability of

Internet services. According to a report by BBC English in 2020, the percentage of individuals in Pakistan who have access to the internet stands at 35 percent. The situation is exacerbated by insufficient financial resources, disparities in educational opportunities between different social classes, and the gap between urban and rural areas [20]. Nevertheless, emerging nations, such as Pakistan, are endeavoring to address the aforementioned circumstances. The closure of educational institutions in response to the Coronavirus outbreak has been notified by the Higher Education Commission of Pakistan. Additionally, universities have been instructed to make necessary arrangements for the implementation of e-learning methods [21]. The implementation of an efficient monitoring and assessment system is vital in this scenario, as it has consistently been a significant concern within the realm of higher education. The resignation serves as an illustrative example of an issue pertaining to the management of education quality [22].

The objective of this investigation is to delve into the readiness of higher education students for online learning, exploring their proficiency, adaptability, and accessibility to the necessary technological infrastructure. This inquiry aims to illuminate the factors influencing students' preparedness, including their existing computer skills, comfort with online platforms, and the adequacy of institutional support.

Methodology:

The study was conducted between August 9th and October 21st, 2020, and aimed to assess higher education students' preparedness and experiences regarding online learning. Employing both descriptive and exploratory methods, the data was collected using a Likert scale-based questionnaire developed and validated by experts from Lahore College for Women University in Lahore [23].

Population, Sampling, and Data Collection:

The study encompassed all university students in Punjab province engaged in online classes during the survey period. Two different sampling methods were utilized across these studies. The first employed simple random sampling, recruiting 400 students from various academic disciplines across 10 universities, both public and private from the first three semesters nationwide, utilizing self-assessment instruments.

Ethical Considerations:

The ethical framework was central in both studies, emphasizing confidentiality, data privacy, and the non-categorization of results. While one sought approval from the Institutional Research Ethics Committee of Technologic de Monterey, the other waived ethical review since data collection didn't meet human subject research requirements.

Research Approach and Instrument Design:

The current study adopted quantitative methodologies, employing a Likert scale with seven dimensions to evaluate students' readiness for online learning [24]. The instruments underwent rigorous validation, including Cronbach's alpha coefficient assessment, ensuring reliability [23].

Research Design and Data Analysis:

The research design encompassed a pre-experimental pre-post-test approach, inviting students to assess their online learning preparedness at the beginning and end of the semester. Statistical analyses were conducted using SPSS, MS Excel, and MINITAB® software to evaluate associations and internal consistency.

Educational Resource Strategy:

One study emphasized curating educational resources, and providing students with materials to reinforce weak areas in online learning readiness. Three resources were offered for each dimension, intending to enhance students' preparation for online study.[25].

Data Analysis:

The present discourse aims to conduct an analysis of the subject matter at hand. The data was subjected to analysis using descriptive statistics. Subsequently, the statistical tool of

simple percentage and chi-square test was employed to evaluate and determine the presence of significant associations pertaining to e-readiness in the context of higher education. The assessment of these relationships was conducted in line with predetermined acceptance criteria. The analysis encompassed the computation of frequencies and percentages, while the inferential analysis involved conducting tests of association with the Pearson chi-square test. A set of six inquiries pertaining to demographic information was posed to both students and teachers. The outcomes of this survey are presented. The sample size for the learners was determined to be 469 individuals. The study involved a total of 200 university students (56%) from social sciences, 30 students (6.2%) from business and law, and 32 students (7%) from arts and humanities. These students were selected from six public institutions and nine private universities. The participants were selected from a diverse range of academic disciplines, including social sciences, business and law, natural and life sciences, as well as arts and humanities [24].

Table 1. Distribution of Students by Field of Study

Field of Study	Number of Students	Percentage
Social Sciences	200	56%
Business and Law	30	6.2%
Arts and Humanities	32	7%
Natural and Life Sciences	138	34.5%

In order to facilitate the generalizability of the findings, the participants were selected through the implementation of a simple random sampling technique. In the study, a total of 400 students participated, with 29.8% (n = 130) being male and 70.2% (n = 270) being female. These students were selected for the study by a simple random selection method. The participants were pursuing majors in educational administration, including disciplines such as social sciences, business and law, natural and life sciences, and arts and humanities. The research tool utilized in this study was a questionnaire, which demonstrated a high level of reliability with a coefficient of 0.79. The researchers employed quantitative methodologies for the study of the data. The research sample comprised 400 students from a total of 10 universities, including 5 public and 5 private institutions. These students were recruited using a basic random sampling technique and represented four distinct fields of study. The data collection was obtained through administering research questionnaires to the participants[26]. The questionnaire consisted of two distinct components. The Likert scale is a commonly used measurement tool in research and surveys. The accuracy and relevancy of the instrument were assessed using the Cronbach's alpha coefficient. A total of 100 individuals utilized laptops or computers for their online educational pursuits, while a majority of 70% relied on smartphones for the same purpose. A total of 53% of the student population utilized Wi-Fi, while 45% relied on 2G/3G/4G networks. A mere 2% of students employed Ethernet technology, with a solitary individual out of 400 pupils opting for tablet usage. The present study focuses on the analysis of bivariate data.

Online classes can be described as the distribution of educational content to students who are enrolled in a course, facilitated by the use of information technology. Students' readiness, in this context, refers to the extent to which they are adequately prepared to engage with and benefit from instructional materials delivered through digital platforms. Additionally, it encompasses the proficiency level of students who are provided with state-of-the-art equipment and devices. A set of indicators was established to assess students' preparedness for engaging in online learning. Out of the total sample size of 400 students, 270 participants identified as female and 130 participants identified as male, as shown by their responses to the questionnaire. There were 255 instances that were situated in urban settings, whereas 160 instances were found in rural locations. The participants in this study were affiliated with a total of 10 universities, both public and private, located in the province of Punjab.

Table 2. Device Usage for Online Educational Pursuits

Device	Number of Users
Laptops/Computers	100
Smartphones	280
Wi-Fi	212
2G/3G/4G Networks	180
Ethernet	8
Tablets	1

The distribution of responses across genders was consistent for different statements. and female students in terms of readiness and familiarity with online classes were found to be similar. There was a statistically significant difference observed between male and female students in their perception of online classes as being fascinating, with a significance level of 4.2%. A chi-square test was utilized to examine the relationship between higher education students based on their gender. The presence of online class accessibility exhibited a notable correlation with gender-specific perspectives on preparedness and experiences in online education. Therefore, the ability to sustain class experience throughout online sessions was found to be more manageable compared to maintaining class discipline. The data shown in the table above indicates that there was no statistically significant disparity in judgments of readiness to participate in online classes based on gender. The findings of the study revealed a statistically significant correlation between self-directed learning and test scores, as evidenced by the attitudes and actions exhibited by online learners. Based on the data collected for the study, it was found that students expressed a preference for teachers to undergo online teaching training sessions prior to commencing online classes, as an indicator of their preparation for e-learning. The findings indicated a significant level of preparedness for motivation, as evidenced by the high overall readiness score among the participating students in the study (chi-square = 0.892, p = 0.029).

Table 3. Readiness for Online Classes Based on Gender

Aspect	Gender Difference	Significance Level
Familiarity with Online Classes	Similar between genders	-
Perception of Online Classes as Fascinating	Statistically different	4.2%
Internet Self-Efficacy	Significant disparity	-
Judgments of Readiness for Online Classes	No significant difference	-
Preparedness for Motivation	Significant level	2.9%

The obtained p-value for the chi-square test indicates that there is no significant difference in the distribution of responses among respondents from urban and rural locations in relation to their claims about online learning experience and preparedness for online classes. An evaluation was conducted to compare different areas based on certain features, namely the experience gained from online sessions, traditional methods, and readiness for on-campus learning. The chi-square test yielded statistically significant evidence indicating a strong correlation between online programs and learners' preparation competency.

In this research work, a pre-validated instrument was employed for data collection. Consequently, an experimental study was conducted to validate its effectiveness among higher education students within the Pakistani environment. The study employed SPSS (Statistical Package for the Social Sciences) version 25 for data analysis. In order to achieve this objective, the chi-square test was utilized and the corresponding degrees of freedom were determined and computed.

Results and Discussion:

In the investigation assessing higher education students' readiness for online learning, there were notable trends in self-evaluations before and after the course. Prior to the course, students felt well-prepared in certain aspects: Technical and internet-based skills - 40% highly prepared, 49% prepared; note-taking abilities - 30% highly prepared, 54% prepared; and understanding of academic methodologies - 29% highly prepared, 49% prepared.

Table 4. Self-Evaluation Before the Course

Dimension	Highly Prepared (%)	Prepared (%)	Need Reinforcement (%)	Moderately Prepared (%)
Technical Skills	40	49	-	-
Note-taking Abilities	30	54	-	-
Understanding Methodologies	29	49	-	-
Interest and Enthusiasm	-	-	8.2	34.8
Readiness for Remote Ed.	-	-	9	25
Effective Time Utilization	-	-	4	30

However, they identified areas of lower readiness, particularly in interest and enthusiasm 8.2% needed reinforcement, 34.8% moderately prepared; readiness for remote education 9% needed reinforcement, 25% moderately prepared; and effective time utilization 4% needed reinforcement, 30% moderately prepared.

Table 5. Self-Evaluation after the Course Dimension

Dimension	Highly Prepared (%)	Prepared (%)	Need Reinforcement (%)	Moderately Prepared (%)
Technical Skills	51	43	-	-
Note-taking Abilities	39	57	-	-
Understanding Methodologies	33	51	-	-
Interest and Enthusiasm	-	-	9	37
Readiness for Remote Ed.	-	-	8	23
Effective Time Utilization	-	-	3	24

Table 6. Self-Evaluation of Non-Resource Users Before the Course Dimension

Dimension	Highly Prepared (%)	Prepared (%)	Need Reinforcement (%)	Moderately Prepared (%)
Technical Skills	45	47	-	-
Note-taking Abilities	23	57	-	-
Understanding Methodologies	26	54	-	-
Interest	-	-	31	23
Interest in Remote Learning	-	-	19	31
Self-regulation of Learning	-	-	10	39

Nevertheless, challenges persisted, notably in interest and motivation 9% needed reinforcement, 37% moderately prepared; inclination towards distance learning 8% needed reinforcement, 23% moderately prepared; and effective management of time 3% needed reinforcement, 24% moderately prepared. Comparatively, among students who did not utilize available resources, their pre-course self-assessment closely mirrored the broader group, showing an inclination towards technical skills 45% highly prepared, 47% prepared; reading and

writing habits 23% highly prepared, 57% prepared; and study habits 26% highly prepared, 54% prepared.

Discussion:

The majority of participants confirmed their proficiency in internet skills and expressed confidence in using productivity software like Word Processing software, Zoom, Microsoft Teams, Microsoft Edge, and other ICT tools. Bivariate analysis revealed a significant link between teacher training before online classes and e-learning. The primary aim of introducing online classes was to ensure access to study materials and offer training in electronic pedagogy before starting online instruction. This study highlights a strong association between academic success and self-directed learning in higher education, regardless of the learning environment—traditional classrooms or online platforms. As e-learning costs decrease over time, academic performance is anticipated to improve. These findings collectively suggest that higher education students in Pakistan were well-prepared for online learning during the COVID-19 outbreak. They demonstrated motivation, actively engaging in online discussions and displaying a proactive attitude toward acquiring knowledge.

Motivation emerged as a crucial factor in online learning during the pandemic. This study enlightens us about our strengths and weaknesses, aiding our readiness for online courses. Besides technological skills, considerations of involvement, motivation, and positive attitudes are vital in addressing societal and cultural challenges for future e-learning acceptance among students. Moreover, the findings showcased the teachers' competence in using various software during online sessions, facilitating effective instruction. Higher education students demonstrated adeptness in utilizing online tools like Zoom, Microsoft Teams, and Microsoft Edge for communication. However, those majoring in arts and humanities showed a moderate level of preparedness in using e-learning platforms. While technology enhanced involvement during virtual sessions, students perceived a lack of autonomy in managing their time within these sessions. The shift to online classes marks a departure from conventional learning, where active participation and interpersonal interactions are common.

Effective time management becomes crucial in online sessions, yet the lack of control over the learning environment in Pakistan's higher education may impact academic performance negatively. Stakeholders hold a greater responsibility to manage time effectively and regulate the online learning environment for seamless educational operation during the pandemic. While higher education students showed strong motivation to learn, their competence and achievement levels in the learning process were relatively low. They exhibited moderate readiness to adopt online classes, displaying reasonable technological self-sufficiency. Amid the ongoing pandemic, distance learning has become the predominant choice for higher education. However, students perceive traditional learning as more advantageous for communication and engagement, possibly due to suboptimal internet connectivity. This study investigates factors influencing online education adoption, encompassing signals, technological challenges, teaching method variations, and attitudes. Emphasizing the assessment of e-learning readiness in higher education is crucial for efficient e-learning deployment, minimizing resource use and time. Evaluating students' satisfaction with online learning and their readiness to learn are essential characteristics to gauge. Abilities, actions, and attitudes emerged as primary factors affecting preparedness for online teaching and learning.

Although readiness varies across schools due to cultural, societal, and infrastructural differences, prioritizing the measurement of these aspects is vital for accurate representation and assessment of e-learning preparedness. In response to the current scenario, a set of policy recommendations needs to be put forth to effectively address these challenges. The report not only emphasized key points but also offered recommendations. It suggested the ongoing pursuit of refining and evolving online learning as a potential substitute for traditional education due to current restrictions. The global impact of the coronavirus has prompted an unexpected shift

from conventional teaching methods to remote learning, necessitating a thorough assessment of preparedness for online education within this evolving educational landscape. University educators are advised to aid students in self-directed learning, empowering them to select appropriate methodologies and take charge of their learning needs, thereby enhancing their academic achievements.

This preparedness for online education encompasses critical aspects of e-learning environments. Social network platforms have played a crucial role in fostering contact, engagement, and motivation among students in online communication. However, many universities in Pakistan have initiated online learning without adequate research on student and faculty preparedness. Therefore, conducting comprehensive studies on both students' and teachers' preparedness for online education is crucial. These outcomes highlight the necessity of providing substantial support and acclimation opportunities for students to navigate e-learning resources effectively, ensuring successful outcomes. The study recommends institutions delve into factors contributing to potential improvement opportunities. This investigation is vital for effective learning experiences, examining higher education student performance, and understanding the elements shaping successful outcomes. Universities in Pakistan are urged to provide intelligent systems, technical infrastructure, materials, and guidance tailored to learners' backgrounds and course-specific characteristics to maximize their impact on academic achievement and student satisfaction.

Conclusion:

The study delves into the analysis of higher education students' readiness for online learning, observing notable trends in self-evaluations before and after the course. Initially, students felt well-prepared in technical and academic skills, with percentages indicating a readiness range. However, deficiencies were noted, particularly in interest, remote education readiness, and time management. Following the course, improvements were observed, yet challenges persisted in motivation, distance learning inclination, and time management. Comparatively, non-resource users mirrored readiness trends, highlighting similar gaps in various dimensions. The analysis aimed to assess the course and provided digital resources' impact on students' self-assessment opinions. The study encompassed a diverse student sample, revealing readiness trends, technological proficiency, and disparities between gender and location. Statistical tests established relationships between training, self-directed learning, and preparedness, emphasizing their influence on online education. The findings underscored a substantial gender-neutral distribution in self-assessment across various aspects, with significant disparities in perceptions of fascination with online classes and internet self-efficacy. Moreover, readiness for motivation displayed a significant level of preparedness. The research concludes by suggesting effective strategies for managing time, enhancing self-directed learning, and emphasizing teacher training to augment online education. It stresses the importance of self-directed learning, technological proficiency, and motivation in navigating online learning platforms effectively. Recommendations include refining online education, prioritizing self-directed learning, and conducting comprehensive studies to understand preparedness factors better.

References:

[1] M. Laal and S. M. Ghodsi, "Benefits of collaborative learning," Procedia - Soc. Behav. Sci., vol. 31, pp. 486–490, 2012, doi: 10.1016/J.SBSPRO.2011.12.091.

[2] M. C. Kim and M. J. Hannafin, "Scaffolding problem solving in technology-enhanced learning environments (TELEs): Bridging research and theory with practice," Comput. Educ., vol. 56, no. 2, pp. 403–417, Feb. 2011, doi: 10.1016/J.COMPEDU.2010.08.024.

[3] D. Wood, J. S. Bruner, and G. Ross, "THE ROLE OF TUTORING IN PROBLEM SOLVING," J. Child Psychol. Psychiatry, vol. 17, no. 2, pp. 89–100, 1976, doi: 10.1111/J.1469-7610.1976.TB00381.X.

[4] C. S. Lin and R. Y. W. Wu, "Effects of Web-Based creative thinking teaching on students' creativity and learning outcome," Eurasia J. Math. Sci. Technol. Educ., vol. 12, no. 6, pp. 1675–1684, Jun. 2016, doi: 10.12973/EURASIA.2016.1558A.

[5] S. Y. Hosseini, K. Salimifard, and S. Yadollahi, "On the effects of organizational culture on e-learning readiness: An iranian experience," Int. J. Soc. Ecol. Sustain. Dev., vol. 3, no. 3, pp. 42–52, Jul. 2012, doi: 10.4018/JSESD.2012070104.

[6] S. Wang, J. Iwata, and D. Jarrell, "Exploring Japanese students' e-learning habits," JALT CALL J., vol. 14, no. 3, pp. 211–223, 2018, doi: 10.29140/JALTCALL.V14N3.231.

[7] A. Ngampornchai and J. Adams, "Students' acceptance and readiness for E-learning in Northeastern Thailand," Int. J. Educ. Technol. High. Educ., vol. 13, no. 1, Dec. 2016, doi: 10.1186/S41239-016-0034-X.

[8] R. D. Johnson, "Gender differences in E-learning: Communication, social presence, and learning outcomes," J. Organ. End User Comput., vol. 23, no. 1, pp. 79–94, Jan. 2011, doi: 10.4018/JOEUC.2011010105.

[9] M. Cuadrado-García, M. E. Ruiz-Molina, and J. D. Montoro-Pons, "Are there gender differences in e-learning use and assessment? Evidence from an interuniversity online project in Europe," Procedia - Soc. Behav. Sci., vol. 2, no. 2, pp. 367–371, 2010, doi: 10.1016/J.SBSPRO.2010.03.027.

[10] A. R. Haidri, "Exploring the Challenge of Cultivating a Peaceful Culture in Higher Education Institutions of Pakistan," Magna Cart. Contemp. Soc. Sci., vol. 1, no. 3, pp. 139–147, Sep. 2022, Accessed: Dec. 20, 2023. [Online]. Available: https://journal.50sea.com/index.php/MC/article/view/625

[11] R. Ramadan, I. M. A. Pradnyana, and P. W. A. Suyasa, "PENGUKURAN TINGKAT KESIAPAN IMPLEMENTASI E-LEARNING (E-LEARNING READINESS) DI SMA N 2 SINGARAJA MENGGUNAKAN MODEL CHAPNICK," J. Pendidik. Teknol. dan Kejuru., vol. 16, no. 2, p. 258, Jul. 2019, doi: 10.23887/JPTK-UNDIKSHA.V16I2.18683.

[12] Y. Saintika, S. Astiti, D. J. A. Kusuma, and A. W. Muhammad, "Analysis of E-learning readiness level of public and private universities in central Java, Indonesia," Regist. J. Ilm. Teknol. Sist. Inf., vol. 7, no. 1, pp. 15–30, 2021, doi: 10.26594/REGISTER.V7I1.2042.

[13] Ramadiani, Azainil, A. N. Hidayanto, D. M. Khairina, and M. L. Jundillah, "Teacher and student readiness using e-learning and m-learning," Bull. Electr. Eng. Informatics, vol. 9, no. 3, pp. 1176–1182, Jun. 2020, doi: 10.11591/EEI.V9I3.2006.

[14] F. Firdaus, R. Muntaqo, and E. Trisnowati, "Analysis of Student Readiness for Blended Learning Model Implementation in Industrial Era 4.0," Indones. J. Sci. Educ., vol. 4, no. 1, p. 48, May 2020, doi: 10.31002/IJOSE.V4I1.2309.

[15] L. W. Suwarsono, "PENGUKURAN E-LEARNING READINESS PADA MAHASISWA TEKNIK UNIVERSITAS TELKOM," Psympathic J. Ilm. Psikol., vol. 2, no. 2, pp. 141–152, Feb. 2016, doi: 10.15575/PSY.V2I2.455.

[16] O. S. Aboderin, "The Challenges and Prospects of E-learning in National Open University of Nigeria," J. Educ. Learn., vol. 9, no. 3, pp. 207–216, Aug. 2015, doi: 10.11591/EDULEARN.V9I3.1728.

[17] D. N. Mutisya and G. L. Makokha, "Challenges affecting adoption of e-learning in public universities in Kenya," E-Learning Digit. Media, vol. 13, no. 3–4, pp. 140–157, May 2016, doi: 10.1177/2042753016672902.

[18] W. Bhuasiri, O. Xaymoungkhoun, H. Zo, J. J. Rho, and A. P. Ciganek, "Critical success factors for e-learning in developing countries: A comparative analysis between ICT experts and faculty," Comput. Educ., vol. 58, no. 2, pp. 843–855, Feb. 2012, doi: 10.1016/J.COMPEDU.2011.10.010.

[19] Omidinia, "Review of E-Learning and ICT Infrastructure in Developing Countries (Case Study of Iran)," Am. J. Econ. Bus. Adm., vol. 3, no. 1, pp. 120–125, Jan. 2011, doi: 10.3844/AJEBASP.2011.120.125.
[20] A. J. Moreno-Guerrero, I. Aznar-Díaz, P. Cáceres-Reche, and S. Alonso-García, "E-learning in the teaching of mathematics: An educational experience in adult high school," Mathematics, vol. 8, no. 5, May 2020, doi: 10.3390/MATH8050840.
[21] A. R. Rojabi, "Exploring EFL Students' Perception of Online Learning via Microsoft Teams: University Level in Indonesia," English Lang. Teach. Educ. J., vol. 3, no. 2, p. 163, Sep. 2020, doi: 10.12928/ELTEJ.V3I2.2349.
[22] L. R. Octaberlina and A. I. Muslimin, "Efl students perspective towards online learning barriers and alternatives using moodle/google classroom during covid-19 pandemic," Int. J. High. Educ., vol. 9, no. 6, pp. 1–9, 2020, doi: 10.5430/IJHE.V9N6P1.
[23] P. Rao, "E-learning in india: The role of national culture and strategic implications," Multicult. Educ. Technol. J., vol. 5, no. 2, pp. 129–150, Jun. 2011, doi: 10.1108/17504971111142664.
[24] A. Sulistyohati, "Pengukuran E-learning Readiness Pada Mahasiswa Sebagai Upaya Penerapan Pembelajaran Jarak Jauh Masa Pandemi COVID-19," Edumatic J. Pendidik. Inform., vol. 4, no. 2, pp. 136–145, Dec. 2020, doi: 10.29408/EDUMATIC.V4I2.2674.
[25] S. GOYAL, "E-Learning: Future of Education," J. Educ. Learn., vol. 6, no. 4, p. 239, Sep. 2012, doi: 10.11591/EDULEARN.V6I4.168.
[26] S. Maudiarti, "PENERAPAN E-LEARNING DI PERGURUAN TINGGI," Perspekt. Ilmu Pendidik., vol. 32, no. 1, pp. 51–66, Apr. 2018, doi: 10.21009/PIP.321.7.