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CHALLENGES FACED BY STUDENTS ASSOCIATED WITH DIGITAL TRANSFORMATION IN DISTANCE EDUCATION SYSTEMS

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ABSTRACT

While online learning has revolutionized classrooms by making information more accessible and flexible, it has also presented new obstacles for students to overcome. This research delves into the technical, pedagogical, and socioeconomic aspects that contribute to the major challenges faced by students in remote education systems that have been digitally altered. Using a standardized questionnaire, 320 students from different online education programs were surveyed to gather data for a descriptive and analytical study. The most significant issues, according to the findings, are unreliable internet access, a lack of digital literacy, a lack of connection between teachers and students, problems with digital tools, and stress caused by technology. It seems that difficulties are generally the same for males and females, as there was no statistically significant difference between the sexes in the reported mean challenge scores.

Keywords: Digital transformation, Distance education, Students, Challenges, Technology

I. INTRODUCTION

From its humble beginnings as mail courses to its current state as a more robust and technologically sophisticated model of education, distance learning in India has had a remarkable evolution in the last several decades. The first correspondence courses were an innovative way to reach students who were unable to attend traditional schools because of factors such as distance, cost, or personal circumstances. It is impossible to overlook the potential impact of distant education on expanding access to higher education in light of the proliferation of open institutions in India, such as IGNOU and others like it, spread across many states. Even though India has been an independent nation for almost twenty years, this kind of tolerance has opened doors for millions of people in every state to pursue higher education. However, there were a number of drawbacks to such open-distance models. The success of such programs was hindered by a lack of access, insufficient infrastructure, and a limitation on instructor-student engagement.

By eradicating the shortcomings of earlier methods, digital transformation has shifted the paradigm about the design and delivery of remote education. The use of digital tools and technology has revolutionized the creation, distribution, and consumption of instructional information. Access to materials, real-time collaboration, and evaluation are now provided via learning management systems (LMS). Now more than ever, AI is able to tailor educational experiences to each student. Even in underprivileged and rural locations, kids now have access to high-quality educational opportunities because to the widespread availability of inexpensive internet and the widespread use of cellphones. By meeting the unique requirements of both underserved populations and working professionals, these technology developments have helped bridge the gap between urban and rural areas and foster a more inclusive environment.

Interaction and participation in distant learning have been greatly enhanced by digital revolution. The old-fashioned, one-dimensional learning that was common in mail courses has given way to a far more active and collaborative learning environment with the advent of online classrooms, discussion forums, and interactive modules. Virtual and augmented reality (VR/AR) are two examples of cutting-edge technology that might revolutionize education by bringing previously intangible ideas to life. Technical and vocational education may greatly benefit from the increasing usage of these technologies to create realistic simulations of real-world settings.

Recent years have seen a great deal of change, with technology seemingly playing a pivotal part in transforming distant education. Thanks to technology, huge opportunities have opened up in terms of accessibility, quality, and inclusivity. Government initiatives under the Digital India project or campaigns have also contributed to the rapid growth of online platforms like SWAYAM and NPTEL, which has accelerated the use of digital technologies in education. In light of the nation's varied and fast expanding population, these initiatives highlight the importance of distant education and the role that technology-based solutions play in meeting the demands of this demographic.

II. REVIEW OF LITERATURE

Budhia, Netramani & Behera, Sasmita. (2023) In this age of globalization, the majority of people utilize the internet on a daily basis to learn more and spread awareness. Many individuals, including students, are finding it difficult to study or get high-quality information because of the current COVID-19 outbreak. Every facet of society, including the business, social life, education, and more, has been touched by its far-reaching effects. We are seeing a rise in the use of digital technology across all industries. Additionally, new models for teaching and learning have emerged in the education sector. Its focus has changed from more conventional forms of media to online courses. In order to adapt to this circumstance and keep on supplying students with information, all educational institutions, from elementary schools to universities, are using new pedagogies or androgogies. As a developing country, India is always looking for ways to strengthen its education system. There are numerous obstacles facing India's educational system, but there are also many potential to improve it and make it more suitable for 21st-century technologies like digital learning.

Bettioui, Rachid et al., (2022) Nowadays, digitalization is essential for most industries to grow and remain competitive. This digital shift is also impacting the higher education industry. Students of today, who choose a training model with smart universities, have made digital pedagogy one of the most suitable kinds of education in the last 20 years. This essay aims to examine the difficulties of remote learning as it was used in Morocco during the COVID-19 epidemic in order to keep students' training going. Quantitative research methods are used. Consequently, 487 students from Morocco's Agadir School of Technology at Ibn Zohr University filled out an online survey. Utilizing IBM SPSS Statistics software, the data was first examined using the descriptive

technique, which entails uni-variate descriptive statistics, and then with the analytical method, which involves the use of the Chi-square test. We used the latter to look at how the conceptual model's variables were related to one another. This study's findings show that there are a number of obstacles to speeding up the digital transformation of universities. When it comes to digital education platforms, many students have major issues at the learner level. These include issues with costly and sluggish internet connections, poor video and sound quality in videoconferences, and trouble comprehending courses. This means they aren't always paying attention in their online courses.

Lazarenko, Nataliia & Ihnatova, Olena. (2022) In light of the global spread of the COVID-19 pandemic, this essay analyses its potential effects on universities throughout the globe, including in Ukraine. This analysis is based on the findings of studies conducted by major international organizations in the field of higher education, including the IU, EUA, and ERA. The pandemic's effect on classroom instruction is ascertained. The current state of higher education funding, academic exchanges between countries, and international collaboration are all detailed. Furthermore, the corona crisis has confronted the world's universities with a number of anxieties, difficulties, and problems that require prompt and sufficient responses. Part one of this article presents survey results from Ukrainian universities and colleges; part two delves into the analysis of students' experiences with online learning and the opportunities and difficulties they've encountered thus far. Concerns about technological and financial difficulties, as well as an increase in both the quantity and quality of students' and instructors' workloads, rank high among the most pressing issues confronting those with a stake in the educational system. The survey results reveal how satisfied people are with the steps that universities have taken to guarantee quality and effective distance learning, and they also shed light on what people think should be done next to increase opportunities for teaching and learning remotely and for people to learn throughout their lives. Teachers are evidently motivated to enhance their own skills and talents by acquiring the new tools needed by the distant learning style, as they appraise the potential and benefits it creates. Such benefits, for students, become mostly financial ones, such as the opportunity to combine study and job, the opportunity to save time and money, and so on.

SIPICĂ, Ionela & Toma, Elena. (2022) It is impossible to ignore the impact of information and communication technology (ICT) on education in its many manifestations in today's

technologically driven culture. The Internet, in conjunction with more conventional approaches, has the potential to greatly improve educational outcomes; the only question that remains is "how." Ultimately, technology-based models will come to rule society. For the purpose of providing a critical analysis of the relationship between information and communication technology (ICT)-based tools and education, the article examined the primary features of various learning systems (e-learning, offline learning, blended learning, etc.). To highlight the new learning models that are developing as a result of the new educational paradigm design and to identify the elements that are affecting their implementation was the major goal.

Fojtik, Rostislav. (2018) The field of online and distant education has grown rapidly in the last few years. This is because educational needs, particularly for adults, are always evolving. In this piece, we'll take a look at the pros and cons of distant education. Case studies of computer science taught remotely during the last two decades illustrate the challenges inherent in this approach of education. We compare the outcomes of computer science bachelor's degree programs that use traditional classroom instruction with those that use online learning. In comparison to full-time bachelor's degree students, distance learners do much worse in their first few years of school, according to long-term results. Differences narrow and students achieve similar outcomes in subsequent years of study. Potential ways to raise the bar of distant education are detailed in the article.

III. RESEARCH METHODOLOGY

Research Design

Examining the difficulties encountered by students in online education systems experiencing digital change, this study used a descriptive and analytical research strategy.

Sampling technique

This research made use of a stratified random sampling strategy.

Population and Sample

Students from a variety of educational institutions participating in various distant education programs made up the study's population. For this study, 320 students were chosen at random.

Data Collection Tool

A structured questionnaire developed for this research was used to gather primary data. A five-point Likert scale evaluating the difficulties of digital transformation in distant learning and a section collecting demographic information made up the questionnaire.

Sources of Data

Primary data, collected from the chosen participants themselves, was the backbone of the research. Secondary sources such published research papers, reports, books, and official government records. In addition to bolstering the study's theoretical foundation, these sources helped put the difficulties students reported into perspective.

Data Collection Procedure

In order to accommodate students from a wide range of geographical locations and technical backgrounds, data was gathered both online and offline. Google Forms and institutional learning platforms were used to disseminate the surveys online, while students in locations with poor internet or who live in rural areas were given paper copies. After being informed of the study's goals, participants were reassured that their answers would remain private. A month was required to complete the data gathering procedure.

Statistical Tools and Techniques

We used statistical tools to code and analyze the acquired data. To describe the data, descriptive statistics were used, including frequencies, means, and standard deviations. To look for gender-based differences, we used an independent sample t-test.

IV. DATA ANALYSIS AND INTERPRETATION

Table 1: Demographic Profile of Students

Variable	Category	Frequency	Percentage (%)
Gender	Male	142	44.4

	Female	178	55.6
	Total	320	100
Residence	Rural	196	61.2
	Urban	124	38.8
	Total	320	100

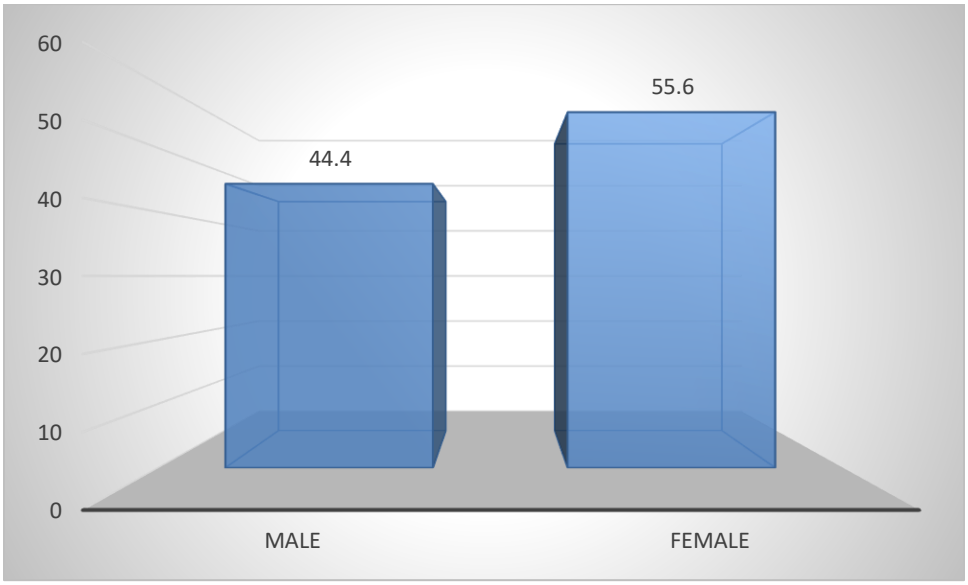

Figure 1: Gender of the respondents

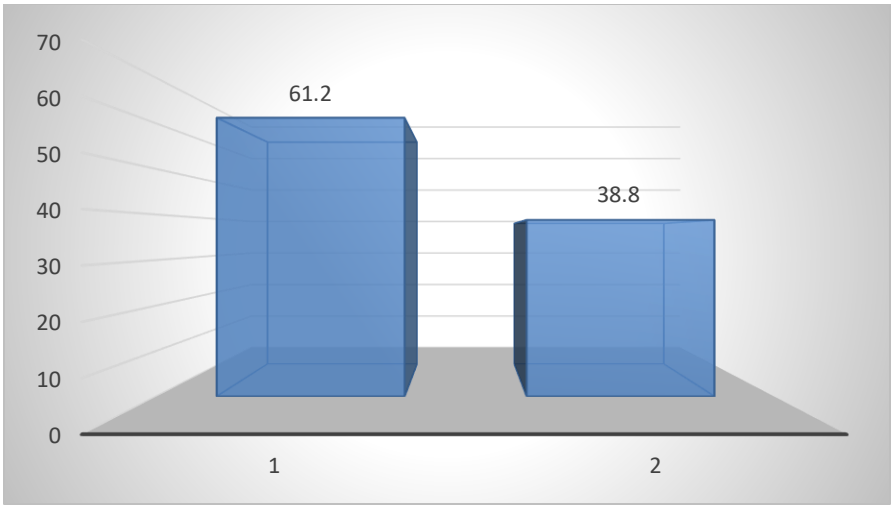

Figure 2: Residence of the respondents

There are a little more female students than male students in the survey (178 vs. 142; 55.6% female to be exact), as seen in Table 1. In terms of where they call home, 196 students (61.2%) come from rural regions, whereas 124 students (38.8%) call cities home.

Table 2: Major Challenges Faced by Students

Challenges	Mean Score	SD	Rank
Unstable internet connectivity	4.42	0.68	1
Lack of digital literacy	4.21	0.74	2
Limited teacher–student interaction	4.08	0.82	3
Difficulty in using digital tools	3.96	0.79	4
Technology-related stress	3.85	0.91	5
Lack of study environment	3.74	0.87	6
Financial constraints for gadgets	3.68	0.94	7
Academic workload pressure	3.55	0.89	8

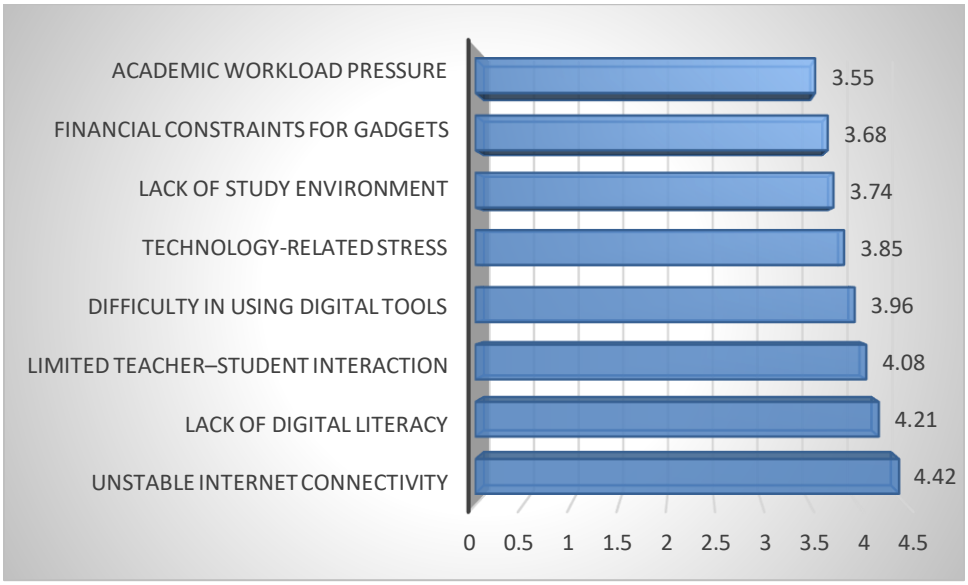

Figure 3: Major Challenges Faced by Students

Table 2 summarizes the most common problems that students face in remote education systems that are heavily reliant on technology. The findings reveal that students' ability to engage successfully in online learning is greatly hindered by pauses in network connection, which ranks as the most serious problem with the highest mean score of 4.42. Another big problem is that students don't have enough digital literacy (mean = 4.21). This is because many students have trouble navigating and using digital platforms, which impacts their self-esteem and how invested they are in their studies. Students' learning support and general motivation are hindered by limited personal contact and academic supervision, as shown by the third-ranking issue of limited teacher-student interaction (mean = 4.08).

Additional difficulties, such as digital tool incompetence (mean = 3.96) and tech-related stress (mean = 3.85), demonstrate the mental and physical toll that over-reliance on digital modes takes. In addition, many students have trouble focusing and getting things done because their home study spaces aren't conducive enough (mean = 3.74), and many families have trouble affording the technology their children need (mean = 3.68). Academic workload strain (mean = 3.55) is still a significant worry, even if it is relatively lower in rank.

Table 3: Independent Sample t-Test on Gender and Overall Challenge Scores

Gender	Mean Challenge Score	SD	t-value	p-value
Male	3.88	0.82	–1.10	0.27
Female	3.98	0.79		

The male students' mean challenge score is 3.88 with a standard deviation of 0.82, as shown in Table 3, while the female students' mean score is slightly higher at 3.98 with an SD of 0.79. It is not statistically significant that male and female students report different difficulties, according to the calculated t-value of -1.10 and the accompanying p-value of 0.27.

V. CONCLUSION

While technological advancements have made distant learning more convenient and accessible, this research found that students now face new and substantial obstacles. The most significant obstacles impacting students' academic engagement and performance were issues including unreliable internet connections, low levels of digital literacy, less teacher-student contact, challenges with digital tools, and stress caused by technology. Furthermore, the data showed that female students reported somewhat more perceived difficulties than male students; nevertheless, the disparity was not statistically significant, indicating that these difficulties are generally encountered by students of both sexes. Inadequate study rooms and financial limits for obtaining digital gadgets are examples of socio-economic and environmental issues that add to the challenges that learners confront. In light of these results, it is clear that students need focused skill development programs, a more robust technical infrastructure, and welcoming and helpful digital learning settings in order to be successful online.

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