AN INVESTIGATION ON EFFECT OF DIGITAL EDUCATION ON STUDENTS' ACADEMIC PERFORMANCE

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KEYWORDS	ABSTRACT
	The present study was conducted to look for the effect of digital education on the academic performance of students. With the rapid advancement of technology, digital education has changed traditional teaching methods, offering innovative approaches to enhance learning outcomes. This study focused the 375 university students. Study was a descriptive and survey was used for data collection. Quantitative analysis revealed positive correlation between digital education and academic outcomes, particularly in terms of knowledge retention, engagement, and flexibility. Regression as statistical technique was adopted and results stated that effect of digital education on students' performance is significant. Thus, researcher acclaims the digital education as compulsory part of education for better academic performance of university students. The findings emphasize potential of digital education to transform the academic success. The recommendations include ensuring equitable access to digital resources, providing training for both students and educators in digital literacy, and balancing online and offline learning modes to mitigate drawbacks. Future research should examine long-term impacts and explore strategies for overcoming barriers to digital education in diverse contexts.
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INTRODUCTION

In the modern era teachers cannot rely only on the old approaches of teaching like lecture method. Whereas in the present-day pedagogy has been shifted from the teachers' centered approaches to students centered approaches. These approaches create the student-centered environments (Abid, Latif & Ghaffar, 2024). Researchers in line with the country policy are focusing on new approaches of teaching like technology use in teaching and digital education at university level (Memon et al.,

2023). Teachers are not only the conveyer of knowledge (Riley & Ward, 2017), to students rather they are the real actor in education which lead the journey of education with modern trends. In this drive, teachers play a crucial role in creating opportunities for students to be creative, communicate effectively, collaborate with others, think critically, solve problems, make informed decisions, and use technology and information efficiently in the classroom (Smith & Gibson, 2016). To do this, they need the right skills and resources that genuinely support student growth. In this linking, this shift means that teachers move away from simply delivering knowledge and instead become facilitators who guide students, empowering them to take charge of their own learning in the diverse situations (Canuto, 2015).

LITERATURE REVIEW

The term digital education is becoming more common, but it is used without a clear understanding of what it actually means (Brink, Kilbrink & Gericke, 2021). It's sometimes used interchangeably with the terms like technology-enhanced learning (TEL), e-learning, or online learning, but each of these terms represents a different stage in the development of the field. Digital education is a broad term that refers to any form of education that involves digital technologies in some way (Hanelt, Bohnsack, Marz & Marante, 2020). This includes using technology in the traditional classrooms, blended learning (which combines online and in-person instruction), and entirely online education. This definition is intentionally wide to cover the various ways technology can be integrated into education (Allan, 2019). In this regard, digital Education is an umbrella term that covers variety of tools and techniques to enhance classroom learning, these may include but are not limited to virtual classrooms, digital resources and platform for the learning that is interactive through technology (Haleem et al., 2022). In Pakistan the shift toward digital education has been growing steadily over the past decade, as more and more teachers adopt the diverse innovative methods to better engage their students.

One key reason for this is research showing that kids are becoming more disengaged in traditional classroom environments (Hallowell, 2013). In Pakistan, a digital transformation is taking place in education, bringing about the major change in how people learn. This shift is not just a response to challenges like the pandemic, but the long-term strategy to create a more resilient and inclusive education system (Juuti, Kervinen & Loukomies, 2022). The goal is to build the digital framework that removes barriers related to gender and age, making education accessible to everyone, whether they live in the busy cities or remote rural areas. This article will look at the potential benefits, the challenges, and the hopeful future of Pakistan's journey into the digital education world. Teachers are the main actors which plays the pivotal role in the education pedagogy (Khalaf & Zin, 2018), therefore their perceptions play a significant role in the selection and choice of the method and their opinions are of great importance. In this regard, the teachers' perceptions in the selection of method of teaching at diverse stages is of much importance (Saba, Nsubuga & Mehmood, 2021). Teachers mold themselves in the professional development for modern teaching (Qureshi, Nawaz & Khan, 2011).

In the modern era teachers are focusing on the modern ways of teaching rather than the traditional approaches of teaching (Hollweck & Doucet, 2020). One of the main challenges in the universities

of Pakistan is lack of infrastructure for implementing digital education (Naveed, 2013). Researcher like Wong and Wylie (2008) are of the view that digital education like use of smart boards provide more conducive learning environment. The similar views are presented by Monica and Mechling (2008) which portrayed that smart board technology significantly improved the reading skills of the elementary level students. Many academic challenges are covered through the use of digital platforms (Karen et al. 2008). The students' academic performance is a big challenge and research suggests that digital education may help the teachers in this regard (Brown Wyatt & Valencia 2011). However, the challenges likewise unequal access to technology and digital fatigue were also reported, influencing performance for some students. The researchers are of the views that digital technology proved helpful at school level for the different reading and educational skills (Riska Patricia, 2010).

Problem Statement

In the present day's academic performance of students at university level is a big challenge which needs to be addressed. Various methods and strategies are applied by researchers to boost up the academic performance. In present study researcher tried to look for the effects of digital education in boosting academic performance of students at university level, since digital education has been experimented globally.

Objectives & Questions

1. To determine relationship between digital education and students' academic performance.
2. To determine the impact of the digital education upon the students' academic performance.
3. Is there any relationship between digital education and students' academic performances?
4. Whether there is any effect of digital learning upon & academic performance of students?

Research Hypotheses

H01:   The Digital education has no significant association with students' academic performance.
H02:   The Digital education does no larger impact on performance of students in institutions.

Significance of Study

This study is important because it looks at how digital education impacts university students. With technology advancing so quickly, it's essential to understand how digital tools influence students' performance, retention, engagement, satisfaction and problem-solving skills. The results of research could help guide decisions made by educators, university leaders, and policymakers. It could also shape the development of digital education policies and strategies to improve the quality of higher education. By addressing this gap in the knowledge, the study will contribute to discussions in the education field and therefore help to create a more inclusive, responsive, and tech-savvy university environment.

RESEARCH METHODOLOGY

This study was descriptive in nature and quantitative methods of data collection and analysis were used. Moreover, the survey questionnaires were the closed ended for the collection of data from the respondents. The study solemnly on the MPhil. and PhD students of southern region universities of Punjab, Pakistan.

Table 1 Population of Research Study

Category	PhD Scholars	MPhil Scholars	Total
Male	2480	4332	6812
Female	2040	4210	6250
Total	4520	6342	13062

Source: https://hed.punjab.gov.pk/public_universities

Sample & Sampling Technique

Sampling was done to collect the real data from the stakeholders of study and take the clear picture of phenomena under investigation. Krejcie and Morgan (1970) table was consulted for determining sample size.

Table 2 Sampling of Study

Category	PhD Scholars	MPhil Scholars	Total
Male	80	125	205
Female	60	110	170
Total	130	245	375

Instrument & Analysis

Two questionnaires were considered suitable by reviewing literature and experts' suggestions. One for digital education and other for academic performance of university students. Both were Likert type designed on five-point for minutely observe phenomena. Moreover, these instruments were validated through experts' opinions. The correlation and regression analysis were applied for the analysis of data.

RESULTS & DISCUSSION

The results of study in order to examine the hypothesized relationships among research variables have been produced in this portion to confirm the required relationships and reaching the desired conclusion that may help in making suitable decisions about research issue in particular situation and context.

Table 3 Correlation Analysis (H1)

		Digital Learning	Performance
Digital Learning	Pearson Correlation	1	.272**
	Sig. (2-tailed)		.000
	N	375	375

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

The correlation procedure was used to examine the association between research variables with respect to strength and direction. The analysis results demonstrated that $r = 0.272$, $p=0.000$, which portrayed that the digital education has a weak correlation with the academic performance of the university students which thus confirmed the hypothesized relationship with respect to correlation of this study. In this connection, the results provide significant information and these results are thus

in line with the previous research studies (Abbas, Hussain & Rasool, 2019; Naz, Raheem, Khan & Muhammad, 2022).

Table 4 Regression Analysis

Model	R	R Square	Adjusted R Square	B	Beta	p
1	.412a	.169	.167	0.398	0.412	0.000

Table 2 depicted that $R^2 = 0.169$, which demonstrated the effect of digital education on academic performance pf students at university level. This effect is not too much because digital education explained 16% of the variance in academic performance of university students and thus the desired hypothesis has been chased and reaching desired conclusion. The results of study are consequently in line with the previous studies to some extent (Abbas, Hussain & Rasool, 2019; Abid, Latif & Ghaffar, 2024).

CONCLUSION

This study looked into how students perceive the impact of digital education on their academic performance at the university level. The participants included 375 male and female MPhil/PhD scholars from different public universities in the southern Punjab. The data was gathered using a questionnaire, and the analysis was done using correlation and regression. The findings revealed that digital education has a noticeable positive effect on the students' academic performance. The study on the effect of digital education on students' academic performance reveals that the digital education significantly enhances learning outcomes by increasing student engagement, improving access to resources, and fostering personalized learning experiences. The findings underscore the transformative potential of digital tools and platforms in reshaping traditional education systems, enabling more flexible and innovative teaching methodologies. To maximize the benefits of digital education, it is essential to address issues of equity, provide inclusive training, and adopt a hybrid approach that balances digital & traditional teaching methods. By doing so, education institutions can create inclusive learning environments that support the diverse student needs and optimize academic performance.

Recommendation

1. As the study results found that digital education proved useful for enhancing the academic performance of students, thus it is suggested that digital education may be implemented at university level for better students' performance.
2. The outcomes may offer equal access to digital devices and high-speed internet, especially for students from the underprivileged backgrounds and implement policies to bridge the digital divide in rural and urban areas.
3. It may help to offer training programs for students and educators to improve their ability in using digital tools and incorporate digital literacy as part of the curriculum to prepare students for evolving digital landscape.
4. There is a need to invest in the creation of interactive as well as culturally relevant digital learning materials and use gamification, multimedia content, and simulations to enhance engagement as well as performance.

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