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Digital Integration in Higher Education: A Survey Research in Nepal

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Abstract

This article explores challenges and opportunities of digital integration in Nepalese higher education Survey method is used to conduct research. An online survey is designed and disseminated through what's app group of teachers of various institutions. This study is based on 170 responses. Digital integration is valued by all 170 respondents, yet the digital gap and a lack of skilled teachers remain. The study identifies barriers and proposes solutions to improve digital tool uptake and use in teaching and learning to inform policymakers and educators. " Despite this, the digital gap, unequal technology access, and a shortage of technology-based learning teachers remain. The necessity for professional growth was highlighted by 64.7% of respondents requesting digital training. The fact that 64.7% have access to quality e-resources while 35.3% do not highlights inequities that must be addressed. Digital tool use varies, with 35.3% always and 35.3% sometimes. Digital skills improve classroom interaction and teamwork, with 82.4% perceiving an increase. However, digital gap and technology overuse remain challenges. These findings highlight the need for comprehensive measures to improve digital literacy, infrastructure, and equitable access to maximize digital education in Nepal and prepare students for the digital age. Recommendations are provided to inform policy makers and educators to enhance digital literacy and maximizing the benefits of digital education in Nepal.

Keywords: barrier, digital divide, digital integration, higher education

Introduction

Digital integration in higher education is a hot topic, especially in Nepal. As technology advances, educational institutions must adapt and use digital tools and platforms to teach and study. However, digital integration in higher education poses obstacles and opportunities. Digital integration has been difficult in Nepal due to regional and institutional resource and infrastructure differences (Rana & Rana, 2020). This paper examines the many problems Nepali higher education institutions confront in digital integration and the potential benefits. This paper examines impediments and proposes solutions to help policymakers, educators, and stakeholders improve digital integration in higher education in Nepal.

Covid 19 had brought great challenges of health and livelihood however, served as catalyst for forcing colleges and universities, instructors and students to shift their ways of thinking, learning and living (Martin & Xie, 2022). This means, COVID pandemic played vital role to develop digital awareness, concentration and action in the field of education throughout the world. (Martin & Xie, 2022) further argues that, digitalization in higher education includes digital learning technologies, instructional modality, technical support services, organizational policies and planning, teachers development, learners development and partnership (Gharti, 2023). The study highlighted that online learning is ineffective in remote areas. Poor internet, limited technical skills, and unreliable electricity were main problem experienced by the teacher. The lack of resources created an unequal learning gap between rich and poor students. Online learning also faced challenges with student access to tools, parental support, and overall administration. As a result, online learning use seems to have dropped after Covid, with an uncertain future. Rana and Rana (2020) suggested that Nepal's government pushes for teachers to become tech-savvy, believing technology can shift classrooms from teacher-led to student-driven learning. Nepal's digital leap: Telecom coverage reaches nearly everyone (96%), and internet use is booming (63% in 2018, up from 50% in 2016). This highlights the growing reliance on modern technology, particularly in urban areas. The governmental ICT education policy of Nepal emphasizes the significance of enhancing the ICT competencies of teachers and advocates for the utilization of ICT to transform traditional educational frameworks.

This study is based on the answering the following questions such as what types of digital tools are feasible to integrated in classroom of higher education? What practices are utilized in higher education? Why digital integration in the classroom of higher education is challenging? How do the teacher and student perceive digitalization in higher education?

Statement of the Problem

Integrating digital tools in higher education is becoming increasingly important. Digital education can create engaging learning opportunities for students and prepare them for the digital world. However, majority of the classes are incompatible to integrate digital devices and technologies. There are challenges and opportunities of integrating digital tools in the classroom. The challenges are digital literacy among both students and teachers, ability to effectively use technology to locate information, evaluate sources, and produce content etc.

The use of technology in education can provide students with an engaging learning experience, allowing them to remain more interested in the subject without losing track of their progress. The successful integration of ICT can make the learning process more exciting and keep learners engaged. Faculty and students see substantial benefits in using digital learning tools, and adoption rates are expected to continue to increase. However, there are still barriers to adoption, including lack of awareness, inadequate deployment capabilities.

Research Objectives

This study aims to examines digital integration in Nepalese higher education institutions. The research addresses these key areas to provide a holistic understanding of digital integration's opportunities and challenges in Nepali higher education for the development of strategies to improve digital tool use in teaching and learning. The study is based on the following purposes:

a. To explore the utilization and practices of digital tools in higher education classroom.
b. To examine the challenges of integrating digital tools and analyze the perceptions of teachers and students regarding integration of digitalization in education

Literature Review

Literature on digitalization in Nepal highlights the major components of digital Nepal framework, including governance, infrastructure and inclusivity. This section includes empirical review, policy review and conceptual framework.

Agormedah et al. (2020) has explored some positive and negative aspects of online learning. Easy access to the resources, learning from everywhere anytime. There is no limitation of learning at all may be positive aspects, lack of formal orientation and training, fluctuations in connectivity and power supply constraint are negative aspects of online learning. Agormedah et al. (2020) has argued that the by providing instructional support to the students ensures their readiness, developing essential technical skills to learn online and consider using flexible approaches to teaching etc. helps to improve active participation, retention and sensitivity to their learning.

Alsoud & Harasis (2021) had conducted the research to extract the students e-learning experiences during the COVID Pandemic highlights the role of e-commerce and e-learning readiness in Jordan. The students from remote area faced challenges such as technological, accessibility, poor connectivity, and sever learning environments. Encouraging the adoption of digital commons in Nepalese higher education requires collaborative efforts, capacity building, and awareness campaigns (Gurung & Shrestha, 2023). Acharya et al. (2021) argues that, In the wake of COVID-19, universities and colleges around the world (including those in Nepal) have had to adapt their teaching methods. With travel limitations and social distancing measures in place, online learning has become the new normal. This study aims to examine the effectiveness of online education by looking at the experiences of students during the pandemic. Additionally, the research has found that many students disliked online classes (64.6%) during Covid. Most (53.4%) used phones to learn, and nearly a third (28.8%) found online education unappealing. This indicates that the digitalization of higher education was not effective at all.

The digital transformation of higher education in Nepal has emerged as a notable focal point in the recent years, reflecting a shift towards embracing technology within the educational landscape. Various initiatives have been set forth by the government to champion the cause of digitalization in education, with the introduction of key policies

such as the National Information Technology policy (2015) and the Digital Education Policy (2020). These strategic frameworks are designed to not only facilitate the integration of digital tools and platforms in pedagogy and academic practices but also to streamline the availability of online educational resources, thereby augmenting the accessibility and depth of learning experiences for students. Furthermore, the overarching goal of these policies is to elevate the standards and efficacy of education as a whole, by fostering a culture of innovation and leveraging digital technologies to optimize the teaching and learning processes (MoCIT, 2019).

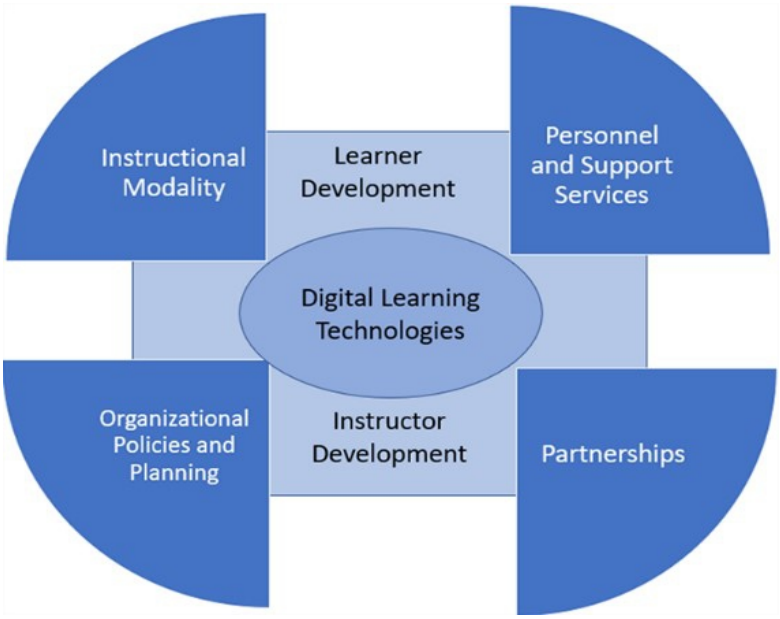
Digital Nepal framework focused on eight sectors including agriculture, health, education, infrastructure, energy, tourism, finance and connectivity. Digital Nepal initiatives in education aims to prepare human capital to capture new economic opportunities through the creation of a transformative teaching and learning environment. This encourage use of digital technologies to support teaching, enrich the learning experience, and improve the quality of education. It proposes smart classroom, OLE 2.0, online learning platform, Rent-a-Laptop program, EMIS2.0, centralized admission system, biometric attendance systems and CCTV cameras, mobile learning centers in rural areas. These programs will support the digitalization in higher education. However, strong commitment is required to achieve succeed.

Conceptual Framework

The literature on online learning in Nepal during the COVID-19 pandemic highlights both the benefits and challenges of this mode of education. While online learning provides easy access to resources, flexibility, and comfort for students, it also faces significant challenges such as poor internet connectivity, limited access to technological devices, and lack of formal orientation and training. These challenges lead to unequal learning gaps between students from different socioeconomic backgrounds and difficulties in adapting to online learning. To address these issues, researchers suggest providing instructional support, developing essential technical skills, and encouraging the adoption of digital commons in higher education. Additionally, enhancing the ICT competencies of teachers and advocating for the utilization of ICT to transform traditional educational frameworks are crucial steps towards improving the effectiveness and accessibility of online education in Nepal. To execute the research

Figure 1

Conceptual Framework



Note: Image courtesy of Florence Martin and Kui Xie.

The conceptual framework comprises six sections, each representing a distinct element associated with digitalization in education. This includes pedagogical approach, learner progression, personnel and assistance services, collaborations, educator advancement, institutional regulations and strategic Planning. At the core of the structure lies the term "Digital Educational Technologies," indicating that these elements collectively contribute to the efficient utilization of technology in education.

Methodology

This study follows a mixed method study examines digital integration in Nepalese higher education institutions using online surveys with structured Survey questionnaire. Total 170 participants, mostly 30-50 years old, provide a balanced perspective from experienced educators and mature students. Quantitative data on digital tool usage, current practices, and perceived challenges was collected via web-based surveys. The survey included closed and open-ended questions to cover digital integration practices. The data collected by creating the Microsoft Form and forwarding to 200 research participants but only 170 got participation. The responses were retrieved

in Excel and transformed the data in SPSS. Descriptive statistics were used with the help of SPSS to analyze quantitative data. Qualitative data were analyzed by coding, organizing data and creating themes. A pilot survey verified the questions and was finalized with getting the feedback from peers and the teacher. In terms of ethical consideration, there was proper explain in the survey form about the research topic and ensuring their privacy. The participation was optional and they could leave drop the survey at any time. Therefore, the researcher had adopted 'do no harm' principle.

Results and Discussion

In this section, demographical variables, access of internet, digital competency, digital literacy training, access of quality resources, uses of digital tools, Impact of digital skills in classroom, concern regarding use of digital technology etc.

Age of the Participants

As per the survey data, the largest age group is 30-40 years old, comprising 41.2% of the total 170 sample). The second largest group is 40-50 years old, making up 35.3% of the sample. The smallest age groups are 20-30 years old, with only one individual (5.9%), and above 50 years old, with 170.6%. Overall, the data suggests that the majority of the sample falls within the 30-50-year age range, with relatively fewer individuals in the younger (20-30) and older (above 50) age categories. Majority of the participants fall within the 30-50-year age range, with fewer individuals in the younger and older age categories. This suggests a predominantly middle-aged demographic in the sample. The mean age of the respondents is 41.18 years, reflecting a concentration of individuals in their 30s and 40s. These findings highlight the distribution pattern within the sample, pointing to a significant representation of middle-aged participants.

Table 1

Demographic Information's of the Participants

Variables	Age	Frequency	Percent
Age	20-30	10	5.9
	30-40	70	41.2
	40-50	60	35.3
	above 50	30	17.6
Gender	Female	40	23.5
	Male	130	76.5
Ethnicity	Aadibasi/Janajati	4	23.5
	Brahmin/Ks hetri	12	70.6
	Madheshi	1	5.9
Faculty of Respondents	Education	90	52.9
	Humanities	40	23.5
	Management	30	17.6
	Medical Science	10	5.9
Types of Institutions	Community & Private	20	11.8
	Community Only	100	58.8
	Constituent Campus & Private	10	5.9
	Constituent Only	20	11.8
	Central Department	20	11.8
Designation of Respondents	Lecturer	110	64.7
	Professor	10	5.9
	Reader	10	5.9
	Teaching assistant	40	23.5

Gender of Respondents

Among the total respondents, 76.5% were male and 23.5% female. It suggests a gender gap that may limit the findings on digital integration in higher education. The data shows that male participants outnumber females.

Ethnicity of Participants

The quantitative data on the ethnicity of participants reveals a distinct distribution: 70.6% of the participants belong to the Brahmin/Kshetri ethnic group, indicating a significant representation of this group in the study. The Aadibasi/Janajati group constitutes 23.5% of the sample, reflecting a notable, albeit smaller, portion and contributing to the diversity of the participants. In contrast, the Madheshi group is under represented, with only one participant making up 5.9% of the total sample. The data shows a predominant representation of the Brahmin/Kshetri group, with the Aadibasi/Janajati group also present but to a lesser extent, and a low representation of the Madheshi group. This indicates a need for more inclusive sampling in future studies to better understand digital integration in higher education across diverse ethnic groups in Nepal, which is crucial for tailoring digital education policies and practices to effectively cater to all ethnic communities.

Faculty Involvement of the Respondents

Data represents sample distribution across fields or disciplines. The sample size is 170. The highest frequency field is "Education," with 90 individuals (52.9%). This suggests that over half the sample is in education. The second most common category is "Humanities," with 40 people (23.5%). Three people (170.6%) say "Management" next. The least frequent field is "Medical Science" with one person or 5.9% of the sample. The data skews toward education, followed by humanities and management, while science, medical, and technology are under represented.

Types of Institutions Involved by the Respondents

The data on the types of institutions represented by the respondents highlights a diverse nature of Nepali higher education. Community-only institutions emerge as the predominant category, with 58.8% of the sample associated with such colleges. However, the minimal representation of constituent campus & private institutions, constituting only 5.9% of the sample, suggests a lesser prevalence of this type within the surveyed population. While community-only institutions dominate the sample, this disparity highlights potential variations in digital integration practices across different institutional types.

Designation of Respondents

The majority of respondents are Lecturers, comprising 64.7% of the total sample. Teaching assistants form the second largest group, making up 23.5% of the respondents, and Professors and Readers each represent 5.9% of the sample. This distribution shows that the majority of the survey participants hold the position of Lecturer, indicating a strong representation of this designation. The presence of Professors, Readers, and Teaching Assistants is relatively smaller, suggesting that the survey is heavily skewed towards individuals in lecturing roles. This information can be useful for understanding the professional backgrounds of the survey participants and for analyzing trends or patterns based on their designations.

Internet Access at the Work Place

The majority of respondents, 70.6%, have internet access at their workplace and a smaller portion, 29.4%, do not have internet access at their workplace. This indicates that a significant majority of the survey participants have internet access at their college or university, suggesting a well-connected working environment for most respondents. However, nearly 30% without internet access highlights a notable gap that could impact finding quality resources or access to information. This data reflects the status of technological infrastructure available to the survey participants and for analyzing how internet access at the workplace might influence their responses or experiences.

Table 2

Internet Access at the Work

Internet Access	Frequency	Percent
No	50	29.4
Yes	120	70.6
Total	170	100.0

MoCIT (2019) has highlighted that total of 2.25 million individuals were newly introduced to Internet services in the year 20170, equating to an average of around 250 fresh Internet users being added every hour. The swift increase in Internet usage within Nepal can be attributed. As of 2024, Nepal has made significant strides in internet connectivity, with approximately 91% of its population having access to the internet.

This translates to over 36 million internet users, which interestingly exceeds the total population count due to multiple subscriptions per user. (Shah, 2023) has argued that A majority of individuals in Nepal utilize mobile phones as their primary means of accessing the internet, with mobile internet users comprising 74.63% of the overall user population. Approximately 24.77% of internet users in the country rely on fixed broadband internet services. The escalation in internet utilization has been swift, marked by a significant rise in user numbers in recent times.

Students Access to Internet in College

Students' access to internet and online learning platforms in college or university classrooms plays a significant role in 21st century learning (Ren et al., 2024). Among the surveyed students, 76.5% reported not having access to the internet in their classrooms, while 23.5% indicated having such access. This data indicates that only a minority of students possess the opportunity to utilize resources provided by their educational institutions, which may include internet connectivity. With a total of 170 students included in the data set, representing 100% of those surveyed, the findings underscore a significant issue concerning resource accessibility. This limitation has the potential to hinder students' full engagement in their academic endeavors, particularly in accessing online resources crucial for their education.

Table 3

Students Access to Internet in College

Students Access to Internet in College	Frequency	Percent
No	130	76.5
Yes	40	23.5
Total	170	100.0

Access and Use of Smart Phone for the Study

All 170 students surveyed possess smartphones, representing 100% of the sample. This suggests widespread smartphone ownership among students, highlighting the ubiquity of this technology in their lives. Smartphones likely serve as essential tools for accessing information, communication, and various applications, including those

relevant to their studies. In the use of smart phone in their study, 70.6% of students do not use their smartphones for studying purposes, while 29.4% do. This distribution suggests a notable portion of students who do not actively utilize smartphones as educational tools, potentially missing out on opportunities for mobile learning and accessing educational resources on-the-go. – Nepal had a total of 15.85 million internet users at the onset of 2023, with an internet penetration rate of 51.6 percent. In January 2023, Nepal housed 12.60 million social media users, accounting for 41.0 percent of the overall population. The number of active cellular mobile connections in Nepal in early 2023 was 42.78 million, representing 139.2 percent of the total population. However, the fact that nearly one-third of students do utilize smartphones for studying indicates a recognition of the device's potential for supporting academic endeavors.

Table 4

Use of Smart Phone for the Study

Use of smart phone for the study	Frequency	Percent
No	120	70.6
Yes	50	29.4
Total	170	100.0

Digital Competency of Teachers

The quantitative data on the digital competency of teachers reveals varying levels of confidence among respondents. Among the surveyed teachers, 52.9% reported feeling very confident in their digital competency, indicating a strong level of proficiency in utilizing digital tools and technologies for teaching purposes. Additionally, 35.3% expressed being somewhat confident, suggesting a moderate level of comfort and proficiency in digital skills. However, 11.8% of teachers reported feeling neutral, implying a lack of strong conviction or confidence in their digital competencies. This distribution highlights the diverse range of digital skills and confidence levels among teachers, indicating the need for tailored professional development initiatives to support teachers in enhancing their digital competencies.

Table 5

Digital Competency of Teachers

Digital competency	Frequency	Percent
Neutral	20	11.8
Somewhat confident	60	35.3
Very confident	90	52.9
Total	170	100.0

Need of Digital Training

Quantitative data on respondents' perceived need for digital training shows high demand. The survey found that 64.7% of respondents needed digital training, highlighting the importance of digital competencies in education. However, 29.4% of respondents did not see a need for digital training, while 5.9% were unsure. This distribution highlights the importance of digital training programs in meeting modern education's demands and equipping teachers with the skills to integrate technology into their lessons. Digital training is supported by most educators, indicating a proactive approach to professional development and a willingness to use digital tools to improve teaching and learning (Table 6).

Table 6

Need of Digital Training

Need of Digital Training	Frequency	Percent
Maybe	10	5.9
No	50	29.4
Yes	110	64.7
Total	170	100.0

Access to Quality E-Resources

The quantitative data regarding access to quality e-resources among respondents illustrates a significant trend towards accessibility. Among the surveyed individuals, 64.7% reported having access to quality e-resources, indicating a majority of

respondents who are equipped with the necessary tools to utilize digital resources effectively in their educational endeavors. Conversely, 35.3% of respondents indicated a lack of access to quality e-resources. Efforts to bridge the gap and improve access to

Table 7

Access to Quality E-Resources

Access to Quality E-Resources	Frequency	Percent
No	60	35.3
Yes	110	64.7
Total	170	100.0

Frequency on Use of Digital Tools

The data on the frequency of digital tool usage among respondents indicates varying levels of engagement. A significant portion, 35.3%, reported "always" using digital tools, demonstrating a consistent integration of these tools in their routines. Another 35.3% use digital tools "sometimes," reflecting intermittent engagement. Additionally, 23.5% use digital tools "often," while a small percentage, 5.9%, "rarely" use them. This distribution highlights a trend where the majority of respondents are regularly incorporating digital tools into their activities, although there remains a notable portion with less frequent usage.

Table 8

Frequency on Use of Digital Tools

Frequency on Use of Digital Tools	Frequency	Percent
Always	60	35.3
Often	40	23.5
Rarely	10	5.9
Sometimes	60	35.3
Total	170	100.0

Impact of Digital Skills Classroom Interaction

The data on the impact of digital skills on classroom interaction reveals that a substantial majority of respondents (82.4%) reported increased interaction and collaboration due to digital skills. Additionally, 11.8% noted both increased and decreased interaction and collaboration, indicating a mixed impact. Only 5.9% observed no significant change in classroom interaction (Table 9). This suggests that digital skills predominantly enhance interaction and collaboration in the classroom, though a small minority experiences varied effects or no noticeable difference. The overall positive impact underscores the importance of fostering digital skills to improve classroom dynamics and collaborative learning.

Table 9

Impact of Digital Skills Classroom Interaction

Impact of Digital skills Classroom Interaction	Frequency	Percent
Increased interaction and collaboration;	140	82.4
Increased interaction and collaboration; Decreased interaction and collaboration;	20	11.8
No significant change;	10	5.9
Total	170	100.0

Important of Integration of Digital Technology in Education

All 170 respondents unanimously consider digital integration in education as "very important." This consensus highlights the critical role of digital tools in enhancing the educational experience and underscores the urgency of prioritizing digital integration strategies in educational institutions.

Concerns Increased on Use of Technology in Education

The data on concerns regarding the increased use of technology in education reveals several key issues. The most prominent concern, reported by 35.3% of respondents, is the digital divide and unequal access to technology. This is followed by concerns about over reliance on technology and decreased face-to-face interaction, noted by 29.4% of respondents. Additionally, 23.5% of participants are worried about the lack of qualified teachers for technology-based learning. A smaller percentage of

respondents, 5.9%, are concerned about data security and privacy, and another 5.9% mentioned other unspecified concerns. Wang (2016) express his concerns over data security, privacy protection, and ethical boundaries of the accessing personal digital data in education. These findings highlight a range of significant issues that need to be addressed to ensure the effective and equitable integration of technology in education.

Table 10

Concerns Increased on Use of Technology in Education

Concerns increase in technology	Frequency	Percent
Data security and privacy concerns	10	5.9
Digital divide and unequal access	60	35.3
Lack of qualified teachers for technology-based learning	40	23.5
Other (Please specify)	10	5.9
Overreliance on technology and decreased face-to-face interaction	50	29.4
Total	170	100.0

Conclusion

Digital integration is a critical concern in Nepalese higher education context. The research highlights both the opportunities and challenges associated with adopting digital tools and platforms in educational institutions. A significant majority of respondents recognize the importance of digital integration and its potential to enhance learning experiences and engagement. However, the survey also reveals substantial barriers such as the digital divide, unequal access to technology, and a lack of qualified educators to effectively implement technology-based learning. Addressing these challenges is essential for maximizing the benefits of digital education and ensuring equitable access for all students.

The research indicates a high demand for digital training among educators, with many respondents acknowledging their need for professional development in this area. While a significant portion of teachers feel confident in their digital competencies, there

remains a portion that is only somewhat confident or neutral. This suggests the necessity of targeted training programs to bolster digital literacy and ensure all educators can utilize digital tools effectively. Moreover, the access to quality e-resources and frequent use of digital tools are seen as positive trends, yet gaps still exist that need to be bridged to promote inclusive and comprehensive digital integration.

Overall, the findings underscore the urgency of prioritizing digital integration strategies in Nepali higher education institutions. Policymakers, educators, and stakeholders must collaborate to develop and implement effective solutions that address the identified challenges. By enhancing digital infrastructure, providing robust training for educators, and ensuring equitable access to technology, Nepal can harness the full potential of digital education to improve learning outcomes and prepare students for the demands of the digital age. The consensus on the importance of digital integration and the recognition of existing barriers highlight the path forward for transforming education through technology.

Implication of the study

The outcomes of the study emphasize the critical need for specialized digital training initiatives for educators, the advancement of digital infrastructure and formulation of policy guidelines to reduce digital divide. Policy makers and educational institutions must prioritize professional development and equitable access to technology to enhance learning outcomes and prepare students for digital age.

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