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Impact of Digital Transformation in Educational Management: A Study on Teacher Training and Student Engagement

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ABSTRACT

The widespread presence of digital tools prompts important inquiries on the magnitude of this change and its subtle impacts on teacher training and student engagement. This study examines the impact of digital transformation in educational management focusing on teacher training and student engagement at Lagos State University, Ojo, Lagos State, Nigeria. The study employed a descriptive survey design to assess the impact of digital transformation on teacher training and student engagement. The population for this study consists of 250 participants, including faculty members and students from Lagos State University, Ojo, Lagos State, Nigeria. A stratified random sampling technique was used to ensure representation across different departments and faculties selected for the study. Data were collected using a structured questionnaire designed to measure the variables of interest: digital transformation, teacher training, and student engagement. The questionnaire was validated through expert review and a pilot test, achieving a reliability coefficient (Cronbach's alpha) of 0.85. The questionnaires were administered to the selected participants via face-to-face methods to maximize response rates. The finding shows the Pearson correlation coefficients for the relationships between digital transformation, teacher training, and student engagement. The results indicate significant positive correlations between digital transformation and both teacher training ($r = 0.68$, $p < 0.05$) and student engagement ($r = 0.72$, $p < 0.05$). Conclusively, this study highlights the significant role of digital transformation initiatives in enhancing teacher training and promoting student engagement within the educational management framework in Lagos State, Nigeria. Recommendations are made for policymakers and educational leaders to prioritize digital training for teachers and develop strategies to improve student engagement through technology

Introduction

The widespread integration of technology into educational practices, learning resources, and administrative procedures, known as digital transformation, has grown pervasive throughout campuses (Suresh & Shobana, 2024). The widespread

presence of digital tools prompts important inquiries on the magnitude of this change and its subtle impacts on teacher training and student engagement, a notion that includes not just learning outcomes but also the building of critical skills, self-confidence, and a sense of agency in one's educational pathway.

Digital transformation in educational management refers to the integration of digital technologies into various facets of education, aiming to enhance administrative efficiency, instructional effectiveness, and student interaction. This transformation includes the adoption of digital tools such as learning management systems (LMS), online assessment platforms, and virtual classrooms, which are increasingly becoming integral to modern educational practices (Zhao & Frank, 2023).

In recent years, the emphasis on digital transformation has intensified as educational institutions seek to leverage technology to address challenges such as increasing student numbers, diverse learning needs, and the demand for more flexible learning environments. Digital tools promise to streamline administrative processes, support innovative teaching methods, and foster a more engaging learning experience for students (Chen & Zhang, 2022).
Educational management involves overseeing and coordinating the various aspects of an educational institution to ensure its goals are met effectively. This includes curriculum development, teacher training, student services, and overall institutional planning. With the advent of digital technologies, there is a growing need to understand how these tools impact core areas of educational management, particularly teacher training and student engagement (Adewale & Oluwaseun, 2023).

Teacher training and student engagement are crucial factors in the educational process. Effective teacher training ensures that teachers are proficient in using digital tools and integrating them into their teaching practices. This proficiency is essential for enhancing the quality of education and supporting student learning (Svinicki, McKeachie, & Hofer, 2021). On the other hand, student engagement characterised by active participation, motivation, and enthusiasm plays a significant role in academic success. Digital technologies have the potential to significantly impact student engagement by making learning more interactive and personalized.

Despite the potential benefits, the impact of digital transformation on these variables is not well-documented, particularly in the context of developing countries like Nigeria. Lagos State University, Ojo, serves as a case study to explore how digital transformation affects teacher training and student engagement and to assess the broader implications for academic performance. Understanding these impacts can provide valuable insights for policymakers, teachers, and institutional leaders seeking to optimize digital integration in education.

Problem

The fast integration of digital technologies into educational management has fundamentally revolutionized teaching and learning processes, although considerable gaps remain in understanding their effectiveness in increasing teacher training and student engagement. At Lagos State University, there is a rising concern regarding the sufficiency of teacher training programmes in educating teachers with the required abilities to effectively employ digital resources for education. Many teachers lack complete training in exploiting digital platforms, such as learning management systems, virtual classrooms, and data-driven assessment tools, which may impede their capacity to offer interesting and effective courses. Furthermore, the extent to which these technologies drive student engagement through interactive learning environments, tailored content, or real-time feedback, and translate into enhanced academic performance remains underexplored. Also, problems include inequities in access to digital infrastructure, varied levels of technological competency among educators, and potential opposition to embracing new teaching approaches. The study seeks to provide insights into how digital tools can be effectively integrated into educational practices to enhance both teaching and learning outcomes. Understanding the impact of digital transformation on educational management is significant for several reasons. Findings of this study will inform policymakers about the benefits and challenges of digital tools

in education, guiding the development of policies that support digital integration. Educational institutions can use the insights to plan and implement effective digital training programs for teachers and strategies to enhance student engagement.

The primary purpose of this study is to investigate the impact of digital transformation in educational management on students' academic performance, with a specific focus on two critical variables: teacher training and student 1engagement.

Research Questions

i. What is the impact of digital transformation in educational management on teacher training at Lagos State University?
ii. How does digital transformation in educational management influence student engagement and academic performance at Lagos State University?

Hypotheses

The study tested the following null hypotheses:

$H0_1$: There is no significant relationship between digital transformation initiatives and the effectiveness of teacher training in Lagos State, Nigeria.

$H0_2$: There is no significant relationship between digital transformation initiatives and student engagement in Lagos State, Nigeria.

Concept of Digital Transformation in Education

Digital transformation, as defined by Norton, Shroff and Edwards (2020) is a shift in how labour is organized driven by new digital technologies and creative business strategies. It entails more than just putting a technology solution into practice; rather, it requires coordinating organizational, human, and digital technologies. Mahlow and Hediger (2019) assert that digital transformation uses digital technologies to strategically and deeply develop new models and competencies.

Digital transformation in education refers to the integration of digital technologies into teaching, learning, and administrative processes within educational institutions. This transformation involves not only the adoption of new tools and platforms but also changes in pedagogical approaches and administrative practices (Zhao & Frank, 2023). Technologies such as learning management systems (LMS), virtual classrooms, and digital assessment tools are reshaping how education is delivered and managed.

Major components of digital transformation

i. Technological Integration: the use of digital tools like LMS and educational apps to facilitate and enhance learning and administrative tasks (Chen & Zhang, 2022).
ii. Pedagogical Innovation: adopting new teaching methodologies enabled by technology, such as flipped classrooms, online collaboration, and multimedia resources (Svinicki, McKeachie, & Hofer, 2021).
iii. Administrative Efficiency: streamlining administrative processes through digital solutions, improving efficiency in tasks such as enrolment, grading, and communication (Adewale & Oluwaseun, 2023).

The correlation between digital transformation in educational management, teacher training, and student engagement is a critical area of study, particularly in understanding their combined effect on students' academic outcomes. As educational institutions increasingly adopt digital technologies, the integration of these tools into management and instructional practices has become essential for enhancing educational effectiveness. Recent research highlights the importance of a synergistic approach, where the successful implementation of digital transformation relies not only on the availability of technology but also on the preparedness and engagement of educators and students.

Digital Transformation in Educational Management

Digital Transformation in Educational Management refers to the process of integrating digital technologies into the administrative and instructional operations of educational institutions. This transformation encompasses a wide range of activities, including the use of digital platforms for communication, online learning environments, data management systems, and digital tools for teaching and learning. Studies have shown that when educational management effectively leverages digital tools, it can lead to improved efficiency, enhanced access to resources, and better support for both teachers and students (Warschauer & Matuchniak, 2010; Selwyn, 2016). However, the success of digital transformation is highly dependent on how well teachers are trained to use these technologies.

Teacher Training

Teacher training is a crucial factor in the effective implementation of digital technologies in education. Adequate training equips teachers with the necessary skills and knowledge to integrate digital tools into their teaching practices, thereby enhancing their instructional effectiveness. Research indicates that teachers who receive comprehensive training in digital tools are more likely to adopt and use these technologies in ways that positively impact student engagement and learning outcomes (Ertmer & Ottenbreit-Leftwich, 2010; Howard, Tondeur, Ma, & Yang, 2021). Conversely, a lack of training can lead to resistance to technology adoption, which may diminish the potential benefits of digital transformation in education.

Student Engagement

Student engagement is another critical component influenced by digital transformation and teacher training. Engagement refers to the level of interest, motivation, and active participation of students in the learning process. Digital tools, when effectively integrated into the classroom, can significantly enhance student engagement by providing interactive, personalized, and collaborative learning experiences (Fredricks, Blumenfeld, & Paris, 2004). For instance, the use of educational software, online discussions, and multimedia resources can make learning more dynamic and relevant to students, thereby increasing their involvement and investment in the learning process. The combined effect of digital transformation, teacher training, and student engagement on:

Impact on Teacher Training

Effective teacher training is crucial for integrating digital tools into the classroom effectively. Digital transformation necessitates that educator acquire new skills and competencies to utilize technology effectively in their teaching practices. Digital transformation requires continuous professional development programs that focus on digital literacy and the use of educational technologies (Svinicki, McKeachie, & Hofer, 2021). Studies show that targeted training programmes can significantly improve teachers' ability to incorporate technology into their teaching (Chen & Zhang, 2022). Teachers need to develop competencies in using various digital tools and platforms to enhance instructional effectiveness and engage students (Zhao & Frank, 2023). Training programmes should cover not only the technical aspects but also pedagogical strategies for using technology effectively.

Challenges in teacher training

Adewale and Oluwaseun (2023) opine that some teachers may resist adopting new technologies due to lack of confidence or perceived difficulty addressing these concerns through supportive training and clear communication. Limited access to resources and inadequate training opportunities can hinder effective digital integration (Chen & Zhang, 2022). Ensuring that all teachers have access to quality training and resources is critical for successful digital transformation.

Impact on Student Engagement

Student engagement is a key factor influencing academic performance. Digital transformation has the potential to enhance student engagement through interactive and personalized learning experiences. Digital tools such as interactive simulations, gamification, and multimedia resources can increase student participation and motivation (Chen & Zhang, 2022). These tools make learning more engaging and can help cater to diverse learning styles. Svinicki, McKeachie, and Hofer (2021) state that technologies like adaptive learning platforms allow for personalized learning experiences that address individual students' needs and pace. Personalization can lead to increased student satisfaction and better learning outcomes.

Challenges in Enhancing Engagement:

Adewale and Oluwaseun (2023) argues that not all students have equal access to digital tools and resources, which can lead to disparities in engagement and learning outcomes. Addressing this divide is crucial for ensuring equitable access to digital learning opportunities. Excessive use of technology can lead to disengagement if not integrated thoughtfully. Balancing digital and traditional learning methods is important to maintain student interest and participation (Zhao & Frank, 2023).

The theoretical framework guiding this study is anchored in two fundamental theories: Technological Pedagogical Content Knowledge (TPACK) and Constructivist Learning Theory (CLT). The aforementioned theories establish a solid basis for comprehending the influence of digital transformation on teacher training and student involvement in educational administration. Technological Pedagogical Content Knowledge (TPACK) is a framework developed by Mishra and Koehler (2006) that emphasizes the interaction among technology, pedagogy, and content competency.

The argument posits that in order to successfully include digital technologies into their teaching methods, teachers need to possess a thorough knowledge not just of the subject matter they teach, but also of the pedagogical techniques that most effectively communicate this subject matter through electronic mediums. Within the setting of Lagos State, Nigeria, the TPACK framework holds significant relevance as it underscores the need to provide teachers with the necessary abilities to effectively employ digital resources, thereby augmenting student involvement and improving learning results. As digital transformation initiatives are launched, the success of these efforts rests on teachers' ability to blend their content expertise with technology, thus increasing the learning experience.

The Constructivist Learning Theory (CLT), primarily developed through the foundational work of Jean Piaget (1896–1980) and Lev Vygotsky (1896–1934**)**, emerged in the early to mid-20th century. This theory posits that learners actively construct their understanding and knowledge of the world through experience and reflection. Constructivist Learning Theory (CLT), Piaget (1952) and Vygotsky (1978) posit that learners actively build their comprehension and knowledge of the world by engaging in experiences and interactions. This idea emphasizes the need for active learning and meaningful involvement of students in the educational process. In the present setting, digital tools serve as a medium through which students can actively and experientially interact with material, therefore conforming to the constructivist approach.

Within Nigerian classrooms, which have traditionally relied on rote learning, the incorporation of digital resources presents a chance to transition towards more constructivist, student-centred learning settings that foster critical thinking and problem-solving abilities. The TPACK framework and Constructivist Learning Theory are used to study how digital transformation in Lagos State can enhance teacher training and student engagement. These theories suggest that technology can enhance teaching methods and enrich student learning experiences.

Digital Transformation Initiatives in Educational Management

i. **Development of Online Professional Development Platforms for Teachers**

The development of online platforms that provide teachers with access to resources for professional development has been made possible by digital transformation. Teachers can make use of these platforms' chances for ongoing education by taking part in webinars, online courses, and virtual workshops. This strategy is especially helpful in Lagos State, where traditional face-to-face training opportunities may be limited due to logistical and financial constraints. These platforms ensure that teachers stay current with the newest digital technologies and pedagogical practices by offering flexible, on-demand training. This improves teachers' capacity to effectively engage students (Ertmer & Ottenbreit-Leftwich, 2020).

ii. **Implementation of Learning Management Systems (LMS)**

Digital platforms called Learning Management Systems (LMS) facilitate the administration and distribution of educational materials. LMS systems are being used in Lagos State to support student engagement and teacher training. An LMS gives educators a single point of contact to track their professional growth, collaborate with colleagues, and access training materials. The LMS provides students with an engaging environment in which they may engage with the material, take part in conversations, and do assignments. In addition to streamlining administrative duties, the incorporation of LMS into school management facilitates more dynamic and individualized learning for pupils (Almarashdeh, 2021).

iii. **Data-Driven Decision Making**

Digital platforms called Learning Management Systems (LMS) facilitate the administration and distribution of educational materials. LMS systems are being used in Lagos State to support student engagement and teacher training. An LMS gives educators a single point of contact to track their professional growth, collaborate with colleagues, and access training materials. The LMS provides students with an engaging environment in which they may engage with the material, take part in conversations, and do assignments. In addition to streamlining administrative duties, the incorporation of LMS into school management facilitates more dynamic and individualized learning for pupils (Almarashdeh, 2021).

iv. **Use of Interactive Digital Tools in Classrooms**

One of Lagos State's initiatives for digital transformation is incorporating interactive digital tools into the classroom to improve student engagement. To make learning more exciting and engaging, tools like interactive whiteboards, educational software, and online collaboration platforms are being deployed. It has been demonstrated that using these tools to enable more interactive and collaborative content exploration by students increases motivation and enhances learning results. According to Fredricks, Blumenfeld, and Paris (2019), the utilization of digital technologies is especially successful in increasing the relevance and accessibility of learning for students, which in turn promotes a higher degree of engagement.

v. **Inclusivity and Access to Digital Resources**:

Digital transformation in Lagos State also emphasizes inclusivity, ensuring that all students and teachers have access to digital resources, regardless of their socio-economic background or location. Initiatives aimed at providing affordable or even free access to digital tools and internet connectivity are being implemented to bridge the digital divide. This is crucial in a region where disparities in access to technology can exacerbate educational inequalities. These programmes ensure that digital transformation benefits all students and teachers by promoting inclusivity, which helps create a fairer educational environment (Adewumi, 2022).

Digital tools and its Integration into Educational Practices

Digital tools are widely regarded as key components for advancing educational practices, particularly in Nigeria, where the integration of technology into education has the potential to revolutionize traditional teaching and learning methodologies. According to Adeoye, Oluwole, and Blessing (2021), the efficient integration of digital technologies into educational practices begins with infrastructure development, which comprises providing dependable internet connection, digital devices, and training for teachers. Without proper infrastructure, the benefits of digital revolution in education may be restricted. This position is also backed by Ogunleye (2022) who argues that teacher training programs must be at the forefront of digital integration. Teachers need to be provided with the essential abilities to incorporate digital technologies into their teaching methods, enabling them to employ e-learning platforms, educational apps, and interactive whiteboards effectively.

Another key issue in integrating digital technologies is curricular congruence. Ajayi and Olagunju (2023) suggest that digital tools must connect with the educational objectives and curriculum material to guarantee that they improve, rather than disrupt, the learning process. For instance, using tools like as interactive simulations, virtual reality (VR), and learning management systems (LMS) can make learning more dynamic and student-centred, so fostering higher engagement.

Furthermore, Nigerian academics like Okwori and Usman (2020) stress the significance of educators' ongoing professional development. They recommend that ongoing training sessions on new digital tools and developing technologies are vital for sustaining the relevance and efficacy of educational activities. In their study, they discovered that instructors who participated in regular professional development workshops were more confident in using digital tools in their classrooms, leading to improved student results.

In addition, Akintunde and Olumide (2022) remark that one of the primary problems in incorporating digital tools in Nigerian education is reluctance to change. To counter this, educational institutions must establish a culture that supports experimentation and creativity. This can be achieved by supporting pilot programmes that allow instructors and students to experiment with various digital technologies in low-risk situations before they are completely introduced across the curriculum.

The integration of digital tools into educational practices in Nigeria involves a multi-faceted approach, including infrastructure development, teacher training, curriculum alignment, and a supportive institutional culture. Nigerian researchers continue to argue for a holistic approach to digital transformation in education to ensure that its benefits are recognised across all levels of the education sector.

Methodology

The study employed a descriptive survey design to assess the impact of digital transformation on teacher training and student engagement. The population for this study consists of 250 participants, including faculty members and students from Lagos State University, Ojo, Lagos State, Nigeria. A stratified random sampling technique was used to ensure representation across different departments and faculties selected for the study. Data were collected using a structured questionnaire designed to measure the variables of interest: digital transformation, teacher training, and student engagement. The questionnaire was validated through expert review and a pilot test, achieving a reliability coefficient (Cronbach's alpha) of 0.85. The questionnaires were administered to the selected participants via face-to-face methods to maximize response rates. Data collection spanned four weeks, ensuring adequate time for participants to complete the survey. The collected data were analysed using both descriptive statistics (mean, standard deviation and inferential statistics of Pearson Product Moment Correlation (PPMC).

Results

The analysis results are presented in two tables: one focusing on teacher training and student engagement. Each table is followed by a detailed interpretation and discussion of the findings.

Table 1: Impact of Digital Transformation on Teacher Training

Item	SA(%)	A (%)	Neut.(%)	D(%)	SD (%)
Access to online professional development platforms has improved my teaching skills.	45%	35%	10%	5%	5%
Digital tools have made it easier to implement interactive teaching methods.	50%	30%	10%	7%	3%
Data-driven insights provided by digital tools have helped me identify areas for professional growth.	40%	30%	15%	10%	5%
The support provided by educational management for digital training is adequate.	35%	40%	15%	7%	3%

Source: *Field work 2024*

Collectively, 80% of teachers expressed strong agreement with the enhancement of their teaching abilities through access to online professional development platforms. These findings suggest that digital transformation efforts are successfully equipping teachers with essential resources and training opportunities, therefore enhancing their professional development. A level of 10% neutrality implies that certain teachers may require more focused or advanced training, whilst the 10% disagreement indicates possible challenges such as the accessibility or relevance of the training material. An overwhelming majority of teachers, namely 80%, recognised that digital tools have greatly facilitated the use of interactive teaching approaches. These results emphasize the significance of digital technologies in enhancing the initiative and engagement of students in the learning process. The minimal level of disagreement indicates that although digital tools are usually well-received, certain teachers may encounter difficulties in incorporating them into the curriculum or classroom activities. Approximately 70% of teachers concurred that data-driven insights have facilitated their identification of areas for professional development. This exemplifies the significance of data analytics in augmenting teacher training through the provision of individualized feedback and platforms for growth. Nevertheless, the presence of 15% neutrality and 15% disagreement implies that there exists a need for the development of more user-friendly data tools or the provision of further training on data interpretation. Among the instructors surveyed, 75% reported feeling supported by educational management in their digital training initiatives, while the remaining 25% indicated neutrality or discontent. This could imply a need for more institutional support, such as more thorough training programs, improved access to digital resources, or continuing technical assistance.

Table 2: Impact of Digital Transformation on Student Engagement

Item	SA(%)	A (%)	Neut.(%)	D(%)	SD (%)
Digital tools make learning more interactive and enjoyable.	55%	30%	10%	3%	2%
The use of digital platforms has increased my participation in class activities.	50%	35%	10%	3%	2%
Digital resources have made it easier to understand complex concepts.	45%	40%	10%	3%	2%
I feel more motivated to learn when using digital tools in the classroom.	50%	30%	12%	5%	3%

Source: *Field work 2024*

Significantly, 85% of students said that the use of digital technologies has improved the interactivity and enjoyment of learning. This indicates the success of digital transformation projects in making education more engaging for students. The low amount of disagreement shows that while most students benefit from these technologies, there might still be some who prefer traditional learning techniques or encounter issues with digital learning settings. Also, an average of 85% of students stated that the usage of digital platforms had improved their participation in class activities. This emphasizes the importance of digital tools in facilitating active learning and student interaction. The small percentage of neutrality and disagreement could be attributable to varied levels of digital literacy or access to necessary gadgets and internet connectivity. Nearly 85 % of students found that digital resources had made it simpler to understand complicated concepts, demonstrating that digital tools are increasing the comprehension and memory of challenging information. The 10% neutrality and 5% disagreement may emphasize the need for more differentiated or adaptable digital content that responds to the varying learning needs of students. While a total of 80% of students felt more motivated to learn when utilizing digital tools, demonstrating that these tools are beneficial in promoting student engagement and passion for learning. However, the 12% neutrality and 8% disagreement indicate to the likelihood that some students may not find digital tools as stimulating, perhaps due to personal preferences or issues with technology use.

Table 1: Descriptive Statistics of Digital Transformation and Teacher Training

variable	Mean	St. D
Digital Transformation	4.25	0.67
Teacher Training	4.10	0.72

Table 1 presents the descriptive statistics for digital transformation in educational management and its perceived impact on teacher training. The high mean scores 4.25 indicate that participants generally perceive digital transformation as having a positive effect on teacher training.

Table 2: Correlation between Digital Transformation, Teacher Training, and Student Engagement

Variables	r-value	p-value
Digital Transformation & Teacher Training	0.68	0.01
Digital Transformation & Student Engagement	0.72	0.05

Table 2 shows the Pearson correlation coefficients for the relationships between digital transformation, teacher training, and student engagement. The results indicate significant positive correlations between digital transformation and both teacher training ($r = 0.68$, $p < 0.05$) and student engagement ($r = 0.72$, $p < 0.05$).

Discussion of findings

The results of this study reveal that digital transformation in educational management plays a crucial role in improving teacher training and student engagement, which are essential for enhancing student academic performance. The high link between digital transformation and teacher training demonstrates that the deployment of digital tools has significantly benefited the professional development of teachers at Lagos State University. Moreover, the significant correlation between digital transformation and student engagement highlights the necessity of digital tools in building an innovative and engaging learning environment. These findings accord with previous studies by Zhao and Frank (2023) who demonstrated that digital tools greatly boost student engagement and learning outcomes. Similarly, Chen and Zhang (2022) stressed the relevance of digital literacy in teacher training programmes, underlining that well-trained teachers are more effective in integrating technology into their teaching strategies.

Conclusion

This study highlights the significant role of digital transformation initiatives in enhancing teacher training and promoting student engagement within the educational management framework in Lagos State, Nigeria. The integration of digital tools, when properly aligned with curriculum goals and supported by adequate infrastructure, can significantly improve teaching effectiveness and learning outcomes. The analysis demonstrates a positive relationship between digital initiatives and both teacher development and student engagement, reflecting the potential of technology to revolutionize education in Nigeria.

To sustain these gains, continuous professional development for teachers, improved infrastructure, and supportive government policies are critical. Additionally, promoting a culture of innovation and experimentation within schools will ensure that teachers and students alike can maximize the benefits of digital transformation. Ultimately, this study underscores the need for a holistic approach to the integration of digital tools in educational management, which will not only improve the quality of education but also prepare students for a digitally driven future.

This study suggests that digital transformation in educational management significantly impacts teacher training and student engagement, both of which are key variables in enhancing the academic performance of students. The study's favourable correlations indicate that adopting digital tools and platforms should be a top priority for educational institutions in order to improve student results.

Recommendations

i. The government and educational institutions must prioritize the development of digital infrastructure, including reliable internet access, digital devices, and power supply.
ii. Adequate funding should be allocated to equip schools with modern technological tools that can facilitate digital learning.
iii. The curriculum should be redesigned to include the use of digital tools that align with educational goals. This would involve integrating interactive learning platforms, multimedia resources, and virtual learning environments that encourage student engagement and active participation.
iv. The University should invest in robust digital infrastructure to support the integration of technology in both administrative and instructional activities.

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