PERCEPTION OF LECTURERS ON TECHNOLOGY ADOPTION FOR TRAINING OF HEALTH INFORMATION MANAGEMENT STUDENTS IN INSTITUTIONS IN ONDO STATE, NIGERIA

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Abstract

With the increasing demand for technological proficiency among Health Information Management (HIM) graduates, there is a need for enhanced technological adoption in the training of HIM students to prepare them for the field. The study investigated lecturers' perceptions on technology adoption in the training of HIM students in selected institutions in Ondo State. Quantitative data were collected from the study. The population comprised of 50 HIM lecturers at the selected training institutions. A structured questionnaire was administered through Google Forms, and the data collected was analysed using descriptive and inferential statistics. The results revealed that the HIM lecturers adopt technology on an average level for the training of HIM Students. Most lecturers have a positive perception of technology usefulness, while perceived ease of use showed a positive and significant influence on the level of technology adoption. Additionally, regular use of technology in the preparation and delivery of course materials, and to communicate with students and other staff are effective strategies reported to enhance technology adoption and proficiency among the HIM lecturers. The study concluded that there is a need to institute effective strategies and enhance the user-friendliness of digital tools to enhance technology adoption by lecturers for the training of HIM students. *The study recommends the development of policies and protocols aimed towards higher adoption of technology in HIM training to ultimately improve the technological proficiency of HIM graduates.*

***Keywords**:* Health Information Management, Lecturers, Perception, Technology Adoption, Training

Introduction

In the evolving landscape of healthcare, effective management of health information plays a pivotal role in ensuring quality care delivery and patient outcomes. The integration of technology into health information management (HIM) practices has therefore become imperative to keep pace with the demands of modern healthcare systems. Particularly within educational settings, where future professionals are trained, the adoption and utilization of technology can significantly influence the development of competencies and skills among students. The 21st century is characterized as technology-dependent; hence, to function optimally within this tech-savvy environment, health information management students require certain technological skills. Tech-savvy lecturers can identify and explore a diverse array of technological tools and devices to select the ones that most effectively complement their teaching and learning materials. Lecturers in higher training institutions frequently use basic information technology skills to coordinate activities, communicate electronically, and create documents (Kotrlik & Redmann, 2009).

Technology adoption refers to an intentional and gradual switch over to the automation of educational processes, not only in administrative activities such as students' admission, registration, and evaluation (Basri *et al.*, 2018), but also in academic activities, including online delivery of lectures, submission of assignments, and administration of tests and examinations. Some of the emerging technologies in educational settings that can be explored in training health information management students include flipped classrooms, social media, asynchronous learning, adaptive learning algorithms, augmented reality, virtual reality, 3D printing, robotics, blackboard learning management system, micro-learning, artificial intelligence/robots, and remote teaching and learning through platforms such as Google Meet and Zoom. Technology adoption helps students to significantly improve not only their scores but also their industry readiness by expanding the information they can access about health information management practices. Also, the enhancement of the quality of teaching is facilitated by the adoption of technology (Mtebe & Raphael, 2018).

In Ondo State, Nigeria, several institutions of learning, such as the University of Medical Sciences, Ondo (UNIMED), Achievers University in Owo,

Ondo State College of Health Technology, Akure, and Millennium College of Health Technology, Akure, among others, are involved in the training of health information management professionals and advancing medical knowledge. These institutions provide diploma, undergraduate, and postgraduate programmes in health information management to address local and global health challenges through effective data management and healthcare service delivery.

This study investigated the lecturers' perceptions on technology adoption in the training of health information management students at selected institutions in Ondo state, Nigeria. Understanding this perspective is critical for discerning the current state, challenges, and opportunities associated with technology adoption in HIM training. The perception of lecturers towards technology adoption in HIM training is multifaceted, encompassing views on its impact on curriculum design, teaching methodologies, student engagement, and overall learning outcomes. By delving into the insights of these lecturers, this study seeks to elucidate key factors that either facilitate or hinder the effective incorporation of technology into HIM training.

Statement of the problem

The adoption of technology in Health Information Management (HIM) training programmes is crucial for equipping graduates with the necessary skills to succeed in today's healthcare environment. However, there is a significant gap between the technological requirements of the HIM field and the preparedness of HIM graduates. The researchers have observed instances of inadequate knowledge and limited technical skills demonstrated by HIM graduates during the application process for a higher degree and their performance of HIM-related functions on digital platforms. This deficiency appears to stem from insufficient technology adoption in the training programmes, leaving the graduates ill-equipped to utilise essential technological tools in their field.

To address the observed gap, it is essential to examine lecturers' perceptions regarding technology adoption in the training of HIM students. Understanding these perspectives is vital for identifying the underlying causes of the technology gap and developing targeted strategies to enhance technology integration in the HIM curriculum and training programmes.

Research objectives

The general objective of this study was to investigate lecturers' perception on technology adoption in training of health information management students in selected institutions in Ondo State. The specific objectives were to:

1. identify the level of technology adoption in the training of health information management students in selected institutions in Ondo State.
2. identify strategies to enhance technology adoption and proficiency among HIM lecturers in selected training institutions in Ondo State.
3. examine lecturers' perceived usefulness of technology adoption in health information management training in selected training institutions in Ondo State.
4. determine the influence of lecturers' perceived ease of use on the level of technology adoption in health information management training in selected training institutions in Ondo State.
5. assess the perceived barriers to effective technology adoption in training HIM students in selected institutions in Ondo State.

Literature Review

Educational technologies have continued to gain recognition among researchers globally. Shi (2016) outlines a broad array of "emerging educational technologies," including augmented reality, virtual reality, artificial intelligence, and live streaming services like Google Classroom and Zoom. These technologies are gaining traction, particularly as EdTech companies emerge to support remote and hybrid learning environments. For health information management students, tools such as Cengage, Google Classroom, and SMART Board can enhance training experiences.

The American Health Information Management Association (AHIMA) has been proactive in addressing technological challenges in academia, launching the e-HIM Virtual Lab in 2006 to improve Health Information Management (HIM) education (AHIMA Advantage, 2008). Despite the benefits these technologies offer, their adoption in developing countries, particularly in West Africa, remains limited. Opoku *et al.* (2016) highlighted that the region lags behind developed nations due to insufficient understanding and preparedness for technology integration in educational settings. Khasawneh (2015) further notes that many institutions in West Africa are not equipped to adopt these technologies.

In Nigeria, while awareness of emerging technologies among lecturers is increasing, actual usage remains low (Uzezi Idhalama *et al.*, 2024). Research

from Sauda Universities also shows that, although technology integration enhances the academic performance of female students, it does not significantly affect their decision to choose technology as a major (Basri *et al.*, 2018). Challenges such as inadequate facilities, negative attitudes, and insufficient supportive policies hinder technology adoption (Ahmed *et al*., 2023). Adeyemi and Awolusi (2021) emphasize that the skills and attitudes of lecturers play a crucial role in technology adoption.

Although educational technology is believed to enhance learning, quantifying its impact remains difficult (Cabaleiro-Cerviño & Vera, 2020). Shi (2016) advocated for digital training for lecturers and promoting student autonomy to maximize technology use. Historical literature demonstrates that technology can significantly improve academic performance by broadening access to information and enhancing the learning environment (Mtebe & Raphael, 2018).

Moreover, technologies such as Web 2.0 facilitate collaborative learning and knowledge sharing (Ikenwe *et al.*, 2019). Innovations like artificial intelligence and virtual reality offer personalized learning experiences and foster teamwork which are crucial for modern education (Hussain Bhat, 2024a). However, challenges persist in the adoption of technology in health information management. Factors such as user attitudes, inadequate infrastructure, and insufficient training contribute to resistance (Akinsola & Oyediran, 2020).

Theoretical Review

The Technology Acceptance Model (TAM), proposed by Davis in 1989, suggests that the acceptance of a computer system hinges on two factors: *perceived usefulness and perceived ease of use*. This model focuses on the user's perceptions, in this case, the lecturers' perception. Even if a technology creator views a product as useful and user-friendly, it will not be accepted by potential users unless they hold similar beliefs. `

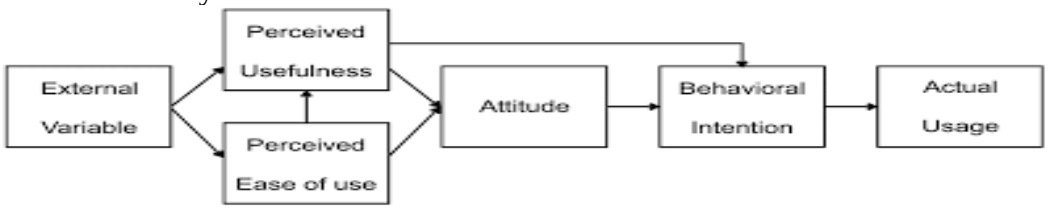

Figure I Technology Acceptance Model

The Unified Theory of Acceptance and Use of Technology (UTAUT) theoretical model posits that the utilization of technology is influenced by behavioural intention. Adoption likelihood is perceived based on the direct impact of four key factors: performance expectancy, effort expectancy, social influence, and facilitating conditions. Various predictors such as age, gender, experience, and voluntariness of use moderate these effects.

Overall, UTAUT offers a comprehensive framework for understanding technology acceptance, depicting a sophisticated interplay of individual characteristics and environmental factors in the adoption process (Marikyan & Papagiannidis, 2023).

Methodology

The study employed a descriptive cross-sectional survey research design of correlational type using a quantitative approach, which involves a systematic and comprehensive collection of data. The study was conducted among institutions offering health information management training in Ondo State. The study population was 50, comprising lecturers involved in the teaching of health information management students at the training institutions. Due to the relatively small and easily manageable population size, the total enumeration method was adopted. The data collection instrument was an adapted structured questionnaire deployed to the respondents through Google Forms.

The settings of the Google Form were configured to maintain response confidentiality and ensure respondent's anonymity. The survey's consent page outlined the study's purpose, stressed voluntary participation, assured respondents of response confidentiality, and sought their consent to partake in the study through a tick on a checkbox. Data collected was analysed using Stata Package (version 14) for descriptive (frequency, percentages, mean and standard deviation, to address objectives i, ii, iii and iv) and inferential (simple linear regression, to address objective v) statistics. The response rate was 92% and a cut-off point of 2.5 was used as the decision point in the four-point Likert scale of the research instrument.

Results and Discussion

Level of Technology Adoption for the Training of Health Information Management Students in Institutions in Ondo State, Nigeria

The first objective of the study sought to identify the level of technology adoption for the training of Health Information Management students in Ondo

State, Nigeria. Respondents were provided with options to enhance the actualization of the objectives.

Table 1: Level of Technology Adoption in the Training of Health Information Management Students in Selected Training Institutions in Ondo State

S/N	Survey Items for the level of technology adoption	Very High Extent Freq (%)	High Extent Freq (%)	Low Extent Freq (%)	Very Low Extent Freq (%)	Mean	Std. Dev.
1	I design learning activities that result in my students being comfortable using technology in their learning.	8 (17.39)	25 (54.35)	10 (21.74)	3 (6.52)	2.83	0.79
2	I regularly pursue innovative ways to incorporate technology into the learning process for my students.	13 (28.26)	26 (56.52)	7 (15.22)	-	2.87	0.65
3	I incorporate technology in my teaching to such an extent that it has become a standard learning tool for my students.	6 (13.04)	22 (47.83)	14 (30.43)	4 (8.70)	2.65	0.82
4	I assign students to use the computer to do content-related activities regularly.	6 (13.04)	16 (34.78)	18 (39.14)	6 (13.04)	2.52	0.88
5	I discuss with my students how they can use technology to enable them to be self-directed learners.	13 (28.26)	28 (60.87)	3 (6.52)	2 (4.35)	3.13	0.72

Grand Mean	2.70	

Source: Researcher's Computation (2024)

Table 1 presents the respondents' opinions on the level of technology adoption in HIM training in institutions in Ondo State, Nigeria. The overall grand mean of 2.7 on a 4-point scale showed that the level of technology adoption among lecturers in the selected training institutions can be described as near-high adoption. The findings revealed that the majority of the respondents,89.13% discuss with their students how they become self-directed learners using technology (mean =3.13 ±0.72); this suggests that the respondents are quite knowledgeable about technology and have positive perceptions about its usefulness. Meanwhile, only a few of the respondents, 47.8% assign students to use the computer to do content-related activities on a regular basis (mean=2.52±0.88); this confirms that technology is not fully adopted or maximized by the respondents in their various institutions. Lastly, majority of the respondents,71.74% adopt technology in designing learning activities and regularly pursue innovative ways to incorporate technology into the learning process for their students (mean=2.83±0.79). Overall, the findings indicated a near-high level of technology adoption for the training of Health Information Management students in institutions in Ondo State, Nigeria.

Strategies to enhance technology adoption and proficiency among HIM lecturers in training institutions in Ondo State

The second objective of the study aimed to identify effective strategies for improving technology adoption and proficiency among Health Information Management lecturers in selected institutions in Ondo State. Respondents were presented with a range of strategic options to select from.

Table 2 Strategies to enhance technology adoption and proficiency among HIM lecturers in training institutions in Ondo State

S/N	Survey Items on Strategies for Technology adoption and proficiency	Very High Extent Freq (%)	High Extent Freq (%)	Low Extent Freq (%)	Very Low Extent Freq (%)	Mean	Std. Dev.
1	By using technology in the preparation of	19 (41.30)	25 (54.35)	2 (4.35)	-	3.37	0.51

	course materials						
2	By using technology in communicating with students and other faculty's	13 (28.26)	31 (67.39)	2 (4.35)	-	3.23	0.52
3	Using technology in delivering learning materials	12 (26.08)	32 (69.57)	2 (4.35)	-	3.22	0.51
4	By appraising lecturers' technological skills for promotion	10 (21.74)	23 (50.00)	7 (15.22)	6 (13.04)	2.80	0.93
5	By enacting an institutional policy that mandates technology adoption in teaching	15 (32.61)	23 (50.00)	8 (17.39)	-	3.15	0.69

Source: Researcher's Computation (2024)

As shown in Table 2, most of the respondents, 95.65% agreed that their technology adoption and proficiency would be enhanced if they inculcated technology in the preparation of course materials (mean =3.37 ±0.51), in delivering their lectures (mean =3.22 ±0.51), and if the lecturers use technology in communicating with students and other faculties, (mean =3.24 ±0.52). In addition, 71.74% of the respondents opined that the technology adoption of lecturers will be enhanced if their technology skills are appraised before promotion (mean = 2.80 ±0.93); this suggests that institutional interventions would be necessary to enhance the adoption of technology among lecturers.

Perceived usefulness of technology adoption in health information management training

The third objective sought to assess the perceived usefulness of technology adoption in the training of Health Information Management (HIM) students within selected institutions in Ondo State, Nigeria. Respondents were provided with various options reflecting the perceived benefits of technology adoption in HIM training. Table 3 illustrates the responses to these options,

highlighting the respondents' overall perceived usefulness of technology adoption in the training of Health Information Management (HIM) students.

Table 3 Perceived usefulness of technology adoption in health information management training in the selected training institutions in Ondo State

S/N	Survey Items on Perceived usefulness of technology adoption	SA Freq (%)	A Freq (%)	D Freq (%)	SD Freq (%)	Mean	Std. Dev.
1	Using technology in my job would enable me to accomplish task more quickly.	24 (52.17)	20 (43.48)	2 (4.35)	-	3.60	0.49
2	Using technology would improve my job performance.	24 (52.17)	17 (36.96)	5 (10.87)	-	3.52	0.72
3	Using technology would increase my job productivity.	26 (56.52)	20 (43.48)	-	-	3.56	0.58
4	Using technology would enhance my effectiveness on the job.	25 (54.35)	19 (41.30)	2 (4.35)	-	3.58	0.49
5	Using technology would make it easier to do my job.	29 (63.04)	15 (32.61)	2 (4.35)	-	3.5	0.58

Source: Researcher's Computation (2024) Key: SA=Strongly Agreed, A=Agreed, D=Disagreed, SD=Strongly Disagreed

Table 3 presents respondents' opinions on the perceived usefulness of technology adoption in health information management training in the selected training institutions in Ondo State, Nigeria. Generally, the data showed that the respondents have a strong positive perception that technology adoption is useful for the training of HIM students. 95.6% of the respondents agreed that using technology in their jobs would enable them to accomplish tasks more quickly (mean =3.60 ±0.49). Similarly, 95.6% of the respondents believed their effectiveness on the job as lecturers would be enhanced using technology (mean =3.58 ±0.49). The majority of the respondents, 95.65% also believed that using technology would make it easier to do their job (mean =3.5 ±0.58).

Influence of lecturers' perceived ease of use on the level of technology adoption in the training of health information management students in selected institutions in Ondo State, Nigeria

This fourth objective assessed the influence of lecturers' perceived ease of use on the level of technology adoption in the training of Health Information Management (HIM) students within selected institutions in Ondo State, Nigeria. Respondents were provided with various options regarding the ease of use of technology in their training processes. Table 4**:** Ordinary Least Square Regression

Source	SS	df		MS
Model	8.22183794	1		8.22183794
Residual	16.1477273	44		.36699380
Total	24.3695652	45		.54154589
Level of Technology Adoption	Coef.	Std. Err.	t	P>|t|
Perceived Ease of Use	0.7329	0.1548	4.73	0.000
_cons	0.1477	0.5592	0.26	0.793
F(1, 44)	= 22.40	Prob > F	= 0.0000	
R-squared	= 0.3374	Adj R-squared	= 0.3223	

Table 4 shows the results of the simple linear regression conducted to examine the fourth objective of the study. The results indicated that the total sum of squares associated with the three sources of variance is 8.2218. Notably, the majority of this variance is attributed to the error term, which accounts for 16.147. This suggests that a substantial portion of the variance is not explained by the independent variables in the model. The degrees of freedom associated with these sources of variance is one, as the model considers only perceived ease of use as the predictor.

Additionally, the analysis demonstrates that the specified model, which examines the linear relationship between perceived ease of use and the level of adoption of technology in Health Information Management (HIM) training models, is statistically significant. This is evidenced by an F-statistic of 22.40 and a p-value of 0.0000, indicating that the model is a good fit for the data.

Furthermore, as shown in Table 4, the R-squared value of 0.3374 indicates that perceived ease of use accounts for 33.74% of the variation in the level of technology adoption in HIM training institutions in Ondo State. This overall result demonstrates that the indicators of perceived ease of use have a positive and significant influence on the level of technology adoption in the training of health information management students in Ondo State.

The individual results for the variables as shown in Table 4 revealed that perceived ease of use has a coefficient value of 0.7329, t-statistics of 4.73 and probability value of 0.000. This indicates that for every unit increase in the perceived ease of use of technology, the level of its adoption for training improves by 0.1477.

Perceived Barriers to Effective Technology Adoption in Training HIM Students in Selected Institutions in Ondo State, Nigeria

The fifth objective of the study was to identify the perceived barriers to effective technology adoption in the training of Health Information Management (HIM) students in selected institutions in Ondo State. Respondents were presented with a range of options regarding potential challenges that could hinder technology adoption. The responses are summarized in Table 5, illustrating the various barriers identified by the respondents.

Table 5 Perceived Barriers to Effective Technology Adoption in Training of HIM Students in Selected Institutions in Ondo State

S/N	Survey Items for Barriers to Effective Technology Adoption	SA Freq (%)	A Freq (%)	D Freq (%)	SD Freq (%)	Mean	Std. Dev.
1	Reduction in students' concentration span, attention and anti-social behaviour is a challenge to the adoption of technology in my teaching.	10 (21.74)	17 (36.96)	19 (41.30)	-	2.804	0.77
2	Poor internet	14	20	12	-	3.043	0.75

	facilities and resources in my institution is a challenge to the adoption of technology in my teaching	(30.43)	(43.48)	(26.09)			
3	Fear of internet and electronic insecurity (hacking) is a challenge to the adoption of technology in my teaching	8 (17.39)	7 (15.22)	25 (54.35)	6 (13.04)	2.369	0.92
4	Computer illiteracy and limited technical support is a challenge to the adoption of technology in my teaching	4 (8.70)	17 (36.96)	11 (23.91)	14 (30.43)	2. 760	0.88
5	Unstable electricity supply is a challenge to the adoption of technology in my teaching	4 (8.70)	4 (8.70)	24 (52.17)	14 (30.43)	3.043	0.72

Source: Researcher's Computation (2024)

Table 5 shows that poor internet facilities/resources (mean = 3.043±0.75) and unstable electricity supply (mean = 3.043±0.72) in studied institutions were identified by the respondents as the major barriers to their adoption of technology. This was followed by the reduction in students' concentration span, attention and anti-social behaviour (mean =3.043±0.72), computer illiteracy and limited technical support is another challenge indicated by respondents (mean 2.760±0.88). Interestingly, the fear of the internet and electronic insecurity (hacking) was the least rated barrier to technology adoption (mean =2.369±0.92).

Discussion of Findings

As revealed in this study, technology adoption by lecturers involved in the training of HIM students in selected institutions in Ondo State, Nigeria was at a near-high level. This depicts a moderate adoption status and provides a strong foundation for identifying barriers and putting forward strategies to encourage optimal and consistent use of technology in HIM training institutions. This level of adoption signifies that most lecturers believe in the use of technology in training HIM students but may have not fully adopted technology for this purpose. Generally, lecturers concur with the usefulness of designing learning activities in a way that makes students comfortable using technology and regularly pursuing innovative ways to incorporate technology. This suggests that most lecturers in these institutions are knowledgeable about technology for training HIM students. However, not all faculties in universities have adopted technology for this purpose (Kotrlik and Redmann, 2009).

With regards to strategies to enhance technology adoption and proficiency among HIM lecturers, the study's findings indicated that there is a need for more improvement in technology adoption and proficiency through suggested strategies such as using technology in the preparation of course materials, communicating students and other faculties, and teaching of learning materials. These findings align with the report of Uzorka *et al.* (2023), which noted that the use of technology in the preparation, communication, and delivery of learning materials enhances technological proficiency.

Nevertheless, the study findings also depict that when the lecturers have a clear understanding of technology and find it easy to use, there will be little to no hesitation to incorporate technology in the learning process of the students. More so, the regular pursuit of innovative ways to incorporate technology in the learning process of students during their training is a function of easiness of the lecturers to operate technology. Furthermore, the study findings connote that perceived ease of use significantly influences technology adoption in health information management (HIM) training by lecturers. Thus, while perceived ease of use is crucial, a broader examination of additional factors is necessary for a complete understanding of technology adoption in selected training institutions in Ondo State.

With regards to the identification of perceived barriers to technology adoption for the training of HIM students in Ondo State, the lecturers acknowledged poor internet facilities and resources, unstable power supply at their institutions, reduction in students' attention span and increase in their anti-

social behaviour as the most prominent challenges. While power and internet challenges are pervasive in the country, many academics continue to explore ways to manoeuvre the various challenges debarring the incorporation technology of into their work. Nevertheless, HIM lecturers could need more orientation on how to ameliorate these challenges and deal with technological distractions among students. The findings are in resonance with the findings of Mbazu *et al.* (2023) who also highlighted constraints such as poor internet services, poor electricity and anti-social behaviour as challenges to technology adoption in higher education institutions in Nigeria. The identified barriers in this study also corroborate the findings of a report from Pakistan, which recommended high-speed internet facilities at departments' computer labs, offices, libraries, hostels and homes to improve the searching skills of lecturers (Afridi & Chaudhry, 2019).

Conclusion

This study concludes that lecturers at HIM training institutions in Ondo believe there is a need to institute effective strategies to improve technology adoption for the training of HIM students in the state. While the lecturers demonstrate a moderate level of technology adoption for the training of Health Information Management (HIM) students, they have positive perceptions regarding the usefulness of technologies for training purposes. However, technological products with higher ease of use (user-friendliness) would potentially receive higher adoption and integration for educational purposes than those that are less user-friendly.

Improvement in technology adoption for the training of HIM students could be achieved through consistent engagement with digital tools to foster proficiency among HIM lecturers and students. Nevertheless, the maximal utilization of the technological tools would depend on how well the identified challenges are addressed through innovative solutions that can enhance the teaching and learning environments.

Recommendations

Based on the findings of this study, the following recommendations are suggested to improve technology adoption for the training of HIM students by lecturers at selected institutions in Ondo State, Nigeria. : in the selected institutions in Ondo State, Nigeria:

1. Staff unions should advocate for improved internet facilities and reliable power supply in educational institutions, while institutional leadership should

collaborate with local government and private sector partners to invest in necessary infrastructure upgrades.

2. Departmental Heads and educational authorities should implement regular training programmes for HIM lecturers focused on the effective use of technology in teaching. This should include mentoring, workshops on digital communication tools and e-learning platforms to enhance their skills and confidence.
3. HIM Lecturers and Curriculum Development Committees should incorporate technology seamlessly into the curriculum. The curriculum should include assignments and projects that require students to use various technological tools, fostering a tech-savvy learning environment.
4. Department Heads and Faculty should establish a feedback system where lecturers can share their experiences with technology use in teaching.
5. Institutional Leadership should create policies that support technology adoption, including providing necessary resources, incentives for adopting new technologies and recognizing innovative teaching practices.

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