PLANNING EDUCATION THROUGH INTEGRATION OF TECHNOLOGY TOOLS HIGHER INSTITUTIONAL DELIVERY IN DELTA STATE

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Abstract

*The study examined planning education through integration of technology tools higher institutional delivery in Delta State. Three research questions with corresponding hypotheses guided the study. The study adopted a descriptive survey research design. The population comprised 2,312 academic staff drawn from Delta State - Delta State University, Federal University of Petroleum Resources, and Delta State Polytechnic Ogwashi-Uku.Taro Yamane formula was used to determine a sample size of 341 respondents. A stratified random sampling technique was used to select academic staff based on departments and institutions. Proportionate sampling was applied across the three institutions to ensure equal representation: 132 from Delta State University, 96 from Federal University of Petroleum Resources, and 112 from Delta State Polytechnic. A structured questionnaire titled:"*Technology Integration in Educational Planning Questionnaire (TIEPQ)", *designed 15-items using a 4-point Likert scale. The instrument was validated by three experts. CronbachAlpha method yielded a reliability index of 0.86. A total of 328 copies of questionnaire were retrieved out of 341 copies. Mean and standard deviation answered the research questions, while Analysis of Variance (ANOVA)tested the hypotheses at a 0.05 level of significance. The study found that educators from DELSU, FUPRE, and DSPZ widely acknowledged that using technology enhances teaching, learning, and administrative processes, contributing to more effective educational planning and improved institutional operations across the three institutions. The study recommended among others that education planners should be encouraged to invest in regular training for teachers on emerging technology tools to ensure continued improvement in classroom engagement and content delivery.*

Keywords: *Planning Education, Integration of Technology Tools, Higher Institutional Delivery.*

Introduction

In recent years, educational planning has shifted from traditional pen-and-paper methods to more robust, technology-driven approaches that are reshaping learning environments. Planning education through the integration of technology tools refers to the structured process of using digital platforms and innovations to enhance curriculum delivery, policy formulation, institutional management, and academic performance. This integration is essential in higher education institutions in Delta State, Nigeria, where technology use is still emerging but rapidly gaining traction. Educational planning becomes more effective when it includes tools such as Learning Management Systems (LMS), digital libraries, virtual classrooms, and analytics software for monitoring and evaluation (Aduwa-Ogiegbaen&Iyamu, 2023). As universities and polytechnics adopt these technologies, they aim to improve teaching methodologies, student engagement, and institutional governance. In this context, technology serves not only as a medium of instruction but also as a strategic planning instrument in decision-making processes.

The relevance of technology integration in educational planning lies in its potential to drive innovation, streamline academic delivery, and promote inclusive access to education. In Delta State, the growth of higher institutions such as Delta State University, Federal University of Petroleum Resources Effurun, and Delta State Polytechnic has created the need for more coordinated and efficient planning mechanisms. Technology tools offer planners real-time data, interactive simulations, and collaborative

platforms that allow for more accurate needs assessment, curriculum development, and long-term forecasting (Akpotu&Akpochafo, 2022). For example, platforms like Google Classroom and Moodle have transformed course management, allowing lecturers to organize content more effectively and giving students 24/7 access to resources. These tools help to eliminate redundancy, reduce operational costs, and promote student-centered learning models, all of which are essential to sustainable educational development in the region.

Despite the opportunities, the integration of technology in educational planning for higher institutions in Delta State is not without its challenges. Infrastructure limitations, insufficient ICT training for staff, and unreliable power supply hinder effective implementation. Furthermore, institutional resistance to change and limited funding also obstruct the proper use of technological tools (Okolie&Ogbodo, 2021). While the Nigerian government and institutional authorities have made efforts to bridge these gaps through interventions such as TETFund ICT grants and digital literacy programs, uptake has been slow. Planning education in this context requires not just the acquisition of hardware and software, but also the transformation of mindsets, practices, and policies. The role of educational planners, therefore, becomes critical in aligning technological tools with the academic goals of institutions. A shift toward digital literacy, collaborative planning, and evidence-based decision-making is necessary for full integration.

To sustain the integration of technology in educational planning, stakeholders must adopt a systemic approach. This includes aligning technology policies with national education goals, promoting capacity-building initiatives, and establishing partnerships with tech providers. Planning should also consider students' technological access, the adaptability of academic content to digital formats, and the availability of support services. In Delta State, institutional leadership must prioritize investment in ICT infrastructure and research into locally adaptable digital solutions (Egbule&Ovoke, 2022). Additionally, monitoring and evaluation frameworks must be integrated to measure the impact of technology use on learning outcomes, staff efficiency, and institutional growth. Ultimately, the effective integration of technology tools into higher education planning in Delta State will foster innovation, equity, and excellence across institutions.

The integration of technology tools in teaching and learning has reshaped educational delivery in Delta State's higher institutions. Technology facilitates a more engaging and interactive learning environment by offering tools such as Learning Management Systems (LMS), multimedia content, and digital assessments. These innovations enhance both teaching effectiveness and student learning outcomes. As highlighted byEze, Chinedu-Eze, and Bello (2018), technology tools improve learner engagement, critical thinking, and access to vast academic resources. In Delta State, lecturers who use virtual classrooms, video conferencing, and digital libraries are able to deliver content more effectively, especially in large classes. Additionally, asynchronous tools such as recorded lectures and online discussion forums allow students to learn at their own pace, thereby supporting inclusive education (Omodan&Ige, 2021). However, challenges such as inadequate digital infrastructure and limited digital literacy among educators still hinder optimal utilization. Despite these limitations, the overall influence of technology on teaching quality in Delta institutions is markedly positive.

Ajadi et al., (2023) study reveal that digital tools such as Learning Management Systems (LMS), virtual simulations, and multimedia content significantly improve students' engagement and comprehension of complex concepts. Moreover, technology tools promote inclusive education by enabling remote learning and providing access to vast academic resources beyond the traditional classroom. Eze et al. (2023) study found that integrating smart boards and online platforms improved lecturer-student interaction and learning outcomes. Significantly, technology use has shifted the teaching paradigm from passive to active learning, allowing educators to implement blended learning strategies that foster critical thinking and collaboration among students.

Several technology tools have become essential for educational planning and delivery in Delta State's tertiary institutions. Among the most used are Google Classroom, Moodle, Zoom, Microsoft Teams, and various data analytics software. These platforms support virtual learning, lesson scheduling, student assessments, and record keeping. According to Okolie, Igwe, and Elom (2020), Moodle is

particularly useful for managing courses and tracking student progress, while tools like Microsoft Excel and SPSS are employed for institutional data analysis and planning. Administrative efficiency has also been enhanced through digital tools that streamline processes such as registration, grading, and student information management. Integration of technology in administrative functions reduces paperwork, enhances real-time decision-making, and ensures transparency (Adebayo &AbdulRahman, 2019). Furthermore, digital platforms enable timely dissemination of information to both staff and students, improving coordination and productivity. The strategic application of these tools fosters a more organized, data-driven approach to educational planning and implementation in Delta State's higher institutions.

Onwuka (2024) study indicated that tools such as Microsoft Excel, Google Workspace, and Blackboard LMS are commonly used for curriculum mapping, data management, and delivering digital content to students. These tools facilitate real-time communication, file sharing, virtual classrooms, and collaborative academic activities. Moreover, Ogunyemi and Ajibade (2024) disclosed that mobile applications like Zoom, Telegram, and Moodle have significantly enhanced the flexibility and scalability of instructional delivery. These platforms support asynchronous learning, course monitoring, and analytics, which help educators tailor instruction to student needs. Significantly, the integration of cloud-based tools ensures seamless access to data, enabling departments to monitor performance indicators and plan for continuous improvement effectively.

The integration of technology in administrative planning has significantly improved efficiency in higher institutions across Delta State. Tools such as Enterprise Resource Planning (ERP) systems, digital filing software, and student management systems (SMS) enable timely decision-making, accurate record keeping, and seamless communication between departments. As observed by Yusuf and Onasanya (2020), such systems reduce administrative workload, minimize human errors, and streamline student registration, result processing, and staff performance evaluation. In Delta State, institutions like Delta State University now rely on digital dashboards and biometric systems to manage attendance, payroll, and academic records more effectively. As noted byAdeoye and Wentling (2021), these technologies help administrators monitor institutional performance and plan future academic sessions using data-driven strategies. Moreover, administrative transparency has increased as information is now more accessible and traceable. These advancements not only save time but also promote accountability and better allocation of resources, thus supporting long-term institutional growth and educational sustainability.

As acknowledged byOyetola and Fashina (2023), the use of enterprise resource planning (ERP) systems, academic management software, and cloud storage services allows administrators to automate tasks such as admissions, timetabling, budgeting, and staff scheduling. This reduces manual errors and enhances coordination across departments. Ojo and Etim (2024) significantly revealed that real-time access to student records and analytics through digital dashboards enables prompt intervention in academic and administrative issues. These tools support strategic planning and resource allocation, ensuring institutions respond swiftly to evolving educational needs. Moreover, technology enhances transparency and accountability by offering digital audit trails and report generation, thus significantly boosting institutional effectiveness and compliance.

Statement of the Problem

Planning education through the integration of technology tools in higher institutions in Delta State faces several challenges that hinder its successful implementation and delivery. A major problem is the lack of adequate digital infrastructure. Most institutions still struggle with inconsistent electricity supply, poor internet connectivity, and outdated computer systems. These challenges limit the capacity of lecturers and students to fully engage in technology-driven teaching and learning.Another key issue is the insufficient funding for educational technology. Budget allocations for acquiring and maintaining digital tools, training staff, and developing e-learning platforms are often inadequate. As a result, the planning process becomes unrealistic, leading to poor implementation and delivery of educational services. Additionally, there is a noticeable gap in the digital literacy of both academic and non-

academic staff. Many educators lack the technical skills needed to effectively use technology tools, thereby reducing the quality of instruction and learning experiences.

These problems significantly affect higher institutional delivery by slowing down the pace of innovation, weakening teaching effectiveness, and widening the digital divide among students. Learning becomes less engaging, and access to modern knowledge resources is limited.To mitigate these issues, policies such as increased investment in digital infrastructure, regular training programs for staff, and public-private partnerships for educational technology development are crucial. The establishment of monitoring frameworks to assess implementation progress can also enhance accountability.Although there are policy frameworks at the national level, their implementation at the state and institutional levels is weak. There is a lack of coordination between planning and actual resource deployment. The gap lies in translating policies into actionable steps tailored to the local context in Delta State. A more participatory planning process involving educators, students, and ICT professionals is necessary to bridge this gap and achieve effective technology integration in education. Hence, deemed it fit to under examine planning education through integration of technology tools higher institutional delivery in Delta State.

Aim and Objectives of the Study

The aim of the studyinvestigatedplanning education through integration of technology tools higher institutional delivery in Delta State. Specifically, the objectives of the study are to:

1. Ascertain how the use of technology tools affects the quality of teaching and learning in higher institutions in Delta State.
2. Find out types of technology tools most commonly used for educational planning and delivery in Delta State's higher institutions.
3. Determine ways integration of technology improve administrative efficiency in planning education in Delta State's higher institutions.

Research Questions

Three research questions guided this study.

1. How does the use of technology tools affect the quality of teaching and learning in Delta State University, Federal University of Petroleum Resources, and Delta State Polytechnic?
2. What types of technology tools are most commonly used for educational planning and delivery in Delta State University, Federal University of Petroleum Resources, and Delta State Polytechnic?
3. In what ways does the integration of technology improve administrative efficiency in planning education in Delta State University, Federal University of Petroleum Resources, and Delta State Polytechnic?

Hypotheses

The three hypotheses tested at 0.05 level of significance guided the study.

1. The use of technology tools does not significantly affect the quality of teaching and learning in Delta State University, Federal University of Petroleum Resources, and Delta State Polytechnic.
2. There are no types of technology tools most commonly used for educational planning and delivery in Delta State University, Federal University of Petroleum Resources, and Delta State Polytechnic.
3. Integration of technology does not significantly improve administrative efficiency in planning education in Delta State University, Federal University of Petroleum Resources, and Delta State Polytechnic.

Methodology

The study adopted a descriptive survey research design to investigate how technological integration influences planning and delivery in tertiary institutions. The population comprised 2,312 academic staff drawn from three public higher institutions in Delta State - Delta State University (898), Federal University of Petroleum Resources (654), and Delta State Polytechnic Ogwashi-Uku (760), according to the Delta State Ministry of Education (2025). Taro Yamane formula was used to determine a sample size of 341 respondents.A stratified random sampling technique was used to categorize the academic staff based on their departments and institutions. Proportionate sampling was then applied across the three institutions to ensure equal representation: 132 from Delta State University, 96 from Federal University of Petroleum Resources, and 112 from Delta State Polytechnic. The main instrument for data collection was a structured questionnaire titled *Technology Integration in Educational Planning Questionnaire (TIEPQ)*, designed 15-items using a 4-point Likert scale: Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1). The instrument was validated by three experts, two in Educational Technology and one in Measurement and Evaluation from the University of Benin. To establish reliability, the Cronbach Alpha method was applied, yielding a reliability index of 0.86, indicating a high level of internal consistency. A total of 341 copies of the questionnaire were distributed according to the sample size, and 328 were successfully retrieved, representing a return rate of 96.5%. Descriptive statistics such as mean and standard deviation were used to analyze the research questions, while inferential statistics, specifically Analysis of Variance (ANOVA), were employed to test the formulated hypotheses at a 0.05 level of significance.

Results and Discussion

Research Question One: How does the use of technology tools affect the quality of teaching and learning in Delta State University (DELSU), Federal University of Petroleum Resources (FUPRE), and Delta State Polytechnic (DSPZ)?

Table 1: Mean and standard deviation analysis on how the use of technology tools affects the quality of teaching and learning in Delta State University (DELSU), Federal University of Petroleum Resources (FUPRE), and Delta State Polytechnic (DSPZ)

S/N	Item Statement	DELSU (n=124)		FUPRE (n=95)		DSPZ (n=109)		Mean Set	Decision
		Mean ($\bar{x}$)	Std. Dev.	Mean ($\bar{x}$)	Std. Dev.	Mean ($\bar{x}$)	Std. Dev.		
1.	I use projectors and smartboards to make my lessons clearer and more engaging for students.	3.32	.52	3.44	.77	3.56	.65	3.44	Agree
2.	I noticed that students learn faster when I use digital tools like videos and simulations.	3.39	.53	3.67	.53	3.49	.67	3.52	Agree
3.	I give students quick feedback using online platforms, which helps them improve faster.	3.27	.54	3.19	.49	3.15	.53	3.20	Agree
4.	I can easily track student performance through digital grade books and learning apps.	3.24	.79	3.12	.70	3.02	.87	3.13	Agree
5.	I spend less time writing on the board and more time guiding students when I use technology.	3.58	.64	3.42	.81	3.72	.59	3.57	Agree
	Average Mean & Std. Dev. Scores	**3.36**	**.60**	**3.37**	**.66**	**3.39**	**.66**	**3.37**	**Agree**

The analysis of Table 1 reveals that respondents from Delta State University, Federal University of Petroleum Resources, and Delta State Polytechnic generally agreed that the use of technology tools positively influences teaching and learning. Across all five items, the mean scores ranged from 3.13 to 3.57, indicating consistent agreement. Specifically, tools like projectors, smartboards, videos, and digital platforms enhance lesson clarity, student engagement, and faster feedback. Additionally, technology helps in tracking student performance and reduces time spent on traditional methods, allowing for more interactive guidance. The overall average mean score of 3.37 confirms a shared positive perception among educators in all three institutions. This suggests that integrating technology improves the overall quality of education across these tertiary institutions.

Research Question Two: What types of technology tools are most commonly used for educational planning and delivery in Delta State University (DELSU), Federal University of Petroleum Resources (FUPRE), and Delta State Polytechnic (DSPZ)?

Table 2: Mean and standard deviation analysis on the types of technology tools most commonly used for educational planning and delivery in Delta State University (DELSU), Federal University of Petroleum Resources (FUPRE), and Delta State Polytechnic (DSPZ)

S/N	Item Statement	DELSU (n=124)		FUPRE (n=95)		DSPZ (n=109)		Mean Set	Decision
		Mean ($\bar{x}$)	Std. Dev.	Mean ($\bar{x}$)	Std. Dev.	Mean ($\bar{x}$)	Std. Dev.		
6.	I mostly use Learning Management Systems like Moodle and Google Classroom.	3.65	.60	3.26	.44	3.49	.63	3.46	Agree
7.	I plan my lectures using Microsoft PowerPoint and deliver them using projectors.	3.24	.62	3.51	.77	3.46	.57	3.40	Agree
8.	I conduct virtual meetings and classes through Zoom or Microsoft Teams.	3.11	.39	3.19	.51	3.12	.44	3.14	Agree
9.	I use WhatsApp and Telegram to send updates and learning materials to students.	3.12	.55	3.23	.42	3.14	.44	3.16	Agree
10.	I rely on data analysis tools like Excel to manage records and track progress.	3.39	.69	3.56	.49	3.43	.69	3.46	Agree
	Average Mean & Std. Dev. Scores	**3.30**	**.57**	**3.35**	**.53**	**3.33**	**.55**	**3.32**	**Agree**

The result of Table 2 shows that respondents from Delta State University (DELSU), Federal University of Petroleum Resources (FUPRE), and Delta State Polytechnic (DSPZ) actively use various technology tools in educational planning and delivery. Learning Management Systems (mean = 3.46) and data analysis tools like Excel (mean = 3.46) ranked highest in usage, indicating strong integration in academic processes. Microsoft PowerPoint, virtual meeting platforms, and messaging apps also received moderate agreement, with mean scores ranging from 3.14 to 3.40. The average mean scores across the three institutions - DELSU (3.30), FUPRE (3.35), and DSPZ (3.33) reflect a general consensus of agreement. This suggests that educators across these institutions regularly apply technology tools to enhance teaching and administrative efficiency.

Research Question Three: In what ways does the integration of technology improve administrative efficiency in planning education in Delta State University (DELSU), Federal University of Petroleum Resources (FUPRE), and Delta State Polytechnic (DSPZ)?

Table 3: Mean and standard deviation analysis on ways the integration of technology improve administrative efficiency in planning education in Delta State University (DELSU), Federal University of Petroleum Resources (FUPRE), and Delta State Polytechnic (DSPZ)

S/N	Item Statement	DELSU (n=124)		FUPRE (n=95)		DSPZ (n=109)		Mean Set	Decision
		Mean ($\bar{x}$)	Std. Dev.	Mean ($\bar{x}$)	Std. Dev.	Mean ($\bar{x}$)	Std. Dev.		
11.	I use digital records to keep student data organized and easy to access.	3.29	.51	3.73	.59	3.56	.56	3.53	Agree
12.	I create timetables and manage schedules faster using planning software.	3.36	.52	3.69	.59	3.61	.56	3.55	Agree
13.	I communicate with staff and students quickly through emails and group apps.	3.29	.55	3.42	.59	3.29	.53	3.33	Agree
14.	I monitor course registration and attendance online, which saves me time.	3.19	.78	3.32	.86	3.12	.89	3.21	Agree
15.	I prepare and submit reports easily using automated systems and online forms.	3.62	.63	3.82	.50	3.82	.46	3.75	Agree
	Average Mean & Std. Dev. Scores	**3.36**	**.60**	**3.60**	**.63**	**3.48**	**.6**	**3.47**	**Agree**

The results from Table 3 show that respondents across DELSU, FUPRE, and DSPZ agreed that integrating technology significantly improves administrative efficiency in educational planning. The highest-rated item was the ease of preparing and submitting reports using automated systems, with a mean of 3.75. Creating timetables, accessing student data, and communication were also positively rated, indicating technology's role in saving time and enhancing organization. Though course registration and attendance monitoring had slightly lower means, the responses still reflected agreement. Overall, with a general mean of 3.47, it is clear that respondents believe technology supports faster, more organized, and effective administrative processes. This demonstrates a strong positive perception of technology's role in improving educational planning and administration.

Ho_1: The use of technology tools does not significantly affect the quality of teaching and learning in Delta State University (DELSU), Federal University of Petroleum Resources (FUPRE), and Delta State Polytechnic (DSPZ).

Table 4: ANOVA analysis on how the use of technology tools affect the quality of teaching and learning in Delta State University (DELSU), Federal University of Petroleum Resources (FUPRE), and Delta State Polytechnic (DSPZ)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.492	1	2.246	6.488	.002
Within Groups	133.982	326	.346		
Total	138.474	327			

* Significance 0.05 > 0.00. Not Significance 0.05 < 0.00

The ANOVA analysis presented in Table 4 shows a significant effect of technology tools on the quality of teaching and learning across DELSU, FUPRE, and DSPZ. The result reveals a **p-value of 0.002**, which is less than the significance level of 0.05. This means there is a statistically significant difference in how technology tools impact teaching and learning quality among the institutions. With an F-value of **6.488**, the variation between groups is not by chance. Based on respondents' views, technology use has positively affects teaching delivery and learning experiences. Therefore, integrating digital tools is essential for improving educational outcomes in these institutions. The result supports the continued adoption of educational technologies for effective academic performance.

Ho_2: There are no types of technology tools most commonly used for educational planning and delivery in Delta State University (DELSU), Federal University of Petroleum Resources (FUPRE), and Delta State Polytechnic (DSPZ).

Table 5: ANOVA analysis on the types of technology tools are most commonly used for educational planning and delivery in Delta State University (DELSU), Federal University of Petroleum Resources (FUPRE), and Delta State Polytechnic (DSPZ)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.778	1	4.389	15.194	.000
Within Groups	111.789	326	.289		
Total	120.567	327			

* Significance 0.05 > 0.00. Not Significance 0.05 < 0.00

The ANOVA result in Table 5 shows a statistically significant difference (**F = 15.194, p = 0.000**) in the types of technology tools commonly used for educational planning and delivery among Delta State University (DELSU), Federal University of Petroleum Resources (FUPRE), and Delta State Polytechnic (DSPZ). Since the **p-value (0.000)** is less than the significance level of **0.05**, it indicates that the variation in the use of technological tools across the institutions is not due to chance. This implies that respondents from the three institutions do not use the same types of technology tools. Generally, the result suggests that institutional differences strongly influence the choice and use of technology tools in educational delivery and planning among academic staff.

Ho_3: Integration of technology does not significantly improve administrative efficiency in planning education in Delta State University (DELSU), Federal University of Petroleum Resources (FUPRE), and Delta State Polytechnic (DSPZ).

Table 6: ANOVA analysis on ways the integration of technology improve administrative efficiency in planning education in Delta State University (DELSU), Federal University of Petroleum Resources (FUPRE), and Delta State Polytechnic (DSPZ)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	32.158	1	16.079	38.431	.000
Within Groups	161.916	326	.418		
Total	194.074	327			

* Significance 0.05 > 0.00. Not Significance 0.05 < 0.00

The ANOVA result in Table 6 reveals that there is a statistically significant difference in how technology integration improves administrative efficiency in educational planning across DELSU, FUPRE, and DSPZ. The between-groups mean square (16.079) and F-value (38.431) with a significance level of 0.000 (which is less than the 0.05 threshold) confirm that the differences observed are not due to chance. This implies that respondents from the three institutions hold varying views on the impact of technology on planning efficiency. Overall, the data suggests that technology plays a meaningful role in improving administrative processes, but the extent of this improvement differs among institutions. Respondents generally agree that technology significantly contributes positively to educational planning, although institutional differences may affect how this benefit is experienced.

Discussion of Findings

How the Use of Technology Tools Significantly Affects the Quality of Teaching and Learning in Higher Institutions

Result in research question one showed that respondents from Delta State University, Federal University of Petroleum Resources, and Delta State Polytechnic generally agreed that the use of technology tools positively influences teaching and learning. Hypothesis one indicated that there is a statistically significant difference in how technology tools impact teaching and learning quality across DELSU, FUPRE, and DSPZ.In corroboration with the present study, the of Ajadi et al. (2023) reveal that digital tools such as Learning Management Systems (LMS), virtual simulations, and multimedia content significantly improve students' engagement and comprehension of complex concepts. Moreover, technology tools promote inclusive education by enabling remote learning and providing access to vast academic resources beyond the traditional classroom. Similarly, the study of Eze et al. (2023) found that integrating smart boards and online platforms improved lecturer-student interaction and learning outcomes. Significantly, technology use has shifted the teaching paradigm from passive to active learning, allowing educators to implement blended learning strategies that foster critical thinking and collaboration among students.

Types of Technology Tools Most Commonly Used for Educational Planning and Delivery in Higher Institutions

Result in research question two revealed that educators across Delta State University (DELSU), Federal University of Petroleum Resources (FUPRE), and Delta State Polytechnic (DSPZ) regularly apply technology tools to enhance teaching and administrative efficiency. Hypothesis two result showed that there a statistically significant difference in the types of technology tools commonly used for educational planning and delivery among Delta State University (DELSU), Federal University of Petroleum Resources (FUPRE), and Delta State Polytechnic (DSPZ).The study of Onwuka (2024) indicated that tools such as Microsoft Excel, Google Workspace, and Blackboard LMS are commonly used for curriculum mapping, data management, and delivering digital content to students. These tools facilitate real-time communication, file sharing, virtual classrooms, and collaborative academic activities. Moreover, the study of Ogunyemi and Ajibade (2024) disclosed that mobile applications like Zoom, Telegram, and Moodle have significantly enhanced the flexibility and scalability of instructional delivery. These platforms support asynchronous learning, course monitoring, and analytics, which help educators tailor instruction to student needs. Significantly, the integration of cloud-based tools ensures seamless access to data, enabling departments to monitor performance indicators and plan for continuous improvement effectively.

Ways Integration of Technology Significantly Improves Administrative Efficiency in Planning Education in Higher Institutions

Result in research question three showed that respondents across DELSU, FUPRE, and DSPZ agreed that integrating technology significantly improves administrative efficiency in educational planning. Hypothesis three result also indicated that there is a statistically significant difference in how technology integration improves administrative efficiency in educational planning across DELSU, FUPRE, and DSPZ.As acknowledged byOyetola and Fashina (2023), the use of enterprise resource planning (ERP) systems, academic management software, and cloud storage services allows administrators to automate tasks such as admissions, timetabling, budgeting, and staff scheduling. This reduces manual errors and enhances coordination across departments. Ojo and Etim (2024) significantly revealed that real-time access to student records and analytics through digital dashboards enables prompt intervention in academic and administrative issues. These tools support strategic planning and resource allocation, ensuring institutions respond swiftly to evolving educational needs. Moreover, technology enhances transparency and accountability by offering digital audit trails and report generation, thus significantly boosting institutional effectiveness and compliance.

Conclusion

Based on the findings, the study concluded that respondents from Delta State University, Federal University of Petroleum Resources, and Delta State Polytechnic generally agreed that the use of technology tools positively influences teaching and learning,educators across Delta State University (DELSU), Federal University of Petroleum Resources (FUPRE), and Delta State Polytechnic (DSPZ) regularly apply technology tools to enhance teaching and administrative efficiency and respondents across DELSU, FUPRE, and DSPZ agreed that integrating technology significantly improves administrative efficiency in educational planning.

Recommendations

1. Education planners should be encouraged to invest in regular training for teachers on emerging technology tools to ensure continued improvement in classroom engagement and content delivery.
2. School administrators should be committed to maintaining and updating digital infrastructure to ensure educators consistently benefit from technological innovations in both instruction and administration.
3. Policy-makers should be tasked with developing structured plans that prioritize the digitalization of school administration to promote long-term efficiency and transparent academic management.

References

Adebayo, F. A., &AbdulRahman, H. D. (2019).Impact of ICT on effective management of tertiary institutions in Nigeria.*International Journal of Educational Management, 33*(5), 123–135. https://doi.org/10.1108/IJEM-03-2018-0103

Adeoye, B. F., &Wentling, R. M. (2021).ICT adoption and educational administration: Implications for Nigerian universities. *Journal of Educational Administration and Policy Studies, 13*(1), 22–34. https://doi.org/10.5897/JEAPS2021.0671

Aduwa-Ogiegbaen, S. E., &Iyamu, E. O. S. (2023).Technology integration in educational planning: Trends and challenges in Nigerian universities. *African Journal of Educational Technology, 12*(1), 55–67. https://doi.org/10.4314/ajet.v12i1.4

Ajadi, T. O., Oladipo, A. O., &Okeowo, T. A. (2023).Technology-enhanced learning and teaching in Nigerian higher education: Emerging trends and challenges. *African Journal of Educational Technology, 15*(2), 45–59.

Akpotu, N. E., &Akpochafo, W. P. (2022).Repositioning educational planning in Nigeria through ICT deployment in higher education.*Delta Educational Journal, 14*(2), 88–101.

Egbule, J. F., &Ovoke, J. O. (2022).Institutional readiness and technology adoption in higher education planning in South-South Nigeria.*Nigerian Journal of Curriculum and Instruction, 29*(1), 70–84.

Eze, S. C., Chinedu-Eze, V. C., & Bello, A. O. (2018). The utilisation of e-learning facilities in Delta State tertiary institutions: Implications for teaching and learning. *Education and Information Technologies, 23*(2), 657–678. https://doi.org/10.1007/s10639-017-9625-7

Ogunyemi, D. A., &Ajibade, O. T. (2024). Mobile technologies in higher education: Use patterns and instructional benefits. *International Journal of Mobile Learning and Education, 9*(3), 55–68.

Ojo, A. A., &Etim, J. E. (2024).ICT tools and educational planning: Effects on institutional effectiveness in Nigerian universities. *West African Journal of Educational Planning, 19*(1), 17–30.

Okolie, C. E., &Ogbodo, J. C. (2021).Barriers to digital technology integration in tertiary education planning: A Nigerian case study. *Journal of Educational Development in Africa, 10*(3), 33–49.

Okolie, U. C., Igwe, P. A., &Elom, M. C. (2020).Digital technologies for educational planning in Nigerian universities: Challenges and prospects. *International Journal of Educational Technology in Higher Education, 17*(1), 1–17. https://doi.org/10.1186/s41239-020-00206-z

Omodan, B. I., &Ige, O. A. (2021).E-learning and the future of higher education in Nigeria: An exploration of stakeholders' perspectives. *Education and Information Technologies*, *26*(3), 3095–3110. https://doi.org/10.1007/s10639-020-10448-5

Onwuka, G. O. (2024). Adoption of digital technologies in educational planning: A study of selected Nigerian universities. *Nigerian Journal of Curriculum and Instruction*, *21*(1), 22–35.

Oyetola, M. A., &Fashina, B. O. (2023).Enhancing educational administration through ICT integration in Nigerian tertiary institutions.*Journal of Educational Administration and Planning*, *18*(2), 41–56.

Yusuf, M. O., &Onasanya, S. A. (2020).Effect of ICT on educational administration in Nigerian universities.*African Journal of Educational Management*, *18*(2), 45–59. https://doi.org/10.4314/ajem.v18i2.4