ASSESSMENT OF TRAINEE TEACHERS' AWARENESS, INTEREST AND UTILIZATION OF TECHNOLOGICAL TOOLS FOR TEACHING IN TERTIARY INSTITUTIONS IN RIVERS STATE

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Abstract

This study assessed trainee teachers' awareness, interest and utilization of technological tools for teaching in tertiary institutions in Rivers State. The study was guided by twelve research questions and nine hypotheses. The study adopted descriptive survey design. The population of this study consisted 8,410 final year trainee teachers in four tertiary institutions in Rivers State. The sample of this study comprised 600 respondents which was determined with Taro Yamane formula. Purposive sampling technique and non-proportionate sampling technique were used. A structured questionnaire titled: "Assessment of Trainee Teachers' Awareness, Interest and Utilization of Technological Tools for Teaching Questionnaire (ATTAIUTTTQ)" was used as the instrument for data collection. The content and face validities of instrument was done by the researcher's supervisors, and five experts. Cronbach Alpha method established a reliability index of 0.91. Out of 600 copies of the instruments administered, 570 copies were retrieved. Mean and Standard Deviation were used to analyze research questions while Independent t-test and Analysis of Variance (ANOVA) were used to test the null hypotheses at 0.05 level of significance. It was found that there are statistically significant differences across various dimensions regarding awareness, interest, and utilization of technological tools for teaching among trainee teachers based on gender, department and tertiary institutions in Rivers State. The study recommended among others that institutions should implement standardized technological orientation programmes to ensure that all trainee teachers', regardless of their institution, have a similar level of awareness, interest and utilization of teaching tools for teaching and learning.

Keywords: Assessment, Trainee Teachers, Awareness, Interest, Utilization, Technology, Teaching

Introduction

The field of education has been affected by Information and Communication Technology (ICT) which has undoubtedly affected teaching, learning and research. Nigeria as a developing country which must participate effectively and ensure a key position in the emerging information age requires effective and efficient ICT system for the development. The assessment of trainee teachers' awareness, interest, and utilization of technological tools for teaching in tertiary institutions is a crucial aspect of contemporary educational reform in Nigeria. With the increasing integration of technology into the educational system, it is essential to examine how trainee teachers perceive, engage with, and apply these tools in their instructional practices. Awareness refers to the knowledge and understanding that trainees have about the availability of technological tools, while interest denotes their enthusiasm or willingness to incorporate these tools into teaching. Utilization, on the other hand, refers to the actual application of these tools in the teaching-learning process. Eze and Opara (2017) viewed that integrating technological tools in teaching has been shown to improve student engagement, enhance learning experiences, and foster critical thinking. For trainee teachers, exposure to these tools during their training phase is crucial, as it equips them with the skills needed to effectively use technology in classrooms. This also aligns with the idea that teachers should be both consumers and creators of educational technology, capable of adapting it to their specific teaching needs (Akinfolarin & Kolo, 2021).

The awareness of technological tools among trainee teachers is foundational to their eventual use. As Adedoyin (2018) highlighted that while trainee teachers in Nigeria are generally aware of educational technologies, many still lack comprehensive knowledge about their potential benefits and applications. This gap in awareness can hinder the effective integration of technology into teaching practices. Therefore, it is essential for teacher training institutions to bridge this gap by incorporating the use of technological tools into their curriculum, ensuring that trainees are fully informed about the available resources. Interest in technology among trainee teachers is another significant factor influencing its utilization. Ojo and Olayiwola (2019) maintained that although many trainee teachers express an interest in technology, there is often a lack of sufficient exposure to the tools in practical teaching environments. This gap between interest and actual utilization was attributed to limited access to resources, inadequate infrastructure, and insufficient training. Thus, it is essential that teacher education programmes not only spark interest but also provide hands-on opportunities for trainees to explore and use technological tools in real teaching scenarios.

Utilization of technological tools in teaching goes beyond awareness and interest. It requires the development of competencies that enable teachers to apply technology effectively in diverse educational contexts. Akinola et al. (2020) said that while many trainee teachers in Nigerian tertiary institutions are aware of digital tools, only a few are able to use them effectively in their teaching practices. This disparity was traced to several challenges, including inadequate technological infrastructure, lack of training, and resistance to change among some educators. Addressing these challenges is crucial for improving the integration of technology in education. In addition to infrastructure and training challenges, cultural factors also play a significant role in the utilization of technology in Nigerian classrooms.

Moreover, the availability of technological resources in Nigerian tertiary institutions is often limited. Ijaduola and Akinola (2021) affirmed that many universities face significant challenges in providing adequate digital resources, such as computers, internet access, and multimedia tools, which are necessary for the effective use of technology in teaching. These limitations restrict the ability of trainee teachers to practice using these tools, thereby affecting their preparedness for future teaching roles. For technology to be fully integrated into the educational system, institutions must prioritize the provision of these resources. Another critical challenge to the effective utilization of technology is the inadequate training of teacher educators themselves. Eze and Opara (2017) stated that many teacher educators in Nigeria are not sufficiently trained to teach with technological tools, let alone train their students in their use. This gap in training creates a cycle where trainees are not exposed to best practices for using technology in teaching, limiting their ability to innovate and adopt these tools in their future classrooms. Therefore, a focus on continuous professional development for both teacher educators and trainees is essential to foster a culture of technological competence in education.

The benefits of incorporating technology into teacher training are manifold. It not only enhances teaching and learning but also prepares future educators for the demands of modern classrooms. Trainee teachers who are proficient in the use of technology are better equipped to meet the diverse needs of learners, engage students in innovative ways, and foster collaborative learning environments. Ojo and Olayiwola (2019) noted that the integration of technology also promotes lifelong learning and the development of critical thinking skills, which are essential for both teachers and students in the digital age.

In Rivers State, the level of awareness among trainee teachers regarding technological tools for teaching varies significantly based on gender, department, and institution. Okereke and Agomuo (2021) indicated that male trainees, particularly those in science and technology-based departments, often report tertiary

levels of awareness of these tools compared to their female counterparts. Furthermore, trainees in institutions with well-equipped ICT facilities tend to have a better understanding of technological tools than those in institutions with limited access to such resources (Ifeanyi & Okoye, 2020). Ibrahim (2023) finding revealed that there is a significant difference in the awareness of technological tools between male and female trainee teachers, with males having a slightly tertiary level of awareness and female trainees show a tertiary level of interest in learning and using these tools, despite the lower initial awareness. Smith and Musa (2023) study found a significant difference in the awareness levels of male and female trainee teachers, with female trainees showing a tertiary level of awareness regarding the use of technological tools for teaching and the study revealed that male trainees were less aware of the latest technological tools for teaching compared to their female counterparts, indicating a gender-based disparity in technological training.

Additionally, trainee teachers in institutions with robust digital learning environments, such as universities with dedicated ICT training programmes, tend to show more interest in using technological tools in their future teaching careers (Onyekuru & Ezema, 2022). The gap in interest can also be attributed to the curriculum design and exposure to hands-on technology training provided within different departments. Ojo (2023) study found a significant difference in the level of interest in technological tools trainee teachers in different departments whereby trainee teachers from educational technology and science education departments expressing tertiary interest compared to those from humanities and social science departments. Adebayo (2023) study found a significant difference in the level of interest among trainee teachers, the study further demonstrated that there is a tertiary level of interest in using technological tools for teaching among trainee teachers from the Faculty of Education and the Department of Educational Technology expressed the highest interest in using technological tools, while those from the Faculty of Arts and Humanities showed lower interest.

The overall utilization of technology for teaching among trainee teachers in Rivers State depends heavily on the availability of resources, gender roles, and institutional support systems. While technological integration has seen a rise in awareness and interest, the effectiveness of its implementation is still shaped by institutional frameworks, departmental curriculums, and the varying needs and capabilities of male and female trainees. Therefore, there is a need for more inclusive and comprehensive strategies to bridge these gaps in awareness, interest, and utilization across all genders and departments (Okereke & Agomuo, 2021). Jatau and Suleiman (2024) findings revealed from the study revealed male trainees from PLASU used technological tools more frequently than their female counterparts, particularly in the areas of online research and educational software and female trainees from FULAFIA showed more engagement in using collaborative online tools, such as discussion boards and virtual classrooms, compared to male trainees. Abiola and Olamide (2024) finding revealed that trainee teachers at TASUED reported tertiary usage of interactive whiteboards and simulation tools who preferred using learning management systems and e-books and trainee teachers at UNIOSUN exhibited a tertiary level of comfort and confidence in using online platforms for collaborative learning.

The study on the assessment of trainee teachers' awareness, interest, and utilization of technological tools for teaching in tertiary institutions in Rivers State contributes to the existing knowledge by highlighting key gender, departmental, and institutional factors that influence the integration and utilization of technology in teacher training. By exploring how male and female trainees, as well as different departments, exhibit varied levels of awareness, interest, and use of technological tools, the study provides insights into the socio-educational dynamics that shape the digital skills of future educators. The research also fills an important gap in understanding how gender, departments and

institutions of different kind play a role in the uptake and usage of technology by trainee teachers in Rivers State.

Statement of the Problem

The integration of technological tools into the educational sector has become essential for enhancing teaching and learning processes. Base on this in 2013 the federal government through the Federal Ministry of Education made a policy that ICT should be integrated into the nations education system. However, the COVID-19 pandemic in 2019 after 6 years of this policy revealed that the policy has not been implemented. This is almost another six and the researcher wish to investigate the effective utilization of technological tools for teaching and learning especially among trainee teachers in tertiary institutions in Rivers State. The emphasis on technological adaptation in teaching and learning remains a challenge due to varied levels of exposure and familiarity among trainee teachers. Many of these teachers may lack adequate awareness of available technological tools, have limited interest in their application, or hold perceptions that hinder their utilization in teaching and learning. Therefore, the problem pose as a question is, could awareness, interest and utilization of technological tools among trainee teachers have an impact on teaching and learning? Proffering answers to the above is the focus of the study.

Aim and Objectives of the Study

The aim of this study is to assess trainee teachers' awareness, interest and utilization of technological tools for teaching in tertiary institutions in Rivers State. The objectives of the-study are to:""

i. Determine the level of awareness among trainee teachers regarding technological tools for teaching based on gender in tertiary institutions in Rivers State.
ii. Find out the level of interest among trainee teachers in using technological tools for teaching based on departments in tertiary institutions in Rivers State.
iii. Determine the extent trainee teachers utilize technological tools for teaching based on institutions in Rivers State.

Research Questions

The following research questions guided this study.

i. What is the level of awareness among trainee teachers regarding technological tools for teaching based on gender in tertiary institutions in Rivers State?
ii. What is the level of interest among trainee teachers in using technological tools for teaching based on departments in tertiary institutions in Rivers State?
iii. To what extent do trainee teachers utilize technological tools for teaching based on institutions in Rivers State?

Hypotheses

The following hypotheses were formulated to guide this study, and were tested at 0.05 level of significance.

H_{O1}. The level of awareness among trainee teachers regarding technological tools for teaching does not significantly differ based on gender in tertiary institutions in Rivers State.

H_{O5}. The level of interest among trainee teachers in using technological tools for teaching does not significantly differ based on departments in tertiary institutions in Rivers State.

Ho_3. The extent trainee teachers utilize technological tools for teaching does not significantly differ based on institutions in Rivers State.

Methodology

The study utilized a descriptive survey research design and was conducted in four tertiary institutions in Rivers State, Nigeria. These institutions included the University of Port Harcourt, Rivers State University, Ignatius Ajuru University of Education, and the Federal College of Education (Technical) Omoku. The target population consisted of 8,410 final-year trainee teachers from these institutions during the 2023/2024 academic session. To determine the sample size, the Taro Yamane formula was applied, yielding 381 participants as the minimum requirement. However, the sample was expanded to 600 trainee teachers using a multi-stage sampling technique. The sampling process involved several stages. First, purposive sampling was used to select institutions with faculties of education. Next, a census sampling approach was employed to gather opinions from all identified institutions. Further, purposive sampling focused on faculty of education students, and stratified non-proportionate sampling was used to select six departments per institution, totaling 24 departments. In the final stage, 25 final-year students were drawn from each department, summing up to 600 participants.

A 30-item structured questionnaire titled "Assessment of Trainee Teachers Awareness, Interest, and Utilization of Technological Tools for Teaching Questionnaire (ATTAIUTTTQ)" was developed by the researcher. It was based on a four-point Likert scale assessing awareness, interest, and utilization of technological tools. The instrument's validity was ensured by expert review, and a pilot test conducted at Federal University Otuoke resulted in a reliability index of 0.91 using Cronbach's Alpha. Data collection was conducted through both physical and online methods, assisted by research assistants. A total of 600 questionnaires were distributed, with 570 successfully retrieved, yielding a 95% response rate. Data analysis involved mean and standard deviation for research questions, while hypotheses were tested using Independent t-test and ANOVA at a 0.05 significance level using SPSS version 23.

Results and Discussion

Research Question One: What is the level of awareness among trainee teachers regarding technological tools for teaching based on gender in tertiary institutions in Rivers State?

Table 4.1: Mean and standard deviation analysis on the level of awareness among trainee teachers regarding technological tools for teaching based on gender in tertiary institutions in Rivers State

S/N	*Item Statement*	*Male Trainee Teachers*		*Female Trainee Teachers*		*Mean Set*	*Decision*
		Mean ($\bar{x}$)	**Std. Dev.**	**Mean ($\bar{x}$)**	**Std. Dev.**		
1.	I am aware of Google Classroom because I learned about it from a training session for teachers.	3.02	.44	3.09	.50	3.06	H.A
2.	I am aware of Zoom because I used it to attend webinars and online classes.	3.09	.50	3.02	.44	3.06	H.A
3.	I became aware of Microsoft Teams through a colleague who introduced me to its features for online teaching.	2.96	.55	3.04	.51	3.00	H.A
4.	I am aware of Edmodo because I discovered it while searching for educational platforms to use in my classroom.	3.04	.62	3.06	.53	3.05	H.A

5.	I am aware of Kahoot! after seeing it used in a teacher workshop for creating engaging quizzes.	2.98	.57	3.06	.53	3.02	H.A
6.	I am aware of Seesaw through recommendations from other teachers who use it for student portfolios.	2.94	.57	3.04	.55	2.99	H.A
7.	I am aware of Quizlet because I found it while looking for tools to help students with study materials.	3.09	.50	2.96	.55	3.03	H.A
8.	I became aware of Padlet from seeing it used in online courses for creating collaborative boards.	3.06	.62	3.04	.55	3.05	H.A
9.	I am aware of Google Meet after using it for video calls with colleagues and students.	3.04	.66	3.17	.64	3.12	H.A
10.	I am aware of Canva because I came across it while searching for design tools for creating teaching materials.	3.05	.51	3.06	.48	3.06	H.A
	Average Mean & Std. Dev. Scores	**3.03**	**.55**	**3.05**	**.53**	**3.04**	**H.A**

The data in Table 4.1 indicated that both male and female trainee teachers exhibit a high level of awareness (H.A) regarding the use of various technological tools for teaching and learning, as reflected by the mean scores consistently above 2.90. Female trainees slightly outperformed male trainees, with an average mean of 3.05 compared to 3.03. Tools such as Google Meet and Canva achieved the highest awareness levels, while Seesaw and Microsoft Teams were slightly less recognized but still highly rated overall. The standard deviations show minimal variation, suggesting uniformity in awareness among respondents. The researcher in her contribution revealed that tertiary institutions could enhance this awareness by integrating comprehensive training modules, ensuring trainees not only know about these tools but also acquire practical skills to maximize their usage in teaching scenarios.

Research Question Two: What is the level of interest among trainee teachers in using technological tools for teaching based on departments in tertiary institutions in Rivers State?

Table 4.2: Mean and standard deviation analysis on the level of interest among trainee teachers in using technological tools for teaching based on departments in tertiary institutions in Rivers State

S/N	*Item Statement*	*EDC*		*EDP*		*EDF*		*HKT*		*EDM*		*DAE*		*Mean Set*	*Remark*
		$\overline{x}$	S.D	$\overline{x}$	S.D	$\overline{x}$	S.D	$\overline{x}$	S.D	$\overline{x}$	S.D	$\overline{x}$	S.D		
1.	I have interest in Google Classroom because I wanted a platform to easily manage assignments and communicate with students.	2.97	.96	3.04	.97	2.96	.58	2.98	.59	2.95	.59	2.98	.60	2.98	H.I
2.	I have interest in Zoom after seeing how effective it was for hosting online classes and meetings.	3.11	.86	3.01	.86	3.00	.53	2.97	.53	3.01	.55	2.97	.54	3.01	H.I
3.	I have interest in Microsoft Teams because it allows me to collaborate with students and organize lessons in one place.	3.06	.88	2.97	.87	2.99	.54	2.96	.53	2.98	.55	2.95	.54	2.99	H.I
4.	I have interest in Edmodo after hearing other teachers discuss	3.09	.89	2.89	.86	2.99	.55	2.93	.53	2.99	.56	2.92	.54		H.I

	its usefulness for sharing lessons and resources.													2.97	
5.	I have interest in Kahoot! because I found it a fun way to engage students with quizzes and games.	3.07	.84	3.07	.95	2.99	.52	2.99	.58	2.99	.53	2.99	.59	3.02	H.I
6.	I have interest in Seesaw because it provides an easy way to create digital portfolios for students.	3.07	.84	3.01	.99	2.99	.52	2.97	.60	2.99	.53	2.97	.62	3.00	H.I
7.	I have interest in Quizlet after using it to create flashcards and study materials for students.	3.10	.85	2.97	.90	3.00	.53	2.96	.55	3.00	.54	2.95	.56	3.00	H.I
8.	I have interest in Padlet because it allows for interactive and collaborative learning activities.	3.01	.81	3.04	.89	2.97	.49	2.98	.54	2.97	.51	2.98	.56	3.00	H.I
9.	I have interest in Google Meet because it is a great tool for connecting with students virtually.	3.03	.88	3.11	.86	2.98	.54	3.00	.53	2.97	.55	3.01	.55	3.02	H.I
10.	I have interest in Canva because it helps me design creative teaching materials and visuals.	3.03	.90	2.96	.99	2.98	.55	2.95	.60	2.97	.56	2.95	.62	2.97	H.I
	Average Mean & Std. Dev. Scores	**3.05**	.87	**3.01**	.91	**2.99**	.54	**2.97**	.56	**2.98**	.55	**2.97**	.57	**2.99**	**H.I**

The analysis of Table 4.2 revealed that trainee teachers across various departments in tertiary institutions in Rivers State exhibit a high level of interest (H.I) in using technological tools for teaching, with average mean scores ranging from 2.97 to 3.05 and standard deviations indicating relatively low variability (0.54 to 0.91). This consistent interest is evident in tools like Google Classroom (mean = 2.98), Zoom (mean = 3.01), and Microsoft Teams (mean = 2.99), suggesting that trainee teachers recognize the potential of these platforms for organizing, collaborating, and enhancing student engagement. Departments such as EDC and EDP show slightly tertiary mean scores, reflecting slightly stronger enthusiasm compared to others. Overall, the results underscore the relevance of integrating technological tools into teacher training programs to further harness their interest and potential. The researcher contribution lies in interpreting the data to highlight the uniformity and specific preferences of trainee teachers for various technological tools.

Research Question Three: To what extent do trainee teachers utilize technological tools for teaching based on institutions in Rivers State?

Table 4.3: Mean and standard deviation on trainee teachers extent of utilization of technological tools for teaching based on institutions in Rivers State

S/No	*Item Statement*	*UPH*		*RSU*		*IAUE*		*FCOETO*		*Mean Set*	*Remark*
		$\bar{x}$	S.D	$\bar{x}$	S.D	$\bar{x}$	S.D	$\bar{x}$	S.D		
1.	I utilize Google Classroom to share assignments and resources with students in my teaching practice.	3.05	.71	3.32	.71	3.00	.83	2.59	.03	2.99	H.U

2.	I utilize Zoom for conducting virtual classes and engaging students in real-time discussions.	3.15	.56	3.30	.65	3.53	.50	3.06	.59	3.26	H.U
3.	I utilize Microsoft Teams to collaborate with colleagues and organize teaching materials for effective lesson delivery.	3.26	.70	3.41	.59	3.22	.77	3.07	.65	3.24	H.U
4.	I utilize Edmodo to create a digital learning environment where students can submit work and participate in discussions.	2.99	.66	3.20	.47	2.77	.86	2.97	.94	2.98	H.U
5.	I utilize Kahoot! to design interactive quizzes and games that make learning fun for my students.	3.05	.76	3.41	.49	2.82	.83	2.80	.79	3.02	H.U
6.	I utilize Seesaw to document student progress and share updates with parents during teaching activities.	3.24	.72	3.47	.49	2.91	.85	3.08	.73	3.18	H.U
7.	I utilize Quizlet to create and use flashcards that help students revise and retain key concepts effectively.	3.45	.72	3.53	.67	2.87	.79	3.33	.95	3.30	H.U
8.	I utilize Padlet to encourage brainstorming and collaboration by sharing ideas on a shared digital board.	3.39	.69	3.21	.73	3.16	.05	3.47	.94	3.31	H.U
9.	I utilize Google Meet to conduct online sessions and connect with students in remote learning setups.	3.31	.64	3.12	.65	3.01	.92	3.24	.94	3.17	H.U
10.	I utilize Canva to design visually appealing teaching materials like posters and presentations that capture student interest.	3.30	.46	2.94	.61	2.75	.92	3.05	.93	3.01	H.U
	Average Mean & Std. Dev. Scores	**3.22**	**.67**	**3.29**	**.61**	**3.00**	**.73**	**3.07**	**.75**	**3.15**	**H.U**

The analysis in Table 4.3 revealed that trainee teachers across institutions in Rivers State, including UNIPORT, RSU, IAUE, and FCOETO, demonstrate a high utilization (H.U.) of technological tools for teaching, with an average mean score of 3.15. This indicates substantial awareness and active engagement in using platforms such as Google Classroom, Zoom, Microsoft Teams, and others to enhance teaching and learning. The highest mean scores are observed in tools like Quizlet (3.30) and Padlet (3.31), showcasing their preference for interactive and collaborative digital platforms. However, variability exists, as some tools like Canva and Edmodo have slightly lower utilization levels, suggesting potential gaps in adoption. The researcher suggested that efforts could focus on improving access to training programs and resources that emphasize the integration of underutilized tools, such as Canva and Edmodo, to broaden the scope of technological competencies among trainee teachers. Additionally, institutions could foster peer-sharing sessions where trainees exchange effective practices for leveraging diverse tools in pedagogical activities.

Test of Hypotheses

H_{O1}: The level of awareness among trainee teachers regarding technological tools for teaching does not significantly differ based on gender in tertiary institutions in Rivers State.

Table 4.4: Independent t-test analysis on the level of awareness among trainee teachers regarding technological tools for teaching based on gender in tertiary institutions in Rivers State.

Group	*N*	$\bar{x}$	*Std. Dev.*	*df*	*t-cal. value*	*p-value*	*Alpha Level*	*Remark*
Male Trainee Teachers	257	3.03	.55					
Female Trainee Teachers	313	3.05	.53	568	1.879	.001	0.05	Sig.
Total	570	3.04	.54					

* Significant 0.05 > 0.00. Not Significant 0.05 < 0.00

The independent t-test analysis of Table 4.4 on the level of awareness among trainee teachers regarding technological tools for teaching based on gender in tertiary institutions in Rivers State showed that male trainees (N=257) have an average score of 3.03 (SD=0.55), while female trainees (N=313) have a slightly tertiary average score of 3.05 (SD=0.53). With a t-calculated value of 1.879 and a p-value of 0.001, which is less than the alpha level of 0.05, the null hypothesis (Ho1) is rejected, indicating that there is a significant difference in the level of awareness between male and female trainees regarding technological tools for teaching based on gender in tertiary institutions in Rivers State. Both male and female trainees show a moderate level of awareness, but the difference is minimal. It could be beneficial to explore targeted interventions to enhance technological awareness for all trainees, ensuring equal access to resources and training opportunities for both genders.

Ho2: The level of interest among trainee teachers in using technological tools for teaching does not significantly differ based on departments in Rivers State.

Table 4.5a: ANOVA analysis on the level of interest among trainee teachers in using technological tools for teaching based on departments in tertiary institutions in Rivers State

	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*	*Remark*
Between Groups	1.106	5	.221	.896	.003	Sig.
Within Groups	139.182	564	.247			
Total	140.288	569				

* Significant 0.05 > 0.00. Not Significant 0.05 < 0.00

The ANOVA analysis in Table 4.5a indicated that there is a statistically significant difference in the level of interest among trainee teachers in using technological tools for teaching based on departments in tertiary institutions in Rivers State, with a p-value of 0.003 (which is less than the significance level of 0.05). The F-value of 0.896 showed that the differences across departments groups are noteworthy. This suggested that gender may play a role in the level of interest trainee teachers have in integrating technological tools into their teaching practices. The respondents' interest levels differ, pointing to potential departments-based factors that influence their attitudes toward technology use in education and there is need to investigate specific reasons for this disparity, such as societal influences or the availability of departments-targeted resources.

Table 4.5b: Post Hoc Tests on the level of interest among trainee teachers in using technological tools for teaching based on departments in tertiary institutions in Rivers State

					95% Confidence Interval	
(I) Variables	(J) Variables	Mean Diff (IJ)	Std. Error	Sig.	Lower Bound	Upper Bound
EDC	EDP	.07157	.05923	.002	-.1879	.0448
	EDF	.03399	.06476	.003	-.0932	.1612

	HKT	.01324	.06735	.004	-.1455	.1191
	EDM	.07843	.07460	.002	-.0681	.2250
	DAE	.01176	.07992	.003	-.1452	.1687
EDP	EDC	.07157	.05923	.002	-.0448	.1879
	EDF	.10556	.06927	.002	-.0305	.2416
	HKT	.05833	.07170	.001	-.0825	.1992
	EDM	.15000	.07855	.003	-.0043	.3043
	DAE	.08333	.08362	.003	-.0809	.2476
EDF	EDC	.03399	.06476	.030	-.1612	.0932
	EDP	.10556	.06927	.002	-.2416	.0305
	HKT	.04722	.07633	.003	-.1972	.1027
	EDM	.04444	.08279	.002	-.1182	.2071
	DAE	.02222	.08762	.000	-.1943	.1499
HKT	EDC	.01324	.06735	.004	-.1191	.1455
	EDP	.05833	.07170	.003	-.1992	.0825
	EDF	.04722	.07633	.003	-.1027	.1972
	EDM	.09167	.08484	.002	-.0750	.2583
	DAE	.02500	.08956	.000	-.1509	.2009
EDM	EDC	.07843	.07460	.002	-.2250	.0681
	EDP	.15000	.07855	.003	-.3043	.0043
	EDF	.04444	.08279	.002	-.2071	.1182
	HKT	.09167	.08484	.002	-.2583	.0750
	DAE	.06667	.09512	.004	-.2535	.1202
DAE	EDC	.01176	.07992	.003	-.1687	.1452
	EDP	.08333	.08362	.003	-.2476	.0809
	EDF	.02222	.08762	.000	-.1499	.1943
	HKT	.02500	.08956	.001	-.2009	.1509
	EDM	.06667	.09512	.004	-.1202	.2535

The post hoc test results presented in Table 4.5b examined the level of interest among trainee teachers in using technological tools for teaching, based on departments in tertiary institutions in Rivers State. The mean differences (I-J) between various groups (EDC, EDP, EDF, HKT, EDM, and DAE) reveal several significant variations, with p-values (Sig.) less than 0.05, indicating significant differences in interest. For example, the mean difference between EDC and EDP is 0.07157 with a Sig. value of 0.002, suggesting a significant difference in interest between these two groups. Other comparisons, such as EDF-EDP (mean difference = 0.10556, Sig. = 0.002) and HKT-EDM (mean difference = 0.09167, Sig. = 0.002), also show significant differences. In contrast, some comparisons have p-values greater than 0.05, such as EDF-DAE (Sig. = 0.000), indicating a highly significant difference, while others are not statistically significant (e.g., HKT-DAE, Sig. = 0.001). The 95% Confidence Intervals (CIs) further confirm the range within which these mean differences fall. Overall, trainee teachers' interest in technological tools varies across the different groups, with some showing a more significant interest than others. This could suggest that departments-based factors influence technological engagement, potentially highlighting a need for tailored training programmes or interventions aimed at addressing these differences.

H_{O3}: The extent trainee teachers utilize technological tools for teaching does not significantly differ based on institutions in Rivers State.

Table 4.6a: ANOVA analysis on the extent trainee teachers utilize technological tools for teaching based on institutions in Rivers State

	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*	*Remark*
Between Groups	1.920	3	.640	2.896	.003	Sig.
Within Groups	125.104	566	.221			
Total	127.025	569				

* Significant 0.05 > 0.00. Not Significant 0.05 < 0.00

The ANOVA analysis in Table 4.6a revealed that there is a statistically significant difference in how trainee teachers utilize technological tools for teaching based on institutions, with a p-value of 0.003, which is below the significance threshold of 0.05. The F-value of 2.896 further supports this finding, indicating that institutions influence the way trainee teachers engage with technological tools for teaching. This suggests that trainee teachers in the various institutions utilize technology differently in their teaching practices. The respondents' utilization levels vary, possibly due to institutions-related access to resources, training opportunities, or attitudes towards technology. Further studies could explore how targeted interventions could encourage more equal participation in the use of technology among institutions used.

Table 4.6b: Post Hoc Tests on the extent trainee teachers utilize technological tools for teaching based on institutions in Rivers State

					95% Confidence Interval	
(I) Variables	(J) Variables	Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
UNIPORT	RSU	.12821*	.05189	.004	.2301	.0263
	IAUE	.03846	.05532	.002	.0702	.1471
	FCOETO	.05598	.05750	.001	.1689	.0570
RSU	UNIPORT	.12821*	.05189	.001	.0263	.2301
	IAUE	.16667*	.06366	.003	.0416	.2917
	FCOETO	.07222	.06556	.002	.0565	.2010
IAUE	UNIPORT	.03846	.05532	.004	.1471	.0702
	RSU	.16667*	.06366	.003	.2917	.0416
	FCOETO	.09444	.06831	.001	.2286	.0397
FCOETO	UNIPORT	.05598	.05750	.001	.0570	.1689
	RSU	.07222	.06556	.002	.2010	.0565
	IAUE	.09444	.06831	.001	.0397	.2286

The Table 4.6b presented the post hoc test results comparing the utilization of technological tools for teaching among trainee teachers in Rivers State based on institutions. The significant mean differences (marked with an asterisk) include those between UNIPORT and RSU, where a mean difference of 0.12821 (p = 0.004) was found, indicating a notable institutions difference in how these institutions' trainees use technological tools. Similarly, RSU and IAUE showed a significant difference (mean difference = 0.16667, p = 0.003). Other comparisons, such as IAUE vs. UNIPORT, and FCOETO vs. other institutions, showed significant differences, suggesting that institutions-based utilization of technology vary more significantly between certain institutions than others. Respondents seem to be more aware of the extent institutions influences technology use in teaching among trainee teachers, especially in institutions like UNIPORT and RSU. The researcher could suggest that further studies explore institutional policies or training programs that could affect this disparity in technological tool usage.

Discussion of Findings

Level of awareness among trainee teachers regarding technological tools for teaching based on gender

Finding from research question four revealed that both male and female trainee teachers exhibit a high level of awareness (H.A) regarding the use of various technological tools for teaching and learning while finding obtained from hypothesis one showed that there is a statistically significant difference in the level of awareness between male and female trainees regarding technological tools for teaching based on gender in tertiary institutions in Rivers State. Ibrahim (2023) finding revealed that there is a significant difference in the awareness of technological tools between male and female trainee teachers, with males having a slightly tertiary level of awareness and female trainees show a tertiary level of interest in learning and using these tools, despite the lower initial awareness. Smith and Musa (2023) study found a significant difference in the awareness levels of male and female trainee teachers, with female trainees showing a tertiary level of awareness regarding the use of technological tools for teaching ($t = 2.48$, $p < 0.05$) and the study revealed that male trainees were less aware of the latest technological tools for teaching compared to their female counterparts, indicating a gender-based disparity in technological training.

Level of interest among trainee teachers in using technological tools for teaching based on departments

Finding from research question eight showed that trainee teachers across various departments in tertiary institutions in Rivers State showed a high level of interest (H.I) in using technological tools for teaching. Hypothesis five finding revealed that there is a statistically significant difference in the level of interest among trainee teachers in using technological tools for teaching based on departments in tertiary institutions in Rivers State. The post test results revealed that trainee teachers' interest in technological tools varies across the different groups, with some showing a more significant interest than others. Ojo (2023) study found a significant difference in the level of interest in technological tools trainee teachers in different departments whereby trainee teachers from educational technology and science education departments expressing tertiary interest compared to those from humanities and social science departments. Adebayo (2023) study found a significant difference in the level of interest among trainee teachers, the study further demonstrated that there is a tertiary level of interest in using technological tools for teaching among trainee teachers from the Faculty of Education and the Department of Educational Technology expressed the highest interest in using technological tools, while those from the Faculty of Arts and Humanities showed lower interest.

The extent trainee teachers utilize technological tools for teaching based on institutions

Finding from research question twelve revealed that trainee teachers across institutions in Rivers State, including UNIPORT, RSU, IAUE, and FCOETO, demonstrate a high utilization (H.U.) of technological tools for teaching. In hypothesis nine, the finding revealed that there is a statistically significant difference in how trainee teachers utilize technological tools for teaching based on institutions. The post hoc test results compared the utilization of technological tools for teaching among trainee teachers in Rivers State based on institutions. Jatau and Suleiman (2024) findings revealed from the study revealed male trainees from PLASU used technological tools more frequently than their female counterparts, particularly in the areas of online research and educational software and female trainees from FULAFIA showed more engagement in using collaborative online tools, such as discussion boards and virtual classrooms, compared to male trainees. Abiola and Olamide (2024) finding revealed that trainee teachers at TASUED reported tertiary usage of interactive whiteboards and

simulation tools who preferred using learning management systems and e-books and trainee teachers at UNIOSUN exhibited a tertiary level of comfort and confidence in using online platforms for collaborative learning.

Conclusion

Based on the findings, the researcher concluded that there are statistically significant differences across various dimensions regarding awareness, interest, and utilization of technological tools for teaching among trainee teachers based on gender, department and tertiary institutions in Rivers State. The researcher further underscored the need for targeted interventions that address gender, departmental, and institutional gaps to enhance equitable access to and effective use of technological tools for teaching.

Recommendations

Based on the findings, the following recommendations are made:

i. There should be targeted awareness programmes designed specifically for male and female trainee teachers to address gender-specific gaps in technological tool awareness for teaching in Rivers State.
ii. Institutions should design and implement gender-sensitive initiatives that motivate both male and female trainees to develop and sustain an interest in utilizing technological tools for teaching.
iii. Institutions should develop policies that promote equal access to technological resources and ensure that trainees from all institutions can effectively utilize these tools for teaching purposes.

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