



Research Paper

Ict-Based Applications And Teachers Job Productivity In Private Secondary Schools In Yenagoa Education Zone of Bayelsa State, Nigeria

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ABSTRACT:

This study investigated ICT-based applications and teachers job productivity in private secondary schools in Yenagoa Education Zone of Bayelsa State, Nigeria. The research was guided by two research objectives, questions and hypotheses. The research utilized a descriptive survey design and engaged a sample of teachers from various schools, employing the Taro Yamen formula for sample size determination. The target population comprised 450 teachers from 32 approved private secondary schools in Yenagoa educational zone, Bayelsa state. A sample of 126 teachers was selected from the 32 private secondary schools in Yenagoa education zone using a random sampling method. Data collection was conducted using a close-ended structured questionnaire entitled "ICT-Based Applications and Teachers Job Productivity Questionnaire (IATJPQ)" The questionnaire underwent a pilot test involving 20 private secondary school teachers in Ogbia local government area, Bayelsa State who are considered not part of the main population. The instrument was administered two times within a space of 2 weeks. The scores of the two-test results were correlated using the Pearson Product Moment Correlation Coefficient (PPMCC) and a reliability coefficient of 0.83 was obtained. A combination of percentage analysis for demographic data, and standard deviation and mean statistical analysis for research questions was used. The hypotheses were analyzed using the t-test at 0.05 level of significance. Findings indicate that ICT-Based applications to a high extent influence job productivity by improving lesson delivery, student engagement, and administrative efficiency. The study recommends the implementation of targeted training programs to improve digital literacy among teachers and the expansion of ICT infrastructure within the schools.

Keywords: ICT-Based applications, Teachers Job Productivity, Private Secondary School.

I. INTRODUCTION

The concept of teachers' job productivity encompasses the effectiveness and efficiency with which educators deliver their instructional responsibilities, fulfil administrative duties, and contribute to the overall success of the educational institution. Productivity in this context is not limited to the quantitative output of lesson delivery but also includes qualitative factors such as student engagement, curriculum adaptation, and professional development. Effective job productivity among teachers is crucial for achieving the learning objectives set by educational institutions and addressing the diverse needs of students (Okebukola & Jegede, 2018). This consideration leads to the integration of Information and Communication Technology (ICT) as a tool to enhance teachers' job productivity. Information and Communication Technology (ICT) refers to a broad range of digital tools, platforms, and applications designed to facilitate the collection, processing, storage, and dissemination of information. In the educational sector, ICT serves as a transformative force, enabling teachers to streamline their instructional delivery and administrative responsibilities. The application of ICT improves the accessibility and organization of educational resources, thereby fostering an environment conducive to enhance teaching and learning experiences (Mishra et al., 2017). As ICT adoption continues to grow, its influence on teachers' productivity demands more focused investigation. ICT-based applications in education are specialized digital tools and platforms developed to support various aspects of teaching and learning, including lesson planning, classroom management, and performance assessment. These applications, such as Learning Management Systems (LMS), digital lesson creation tools, and classroom management software, have demonstrated significant potential in optimizing teachers' workflows. They enable educators to automate routine tasks, access diverse teaching materials, and engage students through interactive platforms (Sharma et al., 2020). The role of these applications becomes increasingly pronounced in private secondary schools, where expectations for innovation and efficiency are heightened.

Private secondary schools are a critical subset of the educational landscape, characterized by their autonomy in curriculum delivery and a greater reliance on technological advancements to meet stakeholder expectations. These schools often adopt ICT-based solutions to gain a competitive edge and ensure high standards of teaching and learning. With smaller class sizes and more flexible operational structures, private schools are better positioned to leverage ICT for enhanced productivity among their teaching staff (Adedeji, 2019). Within such schools, the use of ICT-based applications is instrumental in addressing challenges related to curriculum adaptation and resource allocation. The relevance of these schools becomes more apparent when contextualized within the geographical setting of the Yenagoa education zone. Yenagoa educational zone, the capital city of Bayelsa State, Nigeria, serves as a vibrant hub for education and socio-economic activities. The city's private secondary schools operate in an environment marked by rapid technological adoption and a growing emphasis on digital literacy. However, challenges such as inadequate ICT infrastructure and limited digital skills among teachers often constrain the full utilization of ICT-based tools (Bassey & Essien, 2021). Addressing these issues requires targeted research on the interplay between ICT applications and teachers' productivity in this unique urban setting. The geographical focus on Yenagoa paves the way for understanding the broader implications for Bayelsa State.

Bayelsa State, located in the Niger Delta region of Nigeria, is renowned for its rich cultural heritage and emerging educational reforms. The state faces unique challenges, including resource limitations and infrastructural deficits, which significantly impact its educational sector. Despite these challenges, private secondary schools in the state are gradually embracing ICT-based solutions to enhance teaching and learning outcomes (Ebiye & George, 2020). Yenagoa, as the administrative and economic centre of Bayelsa, provides a microcosm for studying the effects of ICT adoption on teachers' productivity. This context underscores the need to explore specific ICT tools and their influence on educational practices. Among the ICT-based applications, Digital lesson creation tools have emerged to enable teachers to design interactive and multimedia-rich educational content tailored to diverse learning needs. These tools foster creativity and innovation in lesson planning, ensuring that teachers can engage students effectively while maintaining curricular relevance. Digital lesson creation tools encompass a variety of software solutions such as Nearpod, Kahoot!, Canva for Education, Edpuzzle, Book Creator, Adobe Spark, TES Teach with Blendspace, Prezi, Quizlet, and Flipgrid. These tools provide educators with the capabilities to design engaging and interactive learning materials tailored to the needs of their students across diverse educational settings. Studies have highlighted the role of these tools in enhancing teachers' confidence and satisfaction with their instructional approaches, ultimately contributing to overall job productivity (Olufunke & Ademola, 2021). Digital lesson creation tools are software applications that enable teachers to design and customize interactive instructional materials, enhancing their productivity by fostering creativity and efficiency in lesson planning. These tools support multimedia integration, allowing educators to incorporate videos, animations, and interactive simulations into their lessons. Such features not

only make learning more engaging for students but also provide teachers with the flexibility to adapt lessons to varying academic levels and learning preferences (Olufunke & Ademola, 2021). By simplifying the process of creating high-quality content, these tools reduce the time spent on lesson preparation, enabling teachers to allocate more time to other critical teaching responsibilities.

In private secondary schools, where innovation in teaching methods is often a competitive advantage, digital lesson creation tools play a vital role. They empower teachers to craft unique learning experiences that align with school curricula and address the specific needs of their students. Additionally, these tools often include templates and repositories of pre-designed materials, which further streamline lesson preparation. However, their effectiveness depends on teachers' digital literacy and access to the necessary technological infrastructure, challenges that may be prevalent in the Yenagoa educational zone. The utility of these tools also intersects with classroom management software, which helps maintain order and optimise the learning environment during lesson delivery.

Learning Management Systems (LMS) have emerged as pivotal tools in enhancing teachers' job productivity. These systems allow educators to organize instructional content, track student progress, and facilitate communication between teachers and learners. Learning Management Systems (LMS) platforms include Moodle, Blackboard, Canvas, Schoology, Google Classroom, Edmodo, Brightspace by D2L, TalentLMS, Adobe Captivate Prime, and SAP Litmos. These platforms serve various educational and training environments, supporting different teaching and learning needs across academic institutions and corporate settings. The integration of LMS into private secondary schools has been shown to significantly reduce administrative workload and improve instructional delivery (Chigona et al., 2019).

Learning Management Systems (LMS) are digital platforms designed to facilitate the management, delivery, and evaluation of educational content, significantly impacting teachers' job productivity. These systems provide educators with a centralised space to organise instructional materials, assign tasks, and monitor students' progress. By automating routine tasks such as grading and attendance tracking, LMS reduces the administrative burden on teachers, allowing them to focus more on instructional delivery and student engagement (Chigona et al., 2019). Moreover, LMS platforms often include tools for collaboration, enabling teachers to communicate effectively with students and parents, which fosters a more interactive and supportive learning environment.

The adoption of LMS has been linked to increased teacher efficiency, particularly in environments where lesson plans and resources need to be tailored to diverse learner needs. For instance, teachers can easily integrate multimedia resources and create adaptive learning pathways, enhancing the quality of instruction. Additionally, LMS provides analytics and reporting tools that allow teachers to assess student performance comprehensively, thereby enabling data-driven decision-making (Adeyemi et al., 2018). However, the effective use of LMS requires adequate training and access to digital infrastructure, which may be a challenge in some private secondary schools in Yenagoa. This leads to a discussion on the role of digital lesson creation tools, which complement LMS by empowering teachers to develop engaging educational content.

In private secondary schools, where competition and expectations for quality education are high, leveraging ICT tools is essential to maintaining relevance and achieving educational excellence. Without a clear understanding of the impact of ICT-based applications on teacher productivity, school administrators and policymakers risk making uninformed decisions regarding resource allocation, training programmes, and ICT investments. Addressing this gap is crucial to maximizing the benefits of ICT integration in the education sector.

Conducting this study is, therefore, justified as it seeks to bridge the identified knowledge gap and provide actionable insights into the interplay between ICT-based applications and teachers' job productivity in private secondary schools. The findings will serve as a valuable resource for school administrators and policymakers in Yenagoa, guiding them in the development of effective strategies to invest in ICT infrastructure, enhance teacher training programmes, and improve educational outcomes in the region. By addressing this issue, the study aims to contribute to the broader understanding of ICT's role in advancing educational practices, particularly in contexts with resource constraints and evolving technological landscapes.

In light of this context, the goal of this study is to investigate the ICT-Based Applications and Teachers Job Productivity in Private Secondary Schools in Yenagoa education zone of Bayelsa State, Nigeria.

II. Statement of the Problem

The integration of Information and Communication Technology (ICT) into education has revolutionized teaching and learning processes worldwide, offering tools that enhance productivity, efficiency, and the quality of education. Globally, ICT-based applications such as Learning Management Systems (LMS), digital lesson creation tools, and classroom management software have transformed traditional teaching practices, enabling teachers to deliver lessons more effectively, engage students interactively, and streamline administrative tasks. In Nigeria, the role of ICT in education is increasingly recognized as pivotal for achieving national education goals. However, despite these global advancements, the adoption and effective utilization of ICT-based applications in Nigerian schools, particularly private secondary schools, remain inconsistent and inadequately explored.

In the Yenagoa education zone of Bayelsa State, private secondary schools face a range of challenges related to ICT adoption. Many teachers lack the necessary proficiency to utilize ICT-based applications effectively, and schools often struggle with insufficient ICT infrastructure and support systems. These challenges hinder the seamless integration of ICT into teaching processes. Furthermore, teachers' productivity which encompasses lesson planning, student engagement, performance assessment, and administrative efficiency may be significantly impacted by their access to and effective use of ICT tools. Despite the recognized potential of ICT to address these productivity issues, the relationship between ICT-based applications and teachers' job productivity in the context of private secondary schools in Yenagoa has not been comprehensively examined.

This problem is significant because teachers' productivity is a critical determinant of student academic success and overall school performance. Although previous research has investigated ICT adoption in education, these studies often lack focus on private secondary schools within specific contexts, such as the Yenagoa educational zone. Moreover, existing literature seldom explores the practical relationship between ICT-based applications and distinct aspects of teachers' productivity, including lesson delivery, classroom management, and administrative effectiveness. This paucity of data on the unique challenges faced by private secondary school teachers in Yenagoa further exacerbates the knowledge gap, limiting the development of targeted interventions.

III. Purpose of the Study

The main purpose of the study was to examine the ICT-Based Applications and Teachers Job Productivity in Private Secondary Schools in Yenagoa education zone of Bayelsa State, Nigeria. Specifically, the study determined the influence of ;

1. Digital Lesson Creation Tools on Teachers Job Productivity in Private Secondary Schools in Yenagoa education zone of Bayelsa State, Nigeria
2. Learning Management Systems (LMS) on Teachers Job Productivity in Private Secondary Schools in Yenagoa education zone of Bayelsa State, Nigeria

IV. Research Questions

The following research questions were answered in the study

1. To what extent does Digital Lesson Creation Tools influence Teachers' Job Productivity in Private Secondary Schools in Yenagoa education zone of Bayelsa State, Nigeria?
2. To what extent does Learning Management Systems (LMS) influence Teachers' Job Productivity in Private Secondary Schools in Yenagoa education zone of Bayelsa State, Nigeria

V. Hypotheses

The following hypotheses were formulated and tested at 0.05 level of significance

1. There is no significant difference in the mean response of male and female teachers on the extent Digital Lesson Creation Tools influence Teachers' Job Productivity in Private Secondary Schools in Yenagoa education zone of Bayelsa State, Nigeria
2. There is no significant difference in the mean response of male and female teachers on the extent Learning Management Systems (LMS) influence Teachers Job Productivity in Private Secondary Schools in Yenagoa education zone of Bayelsa State, Niger

VI. Theoretical Review

The study adopted the Theory of Reasoned Action (TRA) by Fishbein & Ajzen in 1975

The study on ICT-based applications and teachers' job productivity in private secondary schools in Yenagoa, Bayelsa State, adopts the Theory of Reasoned Action (TRA) as its foundational framework. TRA, developed by Fishbein & Ajzen in 1975, posits that an individual's behaviour is driven by their intentions, which are influenced by personal attitudes and social pressures (subjective norms). This theory provides a structured approach to understanding how teachers' attitudes toward technology and the expectations of their peers and institutions shape their decisions to integrate ICT tools into their professional practices. For example, positive perceptions of learning management systems (LMS) or classroom management software can foster adoption, while social expectations from administrators, colleagues, and even students can further motivate ICT use.

In the context of private secondary schools in Yenagoa, the application of TRA sheds light on how these psychological and social factors impact productivity. Teachers are more likely to embrace ICT tools when they see clear benefits, such as simplifying lesson delivery, enhancing engagement, or streamlining administrative tasks. Additionally, the competitive environment of private education amplifies the influence of social norms, as teachers often feel pressure to meet high-quality standards through technological integration. The study suggests that understanding and leveraging these dynamics by fostering positive attitudes and supportive norms can drive the effective adoption of ICT and improve overall job productivity. TRA thus serves as a valuable guide for policymakers and administrators aiming to promote technology use through targeted training, incentives, and a culture of innovation.

VII. Methodology

The research design that is adopted for this study is the descriptive survey. According to Nwankwo (2016), a descriptive survey is used by researchers to collect data usually from a given population that is sampled and describe certain attributes or features of the sample as they are and as required by the study at that particular time without manipulating any variable. The study was guided by three research objectives, questions, and corresponding hypotheses. The target population comprised 450 teachers from 32 approved private secondary schools in Yenagoa educational zone, Bayelsa state. A sample of 126 teachers was selected from the 32 private secondary schools in Yenagoa education zone using a random sampling method. Data collection was conducted using a close-ended structured questionnaire entitled "ICT-Based Applications and Teachers Job Productivity Questionnaire (IATJPQ)" The questionnaire underwent a pilot test involving 20 private secondary school teachers in Ogbia local government area, Bayelsa State who are considered not part of the main population. The instrument was administered two times within a space of 2 weeks. The scores of the two-test results were correlated using the Pearson Product Moment Correlation Co-efficient (PPMCC) and a reliability coefficient of 0.83 was obtained. Data that was collected from the respondents were analyzed using standard deviation and the mean statistical tool for the research questions $\bar{x} = \frac{\sum fx}{n}$. while the hypotheses were analyzed using the t-test at 0.05 level of significance. A criterion Mean of 2.50 was set because the items were placed on four-point rating scales, which means any Mean from 2.50 and above was accepted as great extent and mean scores below 2.50 were rejected as low extent and arithmetically imputed as $4+3+2+1 = 10, 10/4=2.50$.

VIII. Results

Research Question One: To what extent does Digital Lesson Creation Tools influence Teachers' Job Productivity in Private Secondary Schools in Yenagoa education zone of Bayelsa State, Nigeria?

Table 1: Mean and Standard Deviation Analysis on the Influence of Digital Lesson Creation Tools on Teachers' Job Productivity

S/N	Item statement	Male		Female		Total		Remark
		\bar{X}	SD	\bar{X}	SD	$\frac{\bar{x}_1 + \bar{x}_2}{2}$	SD	
1	Digital tools improve interactive lesson design content.	3.18	0.75	3.12	0.80	3.15	0.78	Great Extent
2	Digital tools save lesson preparation time.	3.09	0.78	3.05	0.76	3.07	0.77	Great Extent
3	Digital tools foster creative and innovative lesson planing.	3.00	0.72	2.95	0.70	2.98	0.71	Great Extent
4	Digital tools allow for customization of interactive lesson instructional materials.	2.91	0.80	3.02	0.73	2.96	0.77	Great Extent
5	Digital tools support collaboration in lesson planning.	3.05	0.74	3.01	0.78	3.03	0.76	Great Extent
6	Digital tools aid in streamlining lesson preparation.	3.10	0.73	3.06	0.75	3.08	0.74	Great Extent
7	Digital tools empower teachers to align learning experiences with school curricula.	2.97	0.77	2.91	0.72	2.94	0.75	Great Extent
	Grand Mean	3.04	0.76	3.02	0.75	3.03	0.76	Great Extent

Cut-off mean = 2.50; Male teachers = 67; Female = 59 and Total = 126

The grand mean scores for male (3.04) and female (3.02) respondents show that the influence of Digital Lesson Creation Tools on Teachers' Job Productivity is generally positive, with mean scores above the decision threshold for acceptance. This suggests that digital tools significantly aid in lesson design, preparation, and presentation.

Research Question Two: To what extent does Learning Management Systems (LMS) influence Teachers' Job Productivity in Private Secondary Schools in Yenagoa education zone of Bayelsa State, Nigeria?

Table 2: Mean and Standard Deviation Analysis on the Influence of Learning Management Systems on Teachers' Job Productivity

S/N	Item statement	Male		Female		Total		Remark
		\bar{X}	SD	\bar{X}	SD	$\frac{\bar{x}_1 - \bar{x}_2}{2}$	SD	
1	LMS enhances instruction delivery.	3.21	0.76	3.18	0.81	3.20	0.79	Great Extent
2	LMS improves assignment efficiency.	3.12	0.72	3.05	0.70	3.09	0.71	Great Extent
3	LMS supports assessment grading.	2.95	0.81	3.01	0.76	2.98	0.79	Great Extent
4	LMS facilitates teacher-student communication.	3.08	0.75	3.02	0.78	3.05	0.77	Great Extent
5	LMS aids in record-keeping to track students progress.	3.00	0.68	2.91	0.74	2.96	0.71	Great Extent
6	LMS encourages collaboration among teachers.	3.15	0.69	3.10	0.73	3.13	0.71	Great Extent
7	LMS reduces workload stress.	3.05	0.74	2.98	0.77	3.02	0.75	Great Extent
	Grand Mean	3.08	0.74	3.04	0.75	3.06	0.74	Great Extent

Cut-off mean = 2.50; Male teachers = 67; Female = 59 and Total = 126

The grand total mean scores for male (3.08) and female (3.04) respondents indicate that the influence of Learning Management Systems on Teachers' Job Productivity in private secondary schools in Yenagoa education zone is generally positive, with both genders demonstrating agreement with most items. However, slight variability is observed in the standard deviation (male: 0.74; female: 0.75), showing consistency in responses. This implies that LMS tools moderately enhance job productivity for teachers but with room for improvement in specific areas like record-keeping and workload stress.

IX. Hypotheses

Hypothesis One: There is no significant difference in the mean response of male and female teachers on the extent Digital Lesson Creation Tools influence Teachers' Job Productivity in Private Secondary Schools in Yenagoa education zone of Bayelsa State, Nigeria

Table 3: t-test Analysis on the mean response of male and female teachers on the extent Digital Lesson Creation Tools influence Teachers' Job Productivity

Variables	N	\bar{x}_1	SD	df	t-Cal	t-Crit	Decision at P<0.05
Male Teachers	67	3.04	0.76				
Female Teachers	59	3.02	0.75	124	0.21	1.98	NS

NS at P<0.05 alpha level; N=126

Since t-calculated 0.21 is less than the critical value of 1.98, the study, therefore, fails to reject the null hypothesis. This indicates that there is no significant difference in the mean response of male and female teachers on the extent to which Digital Lesson Creation Tools influence teachers' job productivity in private secondary schools in Yenagoa educational zone, Bayelsa State.

Hypothesis Two: There is no significant difference in the mean response of male and female teachers on the extent Learning Management Systems (LMS) influence Teachers Job Productivity in Private Secondary Schools in Yenagoa education zone of Bayelsa State, Nigeria

Table 4: t-test Analysis on the mean response of male and female teachers on the extent Learning Management Systems (LMS) influence Teachers Job Productivity

Variables	N	\bar{x}_1	SD	df	t-Cal	t-Crit	Decision at P<0.05
Male Teachers	67	3.08	0.74				
Female Teachers	59	3.04	0.75	124	0.34	1.98	NS

NS at P<0.05 alpha level; N=126

Since t-Calculated 0.34 is less than the critical value 1.98, the study fail to reject the null hypothesis. This implies that there is no significant difference in the mean response of male and female teachers regarding the extent to which Learning Management Systems (LMS) influence teachers' job productivity in private secondary schools in Yenagoa educational zone, Bayelsa State.

X. Discussion of Findings

Research Question One and Hypothesis One: The study reveals that Digital Lesson Creation Tools substantially enhance teacher productivity in private secondary schools in Yenagoa, evidenced by a grand mean score of 3.08. These tools enable the development of engaging and diverse instructional materials, significantly improving lesson planning efficiency and student engagement. The findings are corroborated by Olufunke & Ademola (2021) who emphasize the creative benefits of these tools in teaching, and Bassey & Essien (2021) who recognize their crucial role in addressing diverse learning needs. Despite these positive outcomes, the impact is somewhat moderated by the variable digital literacy levels among teachers, which suggests a need for enhanced training programs. Furthermore, the hypothesis testing revealed no significant gender differences in the perceptions of the productivity enhancements offered by these tools, affirming the gender-neutral benefit of digital resources in educational settings as supported by Olufunke & Ademola (2021) and Ijeoma & Olayemi (2018).

Research Question Two and Hypothesis Two: Learning Management Systems (LMS) have demonstrated a positive, albeit modest, influence on teacher productivity within Yenagoa's private secondary schools, with a grand mean score of 3.06. LMS platforms facilitate efficient organization of instructional content, progress tracking, and reduction of administrative burdens, aligning with Chigona et al. (2019) who note the efficiency gains from automating routine tasks, and Adeyemi et al. (2018) who highlight improved effectiveness in lesson delivery through LMS. However, optimal utilization of LMS is limited by challenges such as restricted access to necessary training and inadequate ICT infrastructure. Additionally, hypothesis testing shows no significant gender differences in the perceived impact of LMS on productivity, suggesting its universal applicability across genders. This universality is consistent with findings from Sharma et al. (2020), though Mishra et al. (2017) underscore the importance of ensuring equitable access to training for maximizing benefits across all teacher demographics.

XI. Conclusion

The research conclusively illustrates the significant impact of Information and Communication Technology (ICT) on teacher productivity in private secondary schools within the Yenagoa education zone. The findings demonstrate that tools like digital lesson creation tools, and learning management systems substantially enhance instructional delivery, administrative efficiency, and student engagement. Despite the positive influence, the study also highlights persistent barriers such as inadequate training and infrastructural deficits, which hamper the optimal utilization of these technologies.

XII. Recommendations

To capitalize on the potential of ICT in enhancing educational outcomes, it is recommended that:

1. Schools implement comprehensive training programs to boost teacher proficiency in using ICT tools, ensuring that all educators are well-equipped to integrate technology into their teaching practices effectively.
2. There should be a concerted effort to improve ICT infrastructure within schools to support the seamless use of digital tools, addressing issues such as internet connectivity and hardware availability.
3. Policymakers and school administrators should foster partnerships with technology providers to keep abreast of the latest educational technology advancements and secure favorable terms for their acquisition and implementation.

4. Continuous evaluation and feedback mechanisms should be established to monitor the impact of ICT on teaching and learning, facilitating timely adjustments and enhancements to technology deployment strategies.

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