

Assessment of ICT Literacy Level of Primary Education Lecturers for Effective Teaching and Learning

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ABSTRACT

Aim of the Study: This study examined the ICT literacy level of primary education lecturers and its implications for effective teaching and learning.

Methodology: Employing a descriptive research design, a survey method was utilized to gather data from tertiary institutions in Anambra State, southeastern Nigeria. The population comprised tertiary institutions offering primary education, early childhood education, and related courses. A self-structured questionnaire was administered via Google survey, comprising demographic data and questions aligned with the research objectives. The instrument's validity was ensured through expert validation, while reliability was tested using the test-retest method, yielding a reliability score of 0.75. Data were collected virtually from knowledgeable respondents via email, WhatsApp, Instagram, and Facebook groups. Eighty (80) appropriately filled questionnaires were received within three weeks. Descriptive statistical analysis, including mean and standard deviation computation, was employed to analyze the data.

Findings: The result showed that Primary education lecturers vary in their ICT proficiency, impacting teaching effectiveness. While some confidently employ technology, positively impacting student engagement, others struggle, hindering integration. ICT-savvy and proficient lecturers create interactive lessons, fostering active learning. Moreover, professional development through conferences, workshops, and sandwich courses enhances ICT literacy, improving teaching quality and learning outcomes.

Conclusion: The study contribute to understanding the ICT literacy level of primary education lecturers and inform strategies for enhancing teaching effectiveness and student learning outcomes in the digital age.

Keywords: Assessment, ICT literacy, Primary Education, Lecturers, Teaching, Learning.

Introduction

In today's digital age, Information and Communication Technology (ICT) literacy among primary education lecturers plays a crucial role in fostering effective teaching and learning experiences. ICT

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literacy refers to the ability to use digital technologies and communication tools proficiently to access, manage, evaluate, and create information effectively (Daramola et al, 2015). The level of ICT literacy among lecturers greatly influences their teaching practices and the educational outcomes of their students. Information and Communication Technology (ICT) refers to the diverse range of technologies used to access, store, transmit, and manipulate information (Amua-Sekyi & Asare, 2016). It encompasses hardware such as computers, smartphones, and networks, as well as software applications and digital platforms.

ICT enables the processing and sharing of data through various communication channels, including the internet, email, and social media. Beyond basic communication, ICT plays a vital role in facilitating business operations, education, healthcare, and entertainment (Bolaji & Ibrahim-Raji, 2023). Its integration into various sectors enhances efficiency, productivity, and connectivity, shaping the way individuals interact, work, and access information in today's digital age. ICT literacy is essential for primary education lecturers as it enables them to integrate technology seamlessly into their teaching methods, enhancing engagement, interaction, and collaboration among students (Mbazu et al, 2023). ICT literacy refers to the ability to effectively navigate, utilize, and critically evaluate information and communication technologies (ICTs) for various purposes, including communication, problem-solving, and decision-making (Istiara & Hastomo, 2023). It encompasses proficiency in using digital tools, software applications, and online resources to access, manage, create, and share information.

ICT literacy involves skills such as internet research, digital communication, data analysis, and multimedia creation. Moreover, it entails understanding ethical and security considerations related to ICT use, as well as the ability to adapt to new technologies and continuously update one's knowledge and skills in response to evolving digital landscapes (Liu, 2024). A study by Abbas et al, 2023) emphasizes the pivotal role of ICT literacy in improving teaching effectiveness and student learning outcomes. Lecturers with higher ICT literacy levels can leverage digital tools and resources to create dynamic and interactive learning environments that cater to diverse learning needs for effective teaching and learning.

Effective teaching and learning involve the creation of engaging, inclusive, and meaningful educational experiences that promote deep understanding, critical thinking, and skill development among learners (Felder & Brent, 2024). Effective teaching encompasses pedagogical approaches that cater to diverse learning needs, foster active participation, and provide timely feedback. It involves the use of innovative instructional strategies, resources, and technologies to facilitate student-centered learning and promote autonomy and self-directed learning (Brownlie et al, 2024). Effective learning occurs when students are actively engaged in the learning process, make connections between new knowledge and prior experiences, and demonstrate mastery of learning objectives through authentic assessments.

Furthermore, ICT literacy empowers primary education lecturers to adopt innovative pedagogical approaches such as flipped classrooms, blended learning, and online assessments, thereby catering to the digital learning preferences of today's students (Warden et al, 2024). By incorporating technology effectively, lecturers can facilitate personalized learning experiences, promote critical thinking skills, and foster digital literacy among students. Despite its significance, primary education lecturers often face challenges and barriers in developing and maintaining ICT literacy. Limited access to ICT infrastructure, inadequate training opportunities, and resistance to change are common barriers hindering lecturers' ICT literacy development (Bauwens et al, 2020). Additionally, disparities in ICT skills among lecturers exacerbate the digital divide, leading to inequalities in educational experiences and outcomes for students.

Moreover, some lecturers may perceive ICT integration as time-consuming or irrelevant to their teaching practice, further impeding their motivation to improve ICT literacy (Senkbeil & Ihme, 2017). Addressing these challenges requires comprehensive strategies that encompass both individual and institutional levels to support lecturers in enhancing their ICT literacy effectively. The urgency for embarking on the study of assessing the ICT literacy level of primary education lecturers for effective teaching and learning is underscored by several key factors. Firstly, in today's digital age, integrating technology into teaching

practices has become imperative to enhance student engagement, facilitate personalized learning, and prepare students for success in the 21st-century workforce (Koehorst et al, 2021). However, there is a notable gap in the literature regarding the ICT literacy levels of primary education lecturers, particularly in relation to their ability to effectively integrate technology into their teaching practices.

Moreover, limited access to ICT infrastructure, inadequate training opportunities, and resistance to change are common barriers that hinder lecturers' ability to develop and maintain their ICT skills (Nwabueze et al, 2018). Without a comprehensive understanding of lecturers' ICT literacy levels, it is challenging to implement targeted interventions and support mechanisms to address these barriers effectively. Furthermore, research has shown that lecturers with higher levels of ICT literacy are better equipped to create dynamic and engaging learning environments, cater to diverse learning needs, and improve student learning outcomes. Therefore, assessing the ICT literacy level of primary education lecturers is essential for identifying areas for improvement, designing effective professional development programs, and ultimately enhancing the quality of teaching and learning in primary education settings.

Research Questions

The following research questions were formulated to guide the study:

- What is the level of ICT literacy possessed by primary education lecturers?
- What are the effects of primary education lecturers ICT literacy on teaching and learning?
- What are the ways to improve ICT literacy level of primary education lecturers for effective teaching and learning?

Methodology

Based on the specific objective of the research, a descriptive research design was employed, utilizing a survey method to gather data. The survey method was chosen to provide a snapshot of existing conditions, identify standards, and determine relationships between events at a specific point in time. The study focused on lecturers in tertiary institutions in Anambra State, southeastern Nigeria, encompassing those offering primary education, early childhood education, and related courses. Data collection was facilitated through a self-structured questionnaire implemented via Google survey. The questionnaire consisted of two sections: Section A captured demographic data, while Section B contained questions aligned with the research objectives. Respondents used a four-point scale to indicate their level of agreement, ranging from strongly agree to strongly disagree. To ensure the validity of the instrument, experienced staff from the Department of Measurement and Evaluation provided feedback, leading to necessary modifications.

For reliability testing, ten lecturers not involved in the main study completed the questionnaire, and their responses were collected and re-administered after two weeks using the test-retest method. The data collected were correlated using the Pearson Product Moment correlation method, resulting in a reliability score of 0.75, indicating instrument reliability. Data collection was conducted virtually, with questionnaires distributed via email, WhatsApp groups, Instagram groups, and Facebook groups to knowledgeable respondents. Eighty (80) appropriately filled questionnaires were received within three weeks. Descriptive statistical analysis, including computing mean scores and standard deviation, was employed to analyze the collected data. This analysis technique facilitated reaching the study objectives by providing insights into the level of ICT literacy among primary education lecturers and identifying areas for improvement.

Results

Research Question 1: What is the level of ICT literacy possessed by primary education lecturers?

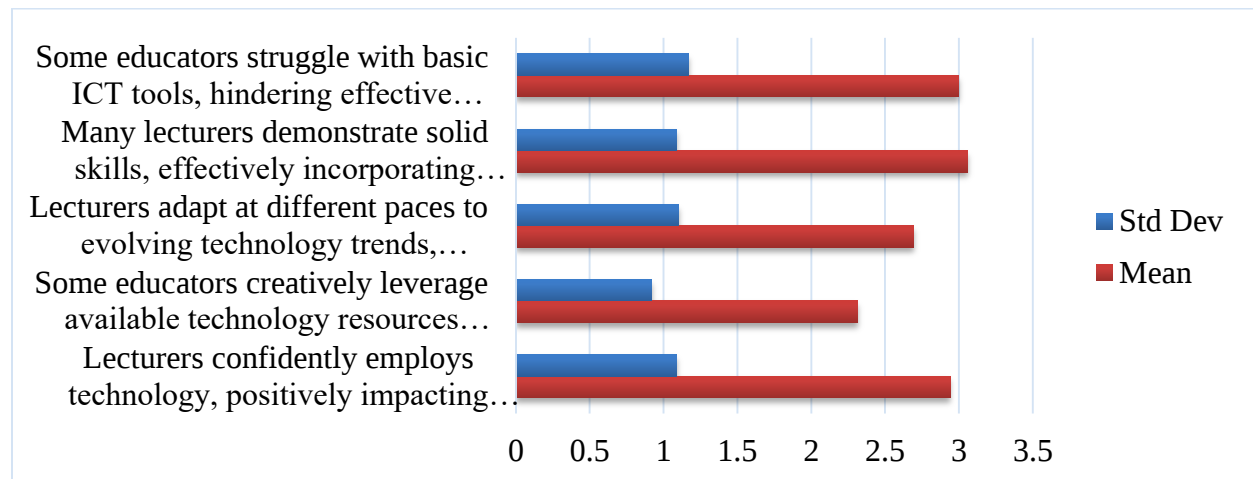


Figure 1: Mean and standard deviation on the level of ICT literacy possessed by primary education lecturers.

In the evaluation of lecturers' integration of technology in Figure 1, those confidently embracing it with a positive impact on engagement and learning outcomes are generally accepted, evidenced by a mean score of 2.94 with a standard deviation of 1.09. However, educators with varying levels of ICT literacy who creatively use available resources, despite rejection, still exhibit a mean score of 2.31 with a standard deviation of 0.92, suggesting a potential for improvement in proficiency. Lecturers adapting at different rates to evolving technology trends are accepted, with a mean score of 2.69 and a standard deviation of 1.1, recognizing the influence on overall ICT proficiency. Those demonstrating solid skills in incorporating ICT tools for enhanced learning experiences are also accepted, with a mean score of 3.06 and a standard deviation of 1.09. However, educators struggling with basic ICT tools, hindering effective integration, are accepted with room for improvement in their technological literacy, as indicated by a mean score of 3 with a standard deviation of 1.17.

Research Question 2: What are the effects of primary education lecturers ICT literacy on teaching and learning?

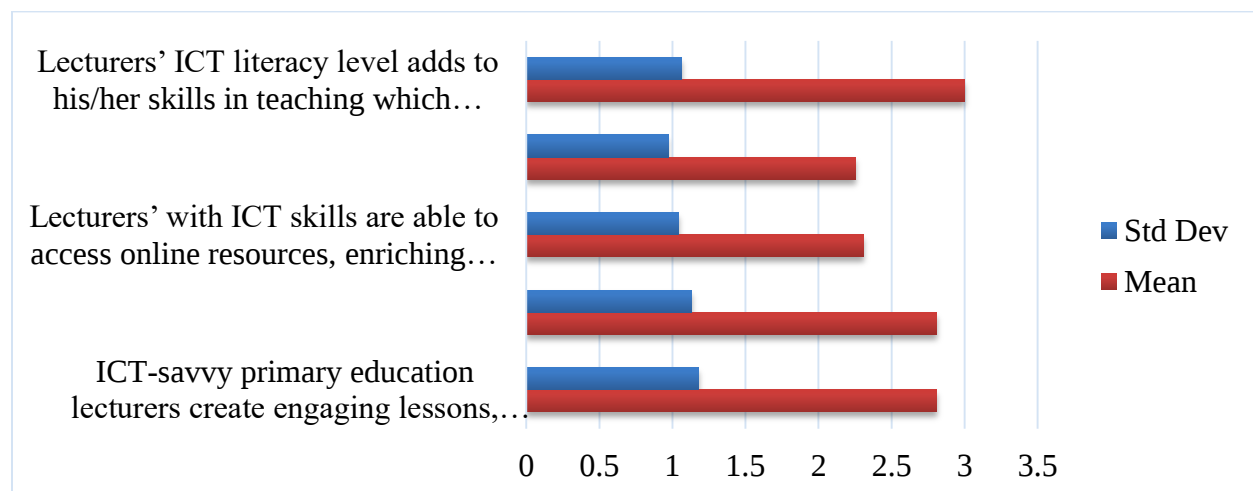


Figure 2: Mean and standard deviation on the effects of primary education lecturers ICT literacy on teaching and learning

Figure 2 showed that those lecturers considered ICT-savvy are accepted, with a mean score of 2.81 and a standard deviation of 1.18. Similarly, lecturers deemed ICT-proficient, fostering interaction and utilizing digital tools for active learning, are also accepted, with a mean score of 2.81 and a standard deviation of 1.13. However, lecturers whose ICT skills allow access to online resources for enriching teaching materials are rejected, indicated by a mean score of 2.31 and a standard deviation of 1.04. Similarly, educators who link primary education lessons to global scientific advancements are rejected, with a mean score of 2.25 and a standard deviation of 0.97. Lecturers whose ICT literacy enhances teaching skills and fosters high academic achievement among students are accepted, with a mean score of 3.00 and a standard deviation of 1.06.

Research Question 3: What are the ways to improve ICT literacy level of primary education lecturers for effective teaching and learning?

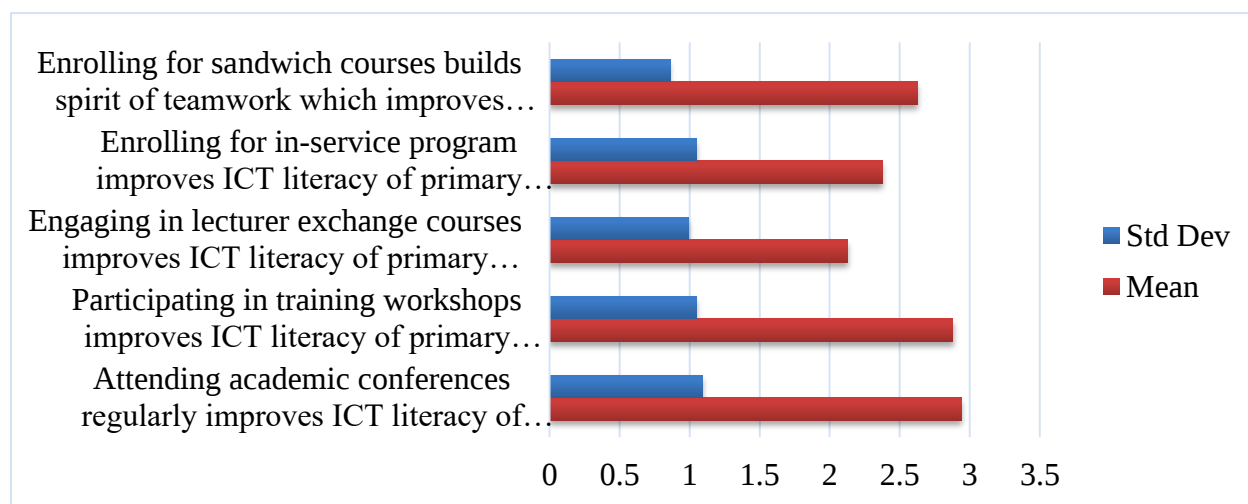


Figure 3: Mean and standard deviation on ways to improve ICT literacy level of primary education lecturers for effective teaching and learning

Figure 3 shows that regular attendance at academic conferences is deemed effective in improving ICT literacy among primary education lecturers for enhanced teaching and learning, with a mean score of 2.94 and a standard deviation of 1.09, thus accepted. Similarly, participation in training workshops, with a mean score of 2.88 and a standard deviation of 1.05, is acknowledged as beneficial, also accepted. However, engaging in lecturer exchange courses, with a mean score of 2.13 and a standard deviation of 0.99, and enrolling in in-service programs, with a mean score of 2.38 and a standard deviation of 1.05, are rejected for their lower perceived effectiveness in improving ICT literacy. On the other hand, enrolling in sandwich courses, fostering teamwork, is accepted, with a mean score of 2.63 and a standard deviation of 0.86.

Discussion of Findings

Research question 1 sought to find out the level of ICT literacy possessed by primary education lecturers. Lecturers confidently employing technology positively impact student engagement and learning outcomes, indicating a subset with advanced ICT literacy skills. In contrast, some educators struggle with basic ICT tools, hindering effective integration into their teaching methods. This finding is supported by Suárez and Colmenero (2024), who noted a significant disparity in ICT literacy levels among lecturers. Many lecturers demonstrate solid skills in incorporating various ICT tools to enhance learning experiences, suggesting a considerable proportion possess proficient ICT abilities. This observation is further substantiated by Williams (2020) and Gbesoevi et al, (2022), emphasizing the importance of continuous professional development in improving ICT literacy. However, lecturers adapt at different paces to evolving technology trends, influencing their overall ICT proficiency. This variability

underscores the need for targeted interventions and support mechanisms to bridge the gap between technologically adept educators and those struggling to keep pace.

Research question 2 dealt with the effects of primary education lecturers ICT literacy on teaching and learning. The findings revealed that ICT-savvy lecturers create engaging lessons, fostering active student participation and effective learning experiences. Similarly, ICT-proficient educators use digital tools for discussions, simulations, and activities, promoting active learning. This finding aligns with Oborah (2022), who observed that lecturers with advanced ICT skills tend to create more dynamic and engaging classroom environments. In contrast, lecturers with lower ICT literacy levels may struggle to effectively incorporate technology into their teaching methods, potentially hindering student engagement and learning outcomes. This observation is supported by Effiong and Esuong (2023), who emphasized the importance of professional development in enhancing ICT literacy among educators to improve teaching effectiveness. Overall, lecturers' ICT literacy positively contributes to their teaching skills, fostering high academic achievement among students. This conclusion is further substantiated by Okundaye et al, (2019), who demonstrated the positive impact of structured training programs on improving ICT literacy among lecturers and subsequently enhancing student learning outcomes.

Research question 3 sought to find out the ways to improve ICT literacy of primary education lecturers for effective teaching and learning. Based on the findings, it was observed that attending academic conferences regularly is shown to enhance ICT literacy among lecturers, providing opportunities for exposure to new technologies and pedagogical strategies. This finding is supported by Rae (2023), who observed a positive correlation between conference attendance and improved ICT skills among educators. Participating in training workshops also significantly contributes to enhancing ICT literacy among primary education lecturers. Ofshteyn et al, (2021) emphasized the role of workshop participation positively impacting teaching effectiveness. In contrast, enrolling in sandwich courses fosters teamwork among lecturers, indirectly improving ICT literacy through collaborative learning experiences. This observation is in line with Ogbonnaya et al, (2018), who highlighted the importance of institutional support and teamwork in facilitating ICT literacy among educators. Overall, a combination of conference attendance, workshop participation, and collaborative learning experiences through sandwich courses can effectively enhance the ICT literacy level of primary education lecturers, thereby improving teaching and learning outcomes.

Conclusion

The study is to study effects of ICT literacy possessed by primary education lecturers on the student's academic achievement. The results of this study have shown that many lecturers demonstrate solid skills, effectively incorporating various ICT tools to enhance learning experiences. The findings also revealed that lecturers' ICT literacy level adds to his/her skills in teaching which fosters high academic achievement among students. The study also made it clear that attending academic conferences regularly improves ICT literacy of primary education lecturers for effective teaching and learning.

However, lecturer behavior helps students to develop early motor, physical and social development. Also, Lecturers adapt at different paces to evolving technology trends, affecting their overall ICT proficiency. Meanwhile, primary education lecturers ICT literacy as a factor has a significant effect on teaching and learning. It means that enrolling for sandwich courses builds spirit of teamwork which improves ICT literacy of primary education lecturers for effective teaching and learning. Based on the above, it can easily be concluded that primary education lecturers in Dunukofia local government area of Anambra state possess the ability to have the knowledge and understanding of basic economic concepts and principles, practical aspect of ICT knowledge that is obtained in the classroom.

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Conflict of Interest

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