



ARTIFICIAL INTELLIGENCE IN CONTENT DEVELOPMENT, DELIVERY AND ASSESSMENT AMONG SECONDARY SCHOOL TEACHERS IN OYE-EKITI: A RELATIVE IMPORTANCE INDEX

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ABSTRACT

The purpose of this study was to investigate the level of adoption of artificial intelligence (AI) in content development, delivery and assessment among secondary school teachers in Oye-Ekiti, Nigeria. The study employed a descriptive survey research design, with a population of all the secondary school teachers in Oye-Ekiti. A sample of 122 participants was drawn using a stratified sampling technique to ensure representation across different schools. Data were collected using the Artificial Intelligence Adoption Questionnaire (AIAQ), validated by educational experts, yielding a reliability coefficient of .84. The analysis utilized the Statistical Package for Social Sciences (SPSS), incorporating descriptive statistics to summarize sociodemographic characteristics and the Relative Importance Index (RII) to assess AI adoption levels and analyze challenges of adoption. The RII quantified various barriers identified by participants, allowing for a ranking of challenges based on their perceived impact on integration. Results indicated that AI is increasingly adopted, particularly for lesson planning and assessment, with significant integration in interactive teaching methods. The study concluded that while there is a growing willingness to embrace AI among teachers, challenges such as inadequate training and infrastructure remain prevalent. The study recommended that education authorities invest in comprehensive training programs for teachers and improve ICT infrastructure to facilitate effective AI integration in the classroom.

Keywords: Artificial intelligence, adoption, integration, secondary school, teachers, content development, delivery, assessment, challenges, education

Introduction

The integration of technology in education has become a vital aspect of teaching and learning in the 21st century. One of the key technological advancements that have gained significant attention in recent years is Artificial Intelligence (AI) (Lu, 2019). AI has the potential to revolutionize the education sector by providing personalized learning experiences, automating administrative tasks, and enhancing student assessment and feedback (Pratama et al., 2023). With the increasing availability of digital resources and infrastructure, educators are now exploring ways to harness the power of AI to improve teaching and learning outcomes (Pedro et al., 2019). The use of AI in education can help to create a more efficient and effective learning environment, where students can learn at their own pace and receive tailored support (Rane et al., 2023). AI-powered tools can also help teachers to identify areas where students need extra support, enabling them to target their interventions more effectively (Amoako et al., 2024). Furthermore, AI can help to enhance the quality of education by providing teachers with data-driven insights that can inform their instructional practices (Opele et al., 2024). As the



education sector continues to evolve, it is likely that AI will play an increasingly important role in shaping the future of teaching and learning.

The benefits of AI in education are numerous and well-documented. AI-powered tools can help teachers to develop customized learning materials, automate grading, and provide real-time feedback to students (Almuhanna, 2024). This can help to reduce the administrative burden on teachers, freeing up more time for them to focus on teaching and supporting students (Hennika, 2019). Additionally, AI can help to identify knowledge gaps and learning difficulties, enabling teachers to provide targeted support to students (Kharbat et al., 2021). AI-powered adaptive learning systems can also adjust to the learning style and pace of individual students, providing a more personalized learning experience (Kaswan et al., 2024). Furthermore, AI can help to enhance the validity and reliability of assessments, reducing the risk of bias and error (Raza, 2024). By leveraging AI-powered tools, educators can create a more efficient, effective, and personalized learning environment that supports the diverse needs of students (Ayeni et al., 2024). Many educational institutions are now investing in AI-powered solutions to enhance teaching and learning, and the results are promising (Alyammahi, 2020). From improved student outcomes to enhanced teacher productivity, the potential benefits of AI in education are vast and varied (Ehtsham et al., 2025). As educators and policymakers continue to explore the potential of AI, it is likely that even more innovative applications of this technology will be witnessed in the years to come.

Despite the potential benefits of AI in education, its adoption and integration in secondary schools in Nigeria face some challenges (Sunday et al., 2025). Many secondary school teachers in the region lack the necessary skills, knowledge, and resources to effectively integrate AI-powered tools into their teaching practices (Okunade, 2024). Furthermore, there is limited awareness about the potential benefits and challenges of AI in education among teachers, policymakers, and other stakeholders (Sanusi et al., 2024). This lack of awareness and understanding can hinder the effective adoption and integration of AI in education, and may also lead to misconceptions and resistance to change (Festus & Emmanuel, 2025). Additionally, the infrastructure and resources required to support AI-powered tools may not be readily available in many secondary schools in Nigeria, which can further exacerbate the challenge (Yakubu, 2024). Therefore, it is essential to investigate the specific challenges and opportunities associated with AI adoption and integration in Nigerian secondary schools in order to develop effective strategies for implementation (Olatunde-Aiyedun, 2024).

The Nigerian government has initiated various policies and programmes aimed at promoting the use of technology in education. However, the focus has largely been on providing infrastructure and training teachers on basic ICT skills (Jegede, 2019). While these initiatives are important, they may not be sufficient to support the effective adoption and integration of AI in education (Uriri & Mmom, 2025). There is a need for more specific initiatives that focus on AI adoption and integration in secondary schools, including training and support for teachers, development of AI-powered educational resources, and infrastructure to support AI-powered tools (Okunade, 2024). Additionally, policymakers and educators need to work together to develop policies and guidelines that support the effective use of AI in education, and address issues such as data protection, privacy, and equity (Olofin, 2024). By developing a comprehensive framework for AI adoption and integration in education, Nigeria can harness



the potential of AI to enhance teaching and learning outcomes, and improve the overall quality of education (Ukeje et al., 2024). Furthermore, this can also help to ensure that students are equipped with the skills and knowledge needed to thrive in an increasingly technology-driven world (Anchal, 2025).

Despite the growing body of research on AI in education, there is a significant gap regarding the extent of adoption of AI in content development, content delivery and assessment by secondary school teachers in Nigeria particularly in Oye-Ekiti, Ekiti State. Most studies have focused on the experiences of developed countries (Aderibigbe et al., 2023; Yakubu, 2024), and there is limited research on the adoption and integration of AI in education in developing countries like Nigeria (Okonkwo et al., 2024). Furthermore, the few studies that have been conducted in Nigeria have largely focused on higher education institutions (Ogunode & Musa, 2020), leaving a gap in knowledge about the experiences of secondary school teachers.

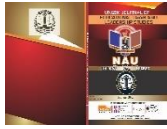
Therefore, this study aimed to fill this gap by investigating the current state of AI adoption and integration among secondary school teachers in Oye-Ekiti, with a focus on content development, delivery. Specifically, the study was guided by the following research questions:

1. To what extent is AI being adopted by secondary school teachers in Oye-Ekiti for content development?
2. To what extent is AI being integrated into content delivery in secondary schools in Oye-Ekiti?
3. To what extent is AI being used for assessment purposes in secondary schools in Oye-Ekiti?
4. What are the prevailing challenges of adopting AI by secondary school teachers in Oye-Ekiti?

This study's findings will provide insights into the extent of AI adoption in content development, delivery, and assessment in secondary schools in Oye-Ekiti. The study's significance lies in its potential to inform policymakers and educators on strategies to harness AI's potential, bridge the technology gap, and enhance teaching and learning outcomes. The study's results will also contribute to the growing body of research on AI in education, providing valuable recommendations for effective AI integration.

Methodology

The study adopted a descriptive survey design to investigate the adoption and integration of artificial intelligence (AI) among secondary school teachers in Oye-Ekiti. The area of the study encompasses various secondary schools within Oye-Ekiti, a region known for its educational institutions. The population comprised all the secondary school teachers in Oye-Ekiti. A sample size of 122 teachers was drawn using a stratified sampling technique to ensure representation across different schools, allowing for a diverse and comprehensive understanding of AI adoption. Data were collected using the Artificial Intelligence Adoption Questionnaire (AIAQ), which consisted of six sections focusing on sociodemographic characteristics, AI adoption levels in content development, delivery, assessment, and challenges faced.



The AIAQ was administered to the respondents with the assistance of trained research assistants, ensuring clarity and accuracy in data collection. The reliability of the instrument was established using Cronbach's alpha, yielding a coefficient of .84. Data analysis was conducted using the Statistical Package for Social Sciences (SPSS). Descriptive statistics were employed to summarize sociodemographic characteristics and AI adoption levels. The Relative Importance Index (RII) was utilized to assess both the levels of AI adoption and the challenges faced by teachers. The findings were interpreted to provide actionable insights into the effective integration of AI tools in educational practices, contributing to the understanding of teachers' experiences and challenges in adopting AI.

Results

Table 1: Socio-demographic Characteristics of the Participants (N = 122)

| Sociodemographic Characteristic | Frequency (N) | Percentage (%) |
|---------------------------------|---------------|----------------|
| Age | | |
| 18-25 | 30 | 24.6 |
| 26-35 | 50 | 40.9 |
| 36-45 | 25 | 20.5 |
| 46 and above | 17 | 13.9 |
| Gender | | |
| Male | 58 | 47.5 |
| Female | 64 | 52.5 |
| Years of Teaching Experience | | |
| 1-5 years | 40 | 32.8 |
| 6-10 years | 35 | 28.7 |
| 11-15 years | 30 | 24.6 |
| 16 years and above | 17 | 13.9 |
| Educational Qualification | | |
| NCE/HND | 70 | 57.4 |
| Bachelor's Degree | 40 | 32.8 |
| Postgraduate Degree | 12 | 9.8 |

Table 1 presents the sociodemographic characteristics of the participants in the study. The age distribution reveals that the largest group of teachers is aged 26-35, accounting for 40.9% of the sample, followed by those aged 18-25 at 24.6% and 36-45 at 20.5%. A slight majority of the respondents are female (52.5%), compared to 47.5% male. In terms of teaching experience, 32.8% have 1-5 years, while 28.7% possess 6-10 years of experience; 24.6% have 11-15 years, and 13.9% have 16 years or more. Educationally, the majority hold a NCE/HND (57.4%), with 32.8% having a Bachelor's Degree and 9.8% participants with Postgraduate Degree.

Table 2: Relative Importance Index (RII) of AI Adoption for Content Development (N = 122)

| S/N | AI Usage Area | ΣW | A | RII | Rank | Adoption level |
|-----|---|-----|---|------|------|----------------|
| 1. | Lesson planning using AI | 452 | 5 | 0.74 | 1st | High |
| 2. | Quiz/test generation using AI | 433 | 5 | 0.71 | 2nd | High |
| 3. | Organizing teaching notes with AI | 415 | 5 | 0.68 | 3rd | Moderate |
| 4. | Creating visual aids using AI | 384 | 5 | 0.63 | 4th | Moderate |
| 5. | Customizing learning materials using AI | 366 | 5 | 0.60 | 5th | Moderate |

Key: ΣW = Total Weighted Score, N = Number of Respondents, A = Maximum Likert Scale Weight, RII = Relative Importance Index

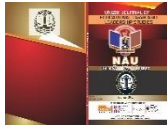


Table 2 is the result of the level of adoption of AI in content creation among secondary school teachers in Oye-Ekiti. The data reveals that lesson planning using AI has the highest adoption rate, with a Relative Importance Index (RII) of 0.74, indicating strong integration into teaching practices. Quiz and test generation follows closely with an RII of 0.71, also reflecting significant usage. In contrast, organizing teaching notes, creating visual aids, and customizing learning materials show moderate adoption levels, with RIIs of 0.68, 0.63, and 0.60, respectively. Overall, the table shows that AI is increasingly adopted in content creation, particularly for lesson planning and assessment development.

Table 3: RII of AI Integration into Content Delivery (N = 122)

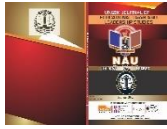
| S/N | AI Usage Area | ΣW | A | RII | Rank | Adoption Level |
|-----|-----------------------------------|-----|---|------|------|----------------|
| 1. | For presentation tools | 440 | 5 | 0.72 | 1st | High |
| 2. | For interactive teaching | 426 | 5 | 0.70 | 2nd | High |
| 3. | For personalized learning paths | 408 | 5 | 0.67 | 3rd | Moderate |
| 4. | For managing classroom tasks | 390 | 5 | 0.64 | 4th | Moderate |
| 5. | For multimedia content generation | 372 | 5 | 0.61 | 5th | Moderate |

Table 3 is the result of the level of AI integration into content delivery among secondary school teachers in Oye-Ekiti. The findings indicate that the use of AI for presentation tools, such as Canva AI, has the highest adoption rate, with a Relative Importance Index (RII) of 0.72, suggesting strong integration in enhancing visual presentations. Following closely is the application of AI for interactive teaching, exemplified by chatbots, which has an RII of 0.70, indicating high usage in fostering engagement. Personalized learning paths rank third with an RII of 0.67, showing moderate adoption. Additionally, managing classroom tasks and multimedia content generation have moderate adoption levels with RIIs of 0.64 and 0.61, respectively. Overall, the table shows that AI is increasingly adopted in content delivery, particularly for presentation and interactive teaching methods.

Table 4: RII of AI Usage for Assessment Purposes (N = 122)

| S/N | AI Usage Area | ΣW | A | RII | Rank | Adoption Level |
|-----|--|-----|---|------|------|----------------|
| 1. | For generating automated quizzes/tests | 438 | 5 | 0.72 | 1st | High |
| 2. | For grading and feedback | 425 | 5 | 0.70 | 2nd | High |
| 3. | For plagiarism detection | 400 | 5 | 0.66 | 3rd | Moderate |
| 4. | AI analytics for student performance | 390 | 5 | 0.64 | 4th | Moderate |
| 5. | For customizing assessment content | 370 | 5 | 0.61 | 5th | Moderate |

Table 4 is the result of the level of AI usage for assessment purposes among secondary school teachers in Oye-Ekiti. The data reveals that the highest adoption is seen in generating automated quizzes and tests, which received a RII of 0.72, indicating strong reliance on AI for efficient assessment creation. Grading and feedback follow closely with an RII of 0.70, also reflecting high usage and suggesting that teachers value AI's role in providing timely evaluations. In contrast, plagiarism detection ranks third with an RII of 0.66, representing moderate adoption, while AI-powered analytics for student performance and customizing



assessment content have RIIs of 0.64 and 0.61, respectively, indicating moderate levels of integration. Generally, the table shows that AI is increasingly adopted for assessment purposes, particularly in quiz generation and grading.

Table 5: RII of Challenges in AI Adoption by Teachers (N = 122)

| S/N | Challenge Area | ΣW | A | RII | Rank | Adoption Level |
|-----|---------------------------------------|------------|---|------|------|--------------------|
| 1. | Lack of training and technical skills | 465 | 5 | 0.76 | 1st | Major Challenge |
| 2. | Inadequate ICT infrastructure | 448 | 5 | 0.73 | 2nd | Major Challenge |
| 3. | Limited access to AI tools | 425 | 5 | 0.70 | 3rd | Major Challenge |
| 4. | Lack of school-level integration | 410 | 5 | 0.67 | 4th | Moderate Challenge |
| 5. | Fear of job replacement by AI | 380 | 5 | 0.62 | 5th | Moderate Challenge |

Table 5 is the result of identifying the challenges in AI adoption faced by teachers in Oye-Ekiti. The findings highlight that the most significant challenge is the lack of training and technical skills, which received a Relative Importance Index (RII) of 0.76, indicating a strong barrier to effective AI integration in teaching practices. Following closely is inadequate ICT infrastructure, with an RII of 0.73, also reflecting a major challenge that affects teachers' ability to utilize AI tools. Limited access to AI tools and platforms ranks third with an RII of 0.70, suggesting that availability issues hinder adoption. Additionally, the lack of policy support or school-level integration is noted as a moderate challenge with an RII of 0.67, while fear of job replacement or mistrust in AI ranks fifth with an RII of 0.62, indicating some level of concern among educators. In summary, the table shows that AI adoption is significantly affected by major challenges, particularly in training, infrastructure, and access to tools.

Discussion of Findings

This study found that secondary school teachers in Oye-Ekiti are increasingly adopting AI for content creation, especially in lesson planning. Recent research highlights this trend, with technologies like ChatGPT and other generative tools helping educators streamline lesson preparation, save time, and enhance instructional quality (Hashem et al., 2023; Ugwu et al., 2024). These tools assist teachers in organizing content, aligning materials with curriculum standards, and tailoring instruction to meet diverse student needs (Novita, 2025; Ugwu et al., 2025). This shift towards AI in lesson planning signifies a significant change in teaching practices, allowing for more efficient content delivery while maintaining the important role of teachers in guiding student learning. In Nigeria, particularly among teachers in Basic Science and Technology, there is a positive attitude toward integrating AI into lesson preparation, suggesting a supportive environment for broader implementation (Olaleye & Salami, 2024). However, for this trend to continue, it is essential to provide access to training, supportive infrastructure, and clear guidelines on the ethical use of these technologies.

Similarly, the study found that AI is being integrated into content delivery by secondary school teachers in Oye-Ekiti. Research on AI integration in secondary education reveals mixed perspectives among educators across different regions. For instance, in Pakistan's District Swat, teachers reported enhanced content delivery and improved lesson planning through subject-specific AI support, although challenges such as poor connectivity, inadequate training, and



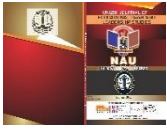
resistance to change among older educators persisted (Wajid et al., 2025). In Nigeria, findings vary significantly: mathematics teachers in Ogun State exhibited high levels of perception and positive attitudes toward AI integration (A. Asanre et al., 2024), while a broader survey of 320 teachers in Southwest Nigeria indicated that 77% held negative views toward AI tutoring systems, citing concerns about job replacement, age factors, and low education levels (V. Olaseni, 2024). Additionally, science teachers in Oyo State showed moderate readiness (64%) for AI-automated practical instruction delivery, with cost (84%) and resistance to change (83%) identified as primary challenges (A. Jinadu, 2024). These varied findings underscore the need for targeted training and strategies to address implementation barriers in order to support effective AI integration in education.

Furthermore, this study found that AI is being integrated specifically for assessing lesson outcomes by secondary school teachers in Oye-Ekiti. Research on AI integration in Nigerian secondary education reveals mixed perceptions among educators regarding its use for assessment. For instance, Asanre et al. (2024) found that mathematics teachers in Ogun State demonstrated high levels of perception and positive attitudes toward using AI for assessment, actively embracing its potential to enhance evaluation processes. Similarly, Ododo et al. (2024) reported that Social Studies teachers in Akwa Ibom State showed strong readiness to integrate AI and e-learning platforms for more effective assessment of student learning. However, contrasting findings from Olaseni (2024) revealed that 77 percent of teachers in Southwest Nigeria held negative views toward AI-based assessment systems, citing concerns related to age, education level, and fears of job displacement. Additionally, Mavropoulou, Koutsoukos & Oikonomou (2023) highlighted AI's potential to generate tailored assessment materials for didactic courses, indicating that AI can customize evaluation tools to better meet educators' needs. These studies collectively emphasize that AI holds significant promise for enhancing assessment practices by teachers.

Finally, despite the gains of integrating AI in content development, delivery, and assessment in teaching and learning, this study found that AI adoption is significantly affected by major challenges, particularly in training, infrastructure, and access to tools. This finding aligns with results from previous research, which has demonstrated that inadequate teacher training and insufficient digital competencies among educators hinder effective AI use (Pujeda, 2023; Dhingra & Rani, 2024). Additionally, infrastructure limitations and accessibility issues pose further obstacles (Kumar, 2024; Dhingra & Rani, 2024; Tang, 2024). Other challenges include data privacy concerns, ethical considerations, and issues related to equity and inclusion (Kumar, 2024; Dhingra & Rani, 2024; Tang, 2024). Successful AI integration requires addressing these fundamental challenges through comprehensive teacher training programs, infrastructure development, and ensuring equitable access to AI tools and resources.

Conclusion

This study examined the current state of artificial intelligence (AI) adoption and integration among secondary school teachers in Oye-Ekiti, focusing on content development, delivery, and assessment. The findings reveal a growing trend in using AI for content creation, particularly in lesson planning and assessment development, indicating educators' willingness to embrace technology. Additionally, AI is increasingly utilized in content delivery through interactive teaching methods that enhance student engagement, and for assessment purposes, particularly



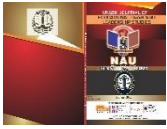
in quiz generation and grading. However, significant challenges remain, particularly in training, infrastructure, and access to technological tools, which hinder effective adoption. Addressing these barriers is crucial for facilitating a more robust integration of AI in education, ultimately improving educational outcomes for students. Future research should explore strategies to overcome these challenges and evaluate the long-term impact of AI in educational settings.

Recommendations

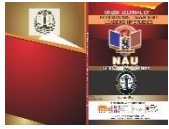
1. Education departments and school administrators should invest in reliable internet connectivity and necessary hardware and software for schools.
2. School districts and education technology providers should implement comprehensive training programs for teachers on the practical use of AI tools.
3. Government agencies and school administrators should explore funding opportunities to subsidize the costs of AI tools and resources in schools.
4. Education authorities should provide training on data privacy and ethical considerations related to the use of AI technologies in education.

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