

ASSESSMENT OF THE APPLICATION AND EFFECTIVENESS OF ARTIFICIAL INTELLIGENCE (AI) IN IMPROVING THE LECTURE NOTES OF ACADEMIC STAFF OF FEDERAL POLYPHONIC UGEP(FPU)

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ABSTRACT

Artificial Intelligence (AI) has become indispensable aspect of everyday lives, especially in higher institutions of learning. The thrust of the study was to examine “Assessment and the Application of the Effectiveness of Artificial Intelligence (AI) in improving the Lecture Notes of Academic Staff of Federal Polyphonic Ugep (FPU)”. The study adopted descriptive survey research design. The population of the study were the entire academic staff of FPU from which the census method was adopted to get a sample size of 165, instrument for data collection was a structured questionnaire and was validated by two experts in the field of Mass Communication. Reliability of the instrument was determined using test-retest method. Data were analyzed using Simple percentage and Frequency Tables. The findings of the study revealed that Half (51%) of Academic staff of FPU make use of Artificial Intelligence (AI) in improving and updating their lecture notes and they make use of Meta AI, ChatGPT, Google Scholar, Scopus, Grammarly, among others in doing so, they are faced with several challenges such as digital divide, ethical and academic integrity concerns, cost of implementation, and teacher training among others, but despite this challenges, the success of AI for lecture notes improvement in FPU is positive and has brought transformation of complex concepts in more engaging ways, reduce preparation time, generation of high-quality instructional content efficiently and more effective classroom delivery. The researcher therefore recommends that: Federal Polytechnic Ugep decision makers should implement the application of AI tools for teaching in the institution for all academic staff, they should provide monthly allowance or data for all staff to enable them access AI tools for quality academic performance and they should come up with training programs like Continuous Professional Development Training (CPDT) for all staff that will carry out training on AI tools to foster a thorough understanding of AI tools and their proper use.

Keywords: Effectiveness, Artificial Intelligence (Ai), Lecture Notes, Academic Staff.

Background to the Study

Lecture notes continue to be one of the main instructional materials in education of higher learning including polytechnics, helping as guide for both teaching and learning. At FPU, as in most Nigerian tertiary institutions, lecturers are accountable for preparing and updating lecture notes in line with the National Board for Technical Education (NBTE) curriculum. However, the process is often handy or manual and this takes lots of time especially to those academic staff who have many courses in a semester to lecture and prepare lecture notes for the various courses they are teaching, and limited access to current academic resources, and periodic curriculum reviews.

The era of digital technology has brought a drastic change to all aspect of human lives including educational sector. Artificial intelligence (AI) is a rapid developing field of technology that is capturing the attention of policy makers Congressional Research Service Report, (2020) as cited by Nsude, (2022). The origins of Artificial Intelligence can be traced back to the 1950s when John McCarthy organized a two-month workshop at Dartmouth College in the United States of America. McCarthy first suggested the phrase “AI” in 1956 in his workshop proposal (Russel, and Norvig, 2010). AI is a term that combines the concepts of intelligence and artificiality. Intelligence is the capacity to think, generate novel ideas, perceive, and acquire knowledge, whereas AI is what is produced by humans. AI refers to computer systems that can imitate human activities such as learning, adapting, studying, self-correcting, and using data to solve complex issues (Popenici, and Kerr, 2017). Baker, and Smith, (2019) offer a comprehensive definition of AI as the utilization of computers to carry out various activities. In recent years, AI has arisen as a tool with the latent to support content creation in education. AI applications such as generative language models, automated

summarization, grammar correction, and content structuring can help lecturers prepare, improve produce clearer, more organized, and up-to-date lecture materials in less time. Universally, other institutions are exploring AI to reduce academic staff workload and improve lecture notes quality, especially in response to digital transformation in education accelerated since 2020.

Despite this universal shift, the adoption of AI for supporting teaching in Nigerian polytechnics remains largely informal and undocumented. At FPU, there is no recognized policy guiding the use of AI by academic staff for lecture note preparation or improvement. While some lecturers may or may not be using AI tools like ChatGPT, Meta AI, Microsoft Copilot, Grammarly among others independently, the extent of application, the challenges encountered, and the level of success of AI have not been systematically assessed. This gap makes it difficult to determine whether AI is actually improving the quality, efficiency, and relevance of lecture notes or if academic staff face barriers that limit its effective application.

Effectiveness involves assessing the extent to which an endeavor has a positive impact or achieves a desired result, it reflects the ability of a system or activity to produce desired or expected results, often in the context of efficiency or success in achieving a purpose.

Moreover, polytechnic education in Nigeria emphasizes practical and industry-relevant training. Lecture notes that are outdated or poorly structured can undermine this objective and affect students' preparedness and academic performance for the workforce. Therefore, understanding how AI is being applied and how effective it is in this specific context is serious for improving teaching standards and informing institutional policy on technology integration.

Federal Polytechnic, Ugep, abbreviated as FPU, FEPU or Fedpoly, Ugep. Ugep, Cross River State, is one of the six newly established Polys by the Federal Government of Nigeria and was recently merged with a state

polytechnic in the same location known as Cross River Institute of Technology and Management (CR-ITM). The institution is a technological school with logo “Technology for Development and Excellence”. Worthy to note is that, the institution is equipped with digital gadgets as well as free internet access for both staff and students to utilize in this particular year of study.

This study therefore seeks to assess how academic staff of Federal Polytechnic Ugep are applying AI to improve their lecture notes, identify the challenges faced in using AI to improve their lecture notes. And determine the success of the effectiveness of AI of such application,

Statement of Problem

The value and importance of lecture notes directly impact on student academic performance in education of higher learning. In polytechnics and other higher institutions like Universities and colleges, academic staff commonly prepare lecture notes by hand, which may lead to obsolete content, varying construction, and incomplete alignment with National Board for Technical Education (NBTE) curriculum. This problem is compounded by academic staff having many courses to teach at a particular semester and inadequate time to check the content of materials and do proper vetting and references, this can be seen in public institutions where staff-to-student ratios remain high.

In recent years, Artificial Intelligence (AI) such as generative AI, automated summarization, and content recommendation systems have arisen as possible answers to rationalize content creation and enhance instructional contents. While some universities, Polytechnics and Colleges worldwide have begun integrating AI into supporting teaching, there is limited empirical evidence on its actual application, efficiency, and effectiveness within the country's higher education, especially for lecture note development and improvement.

More so, several scholars like Goswami, Goswami, Mian, &

Mostow, (2019), Randhawa and Jackson (2020), Chen, Chen, & Lin, ((2020), Castro-Schez, Glez-Morcillo, Albusac, & Vallejo, (2021). Ouyang, & Jiao, (2021). Tang, & Jiang, (2022), Yin, (2021), and Holmes, & Tuomi, (2022).

Among others, have carried out studies on the benefits and role of artificial intelligence (AI) in improving student academic performance or automated grading, generally, suffice to say that none of these scholars have discussed on lecture notes with little attention to how lecturers apply AI to improve their lecture notes. This creates a knowledge gap: it is unknown to what extent academic staff in Federal Polytechnic Ugep are using AI for lecture note preparation, what challenges they face in doing so, and level of success of AI application by academic staff of FPU in improving the quality of their notes.

Therefore, this study seeks to assess the current application of AI by academic staff of FPU in improving lecture notes, identify the challenges limiting its adoption and the level of its effectiveness.

Objectives of the Study

The broad objective of this study is to investigate: “Assessment of the application and effectiveness of Artificial Intelligence (AI) in improving Lecture notes of Academic staff of Federal Polytechnic, Ugep (FPU)”. The specific objectives of the study were to:

1. ascertain whether academic staff of FPU make use of Artificial Intelligence (AI) in improving their lecture notes.
2. identify the challenges faced by academic staff of FPU in using Artificial Intelligence (AI) in improving lecture notes.
3. determine the level of success of Artificial Intelligence (AI) usage is, in improving the lecture notes of academic staff of FPU

Research Questions

The following research questions were used to lead the research in order for the study to be completed properly:

1. Do academic staff of FPU make use of Artificial Intelligence (AI) in improving their lecture notes?
2. What are the challenges faced by academic staff of FPU in using Artificial Intelligence (AI) in improving lecture notes?
3. What is the level of success of Artificial Intelligence (AI) usage in improving the lecture notes of academic staff of FPU?

Significance of the Study

This study has the potential to improve learning experiences in Nigeria tertiary Institutions both theoretically and practically. The study will also be of benefit to academic staff, scholars and students in Nigeria tertiary institutions who may want to carry out a similar study and use the finding of this study for educational purposes. First, the academic staff of higher education will from the findings of the study know how effective and efficient artificial intelligence (AI) usage is, the knowledge of the level of success of artificial intelligence (AI) will enable the academic staff to either stop or continue to use AI.

Also, higher educational management stand to gain from this study because the findings will enable them see how important or not AI is to educational institution and by this implement the use of AI in other aspect of the institution, with this knowledge, they will get to know the challenges of AI and the aspect they need to make adjustments in order to keep using AI for educational improvement. The study will also provide literature for scholars and other researchers that will be conducting research in this area or similar areas. The literature reviewed in this study and the critical argument that follows will help to enrich the world of knowledge and scholarship

Scope of the Study

The scope of the study is Federal Polytechnic Ugep (FPU), sited in Ugep in Yakurr LGA of Cross River State Nigeria. The study covered 2024 and 2025. The reason for limiting the study to one year and in particular 2024 to 2025 was because it represented the year the institution had free internet access and Artificial Intelligence (AI) became so popular in Federal Polytechnic Ugep (FPU).

Review of Related Literature

Conceptual Review

Artificial Intelligence

Artificial intelligence has been defined differently across the globe by different scholars which such:

Russell, & Norvig, (2020) define AI as “the study of agents that perceive their environment and take actions that maximize their chances of achieving goals.” This agent-based definition remains the standard in technical research. Domingos, (2018) narrowed the focus to machine learning, stating that AI is “creating algorithms that learn from data,” a view widely adopted in data science and educational technology studies. Tegmark, (2018) expanded the scope, describing AI as “non-biological intelligence that can evolve and adapt to different situations,” highlighting autonomy and societal impact. Guzman, & Lewis, (2020) argue that AI is “polysemous, encompassing efforts to understand human intelligence by recreating a mind within a machine and to develop technologies that perform tasks associated with some level of human intelligence.” Galloway, & Swiatek, (2021) defining AI as “technologies showing humanoid cognitive abilities and performing humanoid functions in PR activities.” Brennen, Simon, & Nielsen, (2021) emphasized the predictive nature of AI, calling it “a loosely defined set of algorithms and techniques that offer a mathematical method for prediction.” Igartua et al. (2022) operationalized it for empirical research as “computer systems that can make predictions, recommendations, or decisions and select information autonomously using algorithms.”

Marcus, & Davis, (2019) contend that true AI requires “combining deep learning with symbolic reasoning, logic, and real-world knowledge,” arguing that deep learning alone is insufficient for reasoning and context. Crawford, (2021) pushes beyond the technical, stressing that AI is “much more than a technology” and carries material, political, and environmental consequences.

Robinson, (2018) described AI as “the ability of a digital computer, computer-controlled machine or robot to perform tasks commonly associated with intelligent beings like humans.” Thompson, (2025) defines AI as “a simulation of human intelligence that can rationalize and take actions that have the best chance of achieving a specific goal,” while Salihu, (2024) frames it as technologies “revolutionizing global economies, governance structures, and societal interactions” in Nigeria. Angahar. (2025) characterizes AI as “machine learning and data analytics technologies that can improve research efficiency and sustainability by automating data processing and optimizing resource allocation.” Tunmibi, & Okuonghae, (2023) focus on adoption, treating AI as intelligent tools like Google Assistant used by Nigerian librarians. Ibrahim, (2024) examines AI literacy among lecturers, defining AI implicitly as technologies for “enhancing educational practices.” Ibukun, Tolulope, et al. (2024) treat AI in their scientific study as “machine learning, natural language processing, and statistical algorithms” applied across Nigerian academic fields.

Effectiveness of Artificial intelligence

AI adoption to support polytechnic and technical college lecturers in preparing, improving and updating lecture notes has been explored in recent literature. This include the following:

AI for Instructional Design in Technical and Vocational Education: A 2025 scoping review of 73 studies found that AI supports teaching staff by automating instructional design tasks, generating content outlines, and providing real-time feedback on course materials. In polytechnic contexts, this is significant because lecture notes often need to balance theory with practical, industry-aligned content. AI tools can quickly draft lesson structures, suggest updated case studies, and align content with learning outcomes, reducing preparation time for staff managing heavy teaching loads.

Mah, et al. (2025) surveyed faculty across disciplines and reported that staff in applied fields such as engineering, health sciences, and fine arts rated AI for instructional design highly, with mean scores of 3.75–4.50 on a 5-point scale. Polytechnic lecturers in Nigeria fall within this category, where rapid updates to technical content are needed to match industry changes.

Perceived Usefulness and Adoption by Polytechnic Lecturers: Studies using the Technology Acceptance Model (TAM) show that adoption depends on perceived usefulness and ease of use. Davis, (1989) and Venkatesh, & Bala, (2008) note that lecturers are more likely to use AI for lecture preparation if they believe it improves performance and saves time. Conceição, (2025) argues that faculty development centers in technical institutions increasingly use AI to support staff in course design, scaffolding, and feedback generation. For Federal Polytechnic staff, this implies that training and institutional support are key to adoption.

Nigerian studies on AI in higher education report similar patterns. Owan, et al. (2023) found that academic staff in Nigerian universities view AI tools as useful for educational measurement and assessment, but actual use remains limited due to training gaps and infrastructure constraints. These findings apply directly to polytechnic staff, who face similar resource challenges.

Improving Content Quality and Relevance: AI tools such as ChatGPT, intelligent mentors, and adaptive systems help lecturers revise lecture notes by generating diverse examples, updating references, and tailoring explanations to different learner levels. Katiyar, et al. (2024) and Tapalova, & Zhiyenbayeva, (2022) report that AI-enhanced personal learning environments improve perceived ease of use and usefulness of e-learning systems. For polytechnic staff, this means lecture notes can be updated faster to reflect new technologies, standards, and local industry practices.

Challenges of Artificial Intelligence (AI)

The literature identifies barriers that are especially relevant to Nigerian educational system to include:

Low AI Literacy and Training Gaps: Many polytechnic lecturers lack the skills to use AI tools effectively for preparing and updating lecture notes. Zawacki-Richter, Marín, Bond, & Gouverneur, (2025) found that low AI literacy and the absence of faculty development programs are major barriers in under-resourced institutions. Without training, staff either avoid AI or use it in ways that don't improve teaching quality.

Infrastructure and Access Constraints: Unstable internet, limited devices, and poor digital infrastructure reduce the practical use of AI in Nigerian polytechnics. Hiremath, & Kenchakkanavar, (2025) note that infrastructure deficits often prevent staff from accessing cloud-based AI platforms needed for content generation and revision.

Data Quality and Bias: AI tools reflect the data they are trained on. Hiremath, & Kenchakkanavar, (2025) warn that biased or outdated datasets can produce inaccurate or irrelevant content in lecture notes, especially in technical fields where industry practices change quickly. Staff must review and verify AI outputs to avoid errors.

Ethical and Academic Integrity Concerns: Over-reliance on AI raises concerns about plagiarism, loss of originality, and reduced critical thinking. Dakakni, & Safa, (2023) highlight risks to academic integrity and equity when AI-generated content is used without oversight in higher education.

Lack of Governance and Clear Guidelines: Most polytechnics do not have formal policies on AI use in teaching. Rafi, Akbar, Khan Mshmood, & Demi, (2023). identify the lack of ethical leadership, ethics audits, and governance frameworks as top challenges to trustworthy AI adoption. Without clear policy, staff are unsure what is allowed.

Success of AI in Improving Lecture Notes

Recent studies show that AI has produced measurable success in helping polytechnic and university lecturers improve lecture notes through faster preparation, content updating, and better structure, though outcomes depend on training and institutional support.

Efficiency and Content Structuring: Nigerian lecturers report using AI as a “scaffolding tool” to organize thoughts and structure lecture notes. Uchenna Uzo of Lagos Business School states that AI helps “put structure to my thinking, propose relevant examples for projects or amplify what I want to teach the students”. Dr. Victor Odumuyiwa of UNILAG notes that even when lecture notes exist, AI helps keep content updated with new concepts. This aligns with global findings that AI reduces preparation time and supports instructional design.

Perceived Effectiveness in Nigerian Polytechnics and Universities: A 2025 study on AI adoption in Nigerian higher education found that professorial staff rated AI's effectiveness at a mean of 3.20, higher than non-professorial staff at 2.91, particularly in “enhancing understanding and likelihood of adoption”. Professors also showed greater confidence in AI's effectiveness compared to traditional methods.

In Zamfara State, lecturers in federal tertiary institutions perceived AI as a tool that “optimizes research design and methodology, improves research quality, and enhances the validity and reliability of assessments”. Though utilization remains low, the perceived benefits for content and assessment quality are clear.

Relevance to Technical and Applied Education: Rectors and educators in Nigeria argue that AI integration enhances training quality in technical education. Abdul and Akinde (2025) note that AI “enhances innovation, supports applied research, and prepares students to meet the demands of a fast-evolving labour market”. Akinde, (2025) adds that AI integration “enhances training quality and prepares students for high-demand roles in

automation, data science, and robotics”. For polytechnics, this means AI can help staff update lecture notes with current industry-aligned examples and case studies.

Empirical Review

Many scholarly studies have been undertaken in the area of this study, for instance, Slimi, (2023) carried a study on the Impact of Artificial Intelligence on Higher Education: An Empirical Study. To accomplish this, the study employs a qualitative approach based on a survey of the higher education audience. The results of this study demonstrate the crucial role of AI in the future of higher education. The findings highlight the effectiveness and efficiency of AI in equipping graduates with new skills for their future careers. The study findings suggest that AI should be more extensively integrated into higher education curricula, and that institutions need to consider the ethical implications of AI in the development and implementation of their programs. By doing so, they can better prepare graduates for the demands of the future workforce.

The finding of the study is in line with the objectives of the present study. There is gap in knowledge as the previous study looked at educational curriculum at large, while the present study seeks to discover the application, challenges and success of AI by academic staff of FPU in using AI to improve their lecture notes.

Also, Naldi, Nurkadri, Nurkadri, Srisudarso, Cahyono, & Suyitno, (2023). carried out a study on the Evaluation of the Effectiveness of Artificial Intelligence System in Higher Education Curriculum Management. The research method used quantitative and qualitative data analysis of AI implementation in curriculum management in several colleges. Surveys, interviews, and observations were used to collect relevant data. The results show that the implementation of artificial intelligence systems in college curriculum management has successfully improved process efficiency, accommodated dynamic changes in educational needs, and enhanced

students' learning experience. The conclusion of this study explains that a thorough evaluation shows that artificial intelligence systems can significantly improve the effectiveness of college curriculum management.

The finding of the study is in line with the objectives of the present study. There is gap in knowledge as the previous study looked at evaluation of the effectiveness of Artificial Intelligence system in higher education curriculum management at large, while the present study seeks to provide a foundation for polytechnics to continue integrating AI technology to improve the quality of higher education and provide a better teaching experience for lecturers.

Also, Vieriu, & Petrea, (2025) also studied “The Impact of Artificial Intelligence (AI) on Students' Academic Development” Data were collected through a structured questionnaire. The findings reveal that AI offers significant benefits, including personalized learning, improved academic outcomes, and enhanced student engagement. However, challenges such as over-reliance on AI, diminished critical thinking skills, data privacy risks, and academic dishonesty were also identified.

The studies underscores the necessity of a structured framework for AI integration, supported by ethical guidelines, to maximize benefits while mitigating risks. In conclusion, while AI holds immense potential to enhance learning efficiency and academic performance, its successful implementation requires addressing concerns related to accuracy, cognitive disengagement, and ethical implications. A balanced approach is essential to ensure equitable, effective, and responsible learning experiences in AI-enhanced educational environments.

Furthermore,, Phua, Neo, & Teo, (2025) carried out a study on: Evaluating the Impact of Artificial Intelligence Tools on Enhancing Student Academic Performance: Efficacy Amidst Security and Privacy Concerns” A structured survey was administered to students at Multimedia University, Malaysia, The findings reveal a high level of engagement with AI tools

among University students, primarily driven by their perceived benefits in enhancing academic performance, improving efficiency, and facilitating personalized learning experiences. The findings also uncover significant concerns related to data security, privacy, and the potential over-reliance on AI tools, which may hinder the development of critical thinking and problem-solving skills.

Theoretical Framework

The researcher used technological determinism theory by Marshall McLuhan in the year 1962. The technological determinism theory is the idea that technology is the primary driver of social change. It argues that the tools, systems, and platforms a society develops shape its culture, institutions, economy, and how people think and behave. This is divided into two (2): Hard determinism Technology develops independently and forces society to adapt. Humans have little choice. Example: "The printing press inevitably caused the Reformation and modern science." And Soft determinism: Technology creates strong constraints and pressures, but humans still have some agency in how they use and adapt it.

According to the theory, new technologies are causal elements in processes of social change; a change in technology causes a corresponding change in society. This is because people adopt and evolve ways to use the new technology thus creating changes in social interactions and behaviour (Ukonu, et al 2013). This theory was used to explain the fact that technology is pervading and the adoption of AI by academic staff are natural responses to changes in society in order to remain relevant and reach existing and potential customers.

This theory is very relevant to the present study and the choice of using this theory is that if academic staff lean toward determinism, they'd frame AI as an exogenous force that changes how lecturers prepare notes. The logic becomes: "AI tools exist, they alter workflows, lecture notes become better and more efficient." The technology itself is the main independent variable driving change.

Methodology

Research Design

The research method of the study was descriptive survey research design. The survey method adopted by the researcher to interrogate the assessment of the application of the effectiveness and efficiency of Artificial Intelligence (AI) in improving the lecture notes of academic Staff of Federal Polytechnic Ugep. This method was adopted, employing the questionnaire because of its quality, which makes it most relevant and most appropriate for conducting a study that involves asking some questions from a large respondent.

Study Area

The research was carried out in Federal Polytechnic Ugep (FPU). This institution is located at the extreme part of Ugep along Ikom-Calabar highway, Yakurr Local Government Area Cross River State. The institute consist of students from different schools and departments, Administrative staff and academic staff with a pedagogical method of technical, vocational education and training. The choice of this tertiary institution is owned to the fact this institution is a new school with internet access and ICTs gadgets available for teaching and learning for both lectures and students.

Population of the study

The population of the study is made up of 162 academic staff of Federal Polytechnic Ugep (FPU).

Sample Size

The sample size of the study was 165. The researcher adopted the census method. This was because the population that is made up of academic staff of the FPU Ugep is small and can be studied.

Instrument of Data Collection

The research instrument that was used in the study for field survey collection of information was structured questionnaire. The questionnaire was carefully framed and administered to the academic staff of one hundred

and sixty-five (165) respondents of the targeted population of the institution.

Validity of Measuring Instrument

The researcher ensured a content validity by presenting the questionnaire to communication experts. A construct validity was ensured by two experts in the field. One was the project supervisor who checked it before approving it, ensuring that the questions contained in the research questionnaire that were used for the generation of data during the survey were directly drawn from the research question which in turn mirrored the research objectives.

Reliability of Instrument

The reliability of the research instruments was gotten through the “test-re-test” reliability method. The researcher selected 30 respondents by proxy and administered the questionnaire to them two different times in two weeks. This was done to check the consistency of their responses to the research questionnaire. The researcher then proceeded to carry on with the administration of the questionnaire, after observing the relationship between the tests scores.

Method of Data Collection

In the administration of research instrument, the researcher distributed one hundred and sixty-five (165) copies of the questionnaire to the 165 respondents, who formed the study sample size. At the end of the administration and collection, all fully filled copies of structured questionnaire, were returned, coded and analyzed.

During the field survey, the researcher went into a face-to-face contact with the respondents with the help of two research assistants. This helped to facilitate the explanation of the questions to the respondents especially on the ground that the questions are strictly for academic purpose.

Method of Data Analysis

The data collected from the field were processed and analyzed. The data was recorded using frequency distribution tables and simple percentage.

Data Presentation and Analysis

In line with the sample size of the study, the researcher administered 165 copies of the questionnaire to the respondent. Data relating to the returned rate of the questionnaire was summarized table 1.

Table 1: presentation of retrieved rate of the data

Description	No of Response	Percentage (%)
Total number of questionnaires administered	165	100%
Total number of returned valid questionnaire	165	100%
Total number of unreturned questionnaires	0	0%

Source: Alice's Field survey (2025).

As shown on table 1, all questionnaire distributed were all filled and collected by the researcher without losing any of it.

Respondents Bio Data

The table below analyzed the gender, age, marital status, occupation and educational qualification of the respondent.

Table 2: Gender, Age, marital status, occupation and educational qualification

Description	No of Responses	Percentage (%)
Male	130	78.8%
Female	35	21.2%
Total	165	100%
25-30years	19	11.5%
31-35years	33	20%
36-40years4	49	29.7%
41years-above	64	38.8%
Total	165	100%
Married	148	89.7%
Single	17	10.3%
Total	165	100%
Lecturers	165	100%
Total	165	00%
HN.D	8	4.9%
Degree	70	42.4%
Masters	65	39.4 %
Doctorate	22	13.3%
Total	165	100%

Source: Alice's Field survey (2025).

The table above shows the male respondents accounted for more than half of the 165 respondents compared to the female folks that accounted for slightly less of the respondents; This variation is merely accidental as the study did not target any gender in particular. In summary, the data under discussion does indicate that both genders were adequately captured in the survey.

The data from the above table implies that the majority of the respondents are between the age of 20 years and above who participated in the study accounting for a combined 100% of the total valid responses obtained from the survey. The age is the combination of youthful and older age, and it is the particular targeted age of focus of the study.

As presented in the table above, the researcher did not target any group in particular. The fact that more of married completed the questionnaire reflects the environment in which the question was distributed.

The data obtained as presented above shows that all of the respondents are academic staff. This is understandable because the targeted population was the academic staff of FPU.

Educational qualifications covered only one of the educational levels: Tertiary. This is due to the targeted population of the research. This survey implies that all the respondents have higher level of formal education and so could read and understand the items in the questionnaire. This therefore indicate that, there is high level of confidence in the correctness of the data obtained and the results therefrom, since all the participants were literate who can read and understand the survey.

Presentation of Data Relating to the Research Questions

Section B of the questionnaire contained the main items that addressed the research questions of the study. The questions range from items 6-19. The respondents were required to respond to the questions by ticking one of the options.

Do Academic Staff of FPU make use of Artificial Intelligence (AI) in improving their lecture?

Table 3: Are you a Lecturer?

Variables	Frequency	Percentage (%)
Yes	165	100%
No	0	0%
Total	165	100%

Source: Alice's Field survey (2025).

In reference to the data in the above table, the respondents affirmed that they are all academic staff of Fedpoly, Ugep.

Table 4: Do you know about Artificial Intelligence (AI) and that it can be used to improve and update your lecture note?

Variables	Frequency	Percentage (%)
Yes	165	100%
No	0	0%
Total	165	100%

Source: Alice's Field survey (2025).

Also, all of the respondents affirmed that they are all aware of Artificial Intelligence (AI) and that it can be used to improve lecture notes. This showed that the respondents are highly learnt individuals who are up-to-date digital technologies.

Table 5: Do you use Artificial Intelligence ((AI) to prepare or update your lecture notes?

Variables	Frequency	Percentage (%)
Yes	85	51.5%
No	80	48.5%
Total	165	100%

Source: Alice's Field survey (2025).

In line with data gotten on the table above, this means that the respondents are highly informed about the subject matter.

Table 6: How long have you known about AI and have been using Artificial Intelligence (AI) to improve or update your lecture notes?

Variables	Frequency	Percentage (%)
1 year	22	13.3%
2 Years	25	15.2%
3 Years and above	38	23%
None of the Above 8	0	48.5%
Total	165	100%

Source: Alice's Field survey (2025).

The table above shows that although, most of the respondents are aware of AI but some do not use it to improve or update their lecture notes. This means that the respondents are highly informed about AI for a long period of time.

Table 7: Does Artificial Intelligence (AI) effectively and efficiently improve or update your lecture notes?

Variables	Frequency	Percentage (%)
Yes	85	51.5%
No	80	48.5%
Total	165	100%

Source: Alice's Field survey (2025).

In line with the table above, it means that half of the respondents are highly informed of what artificial intelligence (AI) was and half of them use it. This is a clear indication of how effective and efficient Artificial Intelligence (AI) usage is.

Table 8: Which of this Artificial Intelligence (AI) have you used to improve or update your lecture notes?

Variables	Frequency	Percentage (%)
Meta AI	18	10.9%
ChatGPT	32	19.4%
Plagiarism Detection	10	6.1 %
More of the above	25	15.2%
None of the above	80	48.5%
Total	165	100%

Source: Alice's Field survey (2025).

As presented above, the work indicates the various AI system used by academic staff of FPU to improve or update their lecture notes. The group that dominated in this regard are those who do not use AI for improving and updating their lecture notes. This implies that the targeted Artificial Intelligence (AI) is slightly used for lecture notes preparation, improvement and update by lectures of FPU.

What are the Challenges faced by academic staff of FPU in using Artificial Intelligence (AI) in improving lecture note?

Table 9: Have you faced any challenges using artificial Intelligence (AI) to improve or update your lecture notes?

Variables	Frequency	Percentage (%)
Yes	85	51.5%
No	80	48.5%
Total	165	100%

Source: Alice's Field survey (2025).

As presented above, those who dominated in this regard are those who ticked "Yes". This implies AI is efferent for improving or updating lecture notes but has its challenges despites its huge benefits.

Table 10: What are the challenges you have faced in the course of using Artificial Intelligence (AI) in improving your lecture notes?

Variables	Frequency	Percentage (%)
Digital Divide	22	13.3%
Ethical and Academic Integrity Concerns	16	9.7%
Cost of Implementation	11	6.7%
Teacher Training	15	9.1%
All of the above	21	12.7%
None of the above	80	48.5%
Total	165	100%

Source: Alice's Field survey (2025).

In line with the table above, shows the responses of the respondents, those who dominated in this aspect are those who ticked different challenges summing it up 52% of the total result. This means that AI is faced with the challenges of digital divide, ethical and academic integrity concerns, cost of

implementation, and teacher training among others.

Table 11: Were you able to overcome those challenges?

Variables	Frequency	Percentage (%)
Yes	85	51.5%
No	80	48.5%
Total	165	100%

Source: Alice's Field survey (2025).

In reference to the data in the above table, the respondents affirmed despite the challenges of digital divide, ethical and academic integrity concerns, cost of implementation, and teacher training.

What is the level of success of Artificial Intelligence (AI) Usage in improving the lecture notes of academic staff of FPU?

Table 12: Is your lecture notes very efficient due to your overcoming the challenges?

Variables	Frequency	Percentage (%)
Yes	85	51.5%
No	80	48.5%
Total	165	100%

Source: Alice's Field survey (2025).

Table 12 shows the respondents were able to deliver quality, improved and updated lecture notes effectively and efficiently.

Table 13: Do you think using Artificial Intelligence (AI) in improving or updating your lecture notes will improve the quality of students' academic performance?

Variables	Frequency	Percentage (%)
Yes	85	51.5%
No	80	48.5%
Total	165	100%

Source: Alice's Field survey (2025).

In line with the above findings, it is a clear indication that the use of AI by half of academic staff of Fedpoly, Ugep is a success and this has boosted the quality of academic performance of their students.

Table 14: Do you think Artificial Intelligence (AI) is very effective and efficient and you can introduce it to your other academic friends within and outside FPU?

Variables	Frequency	Percentage (%)
Transformation of complex concepts in more engaging ways	12	7.3%
Reduce preparation time	13	7.9%
Generation of high-quality instructional content efficiently	10	6.1%
More Effective Classroom Delivery.	12	7.3%
All of the Above	38	23%
None of the Above	80	48.5%
Total	165	100%

Source: Alice's Field survey (2025).

The table shows that Artificial Intelligence (AI) have so much benefits and has greatly helped majority of lecturers of FPU transformed complex concepts in more engaging ways, reduce preparation time, generate high-quality instructional content efficiently and more effective classroom delivery.

Table 16: Rate AI success from 1-10 in improving or updating your lecture notes?

Variables	Frequency	Percentage (%)
1-3	23	13.9%
4-6	28	17%
7-10	34	20.1%
Can't Rate	80	48.5%
Total	165	100%

Source: Alice's Field survey (2025).

According to the statistical data obtained above, this high percentage suggests the widespread usage of AI among academic staff, brilliantly bringing in advanced technologies into the educational setting.

Discussion of findings.

Ascertain whether academic staff of FPU make use of Artificial Intelligence (AI) in improving their lecture notes.

Based on this study, the researcher concluded that AI is used by half (51%) of the academic staff of FPU and is very effective and efficient and also

offers significant benefits due to its capacity to think, generate novel ideas, perceive, and acquire knowledge, generative language models, automated summarization, grammar correction, and content structuring that has helped lecturers prepare, improve, produce quality, clearer, more organized, and updated lecture materials in less time.

These findings align with previous research emphasizing that AI can adjust educational content to lecturers' individual needs, optimizing study and enhancing quality academic performance of their students. Vieriu, & Petrea, (2025) and Phua, Neo & Teo (2025). Have highlighted the effectiveness and benefits of the integration and adoption of Artificial Intelligence (AI) into higher education toward improving the academic performance of students. However, this study extends their work by specifically focusing on evaluating the effectiveness and efficiency of Artificial Intelligence (AI) in improving the lecture notes of Academic Staff of FPU.

Challenges faced by academic staff of FPU in using Artificial Intelligence (AI) in improving lecture notes.

The second research objectives were to identify challenges faced by academic staff of FPU in using Artificial Intelligence (AI) in improving lecture notes. Half (51.5%) of the respondents 85 responded “Yes” that they were faced with challenges of digital divide, ethical and academic integrity concerns, cost of implementation, and teacher training among others in using AI in improving and updating lecture notes. This is in close affiliation with the findings of Naldi, Nurkadri, Nurkadri, Srisudarso, Cahyono & Suyitno, Suyitno. (2023) and Farhan, Sadiq, Zwayyer and Arnout (2024) in their work highlights some notable concerns as follows: nearly half of the respondents (67.4%) expressed reservations about the accuracy of AI-generated content, while others pointed out the risks of technological dependence, which may undermine critical thinking and human interaction. These concerns are also

reflected in the literature. Similarly, Saseanu et al. (2024) recommend control measures to mitigate the negative effects of AI, and Lodzikowski et al. (2023) emphasize the need for ethical regulations in AI use in education. The responsible implementation of AI in education can bring significant benefits, contributing to more adaptable and efficient academic preparation.

The level of success of Artificial Intelligence (AI) Usage in improving the lecture notes of academic staff of FPU

The third research objective was on the level of success of Artificial Intelligence (AI) in improving the lecture notes of academic staff of FPU. The results demonstrated in table 12, 13, 14, 15 and 16 of the questionnaires showed that 51% of the respondents responded that AI in FPU have improve the quality of their lecture notes and improved academic performance of the students. They also affirmed AI has helped them to transform complex concepts in more engaging ways, reduce preparation time, generation of high-quality instructional content efficiently and more effective classroom delivery. This finding is in line with that of Slimi, (2022) examined The Impact of Artificial Intelligence on Higher Education: An Empirical Study Artificial and Tonbuloğlu, (2023) studied an evaluation of the use of artificial intelligence applications in online education in online education, their findings were on the use of AI in education either the traditional way or online. Their study portrays AI to be of great success to the global landscape of education.

Summary of Findings

The thrust of the study remains on the topic being discussed. The study aimed at Finding out how effective and efficient Artificial Intelligence (AI) is in improving and updating the lecture notes of academic staff of FPU, also to identify the Challenges faced and to ascertain the level of success of Artificial Intelligence (AI). The survey research design was adopted for the study involving 165 participants. The quantitative data obtained from the field were analyzed and the key findings of the study that satisfied the

research objectives are as follows;

1. Half (51%) Academic staff of FPU make use of Artificial Intelligence (AI) in improving and updating their lecture notes and they make use of Meta AI, ChatGPT, Google Scholar, Scopus, Grammarly, among others.
2. Half (51%) Academic staff of FPU are faced with several challenges such as digital divide, ethical and academic integrity concerns, cost of implementation, and teacher training among others in the course of using AI for improving lecture notes.
3. AI despite its challenges, the success of AI for lecture notes improvement in FPU is positive and has brought transformation of complex concepts in more engaging ways, reduce preparation time, generation of high-quality instructional content efficiently and more effective classroom delivery.

Summary

The research study was designed to find out “Assessment of the Application of the Effectiveness and Efficiency of Artificial Intelligence in Improving the Lecture notes of Academic Staff of FPU. After critical look at the survey and data generated and a careful analysis of the results, the following findings were made: half (51%) academic staff of FPU are aware of AI and make use of Meta AI, ChatGPT, LITMAPS, Google Scholar, among Others to prepare, improve and update their lecture notes, in doing so, they are faced with several challenges but despite these challenges, AI is a success and has help to improve the quality of academic performance of their students to those who use it and also help lecturers to deliver their lectures more effectively and efficiently.

Conclusion

Based on the findings of the study. the study concludes that AI has become a critical component of the modern academic landscape, offering significant benefits such as transformation of complex concepts in engaging

ways, reduce preparation time, generation of high-quality instructional content efficiently and more effective classroom delivery. Nevertheless, while most lectures view AI positively citing its capacity to enhance teaching efficiency and academic performance there remain important challenges, particularly regarding the accuracy of AI outputs, the risk of over-dependence, and the potential erosion of critical thinking skills. Despite the challenges of AI technologies, it has a significant force in reshaping the educational system of Nigeria.

Recommendations

In line with the findings, the study recommends following:

1. Federal Polytechnic Ugep decision makers should implement the application of AI tools for teaching in the institution for all academic staff.
2. FPU decision makers should provide monthly allowance or data for all staff to enable them access AI tools for quality academic performance.
3. Federal Polytechnic Ugep decision makers should implement training programs like Continuous Professional Development Training (CPDT) for all staff that will carry out training on AI tools to foster a thorough understanding of AI tools and their proper use.

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