# Roles of AI-Powered Assessments in Enhancing the Professional Development of Academic Staff in Public Universities in Rivers State

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## Abstract

*The study examined the roles of ai-powered assessments in enhancing the professional development of academic staff in public universities in Rivers State. Three objectives and three research questions guided the study. The study adopted the descriptive research design. The population of this study was drawn 2,849 male and female lecturers in the three public universities in Rivers State. The sample size of the study was 360 respondents. The sample size was determined using Taro Yamane formula. However, the proportionate stratified sampling technique was adopted in selecting a total of 180 male lecturers and 180 female lecturers from the three universities under study. The instrument used for data collection was a self- structured questionnaire titled" Roles of AI-Powered Assessments in Enhancing the Professional Development of Academic Staff Questionnaire". This instrument was validated by two experts. The reliability co-efficient index obtained through the Cronbach Alpha method was 0.76, 0.78 and 0.83 which was considered reliable. Research questions were analyzed using mean and standard deviation. The findings of the study revealed among others that AI-powered assessments provide timely and actionable feedback that improves teachers' teaching practices, the use of AI-powered assessments has significantly enhanced teachers' ability to identify areas for professional growth, it offers personalized recommendations that are relevant to teachers' professional development needs and their confidence in adapting to new teaching strategies has improved. Based on the findings, it was recommended among others that Public universities in Rivers State should prioritize the adoption of AI-powered assessment tools as part of their professional development programmes. Institutions should invest in integrating these tools into their teaching evaluation processes to enable academic staff to access personalized, data-driven feedback that enhances their teaching practices and facilitates continuous professional growth.*

**Keywords:** Artificial Intelligence, AI-Powered Assessment, Professional Development, Universities.

## Introduction

The integration of Artificial Intelligence (AI) into educational practices is revolutionizing how academic processes are designed, implemented, and assessed globally. Among its numerous applications, AI-powered assessments stand out as transformative tools that have the potential to redefine teaching and learning outcomes, particularly in higher education. As

institutions worldwide grapple with the demands of fostering academic excellence, enhancing the professional development of educators has become a priority. Professional development, a dynamic process aimed at equipping educators with the necessary skills to improve their teaching practices and adapt to emerging trends, has traditionally relied on structured training programs, workshops, and seminars. While these conventional methods remain valuable, they are often criticized for their lack of personalization and inability to address the diverse needs of academic staff (Zawacki-Richter et al., 2019).

AI-powered assessments leverage advanced technologies such as machine learning, natural language processing, and predictive analytics to offer innovative solutions to some of these challenges. By automating the assessment process and providing data-driven insights, these systems enable academic staff to receive immediate, detailed feedback on their teaching effectiveness and areas requiring improvement. Additionally, AI systems can facilitate reflective practices by identifying patterns in teaching performance and recommending targeted interventions. For example, AI-driven tools such as intelligent tutoring systems and adaptive learning platforms have been shown to significantly enhance teaching outcomes and support professional growth (Alonso & Gago, 2020). These developments are particularly relevant in public universities, where resource constraints and the need for continual staff development often coexist.

In the Nigerian context, public universities, including those in Rivers State, face unique challenges that underscore the importance of leveraging AI technologies for professional development. Limited funding, inadequate technological infrastructure, and the growing demand for quality education place immense pressure on academic staff to adapt and excel. Integrating AI-powered assessments offers a practical solution to some of these issues by providing scalable, efficient, and personalized development opportunities. Research has shown that the use of AI in education can lead to significant improvements in teaching methodologies, curriculum design, and overall institutional effectiveness (Chen et al., 2020). However, the adoption of AI in Nigerian universities remains in its infancy, with limited empirical evidence on its specific impact on professional development.

Despite its potential, the implementation of AI-powered assessments is not without challenges. Concerns about data privacy, ethical considerations, and the readiness of academic staff to adopt these technologies have been highlighted in recent studies (Holmes et al., 2021). Moreover, the cultural and institutional dynamics in Nigerian universities present additional

layers of complexity. The effective integration of AI technologies requires not only robust infrastructure but also a supportive environment that fosters innovation and collaboration among stakeholders. Addressing these challenges necessitates a nuanced understanding of the local context and a strategic approach to policy formulation and capacity building.

This study situates itself within this critical discourse by exploring the role of AI-powered assessments in enhancing the professional development of academic staff in public universities in Rivers State. It seeks to bridge the gap in existing literature by focusing on a specific geographical and institutional context, providing insights into how these technologies can be effectively integrated into higher education systems in Nigeria. By examining the experiences and perceptions of academic staff, the study aims to contribute to the growing body of knowledge on AI in education and its transformative potential in addressing professional development challenges. The findings are expected to inform policy and practice, guiding stakeholders in leveraging AI technologies to achieve sustainable academic excellence.

## Statement of the Problem

The professional development of academic staff in higher education is a critical factor in ensuring quality teaching, research, and institutional effectiveness. In public universities in Rivers State, academic staff are faced with the challenge of adapting to the rapidly changing demands of education, particularly in a globalized and technologically driven era. Traditional professional development initiatives, such as workshops, seminars, and training programs, often fall short in addressing individual needs, providing timely feedback, and fostering continuous improvement. These approaches are frequently constrained by limited resources, lack of personalization, and the absence of real-time, actionable insights into teaching effectiveness and learning outcomes.

Artificial Intelligence (AI)-powered assessments present a transformative opportunity to address these shortcomings by providing data-driven, personalized feedback and recommendations. Such tools have been proven to enhance professional development by enabling reflective teaching practices, identifying specific areas of improvement, and offering targeted learning pathways. However, in the context of public universities in Rivers State, the integration of AI-powered assessments remains largely unexplored. There is a paucity of empirical evidence on how these technologies can be effectively utilized to support the professional growth of academic staff within the unique socio-economic and infrastructural constraints of the region.

Furthermore, barriers such as limited access to technological infrastructure, low levels of digital literacy among educators, and concerns about data privacy and ethical implementation further compound the problem. Without a strategic approach to leveraging AI-powered assessments, the potential for these tools to enhance teaching quality and professional development may remain untapped, perpetuating the inefficiencies and challenges faced by academic staff.

## Purpose of the study

The study examined the role of AI-Powered Assessments in Enhancing the Professional Development of Academic Staff in Public Universities in Rivers State. Specifically, the study sought to achieve the following objectives:

1. assess the effectiveness of AI-powered assessments in enhancing the professional development of academic staff in public universities in Rivers State.

2. identify the challenges to the adoption of AI-powered assessment tools in public universities in Rivers State.

3. investigate the perceptions and experiences of academic staff regarding the use of AI-powered assessments for professional development.

## Research Questions

The following research questions guided the study:

1. How effective are AI-powered assessments in enhancing the professional development of academic staff in public universities in Rivers State?

2. What are the challenges to the adoption of AI-powered assessment tools in public universities in Rivers State?

3. What are the perceptions and experiences of academic staff regarding the use of AI-powered assessments for professional development.

## Methodology

The study adopted the descriptive research design. The population of this study was drawn 2,849 male and female lecturers in the three public universities in Rivers State. This comprises 1330 lecturers from University of Port Harcourt, 1095 from Rivers State University and 424 from Ignatius Ajuru University of Education. The sample size of the study was 360 respondents. The sample size was determined using Taro Yamane formula. However, the proportionate stratified sampling technique was adopted in selecting a total of 180 male lecturers and 180

female lecturers from the three universities under study. The instrument used for data collection was a self- structured questionnaire titled" Roles of AI-Powered Assessments in Enhancing the Professional Development of Academic Staff Questionnaire" (RAPAEPDACQ) and the instrument contains 15 items which was designed based on the research questions. Responses to the items were structured on a four-point summated rating scale of "Strongly Agree", "Agree", "Disagree" and Strongly "Disagree" with values of 4,3,2, and 1 respectively.

This instrument was validated by two experts. The reliability of the instrument was established through a test of internal consistency using Cronbach Alpha method. The reliability co-efficient index obtained through the Cronbach Alpha method was 0.76, 0.78 and 0.83 which was considered reliable. Data were collected through the direct delivery method by the researcher and two research assistants. Only 340 copies of the questionnaire administered were completely filled and retrieved: 176 copies from male lecturers and 164 from female lecturers in the 3 Public universities in Rivers state. Research questions were analyzed using mean and standard deviation. Any item from 2.50 and above was considered "Agree" while items below 2.50 were considered "Disagree".

## Results

**Research Question 1:** How effective are AI-powered assessments in enhancing the professional development of academic staff in public universities in Rivers State?

**Table 1: Mean and Standard Deviation of Respondents on the Effectiveness of AI-powered Assessments in Enhancing the Professional Development of Academic Staff**

| S/N | Item | Male Lecturers N (176) | | | Female Lecturers N (164) | | |
|-----|------|------|------|------|------|------|------|
| 1 | AI-powered assessments provide timely and actionable feedback that improves my teaching practices. | 3.20 | 0.24 | Agree | 3.12 | 0.34 | Agree |
| 2 | The use of AI-powered assessments has significantly enhanced my ability to identify areas for professional growth. | 3.51 | 0.91 | Agree | 3.70 | 0.85 | Agree |
| 3 | AI-powered assessments offer personalized recommendations that are relevant to my professional development needs. | 3.62 | 0.70 | Agree | 3.69 | 0.74 | Agree |

| | | X | SD | Remark | X2 | SD | Remark |
|---|---|---|---|---|---|---|---|
| 4 | Since using AI-powered assessments, my confidence in adapting to new teaching strategies has improved. | 3.02 | 0.87 | Agree | 3.11 | 0.83 | Agree |
| 5 | Overall, AI-powered assessments are an effective tool for enhancing the professional development of academic staff in my institution. | 3.22 | 0.76 | Agree | 3.52 | 0.90 | Agree |
| | **Grand Mean** | **3.31** | | **Agree** | **3.43** | | **Agree** |

Data on table 1 showed the mean response and standard deviation of male and female lecturers on effectiveness of AI-powered assessments in enhancing the professional development of academic staff in public universities in Rivers State. Items (1- 5) had mean scores above the criterion mean of 2.50 and which showed that majority of the respondents agreed with most of the items. With grand mean scores of 3.31and 3.41 for male and female lecturers respectively, the answer to research question one is that AI-powered assessments provide timely and actionable feedback that improves teachers' teaching practices, the use of AI-powered assessments has significantly enhanced teachers' ability to identify areas for professional growth, it offers personalized recommendations that are relevant to teachers professional development needs and their confidence in adapting to new teaching strategies has improved.

**Research Question 2**: What are the challenges to the adoption of AI-powered assessment tools in public universities in Rivers State?

**Table 2: Mean and Standard Deviation of Respondents on the Challenges to the Adoption of AI-Powered Assessment Tools in Public Universities in Rivers State**

| Items | | Male Lecturers N (176) | | | Female Lecturers N (164) | | |
|---|---|---|---|---|---|---|---|
| | | X | SD | Remark | X2 | SD | Remark |
| 6 | Limited access to reliable technological infrastructure is a significant challenge to adopting AI-powered assessment tools in my institution. | 2.60 | 0.83 | Agree | 2.66 | 0.71 | Agree |
| 7 | There is insufficient training and technical support for academic staff on the use of AI-powered assessment tools. | 2.63 | 0.77 | Agree | 3.52 | 0.75 | Agree |

| 8 | Concerns about data privacy and security hinder the adoption of AI-powered assessment tools in my institution. | 2.81 | 0.84 | Agree | 3.00 | 0.78 | Agree |
| 9 | The high cost of implementing and maintaining AI-powered assessment systems poses a significant barrier to their adoption. | 2.64 | 0.88 | Agree | 2.70 | 0.89 | Agree |
| 10 | Resistance to change and lack of awareness among academic staff are major obstacles to the adoption of AI-powered assessment tools. | 3.11 | 0.71 | Agree | 3.09 | 0.80 | Agree |
| | **Grand Mean** | **2.81** | | **Agree** | **3.10** | | **Agree** |

The result in table 2 showed the responses of male and female lecturers on the challenges to the adoption of AI-powered assessment tools in public universities in Rivers State**.** Items (6- 10) had mean scores above the criterion mean of 2.50 which revealed that majority of the respondents agreed with all the items. With mean scores of  2.81 and 3.10 respectively, the answer to research question two is that the challenges to the adoption of AI-powered assessment tools in public universities in Rivers State are limited access to reliable technological infrastructure, insufficient training and technical support for academic staff on the use of AI-powered assessment tools, concerns about data privacy and security, high cost of implementing and maintaining AI-powered assessment systems and resistance to change and lack of awareness among academic staff.

**Research Question 3:** What are the perceptions and experiences of academic staff regarding the use of AI-powered assessments for professional development tools in public universities in Rivers State?

**Table 3: Perceptions and Experiences of Academic Staff Regarding the Use of AI-Powered Assessments for Professional Development.**

| Item | | Male Lecturers N (176) | | | Female Lecturers N (164) | | |
|---|---|---|---|---|---|---|---|
| | | X | SD | Remark | X | SD | Remark |
| 11 | AI-powered assessments are user-friendly and easy to integrate into my professional development activities. | 3.78 | 0.81 | Agree | 3.67 | 0.74 | Agree |

| 12 | Using AI-powered assessments has positively influenced my teaching effectiveness and professional growth. | 3.89 | 0.77 | Agree | 3.88 | 0.82 | Agree |
|----|----|----|----|----|----|----|----|
| 13 | I feel confident in the accuracy and reliability of feedback provided by AI-powered assessment tools. | 3.11 | 0.87 | Agree | 2.91 | 0.66 | Agree |
| 14 | The implementation of AI-powered assessments aligns with my expectations for modernizing professional development practices. | 3.11 | 0.76 | Agree | 3.03 | 0.75 | Agree |
| 15 | My overall experience with AI-powered assessments has been beneficial in identifying and addressing my developmental needs. | 3.73 | 0.90 | Agree | 3.52 | 0.82 | Agree |
| | **Grand Mean** | **3.50** | | **Agree** | **3.40** | | **Agree** |

Data on table 3 showed the mean responses and standard deviation of male and female lecturers on the perceptions and experiences of academic staff regarding the use of AI-powered assessments for professional development tools in public universities in Rivers State. All items in the table are above the criterion mean of 2.50. This implies that majority of the respondents agreed with all the items. With grand mean scores of 3.50 and 3.40 for male and female lecturers respectively, the answer to research question three is that academic staff perceive A-Powered Assessment to be user-friendly and easy to integrate into their professional development activities. They also agreed that AI-powered assessments positively influenced their teaching effectiveness and professional growth. They feel confident in the accuracy and reliability of feedback provided by AI-powered assessment tools and the implementation of AI-powered assessments aligns with lecturers' expectations for modernizing professional development practices.

## Discussion of Findings

The result of the finding for research question one revealed that AI-powered assessments provide timely and actionable feedback that improves teachers' teaching practices, the use of AI-powered assessments has significantly enhanced teachers' ability to identify areas for professional growth, it offers personalized recommendations that are relevant to teachers' professional development needs and their confidence in adapting to new teaching strategies has improved. This finding is supported by Zawacki-Richter et al. (2019) which emphasized that

adaptive learning tools and automated feedback mechanisms empower educators to tailor their methods effectively, fostering professional growth. These systems enable instructors to refine their teaching strategies promptly, addressing student needs more effectively. The use of AI-powered assessments significantly enhances educators' ability to identify skill gaps and areas for growth. According to Alonso and Gago (2020), AI analytics can pinpoint strengths and weaknesses in teaching practices, allowing for more focused professional development. These insights not only boost confidence but also align educators' skills with contemporary educational demands.

The result of the findings for research question two revealed that the challenges to the adoption of AI-powered assessment tools in public universities in Rivers State are limited access to reliable technological infrastructure, insufficient training and technical support for academic staff on the use of AI-powered assessment tools, concerns about data privacy and security, high cost of implementing and maintaining AI-powered assessment systems and resistance to change and lack of awareness among academic staff. This finding is supported by the finding of Holmes et al. (2021) which noted that insufficient access to reliable internet and technological tools disproportionately affects universities in developing regions, hindering the implementation of AI systems and limiting their impact on professional development. Similarly, Chen et al. (2020) reported that educators are hesitant to embrace AI tools due to uncertainties about how their data is collected, stored, and used. This lack of trust slows the adoption of AI technologies, despite their potential benefits in educational settings.

The result of the finding for research question three revealed that academic staff perceive A-Powered Assessment to be user-friendly and easy to integrate into their professional development activities. They also agreed that AI-powered assessments positively influenced their teaching effectiveness and professional growth. They feel confident in the accuracy and reliability of feedback provided by AI-powered assessment tools and the implementation of AI-powered assessments aligns with lecturers' expectations for modernizing professional development practices. The findings of the study were supported by Zawacki-Richter et al. (2019) which revealed that intuitive interfaces and seamless integration into existing systems foster positive perceptions among educators, encouraging widespread adoption. Similarly, educators express high confidence in the reliability and accuracy of feedback generated by AI tools. According to Alonso and Gago (2020), the precision of AI-driven insights aligns closely

with educators' expectations, supporting the modernization of teaching practices and enhancing trust in these technologies.

## Conclusion

The study explored the roles of AI-powered assessments in enhancing the professional development of academic staff in public universities in Rivers State. The findings revealed that AI-powered assessments provide timely and actionable feedback, significantly improve the ability of academic staff to identify areas for professional growth, and offer personalized recommendations that align with their development needs. However, the study also identified several challenges, including limited access to reliable technological infrastructure, insufficient training, concerns about data privacy, and resistance to change among academic staff. Despite these challenges, academic staff perceived AI-powered assessments as user-friendly and aligned with their expectations for modernizing professional development practices. Overall, the study highlights the transformative potential of AI-powered assessments and underscores the need for strategic interventions to optimize their implementation in higher education.

## Recommendations

Based on the findings of the study, it was recommended that:

1. Public universities in Rivers State should prioritize the adoption of AI-powered assessment tools as part of their professional development programmes. Institutions should invest in integrating these tools into their teaching evaluation processes to enable academic staff to access personalized, data-driven feedback that enhances their teaching practices and facilitates continuous professional growth.

2. Government and institutional policymakers should improve technological infrastructure, provide targeted training, and establish clear data security protocols. Investments in internet connectivity, hardware, and technical support are essential, along with professional development workshops to train academic staff in effectively utilizing AI-powered assessment tools. Robust data privacy frameworks should also be developed to build trust and address ethical concerns.

3. Universities should actively promote the use of AI-powered assessment tools by showcasing their benefits and success stories. Institutional leadership should engage academic staff through seminars, testimonials, and case studies that highlight how AI tools improve teaching effectiveness and align with modern professional development practices. This approach will increase acceptance and foster a culture of innovation.

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