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# Integration of Artificial Intelligence (A1) Driven Assessment Tools on the Academic Performance of Students in Public Universities in Rivers State

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## Abstract

*The study examined the integration of Artificial Intelligence (AI) Driven Assessment tools on the academic performance of students in public Universities in Rivers State. Three research questions and hypotheses guided the study. The study employed the descriptive research survey design. The population of the study was 1,754 lecturers of Rivers State University and Ignatius Ajuru University of Education in Rivers State. Taro Yamane formula was used to determine the sample size of 514. Proportionate sampling technique was used to select 329 lecturers from Rivers state university and Ignatius Ajuru university of education. The instrument for data collection was a self-structured questionnaire tagged "Artificial Intelligence (A1) Driven Assessment tools on the Academic Performance of Students in Rives State Universities Questionnaire" (AIDAAPSQ). The instrument was validated by 2 experts in educational management and I expert in measurement and evaluation in the faculty of education. Reliability of the instrument was determined using Cronbach Alpha method and reliability indexes of 0.78, 0.81, 0.84. Data collected were analysed using mean and standard deviation to answer research questions while Z-test to analyse the hypotheses at 0.05 level of significance. Based on the findings of the study, the study found that despite the potential benefits of these tools in enhancing students learning outcomes, the respondents' feedback indicated a limited extent of adoption and utilization. Based on the findings of the study, recommended among others that lecturers should undergo training and workshops on AI-driven assessment tools to enhance their technical skills and confidence.*

**Keywords:** Artificial Intelligence, Adaptive Assessment, Automated Grading, Intelligent Tutoring, Personalized Learning

## Introduction

Education has played a major role in the growth and development of many nations of the world today. Education is very vital to every society be it formal, non-formal or informal. Organisation for Economic Co-operation and Development (2019) defines Education as a process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs, and habits, through various methods, including teaching, training, research, and engagement with the social and physical environment. University education is a process of higher learning that focuses on the development of advanced knowledge, critical thinking and research skills, preparing students for leadership, innovation and civic engagement in a rapid changing world. (Bok, 2013). University education is a transformative stage from one level of experience to another. In a nut shell, it is a continuous process. Offor-Douglas (2021), perceived university

education as education obtained after the secondary school level with the purpose of training future leaders who will be politicians, educators, lawyers, engineers, doctors, and scientist etc. The purpose of university education includes teaching, learning, research, community, and skill development. UNESCO (2020) described University education as that level of education that follows secondary school (high school). It is an advanced level of education that typically takes place in a university or college setting.

University education aims to:

1. Provide advanced knowledge and skills in a specific field
2. Foster critical thinking, creativity, and problem-solving
3. Develop research and analytical skills
4. Prepare students for careers and leadership roles
5. Promote personal growth, social responsibility, and global citizenship.

In our society today, the quest for science and technology are becoming increasingly oriented towards a massive process of technology in all aspects of the economy be it educational, political, social and what have you. Man has been in constant search for knowledge and a way to make things easier for himself. It is as a result of this search that the invention in the area of artificial intelligence becomes very necessary. There has been a widely accepted believe that technology has made the world go round and easy.

This quest of adapting to new technological world has created a variety of technologies that allow communication with the user, called "virtual assistants", which use computer algorithms to imitate or replicate human intelligence so that users have the feeling that they are interacting with another person. This concept is known as "artificial intelligence" (AI) (Ocaña, Valenzuela, & Garro, 2019; Yang, Zhuang, & Pan, 2021). In educational environments, AI has taken special interest, in given the high possibilities of communication established between teachers and students when using virtual information assistants, since its excerption there is a simulation of responses that approach a human conversation. As the tool is used, the interaction with the user is learned and recognised intuitively. Artificial intelligence has three major areas of interest in education: learning with AI (using AI tools in the classroom), learning about AI (its technologies and techniques) and preparing for AI (enabling all students to understand the potential impact of AI on human life). AI has the potential to address some of the biggest challenges facing education today.

Studies have shown that AI-driven assessment has a positive impact on academic performance. According to Oyekunle and Adekunle (2022), AI-driven assessment provides immediate feedback, which has been shown to improve student engagement, motivation, and ultimately, academic performance. Similarly, Nwosu and Okoro (2022) in their research on challenges and opportunities of AI-driven assessment in Nigerian Universities found that AI-driven assessment promotes personalized learning, which leads to improved student outcomes, including increased accuracy, reduced bias, and enhanced student engagement.

Furthermore, Igwe and Okeke (2020) noted that AI-driven assessment helps to identify knowledge gaps and provides targeted interventions, leading to improved student academic performance and reduced attrition rates. However, some studies have raised concerns about the limitations of AI-driven assessment. For instance, Zhang (2020) argued that AI-driven assessment may perpetuate existing biases if the data used to train the algorithms is biased. Despite these concerns, the majority of studies suggested that AI-driven assessment has a positive impact on academic performance. As Garcia (2018) noted, AI-driven assessment has the potential to revolutionize the way we evaluate student learning, making it more efficient, accurate, and personalized.

The integration of Artificial Intelligence (AI) in education has transformed the learning landscape, offering innovative opportunities for students to enhance their academic performance. Rivers State Universities, like many other institutions globally, are embracing AI-powered tools and platforms to support student learning. However, the impact of AI on academic performance of students in this context remains largely unexplored. Vegara (2023), stated that Artificial intelligence (AI) has impacted in various sectors of the society, from taking care of the usual practice of doing things manually to the present day of getting things done through the use of machines. The impact of artificial intelligence on education and students cannot be overemphasised has gradually brought a change in the educational system.

AI has brought about a personalized learning that is facilitated by AI algorithms, which is programmed towards educational content for individual needs, enhancing understanding and engagement. Virtual tutors powered by AI offer immediate support, promoting independent learning and critical thinking. AI-driven content creation, including simulations and virtual labs, makes learning and teaching easier. Students gain exposure to advanced technologies, preparing them for a technology- centric future workforce. However, challenges like data privacy concerns and potential over reliance on technology need careful consideration, (Hogan,

2024). According to Schiller (2023) artificial intelligence (AI) has evolved from a mere science fiction fantasy to a tangible reality that is revolutionizing various aspects of our lives. In the field of higher education, AI is playing a fundamental role in transforming the way students learn and prepare for the future. According to Rodrigo (2023), artificial intelligence (AI) is a branch of research systems created to execute skills that are often associated with human beings these functions include recognizing faces or voices, playing chess, or driving a vehicle in Education (AIED) is a term that describes the application of AI in educational set enhancing the teaching, learning, or overall educational experience. It is possible that AIED will have a significant effect on humans. AIED stands for Artificial Intelligence in Education. It refers to the application of artificial intelligence (AI) technologies and methods to improve learning outcomes, teaching effectiveness, and educational experiences. AIED involves using AI to:

1. Personalize learning
2. Automate grading and feedback
3. Develop intelligent tutoring systems
4. Analyze learning data and provide insights
5. Support accessible and inclusive education
6. Enhance teacher professional development

AIED research focuses on developing and evaluating AI-powered educational tools, systems, and environments that can:

1. Adapt to individual learners' needs
2. Provide real-time feedback and guidance
3. Foster collaborative and interactive learning
4. Support lifelong learning and skill development

According to Sharples (2022), evidence of the beneficial effects of the technologies are not only vital for policy but also for the ethical application of AI. AI is required prior to the investment of time and other resources, such as the effort of passing off the work of another person as one's own has been a prevalent practice written essays continue to be an important component of educational assessment. AI-driven assessment refers to the use of Artificial Intelligence (AI) technologies to evaluate student learning, understanding, and performance. AI-driven assessment utilizes machine learning algorithms, natural language processing, and data analytics to:

1. Adaptive Assessment Tools (AAT): This includes AI-driven assessment tools that adjust their level of difficulty and content in real-time based on student performance.
2. Automated Grading System (AGS): This includes AI-driven systems that provide immediate feedback and scores to students, reducing grading time and increasing feedback accuracy.
3. Intelligent Tutoring System (ITS): This includes AI-driven systems that provide personalized learning experiences, real-time feedback, and adaptive scaffolding to support student learning.
4. Enhance rubric-based assessment: AI is used to evaluate student work against specific criteria and rubrics, increasing consistency and accuracy.
5. Support authentic assessments: it is helpful in accessing the students during seminar presentations and projects.
6. Predict students' performance: AI driven tools can be used in predicting the academic ability of a students in future. The use of algorithms machine to predict the learning outcome of a student and also suggests areas of deficiency where such student will be needing support.

AI-driven assessment has the potential to:

1. Increase efficiency and accuracy
2. Enhance student engagement and motivation
3. Provide personalized learning experiences
4. Support data-driven instruction
5. Foster transparency and fairness in evaluation

The impact of AI and AI tools on the future of education is massive, transformative, and also helps in redefining traditional teaching methods. AI has the ability to personalize learning experiences, tailoring content to individual student needs, enhances comprehension and engagement. Adaptive learning platforms, powered by AI, create dynamic and customized educational journeys. Moreover, AI automates administrative tasks, freeing educators to focus on interactive and creative teaching methods. Virtual tutors and AI-driven tools offer real-time support, fostering independent learning.

## Statement of the problem

Despite the potential of AI-driven assessment tools to enhance student learning outcomes, public universities in Rivers State continue to face challenges in integrating these tools into

their assessment practices, resulting in: Inefficient assessment methods that fail to accurately measure student learning outcomes, Limited feedback and guidance for students to improve their academic performance, Inadequate use of data and analytics to inform instruction and drive student success, and significant disparities in academic performance among students, with some struggling to meet learning objectives.

The traditional methods of assessment used in these universities may not be effectively capturing students learning outcomes and the potential benefits of AI driven assessment such as personalized feedback and adoptive learning are not being fully leveraged. It has been observed that most at times students do not get their anticipated feedback instantly while AI-driven assessment has the potential to enhance the accuracy and efficiency of assessment processes, its effectiveness in improving student learning outcomes in public universities in Rivers State remains unknown. Furthermore, there are concerns about the potential biases and limitations of AI-driven assessment tools, which may disproportionately affect certain student groups. Therefore, this study aims to investigate the impact of integrating AI-driven assessment tools on the academic performance of students in public universities in Rivers State, with a focus on identifying potential benefits and areas for improvement.

## Purpose of the study

The purpose of the study is to examine the integration of AI- driven assessment tools on the academic performance of students in public universities in Rivers state. Specifically, the research sought to achieve the following:

1. investigate the effect of Adaptive Assessment Tool (AAT) on students' academic performance in public universities in Rivers state.
2. to identify the impact of Automated Grading Systems (AGS) on students' academic performance in public universities in Rivers state.
3. to determine the effectiveness of Intelligent Tutoring Systems (ITS) in improving students' academic performance in public universities in Rivers state.

## Research questions

The following research questions were posed to guide the study:

1. To what extent does Adaptive Assessments Tool (AAT) affect the students' academic performance in public universities in Rivers state?
2. To what extent does Automated Grading Systems (AGS) influence the students' academic performance in public universities in Rivers state?

3. To what extent does Intelligent Tutoring Systems (ITS) improve students' academic performance in public universities in Rivers State?

## Hypotheses

The following research questions were tested at 0.05 level of significance.

1. There is no significant difference in the mean response of students of RSU and IAUE on the effect of adaptive assessments on the students' academic performance in public universities in Rivers state.
2. There is no significant difference on the mean response of RSU and IAUE students on the influence of automated grading systems on the students' academic performance in public universities in Rivers state.
3. There is no significant difference on the mean response of RSU and IAUE students on the improvement of intelligent tutoring systems on the academic performance of students in public universities in Rivers State.

## Methodology

The study adopted descriptive survey design. The study was conducted in two state universities in Rivers state. The universities were Rivers State University and Ignatius Ajuru University of education, Port Harcourt. The population of the study was 1,754 consisting of 1,330 lecturers from Rivers state university and 424 lecturers from Ignatius Ajuru university of education. The sampling size of the study was determined using Taro Yamane formula which gave the sample size as 514. Proportionate sampling technique was used to select 329 lecturers from RSU and IAUE which is 64% of the sample size. The instrument for data collection was a self-structured questionnaire, titled" Artificial Intelligence (A1) Driven Assessment tools and the Academic Performance of Students in Rives State Universities Questionnaire" (AIDAAPSQ). the instrument was sub-divided into 2 sections. Section A had to do with the demography of the respondents while section B was about items that illicit the responses from the respondents on the research questions presented. Responses from the respondents were graded using a 4likert scale of Very High Extent (VHE), High Extent (HE), Low Extent (LE), and Very Low Extent (VLE) with rating values as 4,3,2 and 1. The instrument was validated by two experts from department of Educational Management and Measurement and Evaluation in Rivers State University for face and content validity. The instrument was vetted in terms of appropriateness, relevance and level of language and corrections made were effected in the final copy of the instrument before administering. The instrument was administered on 20 lecturers from university of Port Harcourt. The reliability of the instrument was obtained using Cronbach

Alpha method and reliability indexes of 0.78, 0.81, 0.84 were obtained for the various clusters of the instrument. The instrument was administered directly by the researcher to the respondents with the help of two research assistants. Out of the 329 copies of the questionnaire administered, 320 copies were properly filled and retrieved: 200 from RSU lecturers and 120 from IAUE lecturers. Research questions were analyzed using mean and standard deviation statistics while the hypotheses were tested using z-test. Decision rule for the research questions were based on the classification of level of extent.

**Classification Value Range**

| | |
|---|---|
| Very High Extent (VHE)= 4 | 3.50 – 4.00 |
| High Extent (HE) =3 | 2.50 – 3.49 |
| Low Extent (LE) =2 | 1.50 – 2.49 |
| Very Low Extent (VLE) = 1 | 1.00 – 1.49 |

The null hypothesis was rejected and the alternate hypotheses accepted when the computed value was greater than the critical value of 1.96 at the significance level of 0.05. On the contrary, the null hypothesis was also accepted and the alternate hypotheses rejected when the computed value is less than the critical table value of 1.96.

## Results

Research Question 1: To what extent does adaptive assessments affect the students' academic performance in public universities in Rivers state?

**Table 1: Mean and Standard Deviation of Respondents on the Extent of the effect of Adaptive Assessment Tools (AAT) on the students' academic performance in public universities Rivers State.**

| S/NO: | To what extent do you: | RSU (N=200) | | | IAUE (N=120) | | |
|---|---|---|---|---|---|---|---|
| | | X1 | SD1 | RMK | X2 | SD2 | RMK |
| 1 | believe AAT enhances student engagement in your courses? | 3.5 | 0.87 | High Extent | 3.7 | 0.90 | High Extent |
| 2 | use AAT to adjust the difficulty level of assessments for students? | 2.0 | 0.58 | Low Extent | 2.1 | 0.58 | Low Extent |
| 3 | think AAT helps students identify knowledge gaps in your course? | 3.1 | 0.80 | High Extent | 3.0 | 0.81 | High Extent |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 4 | utilize AAT to provide real-time feedback to students? | 2.1 | 0.\59 | Low Extent | 2.3 | 0.81 | Low Extent |
| 5 | believe AAT improves student motivation and participation? | 3.0 | 0.80 | High Extent | 3.1 | 0.80 | High Extent |
| 6 | use AAT to track student progress and understanding? | 2.3 | 0.60 | Low Extent | 2.2 | 0.52 | Low Extent |
| 7 | believe AAT reduces student anxiety and stress during assessments? | 2.8 | 0.76 | High Extent | 3.0 | 0.79 | High Extent |
| | **GRAND MEAN & SD** | **2.7** | **0.71** | | **2.8** | **0.74** | |

**Researcher's field Result 2024**

The result in table 1 shows the responses of lecturers in both RSU and IAUE on the extent adaptive assessments tools affect students' academic performance in public universities in Rivers state. The result in table 1 revealed that lecturers in RSU had mean and standard deviation scores of 2.7 and 0.71 whereas lecturers in IAUE had a mean and standard deviation scores of 2.8 and 0.74. The closeness in the average mean and standard deviation of lecturers from both schools shows that there is an effect of Adaptive assessment tools on academic performance of students in public universities in Rivers state to a high extent.

Research Question 2: To what extent does Automated Grading Systems (AGS) influence the students' academic performance in public universities in Rivers state?

**Table 2: Mean and Standard Deviation of Respondents on the Extent Automated Grading Systems (AGS) influence the students' academic performance in public universities in Rivers state.**

| S/NO | To what extent do you: | RSU (N=200) | | | IAUE (N=120) | | |
|---|---|---|---|---|---|---|---|
| | | X1 | SD1 | RMK | X2 | SD2 | RMK |
| 8 | believe AGS reduces grading time and increases accuracy? | 3.9 | 0.88 | High Extent | 3.8 | 0.80 | High Extent |
| 9 | use AGS to provide immediate feedback to students? | 2.4 | 0.59 | Low Extent | 2.3 | 0.57 | Low Extent |
| 10 | think AGS helps students track their progress and performance? | 3.1 | 0.78 | High Extent | 3.5 | 0.89 | High Extent |
| 11 | utilize AGS to identify areas where students need improvement ? | 2.3 | 0.54 | Low Extent | 2.2 | 0.59 | Low Extent |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 12 | believe AGS improves student satisfaction with feedback? | 3.5 | 0.84 | High Extent | 3.7 | 0.90 | High Extent |
| 13 | use AGS to generate detailed reports on student performance? | 3.4 | 0.80 | High Extent | 3.6 | 0.86 | High Extent |
| 14 | believe AGS enhances the overall grading process? | 3.4 | 0.80 | High Extent | 3.5 | 0.84 | High Extent |
| | **GRAND MEAN & SD** | **3.1** | **0.75** | | **3.2** | **0.78** | |

**Researcher's field Result 2024**

The result in table 2 shows the responses of the lecturers in RSU and IAUE on the extent automated grading systems influence students' academic performance in public universities in Rivers state. The result indicated in table 2 revealed that lecturers in RSU had an average mean and standard deviation of 3.1 and 0.75 whereas students in IAUE had an average mean and standard deviation of 3.2 and 0.78. The closeness in the mean of both schools shows that there is an influence of automated grading systems on the students' academic performance in Rivers state universities to a high extent.

Research Question 3 To what extent does Intelligent Tutoring Systems (ITS) improve students' academic performance in public universities in Rivers State?

**Table 3: Mean and Standard Deviation of Respondents on the Extent Intelligent Tutoring Systems (ITS) improve students' academic performance in public universities in Rivers State.**

| S/NO: | To what extent do you: | RSU (N=200) X1 | SD1 | RMK | IAUE (N= 130) X2 | SD2 | RMK |
|---|---|---|---|---|---|---|---|
| 15 | believe ITS provides personalized learning experiences for students? | 3.3 | 0.78 | High Extent | 3.6 | 0.79 | High Extent |
| 16 | use ITS to provide real-time guidance and support to students? | 2.3 | 0.57 | Low Extent | 2.4 | 0.53 | Low Extent |
| 17 | think ITS helps students develop critical thinking and problem-solving skills? | 3.8 | 0.79 | High Extent | 3.5 | 0.84 | High Extent |
| 18 | utilize ITS to adapt to individual student learning styles? | 2.2 | 0.57 | High Extent | 2.3 | 0.44 | High Extent |
| 19 | believe ITS improves student engagement and motivation? | 3.1 | 0.89 | High Extent | 3.4 | 0.84 | High Extent |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 20 | use ITS to identify knowledge gaps and provide targeted interventions? | 2.4 | 0.58 | Low Extent | 2.3 | 0.59 | Low Extent |
| 21 | believe ITS enhances student learning outcomes and academic performance? | 3.4 | 0.80 | High Extent | 3.4 | 0.83 | High Extent |
| | **GRAND MEAN & SD** | **2.9** | **0.71** | | **2.9** | **0.69** | |

**Researcher's field Result 2024**

The result in table 3 shows the responses of the lecturers in RSU and IAUE on the extent intelligent tutoring systems improve the academic performance of students in Rivers state universities. The result indicated in table 3 revealed that lecturers in RSU had an average mean and standard deviation of 2.9 and 0.71 whereas students in IAUE had an average mean and standard deviation of 2.9 and 0.69. The closeness in the mean of both schools shows that intelligent tutoring systems improves the students' academic performance in Rivers state universities to a high extent.

**Test of hypotheses**

1. Ho1: There is no significant difference in the mean response of lecturers of RSU and IAUE on the effect of adaptive assessments tools on the students' academic performance in public universities in Rivers state.

   Table 4: Z-test Analysis the Extent of the effect of Adaptive assessment tools on the students' academic performance in public universities in Rivers State**.**

| Respondents | N | X | SD | DF | z-cal | Z-crit | A | Decision |
|---|---|---|---|---|---|---|---|---|
| RSU | 200 | 2.7 | 0.71 | 318 | 0.641 | ±1.96 | 0.05 | Accept |
| IAUE | 120 | 2.8 | 0.74 | | | | | |

The analyzed data in table 4 revealed that the z- calculated value is 0.641 and the z-critical table value is ±1.96 with a degree of freedom of 318 at 0.05 level of significance. Since the z-cal (0.641) is less than the z-critical value (±1.96), the null hypothesis was not rejected indicating that there is no significant difference in the mean responses of RSU lecturers and IAUE lecturers on the extent adaptive assessment tools affects the students' academic performance in public universities in Rivers state.

2 $HO_2$: There is no significant difference on the mean response of RSU and IAUE lecturers on the influence of automated grading systems on the students' academic performance in public universities in Rivers state.

Table 5: Z-test Analysis on the extent automated grading systems influence the students' academic performance in public universities in Rivers state

| Respondents | N | X | SD | DF | z-cal | Z-crit | A | Decision |
|---|---|---|---|---|---|---|---|---|
| RSU | 200 | 3.1 | 0.75 | 318 | 0.621 | ±1.96 | 0.05 | Accept |
| IAUE | 120 | 3.2 | 0.78 | | | | | |

The analyzed data in table 5 revealed that the z- calculated value is 0.621 and the z-critical table value is ±1.96 with a degree of freedom of 328 at 0.05 level of significance. Since the z-cal (0.621) is less than the z-critical value (±1.96), the null hypothesis was not rejected indicating that there is no significant difference in the mean responses of lecturers in RSU and IAUE on the extent automated grading systems influence students' academic performance in Rivers state universities.

3 $HO_3$: There is no significant difference on the mean response of RSU and IAUE lecturers on the improvement of intelligent tutoring systems on the academic performance of students in public universities in Rivers State.

Table 6: Z-test Analysis on the Extent the improvement of intelligent tutoring systems affects the students' academic performance in public universities in Rivers state.

| Respondents | N | X | SD | DF | z-cal | Z-crit | A | Decision |
|---|---|---|---|---|---|---|---|---|
| RSU | 200 | 2.9 | 0.71 | 318 | 0.541 | ±1.96 | 0.05 | Accept |
| IAUE | 120 | 2.9 | 0.69 | | | | | |

The analyzed data in table 6 revealed that the z- calculated value is 0.541 and the z-critical table value is ±1.96 with a degree of freedom of 328 at 0.05 level of significance. Since the z-cal (0.541) is less than the z-critical value (±1.96), the null hypothesis was not rejected indicating that there is no significance difference in the mean responses of RSU and IAUE lecturers on the extent the improvement of intelligent tutoring systems affects academic performance of students in public universities in Rivers State.

## Discussion of findings

Result from table 1 revealed that lecturers in the public universities in the state agreed to a high extent that adaptive assessment tools have an effect in the academic performance of students in the public universities in Rivers state. These Adaptive assessment tools can help the lecturers through: enhances student engagement in their courses, adjusting the difficulty level of assessments for students, helping students identify knowledge gaps in their course areas, providing real-time feedback to students, improving students' motivation and participation, track students' progress and understanding, help in reducing students' anxiety and stress during assessments. However, lecturers in these two public universities do not adequately utilize or integrate this adaptive assessment tools in their academic assessment programmes. Afolabi, (2020), opined that despite the potential of adaptive assessment tools to enhance student learning, many lecturers in Nigerian universities have been slow to adopt and integrate these tools into their teaching practices. Supporting this assertion, Ogunsola (2019), stated that the integration of adaptive assessment tools in Nigerian universities is hindered by lecturers' lack of technical skills, inadequate training, and limited access to resources Vergara (2023) stated that Artificial intelligence (AI) has impacted various sectors of society, from replacing rudimentary tasks in factories to tailoring advertisements based on user information. Despite its proven utility, the full-fledged adoption of AI in the educational realm remains nascent. Numerous studies have delved into the application of different forms of AI, such as machine learning and natural language processing, to enhance students' performance and engagement. The corresponding hypothesis 1 revealed that there is no significant difference in the mean response of the lecturers from RSU and IAUE in the effects of Adaptive assessment tools on the students' academic performance. Oyekule and Adekule (2022), opined that Adaptive assessment has a positive impact on students' academic performance as it provides immediate feedback, identifies knowledge gaps, and facilitates personalized learning.

Result from table 2 revealed that the integration of automated grading systems influenced the students' academic performance in public universities in Rivers state in many ways. The result had showed that it: reduces grading time and increases accuracy, provides immediate feedback to students, helps the lecturers in tracking students' progress and performance, helps in identifying' areas where students have need for improvement, improves students' satisfaction with feedback, helps in generating detailed reports on students' performance and enhances the

overall grading process of students. Lajoie, (2015) stated that Automated grading systems can reduce grading time by up to 90%, freeing instructors to focus on teaching and mentoring students. The corresponding hypothesis 2 revealed that there is no significance difference in the mean responses of lecturers from RSU and IAUE on automated grading systems on the academic performance of the students to a high extent. In support of this assertion, Bennett, (2018) opined that Automated grading systems can provide immediate feedback to students, which can lead to improved students' outcome, increased students' satisfaction, and reduced teacher workload.

The result in table 3 revealed the improvement of intelligent tutoring systems on academic performance of the students through: provision of personalized learning experiences for students, provision of real-time guidance and support to students, helping students develop critical thinking and problem-solving skills, adapting to individual student learning styles, improving students' engagement and motivation, identifying students' knowledge gaps and provide targeted interventions and enhancing students' learning outcomes and academic performance.

VanLehn and Nwaigwe, (2017) opined that Intelligent tutoring systems have been shown to be effective in improving students' learning outcomes, with average gains of 0.5 to 1.0 standard deviations compared to traditional instruction. The corresponding hypothesis 3 revealed that there is no significant difference in the mean responses of students in RSU and IAUE on the improvement of intelligent tutoring systems on the students' academic performance. Heffernan and Heffernan, (2018), on their study on the impact of intelligent tutoring systems on student academic achievement: A meta-analysis, stated that the results of this meta-analysis suggest that intelligent tutoring systems have a positive and significant impact on students' academic achievement, with an average effect size of 0.35 standard deviations.

Supporting this, Ritter & Tanner, (2016) were of the view that intelligent tutoring systems can be an effective way to improve student outcomes, particularly for students who are struggling or at risk of falling behind their peers.

## Conclusion

Based on the findings of the study, it was concluded that lecturers in public universities in Rivers state have not fully embraced the integration of AI-driven assessment tools in their teaching practices. Despite the potential benefits of these tools in enhancing student learning outcomes, the respondents' feedback indicated a limited extent of adoption and utilization. This could be attributed to various factors such as lack of technical expertise, inadequate training,

and limited access to resources. The results of this study highlight the need for universities to provide lecturers with the necessary support and resources to effectively integrate AI-driven assessment tools, ensuring that students receive the best possible learning experience. By doing so, universities can harness the potential of AI-driven assessment tools to improve students' outcomes, academic performance, and overall quality of education.

## Recommendations

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

1. lecturers should undergo training and workshops on AI-driven assessment tools to enhance their technical skills and confidence.
2. Government should provide adequate resources, including hardware, software, and internet connectivity, to support the integration of AI-driven assessment tools.
3. There should be review and revise of curricula to incorporate AI-driven assessment tools and ensure alignment with learning objectives.

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