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# UTILISATION OF ARTIFICIAL INTELLIGENCE LEARNING PLATFORMS FOR EFFECTIVE INSTRUCTIONAL DELIVERY IN ECONOMICS EDUCATION IN TERTIARY INSTITUTIONS IN PLATEAU STATE

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## Abstract
This study investigated the utilisation of artificial intelligence learning platforms for effective instructional delivery in Economics Education. The correlational research design was used to find out the relationship between artificial intelligence learning platforms and effective instructional delivery in Economics Education in tertiary institutions in Plateau State. Two sets of questionnaires developed by the researcher titled "Utilisation of Artificial Intelligence Learning Platforms Questionnaire" (UAILPQ) and "Effective Instructional Delivery in Economics Education Questionnaire" (EIDEEQ) were used to collect responses from the respondents. The questionnaires were validated by three experts in the relevant fields and their inputs were duly affected. The reliability of the instruments was also established with a reliability coefficient of 0.79 and 0.81 using Cronbach alpha respectively. The population of the study was 751 undergraduate students of Economics and Education in University of Jos during the 2024/2025 academic session. A sample of 316 students was used for the study as respondents using proportionate stratified and purposive sampling techniques. Multiple Regression via SPSS version 27.00 was used to analyse the data collected at 0.05 level of significance. The findings revealed among others that a significant number of the respondents were familiar with the utilisation of some of the artificial intelligence instructional platforms while some were not conversant with them. Also, the study revealed that artificial intelligence platforms have a significant relationship with effective instructional delivery in Economics Education in tertiary institutions. The recommendation made was the need to ensure that students of Economics Education in tertiary institutions should be exposed to the utilisation of varieties of artificial intelligence instructional platforms in order to ensure their utilisation in learning of Economics Education in Plateau State.

**Keywords:** Artificial Intelligence Platforms, Utilisation, Economics Education, Instructional Delivery

## Introduction
Artificial Intelligence tutoring systems have made inroad into the educational space, with emphasis on the role of artificial intelligence (AI) in administration, instruction, and learning.

Artificial intelligence (AI) learning platforms are equally as significant as online platforms when it comes to the use of technology for Economics Education instruction delivery. According to Thakur (2024), an artificial intelligence learning platform is a digital platform that maximises the administration and distribution of educational content and learning experiences by incorporating artificial intelligence technologies. Lane (2023) introduced the concept of Explainable AI (XAI) in training and tutoring, which could enhance the transparency and trustworthiness of AI systems in education. Thakur (2024) further explores the use of AI techniques in adaptive educational systems, particularly in online learning platforms, to create personalized learning experiences. These studies collectively stress the significant impact of AI in transforming teaching and learning platforms, from intelligent tutoring to adaptive learning environments. In this study, particular attention was paid to Zavvy, Absorb and EdApp artificial intelligence teaching and learning platforms.

The Zavvy artificial intelligence teaching and learning platform appears to have been influenced by a range of existing technologies and methodologies. The use of artificial intelligence in the construction of an intelligent English teaching model (Liu, Lomovtseva, & Korobeynikova, 2022) and the development of Learning Machine Language (LML) for AI education may have also played a role in the creation of Zavvy. These influences suggest that Zavvy is a product of various innovative technologies and methodologies in the field of education. Zavvy aligns itself with the student-centered approach, which provides individualized guidance and support. It also uses chatbots to enhance interactive learning and improve student understanding. The platform's focus on personalized learning strategies (Liu, et. al. 2022) and its integration of AI for intelligent push services (Yang, 2023) further demonstrated its potential to enhance the teaching and learning experience.

The Zavvy artificial intelligence teaching and learning platform offers several advantages, as supported by existing research. It is effective in providing personalized and adaptive learning experiences (Thakur, 2024), and can handle queries, create contents, grade, evaluate, and provide feedback, making learning more contextual and effective (Upadhyay, Marriboina, Goyal, Kumar, El-Kenawy, Ibrahim & Khafaga, 2023). Additionally, it can offload some work from teachers, supporting a blended learning approach (Boulay, 2022). These features make Zavvy a valuable tool for both learners and educators. When utilised in teaching and learning of Economics, the platform can offer several advantages. It can engage students in online, asynchronous environments through the use of AI-based robotic players, thus enhancing their learning outcomes (Liu, et al 2022).

The platform's application of AI technology, including machine learning and natural language processing, can lead to teaching reform and personalized learning (Wu, 2021). Additionally, the platform's use of AI in a qualitative-quantitative simulator can assist students in making decisions when purchasing goods, providing useful information and aiding in the decision-making process (Matsuo, 2024). The introduction of AI in the study of economics education as a course in the university, including the use of logical programming languages and predictive models, further stresses the potential benefits of the Zavvy platform (Gulyamov,

2022). The use of machine learning in Economics, as discussed by Mullainathan (2022), presented a new approach to prediction and parameter estimation. This aligns with the potential of Zavvy's AI teaching and learning platform to enhance students' understanding of these concepts. Goonatilake (2022) highlighted the application of intelligent systems and learning models in finance and Economics, indicating the potential for Zavvy to incorporate these techniques into its platform. However, Corbet, Williams, Creese, Hampshire, Hayman, Palmer, & Ballard (2023) raised concerns about overreliance on computer-based learning, suggesting the need for a balanced approach that encourages critical thinking and intuition.

The challenges of the Zavvy artificial intelligence teaching and learning platform are multifaceted. Thakur (2024) highlighted the need for effective pedagogical principles and accurate student profiles in the design of such platforms. Kumar (2022) emphasized the importance of a unifying theme and hands-on, problem-based learning experiences to engage students and enhance their learning experience. These challenges show the complexity of developing an effective AI teaching and learning platform, which must balance pedagogical principles, student profiles, and engaging learning experiences. Also, Mullainathan (2022) emphasized the need for a clear understanding of the problem that machine learning algorithms are solving, as they are primarily focused on prediction. This suggests that the platform must ensure that its algorithms are appropriately applied and interpreted. Brenner (2023) highlighted the importance of different types of learning processes and the use of genetic algorithms in economic models, indicating that the platform should consider these factors in its teaching approach. Storm (2020) further stressed the need for economists to address the limitations of machine learning in economic analysis, suggesting that the platform should be mindful of these challenges in its curriculum. However, the robust characteristics of the platform shows viability in the learning of Economics Education in tertiary institutions especially in Plateau State.

The Absorb artificial intelligence teaching and learning platform likely draws on a range of foundational concepts and technologies in the field of artificial intelligence. Negnevitsky (2022) provided a comprehensive overview of the field, including rule-based expert systems, artificial neural networks, and knowledge engineering, which are likely key components of the platform. Lane (2023) introduced the concept of Explainable Artificial Intelligence (XAI), which could be integrated into the platform to enhance its transparency and user understanding. The development of intelligent tutoring systems, which are as effective as human tutors, has been made possible by the integration of cognitive psychology, artificial intelligence, and computer technology (Corbett, et al 2023). The use of artificial intelligence techniques in adaptive educational systems within online learning platforms has been found to be particularly beneficial, as it allows for the creation of accurate student profiles and models, and the development of dynamic self-learning capabilities (Thakur, 2024). The incorporation of artificial intelligence tutoring techniques has been shown to enhance students' learning by providing personalized feedback and practice exercises (Fosso et. al., 2024).

The Absorb artificial intelligence teaching and learning platform offers several advantages. It employs AI techniques to create adaptive online learning environments, which can

enhance the learning process and improve both the learner and the system over time (Thakur, 2024). The platform also utilizes big data analysis methods to provide personalized guidance to students and reduce the teaching burden on educators (Xu, et al 2024). Its framework has been evaluated as highly suitable for education, indicating its potential to transform teaching and learning methods (Thongprasit & Wannapiroon, 2022). Furthermore, the Absorb platform supports practical teaching in higher education, promoting personalized and collaborative learning (Yang, 2023). The Absorb artificial intelligence teaching and learning platform offers several advantages in the field of economics education. Lin (2023) highlighted its potential to engage students in online environments, improving learning outcomes. Wu (2021) and Yang (2023) both emphasized the role of AI in teaching reforms and practical teaching modes, respectively, which can be applied to Economics Education to enhance the learning experience at the tertiary level. These studies collectively suggest that the Absorb platform, with its AI capabilities, can significantly enhance the teaching and learning of Economics education in universities.

The use of artificial intelligence (AI) in education, particularly in platforms like Absorb, has been shown to enhance administrative functions and personalize learning experiences (Chen, et al 2020). However, the integration of AI in educational institutions presents challenges, including the need for student support and addressing concerns about teaching, learning, and administration. To address these challenges, AI can be employed to develop adaptive educational systems within online learning platforms, which can improve the learning process by creating accurate student profiles and models (Thakur, 2024). Furthermore, the development of intelligent tutoring systems based on pedagogical principles can help overcome these challenges by providing effective and personalized learning experiences (Corbett, et al 2023). The use of Absorb AI platform in teaching and learning of Economics presents both opportunities and challenges. It is necessary to highlight the importance of understanding how people form expectations, a key concept in Economics, and suggest that AI could be used to model and analyze these processes.

However, Parkes (2023) raised concerns about the design of AI agents in Economics contexts, particularly in multi-agent systems, and the potential for these agents to deviate from human norms. Mullainathan (2022) emphasized the need for a clear understanding of the problem being addressed when applying machine learning in economics education, to avoid misinterpretation of results. Hidayat (2022) provided a comprehensive review of the use of AI in mathematics education, which could also be relevant to teaching and learning of Economics Overall, while AI has the potential to enhance the teaching and learning of Economics on our various institutions, a careful consideration of its application is necessary to ensure its effectiveness and ethical use for better improvement in students' achievement.

The EdApp artificial intelligence teaching and learning platform likely draws inspiration from a range of sources. Sun, Tsai, Finger, Chen & Yeh, (2023) both discussed the development of educational platforms that incorporate artificial intelligence, with a focus on AI-driven applications and the use of deep learning techniques. Griol (2023) further contributed to this

discussion by exploring the use of conversational agents and the construction of intelligent English teaching models. These studies collectively provide a foundation for the development of EdApp, which integrates these various elements to create a comprehensive and innovative learning platform. The use of EdApp's artificial intelligence teaching and learning platform has been explored in some studies. Chen (2020) highlighted its role in enhancing administrative functions and personalizing curriculum and content. Colchester (2022) emphasized the platform's ability to create accurate student profiles and models, and its use of AI techniques for adaptive online learning systems. Luckin, et al (2022) stressed the potential of EdApp in education to improve learning outcomes, and the need for intelligent technologies that align with effective teaching and learning practices. Sun, et al (2023) further demonstrated the platform's effectiveness in improving English language teaching efficiency and student learning outcomes. These studies collectively show the significant impact of EdApp's AI platform on education.

With this, the EdApp artificial intelligence teaching and learning platform offers several advantages, as highlighted in the literature. It provides a more natural interaction between the system and students, making learning more flexible and participatory (Griol, 2023). The platform's use of AI technologies, such as machine learning and natural language processing, enables personalized learning, efficient tutoring, and automated grading and assessment. In the context of China's higher education, the platform's AI applications can improve course resources, predict student learning styles, and enhance teaching quality (Fu, 2023). Furthermore, the platform's adaptive educational systems, which utilize AI techniques, can create accurate student profiles and models, inform pedagogy, and improve the learning-teaching context (Colchester, 2022). The use of interactive exercises to teach Economics, facilitated by platforms such as EdApp, can significantly enhance student engagement and learning outcomes (Gorbatuc, 2023). Furthermore, the integration of AI-based robotic players in online teaching and learning of Economics can bridge the gap between online and in-person learning, improving student's engagement and learning (Lin, 2023). AI technology can also be applied in online learning support systems to assist in decision-making processes, providing users with useful information and aiding in their learning (Matsuo, 2024). Lastly, the application of AI in Economics can lead to teaching reforms, promoting the development of intelligent systems and tools, and supporting teaching innovation (Wu, 2021).

The use of Artificial Intelligence (AI) in education, particularly in platforms such as EdApp, presents both opportunities and challenges. Although AI has the potential to enhance the learning experience by personalizing content and improving administrative functions (Chen, 2020), its introduction also raised concerns about equitable access and the need for appropriate policy responses (Pedró, 2024). The successful integration of AI in education requires a focus on system change, including the development of intelligent technologies that embody great teaching and learning (Luckin, 2024). However, Lin (2023) points out that the lack of face-to-face interaction in online education can hinder learning efficacy. The review has shown the potential of EdApp AI platform in instructional delivery in Economics Education, while also acknowledging the need for further research and development to fully realize its benefits. The

implication for this study is that when these artificial intelligence learning platforms are adequately utilized in learning by students of tertiary institutions, it will result in effective instructional delivery as will be reflected in the students' academic achievement in Economics Education.

**Statement of the Problem**

Over the years, several teaching strategies, which include lectures and discussions, have been used to teach Economics Education across tertiary institutions. These strategies mostly support the conventional face-to-face way of imparting knowledge in a classroom. However, teaching and learning process is a two-way traffic where the teacher sends out the message while the students acknowledge through feedback, but this approach does not provide visibility and large learners at the same time at different location

Therefore, this study was concerned about how willing learners are to consider in addition to the conventional approach where learners must be present at the time of the lesson and only listen to the lesson once when the teacher is teaching, the need to adopt artificial intelligence learning platforms due to its numerous potentials. Hence, it becomes necessary to leverage on technology (online and artificial intelligence-based learning platforms) where learners have the opportunities to learn with flexibility, convenience, access education anytime and anywhere. Furthermore, the platforms also provide self-paced learning opportunities, reduced commuting time, with access to wide range of resources and personalized learning experience. Several studies; Faiz & Neranjaka (2016); Mutoharoh & Diah (2021); Padohiong & Balsicas (2022) have been carried out relating to artificial intelligence learning platforms but are focused on the natural sciences, pharmaceutical and medical sciences. As a result, this study investigated the extent of utilisation of artificial intelligence learning platforms for effective instructional delivery in Economics Education in tertiary institutions in Plateau State.

**Objective of the study**

The purpose of this study was to:

1. ascertain the extent to which the joint utilisation of artificial intelligence learning platforms relates to effective instructional delivery in Economics Education in tertiary institutions.

**Research Question**

1. To what extent does the joint utilisation of artificial intelligence learning platforms relate to effective instructional delivery in Economics Education in tertiary institutions?

**Hypothesis**

1. The joint utilisation of artificial intelligence learning platforms does not significantly correlate to effective instructional delivery in Economics Education in tertiary institutions.

## Methodology

The correlational quantitative research design was adopted for this study. The research design is considered appropriate for the study because it enables the researcher to test the extent of relationship between the independent and dependent variables in this study. Correlational survey research design is a method used to test relationships between variables, especially in educational settings (Okoro, 2023). It equally ensures the collection of data directly from a sample of the population, analyse and generalize based on the research outcome. The population of this study was 751 undergraduate students of Economics and Education in University of Jos, Plateau State. The target population included students who have been exposed to learning through artificial intelligence platforms during the 2024/2025 academic session.

A sample of 316 respondents was used through purposive sampling technique. Two questionnaires developed by the researcher titled Utilisation of Artificial Intelligence Learning Platforms Questionnaire" (UAILPQ) and "Effective Instructional Delivery in Economics Education Questionnaire" (EIDEEQ) were used to collect responses from the respondents. The questionnaires were validated by experts with a reliability coefficient of 0.81 and 0.78 respectively established using Cronbach alpha. Pearson Product Moment Correlation Coefficient (PPMCC) was used to answer the research questions while Linear Regression was used to test the hypotheses via SPSS version 27.00 at 0.05 level of significance.

## Results

**Research Question One:** To what extent does the joint utilisation of artificial intelligence learning platforms relate to effective instructional delivery in Economics Education in tertiary institutions?

**Table 1: Multiple correlation coefficient of Artificial Intelligence (AI) learning platforms (Zavvy, Absorb, EdApp) predict effective instructional delivery in Economics Education in tertiary institutions**

| N | R | $R^2$ | Remarks |
|---|---|---|---|
| 348 | **0.93** | 0.865(87%) | High Relationship |

Sample Size (n), Multiple Correlation Coefficient (R), coefficient of determination ($R^2$) and Remarks

Table 1, a multiple correlation coefficient was computed to describe extent the utilisation of online teaching and learning platforms (Zavvy, Absorb, EdApp) predict effective instructional delivery in Economics education in tertiary institutions. The result shows that the coefficient of 0.74 which fall within the coefficient limit of ±.0.70-1.00 indicating a positive strong/high relationship between artificial intelligence (AI) teaching and learning platforms (Zavvy, Absorb, EdApp) predict effective instructional delivery in Economics education in tertiary institutions. The coefficient of determination ($R^2$) 0.865 indicates that approximately 87% of the variance observed in effective instructional delivery in Economics education in tertiary institutions was attributed to artificial intelligence (AI) teaching and learning platforms.

**Hypothesis One**: The joint utilisation of artificial intelligence learning platforms does not significantly correlate to effective instructional delivery in Economics Education in tertiary institutions. Data for testing the hypothesis is presented on Table 2 as follows:

**Table 2: One Way ANOVA F-test for the coefficient of relationship among the joint Artificial Intelligence (AI) learning platforms (Zavvy, Absorb, EdApp) and effective instructional delivery in Economics Education in tertiary institutions**

| Model | Sum of Squares | Degree of Freedom | Mean Squares | $F_{cal}$ | F-tab | Decision |
|---|---|---|---|---|---|---|
| Regression | 112.52 | 3 | 37.51 | | | |
| Residual | 3371.09 | 345 | 9.77 | 3.84 | 2.60 | Reject Ho |
| Total | 3483.61 | 348 | | | | |

F-test of Significance of Multiple Linear Correlation/Regression among the variables

The data in Table 2, show a One-Way ANOVA F-test of significance of multiple linear correlation statistic computed to display the joint Artificial intelligence (AI) teaching and learning platforms (Zavvy, Absorb, EdApp) significantly predict instructional delivery in Economics education. Based on the data in the Table 1.2, given the calculated F-ratio value 3.84, which is greater than and F tabulated value of 2.60 at .05 level of significance with a degree of freedom (3, 345). Hence, the researcher rejected the null hypothesis; thus, concluding that the joint Artificial intelligence (AI) teaching and learning platforms (Zavvy, Absorb, EdApp) significantly predict effective instructional delivery in Economics Education.

**Discussion of Finding**

The finding on the research question and hypothesis revealed that there is a positive high and significant relationship between the utilization of artificial intelligence (AI) learning platforms and instructional delivery in Economics Education thereby rejecting the null hypothesis. The finding is in agreement with the finding of Chen (2020) who averred that the use of artificial intelligence (AI) in education, particularly in platforms such Absorb, has been shown to enhance administrative functions and personalize learning experiences. On the contrary, Lin (2023) pointed out that the lack of face-to-face interaction in online education can hinder learning efficacy. Furthermore, corroborating the findings of the study, Yunusa, Umar and Bervell (2019) asserted that artificial intelligence has transformed education system by providing easy access to education and training services for many, who hitherto could not have gone to school before the revolution. They further affirmed that artificial intelligence teaching and learning platforms facilitate meaningful learning activities leading to knowledge retention and maximizing academic goal achievement as learning is transferred into the real world of work and life.

## Conclusion

The implication of the finding above is that there lies huge opportunity for undergraduate students of tertiary institutions in the utilisation of artificial intelligence learning platforms in learning of Economics Education. It further implies the provision of adequate motivation for students to learn at their own pace and in a conducive environment which can enhance their learning potentials. It further ensured the effective instructional delivery of lesson content to tertiary institutions students which enhances their comprehension of the lesson in Economics Education.

## Recommendation

In line with the finding the following recommendation is made:

1. Educational stakeholders should encourage the utilisation of artificial intelligence learning platforms in instructional delivery in Economics Education by including artificial intelligence in the curriculum to promote its utilization in the tertiary institutions especially universities.

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