ARTIFICIAL INTELLIGENCE AS A TOOL FOR ENHANCING INSTRUCTIONAL SUPERVISION OF ECONOMICS TEACHING IN NIGERIAN SECONDARY SCHOOLS

By

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Abstract

The quality of Economics teaching in Nigerian secondary schools largely depends on effective instructional supervision that ensures adherence to curriculum standards and the use of appropriate teaching strategies. Traditional supervisory practices, however, are often constrained by inadequate manpower, limited monitoring tools, and delayed feedback mechanisms. With the increasing integration of digital technologies in education, artificial intelligence (AI) offers innovative opportunities to strengthen instructional supervision. This paper examines the role of artificial intelligence in enhancing instructional supervision of Economics teaching in Nigerian secondary schools. Adopting a position paper approach, the study critically reviews existing literature, educational policies, and emerging practices related to AI-driven supervision. The paper argues that artificial intelligence can improve supervision through continuous monitoring of instructional delivery, data-driven evaluation of teaching performance, timely feedback, and targeted professional development for teachers. The study concludes that strategic policy actions and sustained investment can facilitate effective adoption. The paper emphasizes the need for deliberate integration of AI into instructional supervision to improve teaching quality and learning outcomes in Economics.

Keywords: Capacity building, Economics programme, Teachers

1.0 Introduction

Instructional supervision plays a critical role in ensuring quality teaching and effective learning in secondary schools. In the teaching of Economics, instructional supervision is particularly important because the subject involves abstract concepts, data analysis, and interpretation of real-life economic issues that require effective pedagogical approaches. In Nigeria, however,

instructional supervision of Economics teaching in secondary schools has been constrained by challenges such as limited supervisory personnel, inadequate monitoring tools, delayed feedback, and inconsistencies in evaluating teachers' instructional practices.

The emergence of Artificial Intelligence (AI) offers new opportunities to transform instructional supervision in secondary schools. AI technologies such as data analytics systems, intelligent monitoring tools, and digital performance tracking platforms can support supervisors in observing classroom activities, analyzing teaching patterns, assessing lesson delivery, and providing timely feedback. By leveraging AI, educational administrators can enhance the efficiency, objectivity, and effectiveness of supervision processes, particularly in subjects like Economics that demand continuous monitoring of instructional quality.

This study examines the role of artificial intelligence in enhancing instructional supervision of Economics teaching in Nigerian secondary schools. It explores how AI can support supervisors in improving teaching standards, strengthening accountability, and promoting better learning outcomes. The study also considers the challenges and policy implications of integrating AI into instructional supervision within the Nigerian secondary school system.

Conceptual Terms

2.1 Concept of Economics as a Subject

Economics is a social science subject that studies how individuals, organizations, and governments make choices in the allocation of scarce resources to satisfy unlimited human wants. As a secondary school subject, Economics introduces students to fundamental concepts such as scarcity, choice, opportunity cost, demand and supply, production, consumption, distribution, and economic systems. It also exposes learners to contemporary economic issues including inflation, unemployment, public finance, and economic development.

The study of Economics aims to develop students' analytical and critical thinking skills, enabling them to understand and interpret economic problems in society. Through Economics education, students are equipped with knowledge and skills needed for informed decision-making, responsible citizenship, and preparation for higher education and participation in the modern economy.

2.2 Concept of Supervision

Supervision in education refers to the process of guiding, monitoring, and supporting teachers to improve instructional quality and achieve educational goals. It involves planned activities such as classroom observation, evaluation of teaching methods, assessment of instructional materials, and provision of professional feedback to teachers (Ogunode. & Ajape 2021; Ogunode, & Richard, 2021). Supervision is the task of achieving the desired results by means of intelligent

utilisation of human talents and utilising resources in a manner that provides a challenge to human talent. It is concerned with initiating action, putting into effect the plan and decision by stimulation of the human resources of the enterprise."(Terry in (Economis discussion 2020). Supervision is the act or function of overseeing something or somebody. It is the process that involves guiding, instructing and correcting someone. A person who performs supervision is a "supervisor", but does not always have the formal title of supervisor (Skolera 2022).

Overseeing the subordinates at work with authority and with an aim to guide the employees, if he is doing wrong." (Economis discussion 2020) Supervision is direction, guidance and control of working force with a view to see that they are working according to plan and are keeping time schedule. Further, they are getting all possible help in accomplishing their assigned work. 'Supervision is a joint endeavour in which a practitioner with the help of a supervisor attends to their clients, themselves as part of their client practitioner relationships and the wider systemic context, and by doing so improves the quality of their work, transforms their client relationships, continuously develops themselves, their practice and the wider profession.' School supervision is the process of evaluating, assessing and guiding teachers and staff toward improvement of everyday work. Ultimately, this guidance is based on the end-goal of providing a higher level of learning engagement and improved student outcomes. The people supervising educators and other staff are typically members of administration, including educational leaders (Keiseruniversity 2023).

Supervision is not merely fault-finding but a collaborative effort aimed at professional development and improved teaching performance. *Supervision is a Latin Word. Super means 'from the above' and vision means 'to see'. In ordinary sense of the term, supervision means overseeing the activities of others. In management supervision means (*Ogunode, Olatunde-Aiyedun, T& Akin-Ibidiran. Yemi 021) "In secondary schools, effective supervision ensures that teachers adhere to curriculum standards, adopt appropriate teaching strategies, and maintain high academic standards. Instructional supervision plays a vital role in improving teacher competence, enhancing student learning outcomes, and promoting accountability within the school system. (Ogunode, & Ibrahim, 2023;Ogunode, & Fabiyi, 2023)

2.3 Concept of Artificial Intelligence

Artificial Intelligence (AI) refers to the ability of computer systems and machines to perform tasks that normally require human intelligence. These tasks include learning from data, reasoning, problem-solving, decision-making, and pattern recognition. AI technologies include machine learning, data analytics, expert systems, natural language processing, and intelligent automation tools (Khedkar, 2023;Ogunode, & Ukozor, 2023).

Artificial Intelligence refers to computer-based systems designed to perform tasks that normally require human intelligence, such as data analysis, pattern recognition, decision-making, and

prediction. In instructional supervision, AI systems can be used to collect instructional data, analyze teaching practices, track students' learning progress, and support supervisors in making informed decisions. AI-powered tools include learning management systems, classroom analytics software, digital observation platforms, and intelligent feedback systems (Ogunode, Agbade, & Bassey, 2023b; Ogunode, & Gregory, 2023).. The advancement of Artificial Intelligence (AI) presents new opportunities for transforming instructional supervision. AI technologies can support supervisors by collecting and analyzing instructional data, monitoring classroom practices, and providing evidence-based feedback. This paper discusses in detail how artificial intelligence can enhance instructional supervision of Economics teaching in Nigerian secondary schools, highlighting its benefits, challenges, and implications for educational management. (Ogunode, & Gregory,2023; Bordia, 2023;Bilal,023).

Artificial Intelligence and Instructional Supervision in Economics Teaching

Artificial intelligence offers innovative tools that can improve the supervision of Economics instruction by making the process more efficient, objective, and data-driven. AI-powered systems can track lesson delivery, analyze teaching patterns, and assess alignment with curriculum standards. For example, digital lesson plan analysis tools can evaluate whether Economics teachers are covering key topics such as demand and supply, market structures, and national income (Ogunode, et al 2023);. AI can also support classroom observation through smart devices and learning management systems that record instructional activities. These tools enable supervisors to assess teaching effectiveness even in situations where physical supervision is limited. By using AI, supervisors can gain real-time insights into classroom practices and provide timely support to Economics teachers. (Smith, 2022;Ogunode, Idoko, & ThankGod .2024; Ogunode, & Ukozor, 2023).

3.0 Methodology

This study adopts a **position paper methodology**, which focuses on critical analysis, synthesis of existing knowledge, and reasoned argumentation rather than empirical data collection. The position paper approach is suitable for this study because it allows the researcher to examine current supervisory practices in Nigerian secondary schools and assess the potential of artificial intelligence as a transformative tool for instructional supervision.

The paper draws on secondary sources such as academic journals, policy documents, curriculum guidelines, government reports, and relevant literature on artificial intelligence and educational supervision. These sources were analyzed to identify gaps in traditional supervision methods and to highlight the potential contributions of AI to improving the supervision of Economics teaching. Based on this analysis, the paper presents an informed position advocating for the systematic adoption of artificial intelligence in instructional supervision, supported by policy-oriented recommendations.

4.0 Result and Discussion on Artificial Intelligence as a Tool for Enhancing Instructional Supervision of Economics Teaching in Nigerian Secondary Schools

Monitoring of Instructional Delivery

AI enhances the monitoring of instructional delivery by enabling continuous and systematic observation of teaching activities. Through digital platforms, AI can track lesson plans, instructional content coverage, teaching strategies, and time allocation. AI-powered classroom analytics tools can monitor students' engagement levels, participation patterns, and learning behaviors. This allows supervisors to gain real-time insights into how lessons are delivered without relying solely on occasional classroom visits (Ogunode, & Gregory, 2023; Poth, 2023; Saxena, Saxena,, Pandey, Flato, & Shukla, 2023)). Continuous monitoring ensures that instructional practices remain aligned with curriculum objectives and teaching standards. AI systems can monitor instructional delivery by analyzing lesson plans, teaching schedules, and digital classroom interactions. This helps supervisors determine whether Economics teachers are adhering to the prescribed curriculum and using appropriate teaching methods. Continuous monitoring reduces reliance on sporadic school visits and enhances accountability (Ogunode, ThankGod, & Olatunde-Aiyedun, 2022; Ogunode, & Ukozor, 2023).

Data-Driven Evaluation of Teaching Performance

Artificial intelligence enables the collection and analysis of large volumes of instructional data, including student assessment results, classroom participation, and lesson coverage. Through data analytics, supervisors can objectively evaluate teachers' performance and identify areas needing improvement. This reduces subjectivity in supervision and promotes fairness. AI supports objective and data-driven evaluation of teaching performance. (.Sharma, Tomar, Bhardwaj, & Sakalle, 2021). By analyzing large volumes of data such as students' assessment results, attendance records, lesson completion rates, and engagement metrics, AI systems provide evidence-based evaluations of teachers' effectiveness. This reduces subjectivity and bias commonly associated with traditional supervision methods (Oztok, & Zingaro, 2019).. Data-driven evaluation enables supervisors to identify strengths and weaknesses in teaching practices and make informed decisions regarding teacher appraisal and instructional improvement (Ogunode, N. J., Agbade, O. P., & Bassey, U. O. (2023b).Ogunode, N,. J. Idoko, G., & ThankGod . P. (2024).

Timely Feedback and Professional Support

One major limitation of traditional supervision is delayed feedback. AI-powered platforms can generate automated reports on teaching performance and student learning outcomes. These reports help supervisors provide immediate and constructive feedback to Economics teachers, supporting continuous professional development. (Singh, & Singh, 2021) One major advantage of AI in supervision is the provision of timely feedback to teachers. AI systems can generate instant reports

and recommendations based on classroom data and students' learning outcomes (.Muñoz,, Ojeda, Jurado,., Peña, Carranza,, Berríos, & Vasquez-Pauca, 2022).. Teachers receive immediate feedback on areas requiring improvement, such as lesson pacing, assessment strategies, or student engagement. Timely feedback supports continuous professional growth and allows teachers to adjust their instructional practices promptly. AI also facilitates personalized professional support by suggesting relevant resources, training materials, or mentoring opportunities (Brock, 2023; Khedkar, 2023;Laskowski, & Tucci, 2023).

Identification of Training Needs

By analyzing teaching patterns and student performance data, AI can identify gaps in teachers' instructional skills. This information enables educational administrators to design targeted training programs for Economics teachers, ensuring that professional development activities address real instructional needs. AI aids supervisors in identifying teachers' training and professional development needs (Bordia, 2023; Smith, (2021;Smith, 2022).).. By analyzing performance trends and instructional data, AI systems can detect gaps in subject knowledge, pedagogical skills, classroom management, or assessment practices. This enables education managers to design targeted capacity-building programmes rather than relying on generalized training. Accurate identification of training needs ensures efficient use of resources and enhances the effectiveness of professional development initiatives (Bilal, 023; Ogunode & Olowonefa 2023)..

Enhancement of Accountability and Transparency

AI enhances accountability by providing reliable data on instructional practices and learning outcomes. Supervisors can use this data to make informed decisions, enforce standards, and ensure transparency in the supervision process. AI promotes accountability and transparency in instructional supervision by providing clear, traceable, and verifiable data on teaching practices and learning outcomes. (Ogunode, Edinoh, & Chinedu, 2023; Copeland, 2022) Digital records generated by AI systems reduce manipulation and favoritism in supervision and teacher evaluation processes. Supervisors, school administrators, teachers, and policymakers can access reliable data to support decision-making. Enhanced transparency builds trust in the supervisory system and encourages teachers to adhere to professional and ethical standards (Westagilelabs 2022; Ogunode, 2025; Borbajo, Malbas, & Dacanay, 2023)..

4.1 Conclusion and Recommendation

Effective instructional supervision is essential for improving teaching quality and students' learning outcomes in secondary schools. Traditional supervision methods are often constrained by time, manpower, subjectivity, and limited data utilization. The integration of Artificial Intelligence (AI) into instructional supervision offers new opportunities for continuous monitoring, data-driven evaluation, timely feedback, identification of teachers' training needs, and enhancement of

accountability and transparency. This paper examines how AI aids effective instructional supervision by focusing on monitoring of instructional delivery,

Artificial intelligence has significant potential to enhance instructional supervision of Economics teaching in Nigerian secondary schools. By enabling continuous monitoring, data-driven evaluation, and timely feedback, AI can improve teaching quality and strengthen educational management. Based on the discussion and conclusions of the study, the following recommendations are proposed:

1) Policy Development:

Government and educational authorities should develop clear policies and guidelines for the use of artificial intelligence in instructional supervision at the secondary school level.

2) Investment in Infrastructure:

Adequate provision of electricity, internet connectivity, and digital devices should be prioritized to support AI-based supervision systems.

3) Capacity Building:

Regular training programs should be organized for school supervisors and Economics teachers to enhance their understanding and effective use of AI tools.

4) Pilot Implementation:

Pilot projects should be introduced in selected secondary schools to test AI-driven supervision systems before large-scale implementation.

6) Data Protection and Ethics:

Strong measures should be put in place to ensure data privacy, security, and ethical use of AI in line with national data protection regulations.

7) Stakeholder Collaboration:

Partnerships among government agencies, schools, technology providers, and educational researchers should be encouraged to support sustainable implementation of AI in instructional supervision.

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