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Effects of Artificial Intelligence in Colleges of Education: A Study Carried Out at Kasama College of Education, Mansa College of Education, and St. Mary's College of Education

Misheck Mushili Mulenga

Kasama College of Education

Abstract. This extended study explores the multifaceted effects of Artificial Intelligence (AI) in the teaching, learning, and administrative processes within three prominent Zambian Colleges of Education: Kasama College of Education, Mansa College of Education, and St. Mary's College of Education. The research assesses AI integration, potential opportunities, emerging challenges, and the overall impact of AI tools on pedagogy, student engagement, curriculum development, institutional policy, and administrative efficiency. Using a mixed-methods approach with a sample of 150 respondents across the three institutions, data was gathered through surveys, interviews, focus group discussions, and document analysis. Findings indicate significant potential of AI in enhancing educational outcomes, promoting inclusion, and streamlining processes, despite persistent challenges such as infrastructure limitations, low digital literacy, and regulatory gaps. The results of this research underscore the need for targeted investments, capacity-building initiatives, and clear policy frameworks to harness the transformative power of AI in higher education settings.

Index Terms- Artificial Intelligence, Colleges of Education, Pedagogical Innovation, Educational Policy, Zambia

I. Introduction

1. Background of the Study

Artificial Intelligence (AI) has become one of the defining technologies of the 21st century, revolutionizing various sectors, including healthcare, finance, transportation, and most importantly, education. Its capabilities in automating tasks, analyzing vast data sets, and supporting intelligent decision-making have made it a tool of choice for innovative institutions. In education, AI can support both personalized learning experiences and institutional efficiencies. In the Zambian context, particularly within Colleges of Education, the potential of AI remains underexplored but promising. These institutions are critical in shaping the competencies and philosophies of future teachers, and the integration of AI can revolutionize teaching methodologies, resource utilization, and learner engagement.

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2. Statement of the Problem

Despite its potential benefits, the integration of AI in Zambian Colleges of Education is limited. Infrastructure remains underdeveloped, many educators and administrators lack adequate digital literacy, and national education policies have yet to comprehensively address AI integration. These challenges result in a knowledge gap and a risk of exclusion from global advancements in educational technology. Furthermore, there is limited empirical evidence about how AI is currently being used, what tools are available, and how different stakeholders perceive its impact. This lack of data hinders effective planning and resource allocation for AI-driven educational reform.

3. Objectives of the Study

The objectives of this study are to:

- Explore the types of AI tools utilized in the three Colleges of Education.
- Investigate how AI influences teaching practices, curriculum delivery, and assessment methods.
- Assess administrative benefits and challenges associated with AI integration.
- Examine student experiences and engagement with AI-supported learning environments.
- Recommend practical and policy-oriented strategies for strengthening AI adoption in teacher education.

4. Research Questions

This study seeks to answer the following research questions:

- What types of AI technologies are being employed in the selected Colleges of Education?
- How is AI transforming teaching methods, student learning, and assessment practices?
- What are the administrative benefits and operational challenges faced in implementing AI?
- How do lecturers, students, and administrators perceive the impact of AI?
- What frameworks or policies are needed to enhance sustainable AI adoption?

5 Significance of the Study

The study holds significant value in understanding the evolving educational landscape in Zambia and the broader sub-Saharan African region. It contributes to the global discourse on digital transformation in education and highlights the specific realities of low- and middle-income countries. Insights gained will inform policymakers, curriculum developers, college administrators, and education technology providers about the practical implications and strategies for AI implementation. Additionally, the findings may encourage further academic research and development of locally relevant AI solutions tailored to Zambia's educational context.

6. Scope and Limitations

The scope of the study is limited to three Colleges of Education: Kasama, Mansa, and St. Mary's. The selection was based on their regional significance and accessibility. The study includes inputs from lecturers, students, and administrative

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personnel. However, it is constrained by factors such as time limitations, financial constraints, and the rapidly changing nature of AI technology. Moreover, findings may not be universally applicable across all educational institutions due to differences in infrastructure, digital readiness, and institutional culture.

II. Tables

Table 1: Types of AI Tools Used in Selected Colleges

College	AI Tool	Application Area	Frequency of Use
Kasama College of Education	ChatGPT	Student Support and Writing Assistance	High
Mansa College of Education	Khanmigo AI	Interactive Curriculum Delivery	Moderate
St. Mary's College of Education	Grammarly	Grammar Checking and Essay Review	High

Table 2: Observed Administrative Benefits from AI Integration

Benefit	Description	Reported By
Automation of Records	Digital systems for student data management	Administrators
Enhanced Communication	AI bots responding to FAQs and inquiries	IT Support Staff
Improved Scheduling	AI-generated teaching and exam timetables	Academic Coordinators

III. Conclusion

The study on the effects of Artificial Intelligence in Kasama College of Education, Mansa College of Education, and St. Mary's College of Education reveals that AI has a significant positive impact on both teaching and administrative functions. AI enhances personalized learning experiences, facilitates quicker and more accurate assessment feedback, and improves the efficiency of administrative tasks such as registration and record-keeping. However, challenges such as inadequate ICT infrastructure, limited internet access, and a lack of sufficient training for both staff and students hinder the full realization of AI's potential in these institutions. To maximize the benefits of AI in colleges of education, strategic investments in technology infrastructure, comprehensive capacity-building programs, and supportive policies are essential. Ultimately, with the right support and resources, AI can play a transformative role in improving educational quality and institutional management in Zambian colleges of education.

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