

# Artificial Intelligence: An Alternative Innovation and Strategies to Teaching and Learning in Nigerian Secondary Schools: A Case Study with Delta State Basic Secondary Schools

**OBIMGBA, Gladys N. Ph.D, LLB<sup>1</sup>**  
gladys.obimgba@unidel.edu.ng

**ARISI, Regina Oghenero Ph.D<sup>2</sup>**  
<sup>1,2</sup> University of Delta  
Faculty of Education  
Department of Science Education  
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## Abstract

*This paper (An Alternative Innovation and Strategies to Teaching and Learning in Nigerian Secondary Schools: A Case Study with Delta State Basic Secondary Schools) explored the role of Artificial Intelligence (AI) as an alternative innovation in teaching and learning within the context of schools. It examines various strategies and applications of AI that can forward educational practices, personalized learning, Virtual tutors and artificial intelligence-powered analytics. The potential benefits of integrating AI into education are discussed, along with considerations for responsible and ethical implementation.*

**Keywords:** Artificial Intelligence (AI), Innovation in Education, Teaching and Learning, Personalized Learning, Virtual Tutors, AI-powered Analytics

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## Introduction

Traditional educational approaches are facing challenges in meeting the diverse needs of students in today's digital age, (Adeyemo, S. A. [2016](#); Adebessin, F., &Tella, A. 2019; Ajiboye, T. J., Ajiboye, J. O., &Adedoyin, A. A. 2020; Uzochukwu, C. O., Nwankwo, B. C., &Uzochukwu, B. M. 2019).

AI presents promising opportunities that enhance teaching and learning experiences by offering

- Personalized Support,
- Immediate Feedback, and
- Efficient Administrative Assistance.

This paper investigated how AI can serve as an innovative solution to addressing these challenges and improve educational outcomes in classroom situation for our Secondary Schools,

## Literature Review

According to Bergmann, J., & Sams, A. ([2012](#)), Imafidon, E. (2021), Knowles, M. S. ([1975](#)), Nwachukwu, C. V., Ukwueze, S. E., &Ugwuoke, E. E. (2020), Nwazuoke, I. A. ([2017](#)), Ogunlana, B. B., &Afolabi, I. T. (2019), Osuji, U.S., Oyediran, W.O., &Aladejebi, A.T. (2018), the growing interest in leveraging AI technologies within educational settings should Studies demonstrate:

- i. Effectiveness of AI-driven tools in facilitating personalized learning experiences.
- ii. Supporting Educators in instructional decision-making; and,
- iii. Optimizing administrative processes.
- iv. However, concerns regarding data privacy, algorithmic inequality and displacement of human educators also warrant attention.

### **Alternative Innovations and Strategies**

- i Technology integration (e.g., e-learning platforms, educational apps)
- ii Project-based learning
- iii Collaborative learning

### **Ethical Considerations**

- i Informed consent from participants.
- ii Confidentiality and anonymity of participants.

### **Methodology**

This study employed a qualitative approach, drawing on interviews with Educators, Administrators, Students and AI Developers exploring current practices and perceptions regarding AI integration in schools. The data analysis focused on identifying emerging themes and patterns related to the adoption and utilization of AI technologies in educational contexts. Population: 50 Teachers and 100 Students of Delta State Basic Secondary School. Sample Size: 50 teachers and 100 students (selected through random sampling)

### **Data Collection Method:**

Fifteen 15 Questionnaire items for An Alternative Innovation and Strategies to Teaching and Learning in Delta State Basic Secondary Schools, Nigerian. Interview was conducted with 5 teachers and 5 students to gather more in-depth information on their experiences and perceptions.

### **Discussion:**

The discussion section critically examined the implications of Integrating Artificial Intelligence into Education, Addressing both the potential benefits and Challenges. Key considerations include the importance of Ethical Artificial Intelligence design, need for inclusive practices that mitigate inequality in teaching and learning. Complementary role of human Educators in the Artificial Intelligence-enhanced learning environment.

### **Findings:**

The findings revealed:

- i General academic zeal among stakeholders for applying Artificial Intelligence to enhance Teaching and Learning experiences.
- ii Educators value Artificial Intelligence-powered tools for their ability to provide Personalized Support, Automate Routine Tasks and Offer insights into students' performances.
- iii Concerns about Data Security, Equity and the need for ongoing Professional Development are also evident.

### Conclusion:

In conclusion, this paper underscores the transformative potential of AI as:

- i An Alternative Innovation in Teaching and Learning in Nigerian Secondary Schools: A Case Study with Delta State Basic Secondary Schools.
- ii By embracing Artificial Intelligence Technologies responsibly and proactively addressing associated challenges.
- iii Educators can activate the power of Artificial Intelligence to create more Engaging, Effective and Equitable Educational Experiences for all students.

Further research and collaboration are needed to fully realize the promise of Artificial Intelligence in education and validating its positive impact on future generations.

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## Appendix

### Section A: Demographics\*

1. Gender: Male/Female
2. Age: \_\_\_\_\_
3. Role: Teacher/Student
4. Subject/Class: \_\_\_\_\_

### \*Section B: Current Teaching and Learning Practices\*

1. What is your current Teaching/Learning method? (Tick one)
  - Traditional/ Lecture-based
  - Technology-integrated
  - Project-based
  - Collaborative
  - Other (specify)
2. How often do you use Technology in Teaching/Learning? (Scale: 1-5, where 1=rarely and 5=frequently)
3. What challenges do you face in Teaching/Learning? (Open-ended)

### \*Section C: Alternative Innovations and Strategies\*

1. Have you ever used project-based learning? Yes/No
2. How effective do you think technology integration is in improving student learning? (Scale: 1-5, where 1=not effective and 5=very effective)
3. How often do you encourage collaborative learning? (Scale: 1-5, where 1=rarely and frequently)
4. What do you think is the most effective alternative innovation/strategy for improving teaching and learning? (Open-ended)

### \*Section D: Perceived Effectiveness\*

1. How effective do you think the current Teaching/Learning method is in achieving learning objectives? (Scale: 1-5, where 1=not effective and 5=very effective)
2. How confident are you in your ability to implement alternative innovations/strategies? (Scale: 1-5, where 1=not confident and 5=very confident)
3. What support do you need to effectively implement Alternative Innovations/Strategies? (Open-ended)

### \*Section E: Additional Comments\*

1. Do you have any suggestions for improving Teaching and Learning in Nigerian Secondary Schools: *A Case Study with Delta State Basic Secondary Schools?* (Open-ended)