**CHAPTER ONE**

**INTRODUCTION**

* 1. **Background of the Study**

Over the past two decades, technology has greatly changed education around the world. Starting from the use of computers and multimedia tools to more advanced systems like online learning platforms and artificial intelligence, these digital tools have changed how teaching and learning happen. Educational technology has made it easier to create flexible, student-focused learning that supports critical thinking, teamwork, and creativity. In many developed countries, technology is now a key part of their education plans, helping improve how lessons are taught, how students' progress is tracked, and how inclusive learning is achieved.

Developing countries like Nigeria have also recognized the potential of integrating technology in education to bridge educational gaps and improve student performance. That is why the Federal Ministry of Education commemorated the 2025 International Day of Education by embracing the theme “AI and Education: Preserving Human Agency in a World of Automation.” The Ministry has restated its dedication to using the power of AI to improve education in Nigeria. By focusing on innovation and using AI responsibly, it hopes to make learning more open, effective, and creative for everyone in the country. National initiatives, including the *National Policy on ICT in Education*, were designed to enhance access, equity, and quality of education through the effective use of information and communication technologies (Federal Ministry of Education, 2019).

These efforts are meant to improve education, reduce unfair differences in learning, and help students gain the skills they need for today’s world. However, how well these plans work depends on things like school buildings, money, and how prepared the teachers are, which can be very different from one place to another.

However, the implementation of such policies often faces challenges at the grassroots level. Across Nigeria, and particularly in regions like Edo South Senatorial District, infrastructural and socio-economic disparities create a digital divide between schools in urban centers and those in rural or underserved communities. While some schools in cities may benefit from computer labs, internet access, and digital teaching aids, their rural counterparts often operate without electricity, let alone computers or internet connectivity. This imbalance hinders the equitable application of digital learning and widens educational inequality (Norris, 2001).

Edo South Senatorial District, located in Edo State, is a key educational zone with a mix of rural and urban secondary schools. This diversity presents an ideal context for examining how technology affects teaching and learning across varying levels of access and support. According to Adewale and Alabi (2019), urban schools in Edo South are more likely to benefit from government and private sector investments in digital learning infrastructure, while schools in outlying areas face barriers such as poor connectivity, limited funding, and lack of trained personnel.

Furthermore, while infrastructure is a critical factor, the human element—particularly teacher readiness and attitudes—is equally vital. Research shows that even where digital tools are available, many teachers lack the confidence or pedagogical knowledge to effectively integrate technology into their lessons (Ertmer et al., 2012). Without continuous professional development and administrative support, efforts to modernize classroom practices may not yield significant outcomes.

Another issue is the lack of data-driven evaluation of existing technological initiatives in schools. Many policies and pilot programs are introduced with little follow-up research to determine their impact on learning outcomes. As a result, gaps remain between policy intentions and classroom realities. For example, while the Federal Government has launched initiatives to distribute tablets and e-resources to schools, it is unclear how these tools are being used in actual teaching and whether they are improving student engagement and academic achievement.

In light of these challenges, there is a pressing need to investigate how technology is currently influencing teaching and learning practices in specific Nigerian contexts. The choice of Edo South Senatorial District for this study is strategic, as it represents both the opportunities and limitations inherent in Nigeria’s push for educational modernization. By evaluating access to digital tools, teacher readiness, and the actual impact of technology on student learning, this study seeks to provide a comprehensive view of the situation on the ground.

Moreover, in the wake of the COVID-19 pandemic, which forced a sudden shift to online and hybrid learning globally, the importance of technological resilience in education systems has become even more apparent. This further underscores the relevance of understanding the local readiness and capacity to adopt digital learning solutions in regions like Edo South.

Therefore, this research not only responds to national and global calls for technology-enhanced education but also aims to contribute evidence-based insights that can inform policy decisions, support school improvement plans, and empower educators and learners to make the most of digital innovations. It will help clarify what works, what does not, and what needs to change in order to create a more inclusive and effective educational system in Edo South and other similar regions across Nigeria.

* 1. **Statement of the Problem**

Even though the world increasingly understands how powerful technology can be in education, many developing countries like Nigeria still struggle to use digital tools effectively in their schools. Studies have shown that using Information and Communication Technologies (ICTs) in education can help students access learning more easily, receive teaching that fits their needs, and stay more engaged in the classroom. However, these benefits are not universally experienced particularly in under-resourced or rural areas.

In Nigeria, although national policies such as the *National Policy on ICT in Education* (Federal Ministry of Education, 2019) have been developed to promote digital transformation in schools, implementation has been uneven and slow. In regions like Edo South Senatorial District, this gap is even more pronounced. Many senior secondary schools in this area lack the fundamental infrastructure needed to support technology-based teaching and learning. Issues such as unreliable electricity, limited internet connectivity, shortage of digital learning devices, and a lack of trained teachers significantly impede the integration of ICT in education (Obi & Okoro, 2020; Ojo & Abimbola, 2017).

While some previous studies have examined technology use in Nigerian schools, few have focused specifically on the unique socio-educational environment of Edo South Senatorial District a region with both urban and rural schools facing varying degrees of resource allocation and infrastructural support. Moreover, the available research does not adequately address the practical experiences of teachers and students regarding how technology is being applied in classroom instruction and how it affects student engagement and academic performance.

There is, therefore, a crucial need to investigate the current state of technological integration in teaching and learning within this specific region. Key questions remain unanswered: Are technological resources adequately available and accessible in these schools? Are teachers prepared and willing to use them effectively? Is student learning actually being enhanced, or is technology just a symbolic gesture?

This study seeks to fill this gap by focusing on three primary concerns:

* The availability and accessibility of digital tools in senior secondary schools in Edo South;
* The preparedness, attitudes, and professional capacity of teachers to implement technology-driven instruction;
* The actual impact of technology on students’ learning outcomes and classroom engagement.

By addressing these concerns, the research aims to offer practical insights that can inform educational policy and planning. The findings are expected to contribute to bridging the digital divide and guiding more equitable and effective integration of technology in Nigerian secondary education.

* 1. **Purpose of the Study**

The purpose of this study is to examine the impact of technology on teaching and learning in senior secondary schools in Edo South Senatorial District, Edo State. The specific objectives are as follows:

* To assess the extent to which technological resources are available and accessible in these schools.
* To investigate the preparedness and attitudes of teachers towards the use of technology in their teaching practices.
* To evaluate the impact of technology on student engagement and learning outcomes.
* To explore the challenges faced by schools in integrating technology into the educational process.
  1. **Research Questions and/or Hypotheses**

The following are research questions that this study seeks to answer:

* + To what extent are technological resources available and accessible in senior secondary schools in Edo South Senatorial District?
  + How prepared and what are the attitudes of teachers towards using technology in their teaching practices in these schools?
  + What impact does technology have on student engagement and learning outcomes in these schools?
  + What challenges do schools face in integrating technology into the educational process?

The study will test the following hypotheses:

* There is no significant difference in the availability and accessibility of technological resources among senior secondary schools in Edo South Senatorial District.
* There is no significant relationship between teacher preparedness/attitudes and the use of technology in teaching practices in these schools.
* There is no significant impact of technology on student engagement and learning outcomes in senior secondary schools in Edo South Senatorial District.
* There are no significant challenges faced by schools in integrating technology into the educational process.
  1. **Significance of the Study**

This study holds significant value for multiple stakeholders within the education ecosystem, particularly in the context of Edo South Senatorial District, and it may also serve as a reference for other regions grappling with similar educational challenges.

Firstly, the study will provide evidence-based insights for educational policymakers. By identifying the current state of technological integration in senior secondary schools, the research will offer practical recommendations for developing policies that promote equitable access to digital tools, especially in underserved areas. Such data-driven policymaking aligns with national efforts to enhance the quality of education and fulfill international commitments such as the United Nations Sustainable Development Goal 4 (SDG 4), which calls for inclusive and equitable quality education and lifelong learning opportunities for all.

Secondly, school administrators will benefit from a clearer understanding of the infrastructural gaps, human resource limitations, and implementation barriers related to educational technology in their institutions. This understanding can guide more efficient allocation of resources, informed decision-making, and targeted interventions that support both teachers and learners. The insights can also aid in designing school improvement plans that incorporate digital transformation as a key priority.

Thirdly, teachers stand to gain from the study's findings on their current preparedness and attitudes toward technology use in classrooms. By revealing areas of strength and gaps in competence, the study will inform the design of more effective professional development programs that build confidence and competence in ICT-based instruction. This will help educators develop new teaching methodologies that are interactive, inclusive, and aligned with 21st-century learning demands.

Students, though indirectly, are perhaps the most critical beneficiaries. Improved integration of technology in schools will enable them to access interactive, personalized, and engaging learning experiences. It can also empower them with digital literacy skills that are essential for navigating future academic, social, and professional environments. As teachers adopt more innovative instructional strategies supported by digital tools, students are likely to experience enhanced academic performance, increased motivation, and better preparation for the digital economy.

The study will also be beneficial to parents and guardians, by highlighting the essential role of technology in their children’s education. When parents understand how digital tools can enhance learning, they are more likely to support its use both at home and in school, thereby reinforcing a more holistic learning environment.

From an academic and research standpoint, this study will contribute to the expanding literature on technology-enhanced education in sub-Saharan Africa. It will serve as a foundational resource for future researchers seeking to explore related issues, such as the impact of specific technologies on student performance or comparative studies across regions. The data generated may also support interdisciplinary research that links education with technology, development studies, and sociology.

Finally, the broader societal impact of this research lies in its potential to support national development goals. A digitally literate and technologically empowered student population is more likely to contribute meaningfully to economic growth, innovation, and civic engagement. By identifying practical solutions to current challenges, the study will assist stakeholders in making strategic decisions that enhance both the quality and equity of education delivery.

In summary, this research aims not only to evaluate the status of technology in education but also to stimulate dialogue and action that promote effective, inclusive, and sustainable digital learning practices across Edo South Senatorial District and beyond.

* 1. **Scope of Study**

The study focuses on the impact of technology in teaching and learning within senior secondary schools. Specifically, it examines:

* + Availability and Accessibility of Technological Resources: This includes the presence of digital tools such as computers, tablets, internet connectivity, and educational software.
  + Teacher Preparedness and Attitudes: The study explores how prepared teachers are to integrate technology into their teaching practices and their attitudes towards using these tools in the classroom.
  + Impact on Student Engagement and Learning Outcomes: The research investigates how the use of technology affects student engagement, participation, and overall academic performance.
  + Challenges in Technology Integration: It identifies and analyzes the barriers that schools face in effectively incorporating technology into the educational process.

The study is geographically limited to the Edo South Senatorial District in Edo State, Nigeria. This area includes both urban and rural schools, providing a diverse context for examining the differences in technology adoption and its impact on education. The findings will be specific to this region, but they may also offer insights applicable to other similar regions within Nigeria and potentially in other developing countries facing comparable educational challenges.

* 1. **Operational Definition of Terms**
* Technology Integration

The process of incorporating digital tools and resources, such as computers, internet, and educational software, into the teaching and learning environment to enhance educational outcomes.

* Learning Outcomes

The measurable academic achievements of students, including knowledge, skills, and competencies, that result from the educational process. This study focuses on how technology influences these outcomes (Bloom, 1956).

* Educational Technology

Refers to the use of digital tools and resources, such as online platforms, multimedia content, and interactive software, to support and enhance the teaching and learning process (Reiser & Dempsey, 2017).

* Information and Communication Technology (ICT)

A broad term encompassing technologies that provide access to information and communication, including the internet, wireless networks, cell phones, and other communication mediums

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