**CHAPTER FIVE**

**DISCUSSION, CONCLUSION AND RECOMMENDATIONS**

This chapter presents a comprehensive discussion of the findings, the conclusion drawn from the research, the implications for policy and practice, and recommendations for future actions. It also includes suggestions for further study. The discussion section critically interprets the findings in light of previous literature, providing a basis for understanding the practical and theoretical significance of the study.

**5.1 Discussion of the Findings**

**Finding 1: Availability and Accessibility of Technological Resources**  
The findings indicate that there is a general lack of adequate technological infrastructure in senior secondary schools, particularly in public schools within Edo South Senatorial District. The mean scores showed that technological tools such as computers, internet access, projectors, and digital learning materials are limited. This finding strongly aligns with the work of Obi and Okoro (2020), who reported significant disparities in ICT resource allocation among Nigerian schools. Similarly, Ojo and Abimbola (2017) emphasized the role of inadequate infrastructure as a major barrier to effective technology adoption.

However, this study adds new insight by revealing that even where infrastructure exists, it is often not functional, not up to date, or not equitably distributed across schools and classrooms. In many schools, the available tools are often not accessible to all students, leading to unequal learning experiences. Also, due to lack of maintenance and trained support staff, devices remain unused. This reinforces the argument that access alone is not enough; schools also need consistent power supply, internet access, maintenance plans, and trained technical support to sustain use.

**Finding 2: Teachers’ Preparedness and Attitudes Toward Technology**  
The study revealed that many teachers feel unprepared and lack confidence in using technology for teaching. This supports Ertmer et al.'s (2012) findings that beliefs and training heavily influence technology integration. The research also indicated that even where some form of training exists, it is often outdated, overly theoretical, or not practical enough to influence day-to-day classroom practices.

Interestingly, the perception gap between teachers and non-teachers (students and administrators) was minimal, suggesting a widespread acknowledgment of these challenges across different educational roles. The uniformity in responses suggests that the problem is systemic, not limited to a few individuals. In comparison to Adesanya and Idowu (2016), who recorded success in schools where regular ICT training was part of school policy, our findings suggest that such models have not been adopted widely in Edo South.

**Finding 3: Impact of Technology on Student Engagement and Learning Outcomes**  
Contrary to expectations, the findings showed that technology had a limited perceived impact on student engagement and academic performance. Most respondents disagreed or were neutral on whether technology significantly improved participation, understanding, or test scores. These results contrast with the optimistic reports by Adewale and Alabi (2019), who documented enhanced performance in tech-supported classrooms, particularly in science and math.

One possible explanation for this divergence lies in the inconsistent or superficial use of technology in classrooms. It is likely that while technology is available, it is not used in a way that is pedagogically effective or aligned with curriculum goals. The absence of digital literacy among both students and teachers could also hinder the full realization of benefits. This study contributes by highlighting the need for integrating technology meaningfully, not just materially.

**Finding 4: Challenges to Technology Integration**  
A wide range of challenges were reported by respondents, including financial constraints, lack of administrative support, outdated infrastructure, and inadequate maintenance. These challenges are consistent with the findings of Emenike and Osarenren (2018), who stressed that successful technology integration requires more than equipment—it demands robust policy frameworks, funding, and continuous evaluation.

What makes this study particularly valuable is its confirmation that even when schools are equipped with technology, systemic issues can still impede its effective use. From irregular electricity supply to insufficient ICT personnel, the environment in many schools is not conducive to digital learning. Furthermore, the study found that there is no consistent strategy in most schools for evaluating the effectiveness of the technology they deploy, thereby weakening feedback loops that could inform better decisions.

In addition, there appears to be no clearly defined strategy in many schools for how ICT resources are to be used. The lack of school-based ICT committees or monitoring teams has resulted in haphazard integration of technology. Even where tools exist, they are used inconsistently and without evaluating their impact on learning.

This study contributes by reinforcing the need for a structured, policy-driven approach to ICT use in education. Equipping schools without training, planning, and evaluation will not yield sustainable improvements.

**5.2 Implications of the Study**

The findings from this study have significant implications for multiple stakeholders:

* **For Policymakers:** This study highlights the critical need for education policymakers to develop more localized and context-sensitive ICT policies. Infrastructure provision is not enough; sustainable strategies must include continuous funding for maintenance, consistent teacher training, and data collection to monitor progress. Policies must also mandate the equitable distribution of digital tools to minimize the existing urban-rural digital divide. Furthermore, there is a need for clear implementation frameworks that detail how schools should utilize ICT for both teaching and administration.
* **For School Administrators:** The results of this research call for proactive leadership from school administrators. Heads of schools should be equipped to lead technology adoption through proper planning, by establishing ICT management teams, and by actively organizing training sessions for their staff. They are also responsible for ensuring that ICT resources are allocated equitably among all classes and teachers. Administrators must take steps to evaluate the effectiveness of the technology used, based on feedback from students and teachers, and make data-driven decisions to improve usage.
* **For Teacher Training Institutions:** One of the major findings of the study was that teachers feel unprepared to use technology effectively. Teacher education programs need to incorporate compulsory digital literacy and ICT integration modules. Beyond theoretical instruction, trainees should engage in real-life scenarios, simulations, and classroom-based practicum where they learn to use tech tools for lesson planning, assessment, and delivery. Ongoing professional development should also be offered to practicing teachers, tailored to the changing landscape of digital tools.
* **For Curriculum Developers:** For technology to be effectively integrated, the national curriculum must reflect the demands of 21st-century learning. Curriculum planners should revise content to incorporate digital competencies and align subject objectives with available technological tools. Assessment formats should also reflect technology-enhanced learning, using digital portfolios, online quizzes, and multimedia presentations. This alignment ensures that what is taught and assessed reinforces the use of ICT in the learning process.
* **For NGOs and Donors:** These organizations can play a significant role in bridging gaps in funding, training, and technology provision. Based on the findings, NGOs should go beyond donations of equipment to include the development of solar energy solutions for schools in off-grid areas, training programs for teachers, and student-centered digital literacy campaigns. NGOs can also partner with government and communities to ensure that their interventions are culturally appropriate and scalable.

These implications collectively point toward a systems-based approach, where the success of ICT integration depends not just on individual efforts but on the coordination between policies, institutions, and community actors. The sustainability of technology use in schools hinges on deliberate planning, capacity building, and long-term investment.

**5.3 Conclusion**

This research has carefully examined the impact of technology on teaching and learning in senior secondary schools in Edo South Senatorial District. By focusing on the availability and accessibility of technological resources, the preparedness and attitudes of teachers, the level of student engagement, and the challenges schools face in adopting technology, this study has provided meaningful insights into the current state of ICT integration in the region’s education system.

The findings show that while there is growing awareness about the potential of technology in education, actual implementation remains limited and uneven. Public schools, in particular, suffer from inadequate infrastructure, limited internet access, and minimal training opportunities for teachers. These factors reduce the overall effectiveness of technology as a teaching and learning tool. Despite the presence of some digital resources, they are often underutilized due to lack of maintenance, irregular power supply, and insufficient support systems.

Teachers, who play a central role in classroom technology adoption, are not always adequately prepared or confident in using digital tools. The study also found that students, although open to using technology, are not fully engaged in technology-driven lessons due to various barriers including limited access, poor instructional design, and lack of relevant content. Additionally, there are systemic challenges, such as unclear ICT policies, low funding, and weak administrative coordination, that continue to hinder meaningful integration.

In essence, this study concludes that while technology holds significant promise for transforming education, particularly in enhancing student engagement and improving learning outcomes, its successful integration requires more than just providing devices. It demands strategic planning, sustainable funding, policy alignment, teacher development, and stakeholder involvement at all levels.

Therefore, the conclusion drawn is that for Edo South Senatorial District to benefit from digital transformation in education, a collaborative and multi-dimensional approach is necessary one that aligns infrastructure development with human capacity building, policy reform, and continuous evaluation. If these components are put in place, the integration of technology can move from aspiration to reality, positively shaping the future of secondary education in the region.

**5.4 Recommendations**

Based on the findings and implications of this study, the following recommendations are proposed to improve the integration and effective use of technology in teaching and learning within senior secondary schools in Edo South Senatorial District:

* **Increase Investment in ICT Infrastructure:** Schools, particularly public institutions, must be equipped with basic ICT tools such as desktop computers, laptops, multimedia projectors, printers, and internet connectivity. Provision should also include alternative power sources, such as solar panels or generators, especially in schools with unstable electricity supply. This infrastructure must be consistently maintained and upgraded to meet emerging technological trends.
* **Mandatory and Periodic ICT Training for Teachers:** Teachers should be offered regular professional development opportunities focused on technology use in education. Training programs should go beyond theoretical sessions and include hands-on workshops that address lesson planning, instructional delivery, digital classroom management, and subject-specific educational technologies. These training sessions should be incentivized and monitored to ensure participation and impact.
* **Establish School-Based ICT Committees:** Each school should set up an ICT team composed of tech-savvy teachers and administrative staff tasked with overseeing ICT operations. These teams will coordinate hardware maintenance, provide technical support to staff and students, and collect usage feedback for ongoing improvements. They should also organize school-wide ICT initiatives and training schedules.
* **Policy Reforms:** Local education authorities and Ministries of Education should introduce regular assessments and audits to track ICT resource usage and effectiveness in schools. Monitoring tools can include digital attendance for ICT lessons, logs of equipment usage, student performance tracking on e-learning platforms, and feedback surveys. Schools with strong ICT integration outcomes can be used as models for others.
* **Student-Centered Digital Tools:** Curriculum planners and school administrators should prioritize the adoption of platforms that encourage student interaction, creativity, and critical thinking. These tools should be age-appropriate, curriculum-aligned, and designed to promote independent learning. Examples include virtual labs, interactive simulations, online quizzes, and multimedia storytelling platforms.
* **Strengthen Public-Private Partnerships:** The government should build strong partnerships with tech companies, NGOs, and donor agencies to provide resources, training, and digital content to underserved schools. Collaborations can include device donations, digital literacy campaigns, infrastructure support, and teacher fellowships.
* **Digital Equity Initiatives:** Special attention should be paid to reducing the digital divide between rural and urban schools. Government and non-governmental organizations should implement policies that ensure all schools, regardless of location, benefit equally from technology in education. This could involve mobile ICT labs, community ICT centers, or e-learning buses that reach remote areas.
* **Include ICT Use in Teacher Performance Appraisals:** To encourage consistent usage, teachers’ engagement with technology should be included as a key metric in their annual performance reviews. This would serve as motivation for self-development and promote accountability in adopting digital practices.

These recommendations aim to create a holistic and sustainable environment where technology is not just present but meaningfully embedded in the teaching and learning process across all secondary schools in Edo South Senatorial District and potentially across other regions facing similar challenges.

**5.5 Suggestions for Further Study**

1. Future studies could employ qualitative methods such as interviews and classroom observations to gain deeper insights into attitudes and behaviors.
2. Researchers may conduct comparative studies between different regions or states in Nigeria to determine geographical influences on technology adoption.
3. A longitudinal study could assess changes in learning outcomes over time in schools that implement continuous ICT upgrades.
4. Future research could investigate the impact of specific technological tools or learning platforms (e.g., Google Classroom, Moodle) on academic performance.
5. More focus could be placed on gender-based technology usage to explore any disparities between male and female students or teachers.

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