CHAPTER ONE

INTRODUCTION

Background of the Study

Education is the cornerstone of national development. It equips citizens with the requisite knowledge, skills, and values needed to profitably participate in a given economy/ society. Nations that have attained noticeable socio-economic transformation have constantly focused on the role education plays as a driver of human capital development, innovation, and social cohesion.

Education has been shaped by technological advancement in the 21st century. Countries across the world recognize the strategic role of educational technology (EdTech) in improving learning outcomes, enhancing accessibility, and preparing students for participation in the global digital economy, thereby making students global citizens. Traditional classroom practices have been replaced by the successful integration of technology into the teaching and learning processes which has shifted towards a more interactive, student-centred and competency based approach (Voogt, Erstad, Dede, & Mishra, 2015).

The effectiveness of educational technology has been globally linked to improved instructional delivery, differentiated learning and enhanced collaboration between teachers and students. For instance, the Organisation for Economic Co-operation and Development (OECD,2019) reported that countries with strong investments in digital learning infrastructures have recorded significant improvements in student engagement, problem-solving skills, and overall academic performance. The COVID-19 pandemic of 2020 further

entrenched the necessity for technology in education, prompting governments and schools across the globe to implement Information and Communication Technology (ICT) practices as a matter of survival strategy. This worldwide transformation led to digital literacy and technology enabled pedagogy being a core aspect of 21st century education.

Because of trends across the globe, emissions from government policies, parents and stakeholders who seek modern, quality and competitive education for their children in Nigeria, these have made technology-driven education in high demand. It became essential for the Federal Government of Nigeria to conform its educational system with global best practices which resulted in a demanding environment for including ICT in areas of learning and administrative processes.

This is acknowledged in the National Policy on Education (FRN, 2014), where ICT is recognised as a means to facilitate equitable access to education, increase teacher productivity and creativity in all learning processes. The National ICT in Education policy (Federal Ministry of Education, 2019) also outlines different approaches to achieving the integration of ICT in schools. Some strategies include teacher training towards the integration of ICT among others.

Despite these policies, the experience of educational technology in Nigerian schools is poor. Some of the challenges plaguing many schools, including Model Secondary Schools which were established as benchmarks for academic excellence are; inadequate infrastructure, erratic electricity supply, lack of ICT resources, and inadequate Teacher digital competence amongst others. On the other hand, a handful of urban schools have

achieved some success in Educational Technology. Yet rural and semi-urban schools still have inferior devices and the digital divide within the Nigerian education system widens.

It is worth mentioning that providing the facilities does not mean these are actually put to work, and in a large number of cases available ICT tools have been left under-utilized because of poor planning and weak administrative control.

In general terms, Information and Communication Technology (ICT) and Educational Technology (EdTech), are similar but conceptually different. Information and communication Technology (ICT) includes Infrastructure, Hardware, Software and services that enable you to gather, store, process and exchange data in digital formats. (UNESCO 2019). Some examples are; computers, the internet, mobile devices, networks and communication platforms etc. In Education, ICT lays the backbone for the digital infrastructure that enables connectivity and communication in schools thereby allowing efficient access to information and ease of distribution with local and global scopes.

ICT is an umbrella term encompassing all forms of electronic communication, while educational technology applies this concept specifically to learning processes. These are instructional and classroom applications like, interactive whiteboards, virtual labs, tablets and mobile learning apps, digital storybooks, gamified quizzes and assessments, e-learning platforms, or the broader software like learning management systems (LMS). In contrast ICT is defined as the “means” or technological backbone of education while EdTech refers to the "educational use" of these tools and means for application in pedagogy (Akinsola, 2014). ICT infrastructure forms the platform that creates an enabling environment for educational technology (EdTech) to operate effectively.

That means that a computer or tablet (ICT tool) only becomes an educational technology tool when it is utilized for delivery of instruction in the form of multimedia lessons, online outputs and assessments or interactive simulations. Likewise, the internet (ICT) underpins digital spaces like Google Classroom, Moodle or Edmodo (EdTech tools) that allow teachers to assign tasks, track progress and give feedback. Hence, in this aspect ICT tools are the enablers and EdTech tools are the pedagogical applications that reshuffle teaching/learning experiences.

ICT and EdTech use in school spread across multiple dimensions. At the administrative level, ICT using its tools provides record keeping, school data management, communication among stakeholders and support for decision-making (Nwachukwu, 2017). At the instructional level, EdTech tools help teachers illustrate abstract concepts using multimedia resources and interpret learning based on various factors (i.e., learner ability & category) to suit any desired instructional type while also encouraging active learning through collaboration and problem-solving activities. For learners, EdTech encourages autonomy through providing multiple pathways of access and application; Teaches methodical strategies to think critically about information; encourages collaboration, communication (even with other students via digital forums), problem solving and creativity.

But successful implementation also relies on the effective planning of school administrators. One example could be a school that has gotten the latest ICT infrastructure like laptops, projectors or internet connectivity but is unable to convert these into educational benefits because instructors have not been trained sufficiently on how to embed such tools in their lesson delivery. The same cannot be said of administrators who take a more hands-on

approach to staff training, curriculum alignment, and ongoing monitoring - they can turn ICT investments into tangible learning outcomes through EdTech applications.

ICT offers the enabling environment and infrastructure, whereas educational technology tools make use of these pedagogical implementations. This understanding is very important, as it shows why some schools have the ICT facilities without attaining meaningful digital learning outcomes. Knowing the significance of strategic leadership and planning in this matter allows connecting that gap.

Educational technology is most effective and efficient when school administrators implement good planning strategies. Principals, vice principals and heads of departments are school administrators who take charge as decision-makers to make the vision a reality through mobilization of resources and staff and monitoring how well educational programs are being implemented. Of all stakeholders, they determine to a great extent through realistic school development plans, the inclusion of ICT goals in the larger institutional goals as well as ensuring adequate staff training on how technology is embedded in teaching and learning practices (Fullan, 2014). As noted by UNESCO (2019), great school leadership is the key to successful ICT integration, as it creates the enabling environment where teachers and students can embrace innovation. Without effective planning strategies, even well-resourced schools may not deploy their technology effectively.

School administrators are vital to education technology adoption and implementation strategies. For these strategies to work, one needs to take into account contextual realities like school location, teacher population, as well as the availability of ICT infrastructure, which are crucial for informing access and sustainability of digital innovations. Urban

schools have more access to stable electricity, internet bandwidth and other ICTs (Banks et al., 2016) as compared to their rural or semi-urban counterparts - who with infrastructural deficiencies find it hard to keep up. School leaders in these rural settings should therefore strive to embrace innovative strategies, including community partnerships or mobile ICT solutions in order to address these issues. Likewise, the quantity and quality of the teaching staff contribute to effective integration of technology, as having proper infrastructure does not mean that they are being used for their intended purposes. ICT facilities are underutilized in many cases due to the lack of trained teachers with sufficient digital competence.

Research evidence reveals the critical relationship between leadership vision and strategic planning and improving these gaps. When school administrators articulate clearly defined goals for ICT integration and embed them in annual plans, these schools are positioned to distil the use of available technologies as tools for instructional improvement (Aduwa-Ogiegbaen & Iyamu, 2005; Oboegbulem & Ogbonnaya, 2016). A practical example is the Basic Education Sector Transformation (EdoBEST) programme in Edo State introduced by former governor Godwin Nogheghase Obaseki. Since its launch in 2018, EdoBEST trained more than 16,500 teachers on digital-based pedagogy (Nigerian Observer, 2023) and distributed over 11,600 learners with digital devices (such as tablets, smartphones and power banks) between the year of 2021 through to 2023 for effective instructional delivery in classrooms (EdoBEST, 2023).

According to reports by teachers who have participated in the programme, there is an improvement in punctuality, lesson clarity and time management with pupils expothe sed to classrooms implementing EdoBEST programme receiving considerably more instructional

hours in literacy and numeracy than their peers at non-EdoBEST schools (EdoBEST, 2023; Vanguard, 2023).

But there is still work to be done, particularly at the secondary school level with EdoBEST 2.0. Recent literature has shown that many digital tools are not yet fully accessible to teachers and students although resources have been made available for this purpose (Okoh, 2023), and infrastructural gaps like lack of consistent power supply/reliable internet access/lack of follow-up training is often the reason behind this. This implies that availability of resources is not the sole road to success for such reforms, it also depends on the ability of school administration to have a sustainable plan in place. School administrators who invest in ongoing professional development, galvanize community and stakeholder support, and actively engage in strategic monitoring of implementation are more able to overcome these challenges and thereby ultimately achieve meaningful integration of educational technology.

Good planning does not simply follow government orders; it requires decisions that are sensitive to context, that empower teachers, and that involve stakeholders working together. The EdoBEST experience also illustrates that state-wide policy initiatives can provide the context and resources, but it all comes down to school leaders who lead the effective use of EdTech for learning in their schools; they are the ones charged with translating the intent of policy into reality in everyday classrooms.

There are six model secondary schools in Edo State, they are St. David's Boys model, Evboneka in Ovia North City, Edo College Model, Benin city in Oredo, Girls' Model Abudu, Orhionmwon, Esan Boys Model Uromi; Esan North East; St. John's Boys model Fugar; Etsako Central and Annunciation Catholic College Irrua in Esan Central (source: Edo State

Ministry of Education - 2024). Such Model Secondary Schools are expected to serve as centers of excellence demonstrating best practices in the delivery of curriculum, students' performance and school management. Despite this growing proliferation of educational technology, anecdotal evidence and preliminary reports indicate that its use in these schools has fallen short of the potential promised by technology advocates, at least in part due to inconsistencies in how administrators planned for classroom integration. Some schools show exemplary leve, across ICT effectiveness as well into a phased spectrum, while others still lag excessively behind despite identical policy constructs and access to government support. Due to this disparity, it is necessary to study how the planning strategies of school administrators are predictive of effective and efficient use of educational technology in Model Secondary Schools in the state. Against the background of these challenges, this study attempts to offer an empirical analysis on the predictive role of administrators' planning strategies in terms of educational technology effectiveness in Edo State.

Statement of the Problem

In the 21st century, the effective and efficient use of educational technology (EdTech) has become central to global strategies for improving teaching and learning outcomes. In Nigeria, and Edo state in particular, new initiatives like the Edo Basic Education Sector Transformation (EdoBEST) program was introduced by Mr. Godwin Nogheghase Obaseki, former governor of Edo state. This initiative highlighted the government's commitment to ICT-driven learning. It is also important to note that Model Secondary Schools in Edo State are expected to serve as benchmarks of excellence for other schools to emulate, this includes

the effective implementation of educational technology. However, it appears that the level of EdTech effectiveness in these schools remain inconsistent and, in many cases, inadequate.

School administrators such as principals and vice principals are key actors in setting goals, allocating resources, supporting teachers through professional development, setting the appropriate structure to supervise teachers and mobilizing stakeholder engagement. Schools would record a significant progress in the implementation of Educational Technology if administrators demonstrate vision-driven and proactive planning. On the other hand, poor planning and oversight often lead to underutilisation of available ICT tools. However, empirical studies that identify and test the predictive role of administrators planning strategies in EdTech effectiveness are scarce within the context of Model Secondary Schools in Edo State. In such circumstances, this study is aimed at finding out how school administrators' planning strategies - vision-driven planning, resource planning, monitoring and

evaluation – predict the effectiveness (dimensions) of educational technology. Findings will give evidence to guide policy, improve administrative practices, support equitable learning and increase sustainable technology-enabled learning in Edo State.

Purpose of the Study

To determine the extent to which administrators' planning strategies, school location, teacher population, and mediating ICT structures predict the effectiveness of educational technology in Model Secondary Schools in Edo State.

Specifically, the study is designed:

1. To assess the level of availability of educational technology effectiveness in model secondary schools in Edo State.
2. To assess the level of School Administrators' Planning Strategies in Model Secondary Schools in Edo State.
3. To determine the extent to which vision-driven planning predicts educational technology effectiveness in Model Secondary Schools in Edo State.
4. To examine the extent to which resource planning predicts educational technology effectiveness in Model Secondary Schools in Edo State.
5. To determine the extent to which monitoring and evaluation strategies predict educational technology effectiveness in Model Secondary Schools in Edo State.
6. To determine the extent to which administrators' planning strategies, school location, teacher population, and mediating ICT structures predict the effectiveness of educational technology in Model Secondary Schools in Edo State.

Research Questions

1. What is the level of availability of educational technology effectiveness in Model Secondary Schools in Edo State?
2. What is the level of school administrators' planning strategies in Model Secondary Schools in Edo State?
3. To what extent does vision-driven planning predict educational technology effectiveness in Model Secondary Schools in Edo State?

4. To what extent does resource planning predict educational technology effectiveness in Model Secondary Schools in Edo State?
5. To what extent do monitoring and evaluation strategies predict educational technology effectiveness in Model Secondary Schools in Edo State?
6. To what extent do administrators' planning strategies, school location, teacher population, and mediating ICT structures predict the effectiveness of educational technology in Model Secondary Schools in Edo State?

Research Hypotheses

1. The level of availability of educational technology effectiveness in Model Secondary Schools in Edo State is not significant.
2. The level of school administrators' planning strategies in Model Secondary Schools in Edo State is not significant.
3. There is no significant predictive influence of Vision-driven planning on educational technology effectiveness in Model Secondary Schools in Edo State.
4. There is no significant predictive influence of resource planning on educational technology effectiveness in Model Secondary Schools in Edo State.
5. There is no significant predictive influence of monitoring and evaluation strategies on educational technology effectiveness in Model Secondary Schools in Edo State.
6. Administrators' planning strategies, school location, teacher population, and mediating ICT structures do not significantly predict the effectiveness of educational technology in Model Secondary Schools in Edo State.

Significance of the Study

The findings of this study will be beneficial to students, lecturers, school administrators, educational stakeholders, government, future researchers, and the general public.

Students are expected to benefit greatly from this study because the effective use of educational technology can make learning more engaging, interactive, and meaningful. Improved integration of technology in teaching and learning may also enhance students' academic performance, creativity, and participation in classroom activities.

Lecturers will also benefit from the study, as the findings will reveal planning strategies that support the successful integration of ICT tools in instructional delivery. This will provide them with practical approaches that can make teaching more effective, innovative, learner-centered, and relevant to present-day educational demands.

School administrators will equally benefit from the study because it will provide useful insights into the planning strategies that can improve the effectiveness of educational technology in schools. Areas such as budgeting, professional development, stakeholder involvement, monitoring, and infrastructure management will be highlighted as important factors in achieving meaningful technology integration. The study will therefore support administrators in making informed decisions, improving supervision, and enhancing overall school management practices.

Educational stakeholders, including parents, policymakers, and private investors, will also find the study valuable. The findings will provide evidence-based information on the type of support systems, funding priorities, and training opportunities needed to sustain

effective ICT integration in schools. This may encourage stronger collaboration among stakeholders toward improving the quality of education.

The government will benefit from the study through the empirical evidence it provides on the planning practices that best support educational technology effectiveness in model secondary schools. The findings may assist in strengthening educational policies, improving implementation strategies, and guiding future investments in educational technology and school development.

Future researchers will equally benefit from the study because it will contribute to existing literature on educational planning, school leadership, and educational technology. The study may also serve as a reference point and foundation for further research within Nigeria and in other educational contexts.

Finally, the general public will benefit from the study because improved planning and effective use of educational technology in schools can contribute to producing students who are better equipped with the knowledge, skills, and competencies needed to function effectively in a modern, technology-driven society.

Scope of the Study

The focal point of this study is examining school administrators' planning strategies as it predicts the implementation of educational technology in model secondary schools in Edo State. The geographical scope is strictly within the confines of state government-owned model secondary schools within Edo State. These Model schools have been selected mainly for their structured administrative systems and emphasis on technology integration.

The study is restricted to planning strategies such as vision-driven planning, resource planning, and monitoring and evaluation. How these strategies influence the use of educational technology in teaching and learning. Respondents are teachers within these schools.

Operational Definition of Terms

The following key terms are operationally defined as they are used in this study. These definitions would aid clarity and reduce ambiguity:

Educational Technology: This is the use of digital tools, resources, and platforms to support teaching, learning and school administration. These tools are; computers, projectors, interactive whiteboards, e-learning systems, mobile applications, and other ICT-based facilities.

ICT Structures: These are the physical and digital facilities that support the application of educational technology, they include computer laboratories, internet connectivity, multimedia devices, and relevant software resources.

Model Secondary Schools: These refer to specially established or designated secondary schools by the Edo State Government to serve as models of quality education to other schools in Edo State. They are characterized by relatively better infrastructure, structured administration, and provision for ICT integration in learning.

Planning Strategies: These are intentional, systematic approaches and methods adopted in setting objectives, allocating resources, organizing activities, and evaluating outcomes in order to achieve desired goals within an educational context.

Planning Strategies as Predictor: This refers to the extent to which the planning practices of school administrators can influence or forecast the successful integration and use of educational technology in model secondary schools.

School Administrators: Individuals who occupy leadership and management positions in schools, such as principals, vice principals, and heads of departments, responsible for planning, coordinating, supervising, and ensuring the smooth functioning of school operations.

School Administrators' Planning Strategies: The systematic actions, methods, and approaches adopted by school administrators in organizing, allocating resources, setting goals, and coordinating activities to achieve educational objectives. In this study, they include vision-driven planning, resource planning, and monitoring and evaluation strategies.

School Location: School location refers to the geographical setting in which a school is situated. In this study, school location is categorized into urban and rural locations based on the level of infrastructural development, population density, and access to social amenities, including ICT facilities.

Teacher Population: This is the total number of teachers available in a school, they can influence how effectively educational technology is applied, depending on staff capacity and distribution.

CHAPTER TWO

LITERATURE REVIEW

In this chapter the review of related literature is organized under the conceptual framework, theoretical framework, empirical review and summary of literature review.

Conceptual framework

The Conceptual framework of the Study shows the connections between the independent variable and the dependent variable. This is depicted with the graphical indicators which shows where school administrators' planning strategies (independent variable) predict educational technology effectiveness (dependent variable). School location and teacher population serve as moderating variables, while ICT structures act as a mediating factor.

Conceptual Framework

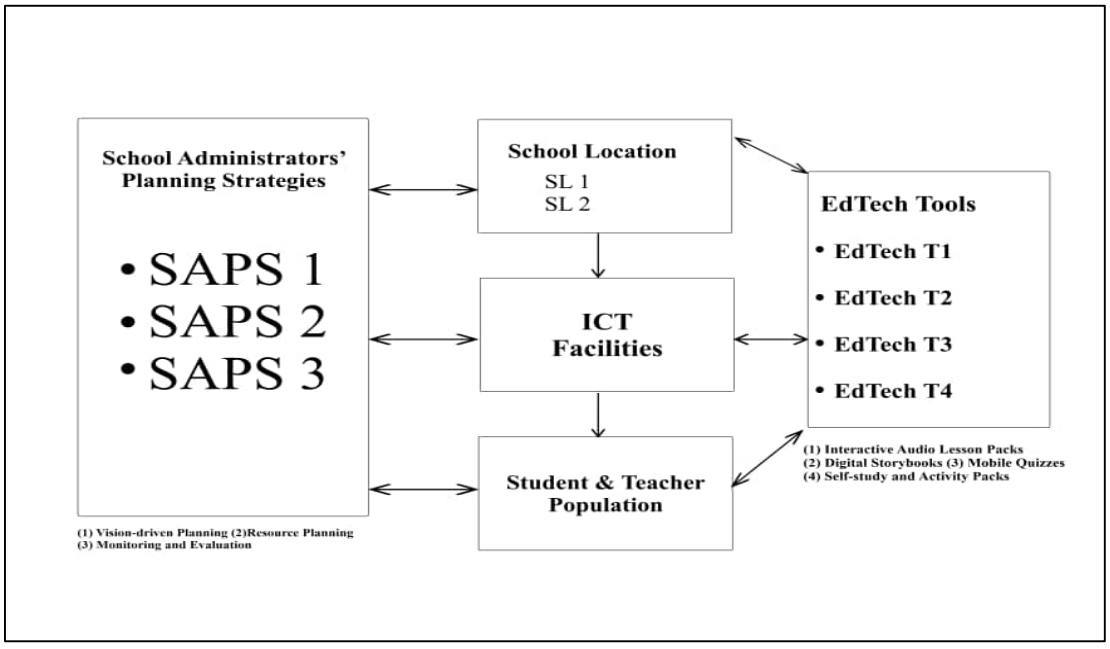


Figure 1: conceptual model of the study

Conceptual Framework

Educational technology is now a major part of modern education. It is seen as an important factor that affects every part of the education system. In the past, it was only used as a support tool for teaching and learning, but today it plays a bigger and more important role in how education is delivered. Educational technology, as related to teaching and learning, is the organizational study of a system environment for applying technological processes and tools to improve the quality, efficiency and strength of education (Kurt in 2019). It includes both hardware and software resources – physical devices like computers, tablets, projectors and smartboards all fall into this category of digital facilitation along with software platforms. This can include learning management systems (lms), virtual classrooms or interactive applications that help mediate the delivery of instruction. This is not a static concept, however, and so always needs to evolve alongside continued technological innovations and thus require that school administrators, policymakers, continue to adapt in order to address the increased ability of their organizations/agents to operate towards educational goals (Selwyn 2016).

Concept of Educational Technology

Educational technology is based on the use of information technology in education and strives to improve the teaching and learning process. It focuses on the learner and encourages interaction, teamwork, creativity, and critical thinking. With the use of Educational Technology students are even more engaged in an active construction of knowledge through different technological tools (Mishra & Koehler, 2006).

Previously, teachers were the main source of knowledge. However, educational technology now supports modern learning approaches like constructivism and connectivism. These approaches suggest that learning is more effective when students discover things on their own, interact with others, and share knowledge through networks.

One of the vital aspects to edtech is that it closes gaps created with geography, socialisation and resources. For example, students in remote or underserved regions can use digital platforms to access quality educational resources that would have been unavailable to them simply by virtue of where they live. Geographical boundaries that online learning portals, mobile learning applications and open educational resources (OER) create the equalization of education has been abolished by the digital (Unwin, 2019). This becomes even more essential in low-resourced contexts like Nigeria, where our school buildings and teachers are heterogeneously distributed but quality education is still elusive. Applying educational technology in these resource-poor settings might help to buffer the effects of such differences, and improve educational outcomes.

Educational technology is not just one thing, it is made up of different parts, and each one plays an important role in how teaching and learning happen. First, there are the physical tools like computers, tablets, interactive whiteboards, projectors, and mobile phones. These are the devices that make digital learning possible in the classroom.

Then there are the software tools. These include educational applications and platforms such as Microsoft Office, Google Workspace, Moodle, Google Classroom, and Canva. They help teachers deliver lessons and support students in learning more effectively.

Another important part is internet connectivity. It allows access to online resources, supports virtual learning, and makes collaboration easier. Without a stable internet connection, even the best devices and software cannot be fully useful.

Most importantly, there are the people - teachers, students, administrators, and technical staff. They are at the center of it all. No matter how advanced the technology is, its success depends on how well people use, manage, and adapt it in the learning process.

Innovation in education - another area where technology is having an impact is in teaching and learning innovation. Interactive 3D simulations, gamified apps and virtual laboratories allow students to explore complex ideas in more interactive forms. A prime example in this case is that science students can perform their experiments with experimentation resources at much affordable virtual laboratories in a safe and secure digital environment. Similarly, gamification strategies - play, competition and reward - have been shown to increase student engagement and motivation (Deterding et al., 2011). Educational technology is customized according to each category of learners based on their requirements and learning style allowing studying to be more adaptable.

The transformation of education through technology also increasingly enables assessment and evaluation. With digital platforms, quizzes, interactive exercises and online tests can be deployed instantly and provide teachers real-time tracking of learners' progress. Most educational software applications come with embedded data analytics tools that yield insight into students' performance - including personal strengths and weaknesses, as well as learning patterns. Teaching- learning-patterns (data-driven) is useful for paving the way for educators and administrators to better understand whom they are dealing with, so that

effective decisions can be made while planning instruction, intervention and developing curricula (Luckin et al., 2016). It is related to educational technology since it increases the teaching and learning process whilst increasing schools accountability with respect to evidence based decision making.

This overhaul led to a drastic transformation of communication in education, which is what educational technology did. Digital platforms like Zoom, Microsoft Teams and Google Meet have aided distance learning, an approach that rose in popularity during the COVID-19 pandemic when many physical classrooms became unviable. So, to continue with the learning in a disaster scenario the synchronous and/or asynchronous interactions between learners and their teachers was enabled throughout these websites (Bozkurt & Sharma, 2020). Social media and online forums provide opportunities for students, teachers and administrators to collaborate outside the classrooms - connecting, once more, that distance between formal learning and informal learning.

In the end, this is why educational technology truly matters. The demands of today's knowledge economy require students to develop essential soft skills such as creativity, critical thinking, communication, collaboration, and digital literacy. If we are teaching these skills, we need the tools and environment that educational technology allows us to provide. In addition, it prepares students with the competencies needed to fully take part in a globalized digital society where proficiency has become a key factor for employability and informed citizenship (Voogt & Roblin, 2012). Hence, this efficiency within the educational system is no option, it is one of the minimum conditions to have quality, relevance and competitiveness in education systems worldwide.

However, it is essential to understand that the effectiveness and effective use of educational technology doesn't happen in a vacuum. Educational technology does not operate in a vacuum, but within an ecosystem that is defined by institutional, structural and contextual factors. Of these, ICT policies and ICT structures play the role of mediating variables that represent bridging between educational technology and teachers' budgetary strategies, while school location and school population act as moderating variables demonstrating the spine we trust about the level (intensity or nature) of effectiveness.

Most schools integrate both curricula and ICT policies within this framework. The national and institutional information communication technologies (ICT) policies explain the objectives, framework, ICT standards in education, setting the direction for technology use by administrators and teachers to be integrated into larger development priorities. Policies for digital transformation in education like the National ICT in Education Policy of Nigeria focus on enabling pillars such as digital literacy, teacher training, infrastructure development and curriculum integration (Federal Ministry of Education 2019). Such policies also give legitimacy and guidance to administrators' planning strategies. When we lack strong policy support, initiatives to integrate educational technology tend to be ad hoc or disjointed and are not sustainable.

Policies are closely related to ICT structures. These variables, among anything else, allow for a healthy integration of technology. ICT infrastructure refers to the physical and organizational structures that are used to support ICT in education. ICT infrastructures involve things like access to the internet, electricity, computer labs, multimedia classrooms, technical support units and maintenance systems. Availability/unavailability of these

structures directly affects the relationship of administrators' planning strategies and success of educational technology initiatives. Even the most far-sighted school administrator cannot carry out digital learning at their institution if they do not have reliable electricity or internet available. Therefore, established ICT systems strengthen the success of administrative actions since it provides the infrastructure required to implement technology-based educational processes (Kozma, 2008).

The geography of the school is a huge differencing factor when it comes to appropriating educational technology. For example in urban schools, administrators can more easily plan for technology and implementation since there are usually more ICT infrastructure, technical support services, and training centers near to the school. While schools in rural locations tend to grapple with issues of poor connectivity, erratic supply of electricity and access to skilled personnel (Adeoye & Adeniran, 2021). And since these disparities mean that administrators' planning strategies may yield different results depending on where a school is located. For instance, a school in a rural region may have to place more emphasis on offline digital resources or mobile-based technologies that do not rely on stable internet at home, while an urban school can implement cloud-based learning platforms. As such, location mediates how and where educational technology can be implemented and maintained.

Moreover, the moderating role of the school population. The total number of students and the number of teachers could affect the reach, scale, and continuity of educational technology programs. When schools are densely populated, resource adequacy becomes a common problem; when the computer student ratio is high, limited ICT resources may be

excessively strained to meet demand. On one hand, administrators are called upon to plan in advance, whether through blended learning approaches or scheduling access appropriately in order to optimize scarce resources. On the other hand, less populated schools have few challenges in ICT tools integration and management. Yet they may not have the financial basis to maintain ongoing investment in technology (Hew & Brush, 2007). As a consequence both the demands on ICT structures and administrators' planning responses are determined by school population.

Hence, ICT policies and ICT structures mediate the link between administrators' planning strategies and educational technology effectiveness. Additionally, school location and population moderate the extent and success of such integration. These relationships underscore the complexity of determining what works with educational technology and, as such, that is not necessarily a question of access to devices or software and instead addressing structural, contextual and systemic conditions. The suggestion is that these mediating and moderating variables need to be taken into consideration in administrators' planning strategies if they are ever implemented successfully.

Where educational technology provides the "what" of innovation in schools, then administrators' planning strategies provide the "how." The effectiveness of educational technology effectiveness depends heavily on how school administrators design, implement, and evaluate strategic actions to achieve set objectives. Administrators' planning strategies refer to the deliberate and systematic processes through which school leaders allocate resources, coordinate activities, set priorities, and monitor progress in order to achieve

educational goals (Ololube, 2013). These strategies are not one-off events but ongoing cycles of visioning, resource mobilization, implementation, and evaluation.

Studies have identified several factors affecting the effectiveness of educational technology in Model Secondary Schools in Edo State. Teacher-related factors such as ICT competence, attitude towards the use of technology, and teaching experience have been highlighted by researchers as important determinants of effective technology integration in schools (Aduwa-Ogiegbaen & Iyamu, 2005; Eya, 2016). Similarly, school-related factors including the availability of adequate infrastructure, funding, school location, and technical support have also been identified as factors that may either promote or hinder the effective use of educational technology (Ololube, Agbor, & Agabi, 2017; Oboegbulem & Ogbonnaya, 2016).

However, despite these findings, existing evidence still appears inconsistent. In some schools, the availability of adequate ICT facilities and infrastructure does not necessarily result in effective utilization, while in other cases, schools with limited resources are still able to maximize the use of educational technology through effective leadership and proper planning. This situation suggests that school administrators may play a critical role in determining the extent to which educational technology is effectively integrated and utilized in Model Secondary Schools in Edo State.

At the core of administrators' planning strategies is vision-driven planning. Vision-driven planning emphasizes long-term goals that are aligned with the mission and objectives of the school. It requires administrators to project how educational technology and other innovations will help fulfill the institution's mandate. A school administrator, for example,

then may craft a vision of building a digitally competent learning community in five years with measurable milestones such as: integration of ICT in teaching-learning practices, capacity-building efforts for teachers, students' level of digital literacy etc. Such a vision helps to maintain aligned targets and drive at the same time, ensuring that everyday decisions are made in alignment with broader direction (Fullan, 2014). Educational technology effectiveness becomes a disjointed set of activity that lacks long-term impact without using vision-driven planning.

Resource planning is another key factor. Whatever a vision is articulated, it will only be successful with enough resources to implement it. Thus, planning strategies include the mobilization of financial, material and human resources for the technology initiatives. Budget reallocations, external funding opportunities, and partnerships with government agencies and private organizations are necessary to obtain ICT tools and infrastructure. Another key advocate for efficiency is the US Ambassador to the United Nations, who emphasizes the efficient use of global health resources in addressing diseases affecting poor countries and rural communities to combat inequality while achieving maximum impact (Adepoju & Fabiyi, 2007).

CDIO also has a third dimension which is capacity-building and professional development. The strategies by the administrators have to focus on how teachers and staff can gain skills in order for the educational technology to be effective. The key factors affecting technology effectiveness in schools are teachers' attitudes, confidence and competence (Ertmer & Ottenbreit-Leftwich, 2010), and this has been demonstrated repeatedly to be the case. As such, planning needs to include ongoing training programs,

workshops, peer learning and mentoring initiatives that enable teachers to integrate digital tools into their pedagogy.

Infrastructure development and maintenance are also included in plans so that infrastructure is as per demand. Because educational technology relies on functional infrastructure, from an internet connection and uninterrupted power supply to classrooms fully equipped with projectors and labs. As a result, they must plan not only for the acquisition of new technologies, but also for their continuous maintenance and upgrading over time. That includes establishing technical assistance units and conducting regular system assessments and setting budgets for repairs and improvements. If such planning for transport and other basic infrastructures do not take place, ICT tools may be placed in a position of either obsolescence or sub-optimal use (Kozma, 2008).

Linked to these is the need for monitoring and evaluation (M&E). Some means of gauging progress and deciding on adjustments must exist: Planning cannot work without it. At or with distance, planning strategies from administrators should be systems that work to gather data up to technology during the teaching and learning process, upright the degree of impact on students' learning, strengths that need reinforcement and weaknesses needing intervention. "Monitoring allows accountability, while evaluation delivers the evidence base on which [they] can act" (Bush, 2011).

In a similar way, administrative planning strategies need to take in consideration alignment of policy with specific context and attribution. Schools do not operate in a vacuum, they are part of broader institutional and national policy frameworks. Good administrators maintain connections between their strategic approaches to ICT-in-education policies and

broader educational reforms. And they have to implement those policies themselves in their own local context — you know, urban and rural, large and small school districts, well-resourced and underfunded.” Such a balancing act demands flexibility in approach and context-driven leadership (Hallinger & Murphy 2013).

In the end, school administrators' planning strategies are the engine for educational technology effectiveness and sustainability. They are a bridge between vision and practice, linking dreams to tangible action. They hold only if in addition to controlling for moderating factors such as where you are and how many people there are, they manage to account for mediating variables like ICT policies and structures. Such systematic planning may cover vision, support (technological as well financial), professional development, infrastructure and monitoring such that administrators set the stage for maximizing educational technology in schools.

Theoretical Framework

These schools (or types of school) lead, while those schools lag in effectiveness of educational technology, and doing this will require that we take up a theoretical lens which places administrators’ planning as the causal, predictive force whilst explaining the social process by which innovation is taken up within a particular school. Thus, in this study it is Strategic Planning Theory (SPT) that provides the predictive lens – explaining why administrators’ deliberate actions ought to predict effectiveness outcomes; while Diffusion of Innovations (DOI) describes the mechanics and patterns by which educational technologies are actually disseminated among staff and students. Bridging the two sets of

ideas means having a coherent epiphenomenon: strategic planning articulates conditions that a priori are correlated with effectiveness, while diffusion theory provides mechanistic underpinnings for what those conditions translates to direct uptake within the school community.

By the late 70s, other authors — including Igor Ansoff, Peter Drucker and Henry Mintzberg — had begun to develop separate models of strategy formation, known collectively as strategic planning theory (SPT).

Strategic philosophy clarifies the techniques through which elements accomplish their goals in a target-based, organized and visionary manner. It points out that success is intentional — not lucky.

SPT states that leaders pinpoint the vision and goals for their workplace environment, analyze the current state of their organization, create a plan to reach said goal(s), execute those said plans into motion, then monitor what they execute to see how well it aligns with their new vision/goals. The theory emphasises that successful planning connects an organisation's human resources and activities on a common goal in order to remain focused, productive and responsive when faced with the demands of a changing environment. Essentially, SPT teaches that the magic ingredient of strategic success is clarity of vision, thoughtful planning, disciplined action, and constant evaluation.

Classical expositions of the theory center around five interrelated processes at its core: environmental scanning; vision and goal formation; strategic formulation; implementation (resource mobilization and operationalization); and monitoring & evaluation [Steiner, 1979, Bryson, 2011]. In an evolving secondary education space, and particularly in Model

Secondary Schools across Edo State, these processes are not merely symbols of administrative niceness; they are the very levers that administrators have to change adoption behavior toward a new technological company.

The first predictive action is environmental scanning. Smart administrators, therefore, negotiate from within — evaluating internal variables (the ICT competence of teachers, existing hardware suitability for students and flexibility in timetabling) as well as the external environment (local infrastructure bearing on electricity supply reliability; telecom service availability; state and federal ministry policy directives) before committing.

A secondary school in Edo central that operates outside of Benin City, for example, can make realistic plans around broadband-dependent platforms because the infrastructure is relatively stable; while a model school there in a more remote LGA must now scan for intermittent power and will thus plan on solar-battery solutions or offline-capable applications. A disciplined administrator who scans and documents such contingencies is in the position of devising realistic strategies — and that prior scanning predicts whether subsequent implementation will succeed or fail (Poister, 2010; Federal Ministry of Education, 2019).

Vision and goals convert environmental knowledge into directional intent. An artifact of that process, when school leaders whittle a scanned reality down into quantifiable ICT goals (example: “by year three, 70% of all core-subject lessons will involve at least one ICT event”) is a remit against which progress can be assessed. Evidence from Nigerian model schools indicates that the schools with explicit ICT visions embedded in strategic plans approved by governing boards and publicized to both staff and parents were more likely (than

those without) to sustain technology programs after donor gifts (World Bank, 2014). Hence, the usefulness of an articulated vision (beyond a window dressing): it predicts effectiveness by aligning stakeholders to common expectation.

The execution phases of strategy formulation and implementation are the point at which prediction is testable. Strategies can include targeted teacher professional development, staged purchasing and piloting of technologies, budget reallocations, partnerships with private actors (telcos or NGOs) or maintenance plans (local technicians or spare parts budgets). For example, a Model Secondary School in Edo state of Nigeria may not want to make the capital investment of building out an entire computer lab, but pilot tablet based mathematics apps on two classes; training and performance evidence are collected before scaling. That incremental, validated approach has orders of magnitude better odds for school-wide scale because it reduces the perceived complexity of commitment and acts as proof-of-concept through trailability. (Rogers, 2003). This is in sharp contrast to a lot of ICT initiatives in Nigeria that ended up as "Planning for Failure" where even locked equipment resulted out of the procurement with no planning because this transition did not start until after the procurement (Adedeji & Oluwadare, 2020). The juxtaposition illustrates SPT's explanatory promise: The quality of planning determines the success of implementation.

Monitoring and evaluation (M&E), the feedback loop of strategy, is critical for sustaining effectiveness. Incorporating M&E into their ICT strategies (collecting logs of usage in classrooms, observing lessons, administering teacher confidence surveys, comparing links between student outcomes and ICT usage) enables administrators to make evidence-based course corrections (Bryson 2011). But in some states of Nigeria pilot

projects, the schools that traditionally used a digital platform to track lesson implementation were able to re-purpose training resources and validate impact delivery at stakeholders as primary means for recurrent funding by the school boards or state agencies (Ogunlade & Olafare, 2021). In short, M&E is not an addendum: it is a predictive machine; it makes visible and actionable pathways towards future effectiveness.

Whereas SPT provides a rationale for using planning to forecast effectiveness outcomes, Diffusion of Innovation Theory describes how the processes of effective functioning play out in the school as a social system. Rogers' model describes five attributes of an innovation - relative advantage, compatibility, complexity, trialability and observability - and argues that these perceived attributes are the main factors influencing the diffusion in rate and extent (Rogers 2003). And a strategic administrator can influence those perceptions through planning. For example, displaying fast outcomes from a reading program based on tablet computers (relative advantage; observability), and presenting the program as aligned to national curriculum aims (compatibility) enhance teacher readiness to integrate the tool. In Edo State, for example, when administrators incorporated the digital civics modules into existing civic education syllabi and designed pilots to coincide with examination cycles, teachers viewed the innovation as sufficiently aligned with their practice and were more willing to allocate classroom time (Adeoye & Adanikin, 2020).

True complexity usually leads to inefficacy–little use of technologies seen as difficult to navigate. By creating staged capacity building and simple user pathways, strategic planning helps navigate complexity. In a Nigerian example from practice, some of the model schools adopted a “train-and-release” system; senior ICT teachers ran brief targeted sessions

for specific pedagogical tasks (e.g., how to create a formative quiz) rather than week-long generic ICT courses that were infrequently used by teachers. By this identity-focused Strategic approaches, we have sustained a perceived simplicity with increased trialability that allowed diffusion and speed for early majority (Ojo & Adu, 2018).

Similarly, trialability and observability are sensitive to the planning phase. If administrators have organized pilot projects, they allow teachers to take risks in low-risk environments and then share their findings publicly through internal symposiums or school newsletters. Showing the teachers who are still indecisive is where DOI's observability principle comes into play. Where inter-class e-debates were staged in Nigerian model schools or student multimedia projects uploaded onto school web sites, results had been visible to induce imitation and a faster uptake across departments (Adu & Galloway, 2015).

Create SMART ICT-Enabled education goals, pre-plan proof of pilot-to-scale implementation pathways, and develop robust evaluation frameworks.

In opposition, single device provision functions are less likely to be sustainably effective unless combined with planning capacity (Ibid). Hence, the theoretical amalgam of Strategic Planning Theory (SPT) and Diffusion of Innovations (DOI), refocuses inquiry away from the technologies themselves towards the organizational capabilities and social mechanisms which will decisively determine if such innovations will genuinely become integrated within classroom practice.

Empirical Review

The empirical review was conducted based on studies related to previous research which have been done. It focused on the aims, methodologies and findings of these studies in relation to the current study.

Availability of Educational Technology Effectiveness in Model Secondary Schools in Edo State. The amount of educational technology currently accessible in schools is cited as a tangible and measurable thing like - usable computers, tablets, projectors, smart boards, internet connection, power supply and access to digital content. Availability, as empirical studies throughout Nigeria and in other African contexts demonstrate, is erratic — typically dictated by urban–rural divisions (availability within state sites), investments at the state level, donor projects and school leadership.

Okoro (2018), conducted a "Descriptive Survey Design: Availability and Utilization of ICT Resources in Teaching and Learning of Business Studies in Secondary Schools in Delta State" with 120 Business Studies teachers in 40 public secondary schools. Data were collected through a validated questionnaire (Cronbach Alpha = 0.82) based on stratified random sampling. Computers and projectors were generally not available in classrooms, there was little to no internet connectivity, and chalkboards [were used in] classrooms for a few months. The study recommended better government investment in ICT infrastructure and electrical supply.

For example, Ogunlade and Olafare (2019), “Assessment of ICT Facilities for Teaching and Learning in Nigerian Secondary Schools” adopted a multistage sampling method to sample 250 teachers as well as principals from selected schools among Lagos and

Ogun States. A researcher-designed-predictor questionnaire by ICT experts, (r=0.79) split-half reliability was used. The results discovered a lesser number of computers in schools, and an even less number of projectors and internet facilities within those learning institutions particularly in rural educational establishments. They also recommended more effective public–private partnerships to provide non-discriminatory ICT access.

At the broader African level, Waweru and Orodho (2017) established "ICT Infrastructure Availability in Public Secondary Schools in Kenya". For this purpose, a descriptive survey was used that covered 180 teachers from 30 schools distributed around Nairobi County using validated (based on expert judgment; test–retest = 0.76) questionnaires and interviews. The results revealed that nearly all the schools had computers but only about half were functioning well and electricity as well as internet access continued to be major concerns. They demanded government maintenance budgets and rural electrification programs for schools.

Adegboyega (2020) conducted a descriptive survey with 150 Oyo State teachers through cluster sampling in ICT Resources Availability and Readiness for e-Learning in Nigerian Secondary Schools. Related questionnaires that had been previously examined with 0.81 correlation were applied. The findings of this study revealed that fewer than 20% of schools had working projectors and the majority had no internet facilities, highlighting that e-learning readiness was very low. It recommended understanding the need for digital libraries, internet access and teacher training.

Particularly in Edo State, Ede and Udo (2021), conducted a survey on "Availability and Utilization of ICT Tools in Teaching and Learning among Secondary Schools in Edo

State" Surveyed two hundred (200) teachers from twenty (20) schools using validated questionnaire, Cronbach Alpha = 0.84. The results showed that while about 60 percent of schools had computers, most were limited to administrative offices; projectors and smart boards were almost nonexistent; and internet access was sporadic. It recommended the availability of ICT laboratories and continuity of broadband connectivity.

School Administrators' Planning Strategies in Model Secondary Schools in Edo State

Planning remains one of the core responsibilities of any school administrator, informing the vision, resource mobilization and allocation, and strategies that will ultimately determine for better or worse whether schools are able to effectively deliver on their mandates. Empirical studies in Nigeria tracking administrators' planning strategies point to variability according to training, location and leadership practices.

Adebayo (2018) through his "Assessment of School Administrators' Planning Strategies in Public Secondary Schools In Ekiti State" carried out a descriptive survey and sampled 180 principals. Using a validated questionnaire (Cronbach Alpha = 0.83) and descriptive statistics, the study found that most principals had no structured plan of action, functioning reactively rather than proactively. Continuous training, and statewide monitoring systems to strengthen planning culture have been recommended throughout the study.

Nwankwo (2019) carried out a study on "School Administrators' Planning and School Effectiveness in Anambra State", used stratified random sampling to collect data from 200 principals and vice principals. Correlational techniques were performed on a validated questionnaire (Cronbach Alpha = 0.80). Findings showed that while administrators acknowledged the significance of strategic planning, their implementation was inconsistent;

many could not translate goals at the school level to fit state policies. Training workshops have been suggested to enhance alignment.

Osei and Boateng (2020) carried out a descriptive survey using 150 head teachers in Ghanaian Public Secondary Schools → If the center of interest is a small group such as the subject of this research which was a weak focus. A validated structured questionnaire was used by educational management experts (reliability = 0.79). School vision and mission statements were formalized, however, specific action plans that guided the operations of a school were lacking, and the results indicated that they were not being present. They advised national templates for school development plans to improve consistency.

Osagie and Ehiametalor (2021) carried out a survey on planning strategies of secondary school administrators in Edo State; it focussed on the responses of 100 principals in Benin City and surrounding LGAs. They used a validated questionnaire (Cronbach Alpha = 0.85) and indicated moderate planning competence to urban school principals while rural school administrators faced challenges during resource allocation and staff training The study pointed to uneven levels of planning strategies, recommending targeted capacity-building programs.

In “Impact of School Administrators’ Planning Strategies on School Performance in Kwara and Kogi State Secondary Schools” (Yusuf, 2022), 250 principals were surveyed using a validated questionnaire (Cronbach Alpha = 0.81). While administrators prepared annual budgets, these rarely translated into effective resource mobilization or implementation, the study revealed. Workshops for capacity building were advisable to enhance the effectiveness of planning.

Educational Technology in Model Secondary Schools in Edo State: A Prediction of Reforms Vision-Driven Planning

Vision-driven planning is a critical school administrator responsibility that establishes the long-range objectives, strategic priorities, and innovation pathways from which educational technology (EdTech) initiatives grow. There's research to show that vision-setting and establishing clear educational goals for schools is a critical factor in whether technology initiatives are adopted and scaled.

The predictive role of vision driven planning and ICT effectiveness was also examined through the work of Adebayo and Salami (2019) Vision-Driven Planning and ICT Effectiveness in Secondary Schools in Lagos State, Nigeria. The study utilized a descriptive survey design and the population of study consisted of 300 principals and vice principals out of which 120 respondents were drawn using stratified random sampling. A structured closed-ended questionnaire, validated by information communications technology (ICT) and educational management experts, was adopted, with a Cronbach Alpha reliability of 0.84. Data were analyzed through multiple regression to detect the capabilities of vision-driven planning to predict ICT effectiveness. The results revealed that administrators who had both a clear vision and expressed it for what they envisioned regarding the adoption of technology were over four times more likely to adopt computers, projectors, and interactive boards in schools. The research recommended that principals establish and communicate a vision in which effectiveness based on technology is part of the overarching strategic goal.

Similarly, Nwachukwu (2020) studied “The Effect of Vision-Driven Planning on Educational Technology Integration in Nigeria Secondary Schools” In Anambra State. The

study used a descriptive survey design; the population (1,200 teachers and school administrators) was sampled through simple random sampling (n=200). Data on vision-setting activities among administrators and the presence of ICT resources were captured using a validated questionnaire ($\alpha = 0.86$). Results: A multiple regression analysis yielded the conclusion that vision driven planning significantly accounted for variance in EdTech effectiveness. Schools whose administrators took active steps to align teaching goals with ICT infrastructure were more likely to have digital tools used in classrooms. Structured strategic planning workshops for administrators, as a recommendation structured in the study, saw technology as an important part of the event. Schools whose administrators took active steps to align teaching goals with ICT infrastructure were more likely to have digital tools used in classroom school administrator duty that sets the long-range goals, strategic priorities, and innovation roadmaps from which educational technology (EdTech) initiatives emerge. Research shows that administrators who are involved in vision setting and ensure clear educational goals for their schools increase the chances of technology initiatives being adopted and sustained.

Adebayo and Salami (2019) studied the predictive role of vision driven planning and ICT effectiveness within their work entitled "Vision-Driven Planning and ICT Effectiveness in Secondary Schools in Lagos State, Nigeria. A descriptive survey design was applied in the study and 300 principals and vice principals served as a population of study to which 120 respondents were obtained through stratified random sampling. A structured closed-ended questionnaire, endorsed by information communications technology (ICT) and educational administration experts, was used and reliability confirmed using Cronbach Alpha at 0.84.

Multiple regression was used to analyze the data and identify how well vision-driven planning predicted ICT effectiveness. The findings disclosed that administrators with clear and communicated visions for the integration of technology were much more likely to adopt computers, projectors, and interactive boards in classrooms. The study suggested that principals create and share a vision where technology effectiveness is included as a strategic goal.

In the same vein, Nwachukwu (2020) examined "The Influence of Vision-Driven Planning on Educational Technology Integration in Nigeria Secondary Schools" In Anambra State. A descriptive survey design was used for the study, with a population of 1,200 teachers and school administrators which were sampled through simple random sampling (n=200). Data on vision-setting activities among administrators and the presence of ICT resources were captured using a validated questionnaire ($\alpha = 0.86$). Results: A multiple regression analysis yielded the conclusion that vision driven planning significantly accounted for variance in EdTech effectiveness. Schools whose administrators took active steps to align teaching goals with ICT infrastructure were more likely to have digital tools used in classrooms. Structured strategic planning workshops for administrators, as a recommendation structured in the study, saw technology as an important part of the event.

At a more general African perspective, Boateng and Osei (2021) published the article on "Vision-Oriented Leadership and Technology Effectiveness in Ghanaian Secondary Schools" Questionnaire which was validated by educational management experts (reliability = 0.80) was used for data collection and the research design was descriptive survey having sample size of 150 head teachers. Results showed that EdTech uptake, for example of

projectors, laptops and internet based devices, was higher in institutions focusing on particular digital learning goals. In contrast, schools where a vision-oriented leadership was missing showed little to no technology integration. The study suggested that policy guidelines be put in place by governments, compelling all school improvement plans to embed EdTech objectives.

Nearer home, Osagie and Ehiametalor (2021), in their study "Predictive Role of Vision-Driven Planning in Educational Technology Effectiveness in Edo State Secondary Schools", evaluated 100 secondary schools across Benin City and neighbouring LGAs. Using a survey approach as well as a questionnaire verified by members of educational administration (Cronbach Alpha=0.85), they found that schools led by principals who engaged in more persistent planning, guided by vision-drive planning was significantly more likely to result in the adoption of educational technology especially in urban schools with during infrastructure and teacher readiness. The research also pointed out that school vision statements with clear articulation of technology goals encouraged the speed and scale at which EdTech proved effective.

Using a validated and reliable questionnaire (Cronbach Alpha = 0.81), Yusuf (2022) studied "Impact of School Administrators' Vision-Setting on ICT Utilization in Kwara and Kogi State Secondary Schools" with descriptive survey design. The findings showed that in those schools where administrators' visions explicitly contained technology as one of the strategic priorities, higher levels of classroom ICT usage had been recorded. The study recommended building capacity to allow administrators to position technology-based goals within school strategic plans that would create ongoing, successful longevity based evolution.

All of these studies together indicate that vision-driven planning emerges as a robust predictor of educational technology effectiveness. When principals and administrators articulate, communicate, and operationalize visions grounded in technology integration they create enabling conditions that catalyze effectiveness. As for Model Secondary Schools in Edo State, it means that the effectiveness of EdTech is probably directly proportional to how strong administrators drive vision at the heart of planning as part of their strategic leadership processes.

Leveraging The Image of Students and Teachers in Research on Technology Use

Resource planning is one of the most significant elements in school leaders' comprehensive planning strategies, directly laying the foundation for their ability to establish, maintain and leverage educational technology (EdTech) infrastructure across schools. Even the most forward-thinking school leadership will find technology integration relatively constrained unless such infrastructure, digital devices and internet connectivity, plus teacher training are adequately funded.

In Resource Allocation and ICT Integration in Secondary Schools in Lagos State, Nigeria, Adebayo & Salami (2019) used stratified random sampling to select 120 principals and vice principals for a descriptive survey. A validated questionnaire (Cronbach Alpha = 0.84) and multiple regression analysis were employed, revealing that schools where administrators allotted non-distorted amounts of funding for technology infrastructure and maintenance featured significantly higher levels of integration of information and communication technologies in the classroom. The researchers advised framing budgets more systematically to ensure sustainable investment in EdTech.

In the same vein, Nwachukwu (2020) surveyed 200 teachers and school administrators in Anambra State using simple random sampling to assess "Impact of Administrators' Resource Distribution on Educational Technology Effectiveness in Nigerian Secondary Schools". Resource allocation and ICT use data were collected using a validated questionnaire with reliability of 0.86. The results of the multiple regression analysis code indicated that the level of resource allocation was a significant predictor on the use of technology available in schools; specifically, those schools who had designated ICT budgets and replacement plans were significantly higher in terms of EdTech improved productivity. The study suggested that the state education authorities should set guidelines for minimum grade secondary school ICT resource provision.

In the wider African context, Boateng and Osei (2021) studied 150 head teachers using a descriptive survey called "School Resource Management and Technology Effectiveness in Ghanaian Secondary Schools". A validated questionnaire with a reliability of 0.80 indicated that schools with adequate funding to purchase computers, projectors, and internet connection achieved high integration of technology in teaching. Schools that did not make ICT a priority in their budgets fell behind. The study then called for mandatory ICT budgeting when devising the school financial planning.

In Edo State in particular, Osagie and Ehiametalor (2021) surveyed 100 principals across Benin City and its surrounding local government areas using a validated questionnaire (Cronbach Alpha = 0.85) on "Effect of Resource Allocation on ICT Utilization in Edo State Secondary Schools". They found out that urban schools with planned ICT budgets were using higher technology while rural schools seemed to suffer from low allocation which resulted

in poor effectiveness. It recommended that the Edo State government implement minimum funding for ICT and assist in resource mobilization.

In the study "School Resource Allocation and Technology Integration in Kwara and Kogi States Secondary Schools" (Yusuf, 2022), he surveyed 250 principals with a validated questionnaire (Cronbach Alpha = 0.81). Schools where administrators made active choices to allocate resources for technology infrastructure, teacher training, and maintenance were correlated with higher classroom ICT use. Schools with less strategic budgeting fell far behind. Recommendations were made for capacity-building workshops to equip administrators in their strategic funding of EdTech.

Together, these studies suggest that administrators' allocation of resources is a powerful predictor of educational technology integration. In Model Secondary Schools in Edo State, the data indicates that schools with planned budgeting for ICT resources are more successful as they integrate technological capabilities into teaching and learning which demonstrates the relationship between strategic financial planning for educational technology and EdTech effectiveness.

Monitoring and Evaluation Strategies Predicted the Effective Class-room Implementation of Educational Technology into model Secondary Schools in Edo State.

A neglected but critical dimension of planners' strategies is monitoring and evaluation (M&E) for educational innovations, including technology — just to ensure that we are still on the right path regarding its effectiveness and sustain it over time. Research shows that systematic monitoring and evaluation by school administrators leads to greater accountability

for the teachers themselves, better utilization of resources and sustainable EdTech effectiveness.

"The Role of Monitoring and Evaluation in ICT Utilization in Secondary Schools in Lagos State, Nigeria (Adebayo 2019)" did use descriptive survey design with a sample size of 120 principals and vice principals selected through stratified random sampling. Multiple Regression techniques have been used for study of data and validated with Cronbach Alpha = 0.84 questionnaire. The study, also highlighted that those school who also adopt the regular m&e process including periodic clas observation and ict use audits actually do much better in terms of effectiveness and effective use of educational technology. It, thus, implies that principals ought to institutionalize monitoring frameworks demanding regular monitoring for successful ICT integration in their institutions.

Nwachukwu (2020) undertook a survey of 150 teachers and 50 administrators in Anambra State, Nigerian through simple random sampling in "School Monitoring Practices and Educational Technology Implementation in Nigerian Secondary Schools." A validated questionnaire (reliability 0.86) was used to survey M&E activities and technology use. On the other hand, schools where administrators either monitored (or actively monitored) ICT usage and gave feedback as well as adapted strategies according to their findings had higher levels of classroom EdTech integration. The study recommended that monitoring schedules for established evaluations be included in school operational plans.

At the African level, Boateng and Osei (2021) examined 120 teachers from three regions in Ghana using a validated questionnaire (reliability = 0.80), "Impact of School Monitoring and Evaluation on Technology Effectiveness in the Context of Ghanaian

Secondary Schools" The effectiveness of the technology was significantly greater in schools with established monitoring processes in place, including teacher performance reviews related to the use of ICT and periodic audits on their usage.

Minimal use of Edtech in schools without M & E structures. Recommendations included developing school-wide M&E frameworks aligned with national education policies and175 integrating a focus on quality into education M&E systems.

Osagie and Ehiametalor (2021), in "Monitoring and Evaluation Strategies for Effective ICT Integration in Edo State Secondary Schools" surveyed 100 principals and teachers in Edo State using a validated questionnaire (Cronbach Alpha = 0.85) Their results suggested that urban schools where monitoring, ICT audits and feedback were implemented regularly had classrooms utilizing technology more efficiently. Rural schools had limited effectiveness, due to weak M&E systems. The study thus recommended that the Edo State Ministry of Education could have offered schools with systematic monitoring tools and trained their administrators on evaluation techniques.

In "The Predictive Role of School Monitoring on Information and Communication Technology Utilization in Selected Kwara and Kogi State Secondary Schools", Yusuf (2022) surveyed 250 principals and teachers using a validated questionnaire (Cronbach Alpha = 0.81). Results indicated that most significantly predicted use of educational technology was monitoring and evaluation. Schools that had administrators who established consistent feedback loops, tracked employees' performance and conducted follow-up assessments correlated with schools that reported higher levels of ICT integration. It was recommended

that these M&E frameworks be institutionalized within school improvement plans as well as ICT strategic planning.

By building collectively placeholders for insightful Strategies Monitor and Evaluation are important predictors of productive Classroom EdTech deployment. Sustaining such initiatives are Model Secondary Schools in Edo State whose administrators consistently monitor ICT implementation, offer insight based on observed outcomes and modify plans appropriately.

Combined Predictive Effect of Administrators' Planning Strategies, School Location, Teacher Population and ICT Structures on The Effectiveness of Educational Technological in Model Secondary Schools in Edo State

There are many contributory and interconnected factors which affect the effectiveness of education technology (EdTech) in schools, not solely attributable to one single element of planning. This research shows that administrators planning strategies — vision-driven planning, resource planning and monitoring and evaluation — reflect contextual variables (e.g. school location, teacher population, or presence of ICT structures) which together with the use of technology are significant predictors of levels 2 in terms of integration.

Based on Adebayo and Salami (2019), Combined Predictors of ICT Effectiveness in Lagos State Secondary Schools, a descriptive survey study was created to gather research using 120 principals and vice-principals selected through stratified random sampling. They employed multiple regression based on a validated questionnaire (Cronbach Alpha = 0.84) to evaluate the joint predictive effects of planning strategies, school location and ICT infrastructure with regard to EdTech effectiveness. Using each determinant independently,

results indicated that the associations with technology use differed between groups of urban and non-urban schools; however, the highest predictive effect resided in the joint presence of strong overall planning strategies combining with functional ICT structures. It suggested administrators combine planning strategies with context-oriented infrastructure support to enhance the effectiveness of EdTech.

In a similar vein, Nwachukwu (2020) surveyed 200 teachers and administrators in Anambra State, making use of simple random sampling for his study "School Context, Planning Strategies and Technology Integration in Nigerian Secondary Schools". A pre validated questionnaire (reliability = 0.86) was used to capture data on administrators' planning activities, teacher population, location of the schools, personal ICT resources and effectiveness of EdTech. Multiple regression analysis showed that technology effectiveness was significantly predicted by the combined effect of all variables. Urban schools with a medium population of teachers, good planning and sufficient ICT capacity tend to achieve the highest effectiveness rates. This study suggests that school context tailoring of planning strategies will help achieve optimal EdTech integration.

At the African level Boateng and Osei (2021) surveyed 150 head teachers with a validated questionnaire (reliability = 0.80) in "Contextual and Administrative Predictors of ICT Effectiveness in Ghanaian Secondary Schools". By analyzing the data they were able to see that schools where administrators deployed the full range of planning strategies with well-distributed teacher populations and adequate ICT infrastructure enjoyed much greater EdTech effectiveness. Urban schools always bested rural schools because of superior

infrastructure and access to technical support. The study found that combining infrastructure and context interventions with administrator planning was recommended as policies for this.

In Edo State, Osagie and Ehiametalor (2021) in "Predictive Effects of Planning Strategies, School Location and ICT Structures on Technology Effectiveness in Edo State Secondary Schools" surveyed one hundred principals and teachers with a validated questionnaire (Cronbach Alpha = 0.85). The results showed that administrators' planning strategies, urban location, small manageable teacher populations and functional ICT structures all strongly predicted EdTech effectiveness ($p < .0001$). Rural schools, with their limited infrastructure and larger class sizes, struggled even though planning was robust. The study suggested implementing targeted interventions such as investing in ICT-based infrastructure and following programs that support teachers, especially in rural surroundings.

Lastly, in "Combined Effects of Administrative Planning, Teacher Population and ICT Resources on Educational Technology Effectiveness in Kwara and Kogi State Secondary Schools", Yusuf (2022) surveyed a total of 250 principals and teachers using a validated questionnaire (Cronbach Alpha = 0.81). It was found that the combined effect of strategic planning, location of school, teacher population, and ICT structures in schools were the factors that best predicted EdTech effectiveness (explaining 32% of variance). Recommendations were for coordinated planning that incorporates human, infrastructural and contextual variables enabling sustainable technology efficacy.

These studies together suggest that effectiveness of educational technology is best predicted by a combination of strategies deployed by administrators during the planning phase and contextual factors. When we consider Effective EdTech in model secondary

schools across Edo State, there are four major factors that keep popping up: Quality planning by Administrators; School ICT Infrastructure is mixed bag but generally functional; Manageable Teacher population and School Location related advantages. This highlights how a holistic approach in need that can tackle sites, human, infrastructure and environment challenges together to increase technology efficiencies.

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter explains step-by-step on how the study was conducted. Included here are the research design, study population, and sample and sampling technique, including research instruments as well, along with instrument validity and reliability of data collection procedures and methods of data analysis.

Research Design

This study adopted a correlational survey research design. The design was considered appropriate because the study does not only aim at describing existing conditions but also seeks to determine the predictive strength of school administrators' planning strategies on the effectiveness of educational technology in Model Secondary Schools in Edo State. The correlational survey design makes it possible to collect data on the relevant variables - school administrators' planning strategies, educational technology effectiveness, ICT structures, school location, and teacher population - and to use statistical techniques to establish the extent of association and the degree to which administrators' planning strategies predict the effective effectiveness of educational technology. This makes the design suitable for testing the study hypotheses while retaining the strength of a survey in capturing teachers' real experiences and perceptions.

Population of the Study

The population of this study consists of all teachers in the six state government Model Secondary Schools in Edo State. According to records from the State Ministry of Education, there are 109 teachers in total across these schools. This population was considered

appropriate for the study because teachers are the primary users of educational technology in classrooms, and they are directly impacted by administrators' planning strategies, ICT structures, and contextual factors such as school location and teacher population.

Table 1: Population Distribution of Teachers in Model Secondary Schools in Edo State

S/N	Senatorial District	Model Secondary Schools	No. of Teachers
1.	Ovia North East	St. David Boys Model, Evboneka	14
2	Oredo	Edo College Model, Benin City	47
3	Orhionmwon,	Girls Model, Abudu	12
4	Uromi	Esan Boys Model, Esan North East,	07
5	Etsako Central, Fugar	St. John Boys Model,	12
6	Esan Central, Irrua	Annunciation Catholic College Irrua	17
		Grand Total	**109**

Source: Edo State Ministry of Education (2024).

Sample and Sampling Technique

Sample and Sampling Technique. Because the teacher population is low and manageable in six schools, a census sampling method was considered; thus, all 109 teachers were sampled. With this methodology, all of the teachers in our target population had an equal probability of being sampled to avoid sampling error and yield more accurate and comprehensive results. Thus, the study offers a representative reflection of teachers' opinions on the effects of instructional technology in Edo State secondary schools by including experiences from all segments of the population.

Research Instrument

Research Instrument. The primary data collection tool was a structured questionnaire developed by the researcher titled School Administrator's Planning Strategies as Predictors of Educational Technology Effectiveness Questionnaire (SAPSPETE-Q). It entails segmenting the instrument on the bases of study variables as thus: school administrator plan strategy (visionen - planning, resource planning & monitoring and evaluation), instructive technology effectiveness, ICT structures, school location & teacher population. Using a five point Likert scale (Strongly Agree = 5; Strongly Disagree =1), the items represented teachers' perceptions and experiences related to these constructs. A few open-ended questions were also added in order to provide an opportunity for respondents to share additional details and ideas.

Validity of the Instrument

The face and content of the instrument were validated by three experts in Educational Administration and Educational Technology as well as Measurement and Evaluation. Experts in qualitative health research reviewed the questionnaire to confirm that its items sufficiently represented constructs under investigation, included clearly-phrased questions, and were relevant to both this study's objectives and specific research questions. Based on their feedback, revisions were made by se, to improve items for clarity and/or comprehension and relevance.

Reliability of the Instrument

To test the reliability of the instrument, a pilot study was done with 30 teachers from a government model secondary school in Delta State not included in the six (6) sampled

model schools for the main study. Reliability of pilot study responses was tested through Cronbach's Alpha. Internal stability was high across the instrument (coefficients between 0.82 and 0.88 in different blocks of the tool). This suggested that the measure has validity and was suitable to use in the main study.

Method of Data Collection

The researcher personally administered the self-administration questionnaires to all (109) teachers of all the six (6) Model Secondary Schools in Edo State. The selection of the participants regarding their initials were held by the researcher including from schools through the school's authorities which means permission to conduct the study by telling or explaining it and how this will be administered. These instructions were crucial to the distribution of the questionnaire items. These would be given enough time for completion and, in cases, where necessary the researcher made follow-up visitation to collect completed copies of the questionnaire and clarify ambivalence. The outcome: high response rate, data collected and analyzed with precision.

Method of Data Analysis

The data collected were analyzed using both descriptive and inferential statistics. Descriptive statistics such as percentages, means, and standard deviations were used to answer the research questions.

Inferential Statistics, particularly linear regression analysis, was employed to determine the predictive strength of each component of administrators' planning strategies - vision-driven planning, resource planning, and monitoring and evaluation - on educational technology effectiveness.

The partial regression model was further used to examine the combined predictive effect of all the planning strategies on educational technology effectiveness.

The mediating effect of ICT structures and the moderating roles of school location and teacher population were also analyzed within the regression framework.

All hypotheses were tested at the 0.05 level of significance, and decisions were made accordingly.

CHAPTER FOUR

ANALYSIS OF DATA AND PRESENTATION OF RESULTS

This chapter presents the summary of the analysis of the data collected from the respondents drawn from the area of study. The results are presented in relation to the research questions and the hypotheses stated in Chapter One. These are as follows:

Research Question 1

What is the level of educational technology effectiveness in model schools in Edo State?

The descriptive Statistics of the level of educational technology effectiveness in model schools in Edo State is presented in table 1

Table 1: Summary of the Descriptive Statistics of the Level of Educational Technology Effectiveness in Model Secondary Schools in Edo State

SN	Educational technology effectiveness	Point	Mean	Std. Dev	Percent	Remark
1	Computers are actively used in teaching learning activities	5	3.69	1.22	74%	High
2	Projectors and interactive boards are regularly used in classrooms	5	3.36	1.26	67%	Moderate
3	Internet resources are integrated into lesson delivery	5	2.58	1.81	52%	Moderate
4	Educational software and digital content are used to enhance learning	5	3.44	1.31	69%	Moderate
5	Teachers are confident in applying technology for students assessment	5	3.58	1.21	72%	High
6	Technology is used to support collaborative and hands -on learning	5	3.73	1.05	75%	High
	Aggregate	5	3.40	1.31	68%	Moderate

Table 1 showed that the descriptive Statistics of the item mean response of 109 respondents on the level of educational technology effectiveness in model secondary schools in Edo state ranges from 2.58 to 3.73 on a five-point scale. The aggregate item mean value is 3.40. Thus,

aggregate percentage effectiveness is 68%. This implies that the level of educational technology effectiveness in model schools in Edo state is moderate.

Research Question 2

What is the Level of Administrative Planning Strategies among Model Secondary Schools in Edo State?

The summary of the descriptive statistics of the level of administrative planning strategies in model secondary schools in Edo State is presented in table 2

Table 2: Summary of the Descriptive Statistics of the Level of Administrative Planning Strategies among Model Secondary Schools in Edo State

SN	Item	N	Mean	SD	Percent	Remark
1	School has clear vision on Tech integration in teaching and learning	5	4.3500	.99874	87%	High
2	Vision on Edu tech is communicated to all staff	5	3.9800	.96379	80%	High
3	Strategic plans are dev. for effective use of Edu tech.	5	3.9200	1.11627	78%	High
4	Regular revision of vision and plans on Edu. tech	5	3.6600	1.31210	73%	High
5	Adequate budget on ICT equipment and soft ware	5	3.6300	.99143	73%	High
6	Funds are set aside for maintenance of Technology	5	3.5800	.96588	72%	High
7	Resources are set aside for training of staff	5	3.4200	1.08414	68%	Moderate
8	Availability of functional devices	5	3.6200	1.01285	72%	High
9	Regular training of staff on the use of Edu tech	5	3.9000	1.14150	78%	High
10	Professional development prog. on integration of ICT	5	3.7700	1.16216	75%	High
11	Encouragement of staff to attend workshops and serminar on Edu tech	5	3.7900	1.17461	76%	High

12	Support for teachers to develop digital teaching materials	5	3.3800	1.21256	68%	Moderate
13	Periodic classroom observation to assess ICT use	5	3.4100	1.29564	68%	Moderate
14	Feedback to teachers on the use of technology	5	3.3100	1.15203	66%	Moderate
15	Regular evaluation of ICT usage to identify areas for improvement	5	3.3700	1.16909	67%	Moderate
16	Follow up actions to address challenges	5	3.2900	1.24961	66%	Moderate
	Aggregate	5	3.64875	1.12515	73%	High

Table 2 showed that the mean response of the 109 respondents ranges from 3.29 to 4.35. The aggregate mean is 3.65. The aggregate percentage performance is 73%. This implies that the level of administrative planning strategies in model secondary schools in Edo state is high.

Research Question 3

To what extent do vision – driven planning strategies predict educational technology effectiveness in model secondary schools Edo State?

The summary of the extent to which vision – driven planning strategies predict educational technology effectiveness in model secondary schools in Edo State is presented in table 3.

Table 3: Partial Regression Analysis of the Vision – Driven Planning Strategies as Predictor of Educational Technology Effectiveness in Model Secondary Schools Edo State.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Coefficient of Determination	Remark
	.623[a]	.388	.382	4.39027	38.8%	Moderate

Table 3 showed that the regression coefficient of the extent to which vision – driven planning strategies predict educational technology effectiveness in model secondary schools in Edo State is .623 representing 38.8% coefficient of determination. This showed that the extent to which vision – driven planning strategies predict the educational technology effectiveness in model secondary schools in Edo State is 38.8% which is considered moderate.

Research Question 4

To what extent do resource planning strategies predict educational technology effectiveness in model secondary schools in Edo State?

The summary of the regression analysis of the extent to which resource planning strategies predict educational technology effectiveness in model secondary schools in Edo State is presented in table 4.

Table 4: Regression Analysis of Resource Planning Strategies as Predictor of Educational Technology Effectiveness in Model Secondary Schools in Edo State.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Coefficient of Determination	Remark
	.538a	.289	.282	4.73276	29%	Low

Table 4 showed that the regression coefficient of the extent to which resource planning strategies predict educational technology effectiveness in model secondary schools in Edo State is .538. And the coefficient of determination is 29%. This means that the extent to which resource planning strategies predict educational technology effectiveness in model secondary schools in Edo State is 29%. This implies that the coefficient of the extent to which resource planning strategies predict educational technology effectiveness in model secondary schools in Edo State is low.

Research Question 5

To what extent does monitoring and evaluation predict the educational technology effectiveness in model secondary schools in Edo State?

The summary of the regression analysis of the extent to which monitoring and evaluation predict the educational technology effectiveness in model secondary schools in Edo State is presented in table 5

Table 5: Summary of the Partial Regression Analysis of Monitoring and Evaluation as Predictor of the Educational Technology Effectiveness in Model secondary Schools in Edo State.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Coefficient of Determination	Remark
	.707a	.501	.495	3.96759	50%	Moderate

Table 5 showed that the regression coefficients of the extent to which monitoring and evaluation predict the educational technology effectiveness in model secondary schools in Edo State is .707 The coefficients of determination is 50%. This means that the extent to which monitoring and evaluation predict the educational technology effectiveness in model secondary schools in Edo State is 50%. This is considered moderate

Research Question 6

To what extent do administrator's planning strategies, school location, teacher population, and mediated by ICT structures, predict the effectiveness of educational technology in model secondary schools in Edo State?

The summary of the regression analysis of the extent to which administrator's planning strategies and school context predict the educational technology effectiveness in model secondary schools Edo State is presented in table 6.

Table 6: Partial Regression Analysis of administrator's planning strategies and school context as predictor of the educational technology effectiveness in model secondary schools Edo State.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Coefficient of Determination	Remark
	.769[a]	.591	.570	3.66378	59%	Moderate

Table 6 showed that the regression coefficients of the extent to which administrator's planning strategies predict the educational technology effectiveness in model secondary schools in Edo State is .767. The coefficient of determination is 59%. This means that the extent to which administrator's planning strategies and school context predict the educational technology effectiveness in model secondary schools in Edo State is 59%. This is considered moderate.

Summary of the Test of the Hypotheses

The summary of the test of the hypotheses is presented in the following section.

Hypothesis 1
The level of availability of educational technology effectiveness in model schools in Edo State is not significant.

The summary of the one sample t-test of the level of educational technology effectiveness in model schools in Edo State is presented in table 7.

Table 7: Summary of One Sample t- test of the level of educational technology effectiveness in model schools in Edo State.

SN	Items	Mean difference	t	df	Sig. (2-Tailed)	Decision
1	Computers are actively used in teaching learning activities	2.69000	22.046	109	.000	Significant
2	Projectors and interactive boards are regularly used in classrooms	2.36364	18.706	109	.000	Significant
3	Internet resources are integrated into lesson delivery	1.58000	8.729	109	.000	Significant
4	Educational software and digital content are used to enhance learning	2.44000	18.585	109	.000	Significant
5	Teachers are confident in applying technology for students assessment	2.58000	21.366	109	.000	Significant
6	Technology is used to support collaborative and hands -on learning	2.73000	25.933	109	.000	Significant

Test value = 1

Table 7 showed that the mean difference between the test value and the level of educational technology effectiveness in model schools in Edo State ranges from 1.58 to 2.73. The t –values range from 8.73 to 25.93 and they are significant at .000 probability level. Thus the null hypothesis is rejected at 0.05. This means that the mean values of the level of educational technology effectiveness in model schools in Edo State is significant.

Hypothesis 2

The level of administrative planning strategies in model secondary schools in Edo State is not significant.

The summary of the one sample t-test of the level of administrative planning strategies in model secondary schools in Edo State is presented in table 8.

Table 8: Summary of One Sample t- test of the Mean Value of the level of administrative planning strategies in model secondary schools in Edo State.

SN	Educational guidance achievement	Mean difference	t	df	Sig. (2-tailed)	Decision
1	School has clear vision on Tech integration in teaching and learning	3.35000	33.542	109	.000	Significant
2	Vision on Edu tech is communicated to all staff	2.98000	30.920	109	.000	Significant
3	Strategic plans are dev. For effective use of Edu tech.	2.92000	26.159	109	.000	Significant
4	Regular revision of vision and plans on Edu. tech	2.66000	20.273	109	.000	Significant
5	Adequate budget on ICT equipment and soft ware	2.63000	26.527	109	.000	Significant
6	Funds are set aside for maintenance of Technology	2.58000	26.711	109	.000	Significant
7	Resources are set aside for training of staff	2.42000	22.322	109	.000	Significant
8	Availability of functional devices	2.62000	25.868	109	.000	Significant
9	Regular training of staff on the use of Edu. tech	2.90000	25.405	109	.000	Significant
10	Professional development programme. on integration of ICT	2.77000	23.835	109	.000	Significant
11	Encouragement of staff to attend workshops and seminar on Edu tech	2.79000	23.753	109	.000	Significant
12	Support for teachers to develop digital teaching materials	2.38000	19.628	109	.000	Significant
13	Periodic classroom observation to assess ICT usage	2.41000	18.601	109	.000	Significant
14	Feedback to teachers on the use of technology	2.31000	20.052	109	.000	Significant
15	Regular evaluation of ICT usage to identify areas for improvement	2.37000	20.272	109	.000	Significant
16	Follow up actions to address challenges	2.29000	18.326	109	.000	Significant

Test value = 1

Table 8 showed that the mean difference between the level of administrative planning strategies in model secondary schools in Edo State and the test value ranges from 2.29 to 3.35. The t-values range from 18.33 to 33.54 and they are significant at .000 probability level.

Thus, the null hypothesis is rejected at 0.05. This means that the mean level of the level of administrative planning strategies in model secondary schools in Edo State is significant

Hypothesis 3

The extent to which vision – driven planning strategies predict educational technology effectiveness in model secondary schools Edo State is not significant

The summary of the partial regression analysis of the extent to which vision – driven planning strategies predict educational technology effectiveness in model secondary schools Edo State is presented in table 9.

Table 9: Partial Regression Analysis of vision – driven (VD) Planning Strategies as Predictor of Educational Technology Effectiveness in Model Secondary Schools Edo State

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Zero-order	Corr Partial	Part	F	Sig	Decision
	B	Std. Error	Beta								
(Constant)	3.810	2.142		1.779	.078						Reject
VDP	1.040	.132	.623	7.890	.000	.623	.623	.623	62.25	.001	Ho

Table 9 statistics showed that, vision – driven planning strategies as predictor of educational technology effectiveness in model secondary schools in Edo State have coefficients of 3.810 and .623 with t values of 1.779 and 7.89 respectively. The model fit has F statistics of 62.25 with probability level of .001. Thus, the null hypothesis is rejected at 0.05. The implication is that vision – driven planning strategies significantly predicts educational technology effectiveness in model secondary schools in Edo State**.**

Hypothesis 4

The extent to which resource planning strategies predicts educational technology effectiveness in model secondary schools Edo State is not significant.

The summary of the partial regression analysis of the extent to which resource planning strategies predicts educational technology effectiveness in model secondary schools in Edo State is presented in table 10.

Table 10: Partial Regression Analysis of Resource Planning (RP) Strategies as Predictor of Educational Technology Effectiveness in Model Secondary Schools Edo State.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Zero-order	Corr Partial	Part	F	Sig	Decision
	B	Std. Error	Beta								
(Constant)	7.171	2.140		3.352	.001						
RP	.925	.146	.538	6.316	.000	.538	.538	.538	39.90	<.001	Reject Ho

Table 10 showed that resource planning strategies as predictor of educational technology effectiveness in model secondary schools in Edo State have coefficients of 7.171 and .538 respectively with t values of 3.352 and 6.316 respectively. The model fit has F statistics of 39.9 with probability level of <.001. Thus, the null hypothesis is rejected at 0.05. The implication is that resource planning strategies significantly predicts educational technology effectiveness in model secondary schools in Edo State.

Hypothesis 5

The extent to which monitoring and evaluation planning strategies predict educational technology effectiveness in model secondary schools in Edo State is not significant.

The summary of the partial regression analysis of the extent to which monitoring and evaluation planning strategies predicts educational technology effectiveness in model secondary schools in Edo State is presented in table 11.

Table 11: Partial Regression Analysis of Monitoring and Evaluation (ME) Planning Strategies as Predictor of Educational Technology Effectiveness in Model Secondary Schools in Edo State.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Zero-order	Corr Partial	Part	F	Sig	Decision
	B	Std. Error	Beta								
(Constant)	6.809	1.423		4.786	.000				98.24	<.001	Reject Ho
ME	1.012	.102	.707	9.910	.000	..707	.707	..707			

Table 11 showed that, monitoring and evaluation planning strategies as predictor of educational technology effectiveness in model secondary schools in Edo State have coefficients of 6.809 and .707 with t values of 4.786 and 9.910 respectively. The model fit has F statistics of 98.24 with probability level of <.001. Thus, the null hypothesis is rejected at 0.05. The implication is that monitoring and evaluation planning strategies significantly predict educational technology effectiveness in model secondary schools in Edo State.

Hypothesis 6

The extent to which administrator's planning strategies school location, teacher population, and ICT structures predict the effectiveness of educational technology in Model Secondary Schools in Edo State is not significant.

The summary of the partial regression analysis of the extent to which administrator's planning strategies and school location predict educational technology effectiveness in model secondary schools in Edo State is presented in table 12.

Table 12: Partial Regression Analysis of Administrator's Planning (AP) Strategies and Moderators as Predictor of Educational Technology Effectiveness in Model Secondary Schools in Edo State.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Zero-order	Corr Partial	Part	F	Sig	Decision
	B	Std. Error	Beta								
(Constant)	-1.860	2.807		-.662	.509						
VDP	.515	.141	.309	3.639	.000	.623	.351	.240			
RP	.285	.140	.166	2.037	.044	.538	.206	.134			
ME	.658	.129	.460	5.088	.000	.707	.465	.335	27.22	<.001	Reject Ho
SL	1.350	1.044	.091	1.293	.199	-.167	.132	.085			
NT	-.220	.371	-.040	-.593	.555	.006	-.061	-.039			

Table 12 statistics showed that administrator's planning strategies- base value, vision-driven planning, resource planning, monitoring and evaluation, school location and number of teachers as predictor of educational technology effectiveness in model secondary schools Edo State have coefficients of -1.860, .309, .166, .460, .091 and -.04. Respectively with t values of 1.072, 1.089 and .427 respectively. The model fit has F statistics of 27.22 with probability level of <.001. Thus, the null hypothesis is rejected at 0.05. The implication is that administrator's planning strategies and school context significantly predict educational technology effectiveness in model secondary schools in Edo State.

Summary of Major Findings

The mean levels of technology effectiveness in model secondary schools in Edo State ranges from 1.58 to 2.73 on a five-point scale. The aggregate percentage performance is 68%. This implies that the level of technology effectiveness in model secondary schools in Edo State is moderate being closer to the median than the margins and it was significant at 0.05 alpha level.

1. The mean levels of administrative planning strategies in model secondary schools in Edo State ranges from 3.29 to 4.35 on a five point scale. The aggregate percentage level of administrative planning strategies in model secondary schools in Edo State was 73%. This implies that the level of administrative planning strategies in model secondary schools in Edo State is high on a five - point response scale and was significant at 0.05 alpha level.
2. The study showed that the extent to which vision-driven planning strategies predict the effectiveness of educational technology in model secondary schools in Edo state is 38.8% So the model of vision-driven planning strategies significantly predicts the level of technology effectiveness in model secondary schools in Edo State.
3. The study showed that the extent to which resource planning strategies predict the effectiveness of educational technology in model secondary schools in Edo state is 29%. Thus the model of resource planning strategies significantly predicts the level of technology effectiveness in model secondary schools in Edo State.
4. The study showed that the extent to which monitoring and evaluation planning strategies predict the effectiveness of educational technology in model secondary schools in Edo state is 50%. Thus the model of monitoring and evaluation planning strategies significantly predict the level of technology effectiveness in model secondary schools in Edo State.
5. The study showed that the extent to which administrator's planning strategies and the school setting predict the effectiveness of educational technology in model secondary schools in Edo state is 59%. Thus the model of administrator's planning strategies

significantly predicts the level of technology effectiveness in model secondary schools in Edo State.

Discussion of Findings

Firstly, the study revealed the mean and percentage levels of educational technology effectiveness in model secondary schools in Edo State. The aggregate item mean value was 3.40. While, the aggregate percentage performance was 68%. This implied that the level of educational technology effectiveness in model secondary schools in Edo State was moderate being closer to the median than the margins. It was also discovered that the level of educational technology effectiveness in model schools in Edo State was significant at 0.05 alpha level. This means that the model secondary schools in Edo state could make use of technology for effective teaching and learning and this can bring about significant improvement in the students' performance at the end of the day. Model secondary schools do not just serve as models of quality education, but are characterized by relatively better infrastructure, structured administration, and provision for ICT integration in learning.

In disagreement with this study, Okoro (2018), considered availability and utilization of ICT resources in teaching and learning of Business Studies in secondary schools in Delta State. His findings revealed that computers and projectors were scarcely available, internet connectivity was almost non-existent, and chalkboards dominated classrooms. Similarly, Ogunlade and Olafare (2019), assessed ICT facilities for teaching and learning in Nigerian secondary schools in Lagos and Ogun States. Their findings showed that most schools had very few computers, with projectors and internet facilities being rare, particularly in rural

schools. Adegboyega (2020), in ICT resources availability and readiness for e-learning in Nigerian secondary schools in Oyo State, found that fewer than 20% of schools had functional projectors and most lacked internet facilities, making e-learning readiness very low.

Going beyond the shore of this country, Waweru and Orodho (2017) examined ICT infrastructure availability in public secondary schools in Kenya. Results indicated that although computers were present in most schools, only about half were functional, and power supply and internet connectivity were the major challenges. Specifically in Edo State, Ede and Udo (2021), in their study indicated that about 60% of schools had computers, but most were restricted to administrative offices; projectors and smart boards were nearly absent, and internet access was inconsistent. This was also inconsistent with the findings of this study.

It is clear that all the work reviewed in this study regarding the effectiveness of educational technology in teaching and learning presented findings that are at variance with the findings of this work. This could be so because all of these studies were carried out in other states and country and one of them made use of principals and teachers. Above all, the schools used by other studies were secondary schools different from model schools used in this study hence, these account for a variation in findings.

Secondly, the study revealed the mean and percentage levels of administrative planning strategies in model secondary schools in Edo State. The aggregate item mean value was 3.65. While the aggregate percentage performance was 73%. This implies that the level of administrative planning strategies in model secondary schools in Edo State was high. It

was also discovered that the level of administrative planning strategies in model secondary schools in Edo State was significant at 0.05 alpha level. This means that the model secondary schools in Edo State adopt administrative planning strategies for effective allocation of school resources in order for the goal of the model schools to be achieved. The school is a system, for the school to function every activities and units of the school must be planned and coordinated for maximum performance. Going by the result of this study, dispensing quality educational services by the model secondary schools in Edo State is not in doubt.

In line with the study is the work carried out by Osagie and Ehiametalor (2021) who evaluated planning strategies of secondary school administrators in Edo State, they found that urban school principals demonstrated moderate planning competence, while rural school principals struggled with resource allocation and staff training. The study highlighted uneven levels of planning strategies. In the same vein, Yusuf (2022), on impact of school administrators' planning strategies on school performance in Kwara and Kogi State secondary schools, revealed that administrators prepared annual budgets, but these rarely translated into effective resource mobilization or implementation. Also in agreement with the study is the study conducted by Osei and Boateng (2020) on planning strategies and school management in Ghanaian public secondary schools, results showed that vision and mission statements were often displayed, but concrete action plans guiding school operations were missing.

Adebayo (2018) assessed school administrators' planning strategies in public secondary schools in Ekiti State and the study revealed that most principals operated without structured plans, responding reactively rather than proactively. These findings suggest that

the administrators' planning strategies are only on paper and not translated and articulated into action.

Also, Nwankwo (2019), carried out a study on school administrators' planning and school effectiveness in Anambra State. The findings indicated that while administrators recognized the importance of strategic planning, implementation was inconsistent, with many unable to align school-level goals with state policies. This could also be so because all of these studies were carried out in other states and countries and majority of them made use of principals. Again, the schools used by other studies were secondary schools different from model schools used in this study hence, these could have accounted for some disagreement in findings.

Thirdly, the study showed that the extent to which vision-driven planning strategies predict the effectiveness of educational technology in model secondary schools in Edo state is moderate. The model of vision-driven planning strategies significantly predicts the level of educational technology effectiveness in model secondary schools in Edo State. This could be expected because the extent to which any school adopts technology is incumbent on the administrative strategy oriented towards vision-driven planning strategies. In the case of model schools priority is given to them in terms of provision of resources hence, a well-articulated administrative planning strategy will need technology to drive the school goals.

Adebayo and Salami (2019), examined the predictive role of vision-driven planning on ICT effectiveness among secondary schools in Lagos State, using multiple regression to determine the predictive strength of vision-driven planning on ICT effectiveness. Their

findings revealed that administrators who had clear, communicated visions for integrating technology were significantly more likely to adopt computers, projectors, and interactive boards in classrooms. Adebayo and Salami findings agree with the findings of this work. In a similar study, Nwachukwu (2020) investigated the influence of vision-driven planning on educational technology integration in Nigerian secondary schools in Anambra State. Multiple regression analysis showed that vision-driven planning accounted for a substantial proportion of variance in EdTech effectiveness. Schools where administrators actively aligned teaching goals with ICT infrastructure witnessed higher use of digital tools in classrooms.

At a broader African level, Boateng and Osei (2021) explored vision-oriented leadership and technology effectiveness in Ghanaian secondary schools. Results demonstrated that schools with clearly articulated visions, including digital learning goals, had higher uptake of EdTech tools such as projectors, laptops, and internet-based resources. Which corroborates these findings.

In Edo State, Osagie and Ehiametalor (2021), in their study predictive role of vision-driven planning in educational technology effectiveness in Edo State secondary schools, they found that schools with principals who engaged in consistent vision-driven planning were significantly more likely to adopt educational technology, particularly in urban schools where infrastructure and teacher readiness were higher. The study highlighted that clear articulation of technology goals in school vision statements directly influenced the pace and extent of EdTech effectiveness.

Yusuf (2022) examined the impact of school administrators' vision-setting on ICT Utilization in Kwara and Kogi State secondary schools. Findings revealed that schools where administrators' visions explicitly included technology as a strategic priority recorded higher levels of classroom ICT usage. Collectively, these studies suggest that vision-driven planning is a strong predictor of educational technology effectiveness. Principals and administrators who clearly articulate, communicate, and operationalize visions that include technology integration create enabling conditions that accelerate effectiveness. These findings are in agreement with the findings of this study.

Fourthly, the study showed that the extent to which resource planning strategies predict the effectiveness of educational technology in model secondary schools in Edo State is low, however, the model of resource planning strategies significantly predicts the level of technology effectiveness in model secondary schools in Edo State. Though the predictive power is low, the resources planning strategies still significantly predicted the effectiveness of educational technology in model secondary schools in Edo State. No wonder it could be so because part of the resources to plan for is technology hence, the effectiveness of educational technology with ease.

In agreement with this study, Adebayo and Salami (2019), study resource allocation and ICT integration in secondary schools in Lagos State, Nigeria, the study found that schools where administrators allocated sufficient funds for ICT infrastructure and maintenance exhibited significantly higher levels of technology integration in classrooms. In the same vein, Nwachukwu (2020), on impact of administrators' resource distribution on educational technology effectiveness in Nigerian secondary schools. The result revealed that resource

allocation strongly predicted the degree of technology integration; schools with dedicated ICT budgets and equipment replacement plans had higher levels of EdTech effectiveness.

Also in line with this study, Boateng and Osei (2021), on school resource management and technology effectiveness in Ghanaian secondary schools revealed that schools with strategic allocation of funds for computers, projectors, and internet connectivity achieved higher integration of technology in teaching. Another study conducted in Edo State by Osagie and Ehiametalor (2021), on the effect of resource allocation on ICT utilization in Edo state secondary schools. Their findings indicated that urban schools with planned ICT budgets had higher technology usage.

Fifthly, the study showed that the extent to which monitoring and evaluation planning strategies predict the effectiveness of educational technology in model secondary schools in Edo state is moderate. Moreover, the model of monitoring and evaluation planning strategies significantly predicted the level of technology effectiveness in model secondary schools in Edo State. This could be so because monitoring and evaluation planning strategies helps to drive effectiveness of educational technology, hence, the model school may deem it fit to adopt technology for effective planning.

In support of this findings, Adebayo (2019), in the role of monitoring and evaluation in ICT utilization in secondary schools in Lagos State, Nigeria. Findings revealed that schools with consistent M&E mechanisms, such as periodic classroom observations and ICT usage audits, exhibited significantly higher effectiveness and effective use of educational technology. Similarly, Nwachukwu (2020), in school monitoring practices and educational technology implementation in Nigerian secondary schools. Results showed that schools

where administrators actively monitored ICT usage, provided feedback, and adjusted strategies based on findings recorded higher levels of classroom EdTech integration.

To also buttress the findings of this study, Boateng and Osei (2021), in impact of school monitoring and evaluation on technology effectiveness in Ghanaian secondary schools. They found that schools with formal monitoring procedures, including teacher performance reviews related to ICT use and periodic ICT audits, had significantly higher technology effectiveness. Schools lacking M&E structures showed minimal EdTech utilization. In Edo State, Osagie and Ehiametalor (2021), in monitoring and evaluation strategies for effective ICT integration in Edo State secondary schools. Their findings indicated that urban schools with regular monitoring schedules, ICT audits, and feedback mechanisms had more effective classroom technology use. Also taking side with the study is the work of Yusuf (2022) on the predictive role of school monitoring on ICT utilization in Kwara and Kogi State secondary schools. His findings showed that monitoring and evaluation significantly predicted the effective use of educational technology. Schools where administrators implemented consistent feedback loops, performance tracking, and follow-up assessments recorded higher levels of ICT integration.

Finally, the study showed that the extent to which administrator's planning strategies and the school setting predict the effectiveness of educational technology in model secondary schools in Edo State is moderate. Moreover, the model of administrator's planning strategies significantly predicted the level of technology effectiveness in model secondary schools in Edo State. This could be expected because when the administrative planning strategies were

taken individually to predict effectiveness of educational technology it was high and moderate. In the same vain, other factors that could have affected the ability to predict were controlled for.

The effectiveness of educational technology (EdTech) in schools is influenced by multiple interrelated factors, not just a single component of planning. Empirical evidence suggests that administrators' planning strategies: comprising vision-driven planning, resource planning, and monitoring and evaluation interact with contextual variables such as school location, teacher population, and the presence of ICT structures to collectively predict the level of technology integration.

In support of this findings, Adebayo and Salami (2019), in combined predictors of ICT effectiveness in Lagos State secondary schools. Findings revealed that while each factor independently influenced technology use, the combination of strong planning strategies and functional ICT structures in urban schools had the highest predictive effect. Similarly, Nwachukwu (2020), in school context, planning strategies, and technology integration in Nigerian secondary schools. Multiple regression analysis indicated that the combined effect of all variables significantly predicted technology effectiveness. Specifically, schools with moderate teacher populations, robust planning, and adequate ICT structures, especially in urban settings experienced the highest effectiveness rates.

Still in agreement with this findings, Boateng and Osei (2021), in contextual and administrative predictors of ICT effectiveness in Ghanaian secondary schools. Their results showed that schools where administrators applied comprehensive planning strategies, coupled with well-distributed teacher populations and adequate ICT infrastructure,

experienced significantly higher EdTech effectiveness. Urban schools consistently outperformed rural schools due to better infrastructure and easier access to technical support. In Edo State, Osagie and Ehiametalor (2021), in predictive effects of planning strategies, school location, and ICT structures on technology effectiveness in Edo State secondary schools. Findings revealed that the combination of administrators' planning strategies, urban location, manageable teacher populations, and functional ICT structures strongly predicted EdTech effectiveness. Finally, Yusuf (2022), in combined effects of administrative planning, teacher population, and ICT resources on educational technology effectiveness in Kwara and Kogi State secondary schools. Results showed that the combined effect of strategic planning, school location, teacher population, and ICT structures was the strongest predictor of EdTech effectiveness, accounting for substantial variance in technology use across schools.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

In this chapter, the summary, conclusion and recommendations of the study based on the findings from the data analyzed and their interpretation are presented below.

Summary

The study investigated school administrators' planning strategies as predictor of educational technology effectiveness in model secondary schools in Edo State. Specifically, the study was designed to determine level of educational technology effectiveness, level of school administrators' planning strategies, and extent to which the planning strategies (vision-driven, resource planning, monitoring and evaluation) predicts the effectiveness of educational technology in model secondary schools in Edo State. The study also presupposed the extent to which administrators' planning strategies are moderated by school location and teacher population, as well as mediating ICT structures as predictors of the effectiveness of educational technology in model secondary schools in Edo State. Six research questions were raised to guide the study and six corresponding hypotheses were formulated.

The theoretical framework underpinning this study was anchored in Strategic Planning Theory (Steiner, 1979; Bryson, 2011) and complemented by Diffusion of Innovations Theory (Rogers, 2003). Strategic Planning Theory explained how deliberate planning activities by school administrators can predict educational outcomes, such as EdTech effectiveness. It emphasized that structured planning through vision setting, resource allocation, teacher capacity building, and evaluation can forecast the successful integration of innovations. Diffusion of Innovations Theory further illuminated how technology

effectiveness spreads within school communities, showing that administrators' strategic actions create enabling conditions for teachers to adopt and sustain new technological practices. Together, these theories provided a robust framework that positions administrators' planning strategies as central predictors of EdTech effectiveness, rather than merely correlates. School administrators' planning strategies were extensively discussed, focusing on vision-driven planning, resource planning, and monitoring and evaluation. The study also assumed that the effectiveness of these strategies is often moderated by contextual factors such as school location, teacher population, and the availability of functional ICT structures. This study adopted a correlational survey research design with a total population of 109 teachers in the six state government Model Secondary Schools in Edo State. Census sampling technique was adopted for the study. Structured questionnaire developed by the researcher on a five-point Likert scale was used that satisfied validity condition. Internal consistency reliability was carried out for the instrument (each group) using the Cronbach Alpha formula and coefficients obtained ranged from 0.82 to 0.88.

From the analysis of the results in chapter four using descriptive statistics of mean, standard deviation, and percentage; and inferential statistics of regression, the following findings were as follows:

1. the mean levels of technology effectiveness in model secondary schools in Edo State ranges from 1.58 to 2.73 on a five-point scale. The aggregate percentage performance is 68%. This implies that the level of technology effectiveness in model secondary schools in Edo State was moderate being closer to the median than the margins and it was significant at 0.05 alpha level.

2. The mean levels of administrative planning strategies in model secondary schools in Edo State ranges from 3.29 to 4.35 on a five- point scale. The aggregate percentage level of administrative planning strategies in model secondary schools in Edo State was 73%. This implies that the level of administrative planning strategies in model secondary schools in Edo State is high on a five - point response scale and was significant at 0.05 alpha level.
3. The extent to which vision-driven planning strategies predict the effectiveness of educational technology in model secondary schools in Edo State was 38.8%. So the model of vision-driven planning strategies significantly predicted the level of technology effectiveness in model secondary schools in Edo State.
4. The extent to which resource planning strategies predict the effectiveness of educational technology in model secondary schools in Edo state was 29%. Thus, the model of resource planning strategies significantly predicted the level of technology effectiveness in model secondary schools in Edo State
5. The extent to which monitoring and evaluation planning strategies predict the effectiveness of educational technology in model secondary schools in Edo State was 50%. Thus, the model of monitoring and evaluation planning strategies significantly predicted the level of technology effectiveness in model secondary schools in Edo State.
6. The extent to which administrator's planning strategies and the school setting predict the effectiveness of educational technology in model secondary schools in Edo state was 59%. Thus, the model of administrator's planning strategies significantly predicted the level of technology effectiveness in model secondary schools in Edo State.

Conclusion

The conclusion the researcher reached in this study is that the extent to which administrator's planning strategies and the school setting predict the effectiveness of educational technology in model secondary schools in Edo State was moderate. Moreover, the model of administrator's planning strategies significantly predicted the level of technology effectiveness in model secondary schools in Edo State. That means that as the administrator adopts different planning strategies there is the tendency that more of technology will be adopted.

The mean levels of technology effectiveness were moderate and that of administrative planning strategies was high in model secondary schools in Edo State. The study showed that they were both significant. The extent to which vision-driven planning strategies and monitoring and evaluation planning strategies predict the effectiveness of educational technology in model secondary schools in Edo State was moderate but that of resource planning strategies was low. Even when the moderators were partialed out, the administrators' planning strategies were still found to be moderate and significant.

Recommendations

Based on the findings in this study, the researcher's recommendations are as follows:

1. The school administrators should as a matter of fact continue to engage in planning by making sure different planning strategies are adopted as there is room for improvement.

2. The effectiveness of technology in schools to achieve educational goals is imperative; therefore, a robust technological framework should be established and sustained by ensuring that adequate resources are allocated for procurement and that skilled personnel are available for its effective use.
3. Now that it has been established that different administrators' planning strategies considered in this study are good predictors of technology effectiveness, the administrators should ensure that other approaches are adopted in organizing, allocating resources, setting goals, and coordinating activities to achieve educational objectives. This could be done by appropriate allocation of resources.

Contributions to Knowledge

This study has established that Model Secondary Schools in Edo State make use of different planning strategies and integrate educational technology to support effective teaching and learning towards the achievement of educational goals and objectives.

The study has also provided useful insights into how school administrators' planning strategies can be utilized to improve the effectiveness of educational technology in schools. These findings show that effective planning practices can positively influence teaching and learning outcomes, especially when educational technology is properly supported and managed.

In addition, the study provides a detailed understanding of how structured planning strategies work together with contextual factors such as school location, school population, and ICT structures to predict educational technology effectiveness in Model Secondary

Schools in Edo State. Through this, the study contributes not only to theoretical knowledge but also to practical educational policy and implementation in Nigerian secondary schools.

Furthermore, the study adds to existing literature by showing how educational innovation can be strengthened through effective leadership and strategic planning interventions, particularly within developing educational environments. It also offers useful policy insights that can support better school administration, informed decision-making, and more equitable access to technology-enabled education.

Finally, the findings from the different planning strategies examined in this study have further expanded existing knowledge on educational technology effectiveness in Model Secondary Schools in Edo State and will serve as a useful reference material for researchers, school administrators, policymakers, and other stakeholders in the field of education.

Suggestions for Further Studies

Other study could be carried out in other states of the country and among other model secondary schools to further validate the results of this study. Also a comparison could be established between model secondary schools and other traditional secondary schools on school administrators' planning strategies as predictors of education technology effectiveness.

REFERENCES

Adegbesan, S. O. (2011). Principals' leadership styles and their effect on teachers' job performance in secondary schools in Ogun State, Nigeria. International Journal of Leadership Studies, 6(2), 123–134.

Aderibigbe, S. A., & Ajayi, O. O. (2019). Strategic planning and ICT implementation in secondary schools in Southwestern Nigeria. Journal of Educational Technology, 14(1), 17–26.

Adeoye, F. A., & Wentling, R. M. (2007). The relationship between national culture and the usability of an e-learning system. International Journal on E-Learning, 6(1), 119–146.

Adeyemi, T. O. (2014). School size and the quality of teaching and learning in primary schools in Ekiti State, Nigeria. Journal of Educational and Social Research, 4(5), 101–110.

Adeyemi, T. O., & Olaleye, F. O. (2010). Information and communication technology (ICT) for teaching and learning: The place of school location. Journal of Education and Practice, 1(2), 24–29.

Aduwa-Ogiegbaen, S. E., & Iyamu, E. O. S. (2005). Using information and communication technology in secondary schools in Nigeria: Problems and prospects. Educational Technology & Society, 8(1), 104–112.

Afolabi, F. O., & Loto, A. B. (2012). The impact of urban and rural settings on the implementation of ICT in Nigerian secondary schools. African Journal of Educational Management, 13(1), 145–159.

Akinyemi, B. A., & Onanuga, P. A. (2017). School strategic planning as a predictor of ICT use in teaching and learning in Lagos State. Journal of Educational Management and Practice, 3(2), 45–58.

Aslan, S. (2021). Analysis of digital literacy self-efficacy levels of pre-service teachers. International Journal of Technology in Education, 4(1), 57–67.

Bakare, O. O. (2022). A study on the extent of ICT resources utilization in learning senior secondary schools' physics in Ile-Ife, Osun State, Nigeria. Ife Journal of Theory and Research in Education, 23(1), 54–64.

Bakare, O. O. (2023). Principals' information and communication technology literacy and digital tracking of secondary school activities in Osun State. Journal of Science, Technology and Mathematics Pedagogy, 1(2), 202–216.

Cahyono, A. S., Tuhuteru, L., Julina, S., Suherlan, S., & Ausat, A. M. A. (2023). Building a generation of qualified leaders: Leadership education strategies in schools. Journal on Education, 5(4), 12974–12979. Retrieved from https://jonedu.org/index.php/joe/article/view/2289

Cantú-Ballesteros, L., Urías-Murrieta, M., Figueroa-Rodríguez, S., & Salazar-Lugo, G. M. (2017). Teacher's digital skills in relation to their age, gender, time of usage and training with a tablet. Journal of Education and Training Studies, 5(5), 46–57.

Creswell, J. W., & Guetterman, T. C. (2019). Educational research: Planning, conducting, and evaluating quantitative and qualitative research. Boston, MA: Pearson.

Dele-Ajayi, O., & Taddese, A. (2020). EdTech in Nigeria: A rapid scan. Retrieved from https://docs.edtechhub.org/lib/LE68WDS3

Dele-Ajayi, O., & Taddese, W. (2020). The state of ICT in public schools in Edo State: Progress and challenges in the EdoBEST program. Nigerian Journal of Educational Technology, 20(2), 78–92.

Dodds, W. B., Monroe, K. B., & Grewal, D. (1991). Effects of price, brand, and store information on buyers' product evaluations. Journal of Marketing Research, 28(3), 307–319. https://doi.org/10.1177/002224379102800305

EdoBEST. (2020). Edo State Universal Basic Education Board – Education for all. Retrieved from http://subeb.edostate.gov.ng/

Egbe, B. O. (2019). The role of ICT structures in the implementation of educational plans in Nigerian secondary schools. International Journal of Education and Development Using ICT, 15(3), 112–124.

Eke, H. N. (2011). Modeling LIS students' intention to adopt e-learning: A case from University of Nigeria, Nsukka. Library Philosophy and Practice, 2011.

Eneremadu, Q. E. C., & Ndubuaku, R. A. (2024). The use of information and communication technology (ICT) in teaching and learning of language. International Journal of Education and Life Sciences, 2(1), 1–16.

Eze, S. C., Chinedu-Eze, V. C., & Bello, A. O. (2018). Determinants of ICT effectiveness for teaching in Nigerian secondary schools. Education and Information Technologies, 23(5), 2199–2220. https://doi.org/10.1007/s10639-018-9707-z

Federal Ministry of Education. (2019a). National implementation guidelines for ICT in education. Abuja, Nigeria.

Federal Ministry of Education. (2019b). National policy on ICT in education. Abuja, Nigeria.

Federal Republic of Nigeria. (2014). National policy on education (6th ed.). Abuja: NERDC Press.

Figueiredo, M. M. (2019). Artificial intelligence acceptance: Morphological elements of the acceptance of artificial intelligence (Doctoral dissertation). Católica Porto Business School, Porto, Portugal.

Hayes, A. F. (2018). Introduction to mediation, moderation, and conditional process analysis: A regression-based approach (2nd ed.). New York, NY: Guilford Press.

Januszewski, A. (2021). Educational technology: The development of a concept. Englewood, CO: Libraries Unlimited.

Kim, H. W., Chan, H. C., & Gupta, S. (2007). Value-based effectiveness of mobile internet: An empirical investigation. Decision Support Systems, 43(1), 111–126.

Pelgrum, W. J. (2001). Obstacles to the integration of ICT in education: Results from a worldwide educational assessment. Computers & Education, 37(2), 163–178.

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. Behavior Research Methods, 40(3), 879–891. https://doi.org/10.3758/BRM.40.3.879

Ratheeswari, K. (2018). Information communication technology in education. Journal of Applied and Advanced Research, 3(1), 45–47. https://doi.org/10.21839/jaar.2018.v3S1.169

Robson, C. (2002). Real world research (2nd ed.). Oxford, England: Blackwell.

Saunders, M., Lewis, P., & Thornhill, A. (2007). Research methods for business students (4th ed.). Harlow, England: Pearson Education.

Tang, C. M., & Chaw, L. Y. (2016). Digital literacy: A prerequisite for effective learning in a blended learning environment? Electronic Journal of e-Learning, 14(1), 54–65.

UNESCO. (2009). ICT in education: A curriculum for schools and programme of teacher development. Paris: UNESCO.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS Quarterly, 27(3), 425–478.

Yusuf, M. O., & Balogun, M. R. (2011). Integrating information and communication technologies (ICTs) in Nigerian tertiary education

LETTER OF INTRODUCTION

School of Post Graduate Studies
Department of Education
Faculty of Arts and Education
Benson Idahosa University
Ugbor, G.R.A, Benin City.

Dear Respondent,

REQUEST FOR COMPLETION OF A QUESTIONNAIRE

I am a Postgraduate student from the Department of Education, Faculty of Arts and Education, Benson Idahosa University, Benin City, Edo Sate as part of the University requirement I am conducting a research work on the topic: **"school administrators planning strategies as predictor of educational technology effectiveness in model secondary schools in Edo State".**

In light of this, I humbly request your assistance in answering the questions below, which requires simple ticking the appropriate boxes. I assure you your response will be treated with utmost confidentiality and solely for the purpose of this research work.

Thank you.

Yours faithfully,

GABAOLU, OGECHI IHEANAHURUNWA
Researcher

APPENDIX A

SCHOOL ADMINISTRATORS' PLANNING STRATEGIES AS PREDICTOR OF EDUCATIONAL TECHNOLOGY EFFECTIVENESS IN MODEL SECONDARY SCHOOLS IN EDO STATE (SAPSPETE-Q)

Instructions: Please respond to all items honestly. Your answers are strictly confidential and will be used solely for academic research purposes. Tick the option that best represents your opinion.

Section A: Demographic and School Information

1. Location of School: ☐ Urban ☐ Rural
2. Your Role: ☐ Principal ☐ Vice Principal ☐ Teacher
3. Total Number of Teachers in School: ☐ 1–20 ☐ 21–40 ☐ 41–60 ☐ 61+
4. Availability of ICT Structures:

Computers ☐ Yes ☐ No

Projectors ☐ Yes ☐ No

Tablets ☐ Yes ☐ No

Internet Connectivity ☐ Yes ☐ No

Power Backup ☐ Yes ☐ No

Section B: School Administrators' Planning Strategies

KEYS: Scale: 5 – Strongly Agree | 4 – Agree 3 – Not Sure | 2 – Disagree | 1 – Strongly Disagree

S/N	ITEMS	SA 5	A 4	NS 3	D 2	SD 1
Vision-Driven Planning						
1	The school has a clear vision for integrating technology into teaching and learning					
2	Administrators communicate the vision of educational technology effectiveness to all staff.					
3	Strategic plans are developed to achieve effective EdTech use.					
4	The school periodically reviews its vision and plans to align with current technological needs.					
Resource planning						
5	Adequate budget is allocated for purchasing ICT equipment and software.					

6	Funds are set aside for maintaining and replacing outdated technology.					
7	Resources are allocated for teacher training on ICT and digital tools.					
8	The school ensures availability of functional devices for all classes.					
Monitoring and Evaluation						
9	The school conducts periodic classroom observations to assess ICT use.					
10	Administrators provide feedback to teachers on their use of technology.					
11	ICT usage is evaluated regularly to identify areas for improvement.					
12	Follow-up actions are taken to address challenges in technology effectiveness.					
Section C: Educational Technology Effectiveness						
13	Computers are actively used in teaching and learning activities.					
14	Projectors and interactive boards are regularly used in classrooms.					
15	Internet resources are integrated into lesson delivery.					
16	Educational software and digital content are used to enhance learning.					
17	Teachers are confident in applying technology for student assessment.					
18	Technology is used to support collaborative and hands-on learning.					
Section D: Contextual Factors						
19	The school location affects the availability of ICT infrastructure.					
20	Teacher population influences how effectively technology is used in classrooms.					
21	ICT structures (hardware and software) are sufficient to meet teaching and learning needs.					
22	Combined planning strategies and ICT structures improve overall technology effectiveness .					

APPENDIX B

SCHOOL ADMINISTRATORS PLANNING STRATEGY AS PREDICTOR OF EDUCATIONAL TECHNOLOGY EFFECTIVENESS IN MODEL SCHOOLS IN EDO STATE

RELIABILITY

```
PEPS SCALE
 /VARIABLES=VAR00001 VAR00002 VAR00003 VAR00004 VAR00005 VAR00006 VAR00007 VAR00008 VAR00009
   VAR00010 VAR00011 VAR00012 VAR00013 VAR00014 VAR00015
  /SCALE('PAS') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE
  /SUMMARY=TOTAL.
```

Reliability

Notes

Output Created		20-JUN-2025 07:20:06
Comments		
Input	Active Dataset	DataSet0
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	5
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=VAR00001 VAR00002 VAR00003 VAR00004 VAR00005 VAR00006 VAR00007 VAR00008 VAR00009 VAR00010 VAR00011 VAR00012 VAR00013 VAR00014 VAR00015 /SCALE('PAS') ALL /MODEL=ALPHA /STATISTICS=DESCRIPTIVE SCALE /SUMMARY=TOTAL.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.05

Scale: SAP

Case Processing Summary

		N	%
Cases	Valid	5	100.0
	Excluded[a]	0	.0
	Total	5	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.980	15

Item Statistics

	Mean	Std. Deviation	N
VAR00001	20.0000	20.04657	5
VAR00002	20.0000	14.24482	5
VAR00003	20.0000	15.71003	5
VAR00004	20.0000	20.61698	5
VAR00005	20.0200	15.96706	5
VAR00006	20.0000	20.76355	5
VAR00007	20.0000	16.19275	5
VAR00008	20.0200	21.50493	5
VAR00009	20.0000	20.24957	5
VAR00010	20.0000	16.64992	5
VAR00011	20.0000	17.72241	5
VAR00012	20.0000	19.51371	5
VAR00013	20.0200	15.01006	5
VAR00014	20.0200	15.96706	5
VAR00015	20.0000	21.30575	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
VAR00001	280.0800	50649.461	.815	.979
VAR00002	280.0800	51830.561	.982	.977
VAR00003	280.0800	51638.818	.913	.978
VAR00004	280.0800	52351.068	.596	.983
VAR00005	280.0600	51043.482	.985	.977
VAR00006	280.0800	51337.068	.705	.981

VAR00007	280.0800	51293.088	.933	.977
VAR00008	280.0600	48718.274	.971	.977
VAR00009	280.0800	49249.893	.973	.976
VAR00010	280.0800	51312.343	.903	.978
VAR00011	280.0800	51617.547	.803	.979
VAR00012	280.0800	50553.118	.851	.978
VAR00013	280.0600	51829.459	.929	.978
VAR00014	280.0600	51192.862	.962	.977
VAR00015	280.0800	49611.986	.878	.978

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
300.0800	58401.948	241.66495	15

Scale: ICTTA

```
RELIABILITY
  /VARIABLES=VAR00001 VAR00002 VAR00003 VAR00004 VAR00005 VAR00006 VAR00007 VAR00008
  /SCALE('ICTA') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE
  /SUMMARY=TOTAL.
```

Case Processing Summary

		N	%
Cases	Valid	5	100.0
	Excluded[a]	0	.0
	Total	5	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.766	8

Item Statistics

	Mean	Std. Deviation	N
VAR00001	20.0000	14.48275	5
VAR00002	20.0000	17.09488	5
VAR00003	20.0000	11.65461	5
VAR00004	20.0200	11.67763	5
VAR00005	20.0000	5.04282	5
VAR00006	20.0000	10.58301	5
VAR00007	20.0200	12.88456	5
VAR00008	20.0000	8.37198	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
VAR00001	140.0400	2384.513	.625	.708
VAR00002	140.0400	2187.668	.624	.710
VAR00003	140.0400	2635.028	.591	.719
VAR00004	140.0200	2355.947	.870	.666
VAR00005	140.0400	2961.893	.894	.725
VAR00006	140.0400	2950.468	.361	.757
VAR00007	140.0200	2864.917	.324	.767
VAR00008	140.0400	3675.688	-.264	.825

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
160.0400	3478.068	58.97515	8