ASSESSMENT OF TECHNICAL COLLEGE TEACHERS' PROFICIENCY IN USING TECHNOLOGY TOOLS AND RESOURCES TO IMPROVE JOB PERFORMANCE

BY

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CERTIFICATION

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DEDICATION

This project is dedicated to God Almighty for granting me the strength, knowledge, and understanding.

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ABSTRACT

This study aimed to assess the proficiency of technical college teachers in utilizing technology tools and resources to enhance job performance. A descriptive survey research design was employed. The population of the study consisted of 100 respondents, including technical college teachers from the Federal College of Education (Technical) Akoka, Lagos State. Five research questions guided the study. Mean and standard deviation were used to answer the research questions. Data was collected through a structured questionnaire consisting of 50 items, distributed across five sections. A four-point Likert scale was used for respondents' feedback. The instrument was validated by two experts from the Department of Technology and Vocational Education at the University of Lagos, Akoka, and the reliability of the instrument was tested using Cronbach's Alpha, yielding a reliability coefficient of 0.87. It was found out that: (1) most teachers had access to basic technology tools such as interactive whiteboards and educational software, but advanced tools like virtual reality and 3D printing were lacking. (2) Teachers demonstrated moderate proficiency in using technology tools, particularly in educational software and online platforms, though they struggled with more advanced tools and troubleshooting. (3) A significant positive correlation was found between teachers' technology proficiency and their job performance. (4) Challenges identified included limited access to modern technology, insufficient training, and inadequate technical support. (5) It was recommended that targeted professional development programs and mentorship schemes be introduced to improve proficiency levels. The study highlights the need for greater investment in technological infrastructure and training to fully equip teachers with the skills required to integrate technology effectively in teaching and learning. Addressing these challenges will not only enhance teachers' job performance but also improve the quality of education delivered to students.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The educational landscape is undergoing a seismic shift fuelled by the relentless march of technological innovation. Gone are the days of static classrooms focused on rote memorization. Today's learning spaces are dynamic hubs brimming with technological potential, fostering engaging, collaborative, and thought-provoking experiences. This digital revolution presents educators with a double-edged sword: a vast array of tools and resources to enhance learning outcomes, coupled with the challenge of integrating them effectively into the classroom.

While technology offers transformative possibilities, successful integration necessitates a fundamental shift in teaching methodologies and a robust skill set in utilizing these tools. Technology tools and resources refer to the digital devices, software, and platforms that facilitate teaching and learning. These include interactive whiteboards, educational software (e.g., AutoCAD, MATLAB), online learning platforms like Moodle and Blackboard, and multimedia content that enriches classroom experiences. These tools not only serve as instructional aids but also support student engagement by catering to diverse learning styles.

Teacher proficiency refers to an educator's ability to effectively integrate these tools into their instructional practices. Proficient teachers possess both technical skills, such as operating digital devices and troubleshooting issues, and pedagogical skills that allow them to adapt their teaching methods to the digital age. They are able to create interactive, student-cantered learning environments that maximize the potential of technology. This proficiency is crucial, as it determines how well a teacher can utilize available resources to improve student outcomes.

Job performance in this context relates to how effectively teachers fulfil their roles, particularly in lesson delivery, classroom management, and student engagement, using technology. Teachers who are proficient in the use of technology are generally more effective at incorporating digital tools into their lessons, fostering a learning environment that promotes deeper understanding and critical thinking. This ultimately leads to enhanced instruction quality and improved learning experiences for students.

Technical college teachers stand at the forefront of this transformation. Their role transcends simply imparting technical skills. They are entrusted with the critical mission of cultivating a passion for lifelong learning in students, fostering responsible use of technology, and most importantly, designing meaningful learning experiences that leverage technology to unlock a student's full potential (Adeoye & Akanbi, 2014).

"Technical college teachers must master the art of seamlessly integrating technology into lesson plans, thereby promoting critical thinking and fostering innovative problem-solving within a digital context. In this rapidly evolving environment, it is crucial to assess their proficiency in using technology tools and resources." **Assessment**, in the context of this study, refers to the systematic evaluation of teachers' skills and effectiveness in incorporating technology tools into their teaching practices. By understanding the factors influencing their comfort level with technology tools and resources and identifying areas for improvement, educational institutions can tailor professional development programs and support systems accordingly. These programs can draw from renowned sources like the International Society for Technology in Education (ISTE) standards and the Technology Integration Matrix (TIM) framework, ensuring a comprehensive approach to enhancing teachers' technological proficiency (Adeniran & Olutola, 2015).

This is not merely an exercise in evaluation; it is a cornerstone for ensuring quality teaching and maximizing student learning outcomes. By empowering technical college teachers with the necessary skill sets and fostering a culture of continuous learning, we empower them to become catalysts for change. In their hands, technology transforms from a mere tool into a potent force that ignites student engagement, deepens understanding, and fosters a love of learning that transcends the confines of the classroom (Olawale & Oyewusi, 2017). Technical colleges are specialized institutions focused on providing vocational and technical education to equip students with practical skills and theoretical knowledge necessary for various trades and professions. These institutions aim to prepare students for specific careers by providing hands-on experience and industry-relevant training.

This study aims to delve into the proficiency of technical college teachers in utilizing technology tools and resources to enhance their job performance. Job performance, in this context, refers to the effectiveness and efficiency with which teachers carry out their responsibilities, including instruction quality, classroom management, and student engagement. By identifying their strengths and weaknesses, we can develop targeted

strategies to equip them to leverage technology effectively. Ultimately, this will lead to improved student learning outcomes in the dynamic digital age, ensuring that technology serves as a bridge to knowledge and a springboard for innovation, not a barrier to meaningful educational experiences (Ogunyemi & Ikpe, 2021). These programs can draw from renowned sources like the International Society for Technology in Education (ISTE) standards and the Technology Integration Matrix (TIM) framework, ensuring a comprehensive approach to enhancing teachers' technological proficiency.

In the 21st century, technology has become an integral part of education, transforming traditional teaching methods and providing innovative opportunities for both educators and learners (Adebayo & Abdulhamid, 2014). As technology continues to evolve, its integration into educational settings has become crucial to preparing students for success in an increasingly digital world (Ololube, 2013). In this context, technical college teachers play a pivotal role in facilitating meaningful learning experiences that leverage technology tools and resources to enhance student engagement, comprehension, and skill acquisition (Nwosu & Nworgu, 2018).

Technology education covers a wide range of subjects, such as computer science, digital literacy, engineering, robotics, multimedia design, and information technology. Teachers in technical colleges, who specialize in these fields, need not only a deep understanding of their subject matter but also the ability to effectively use technology tools and resources in their teaching. This proficiency refers to a teacher's capability to integrate technology seamlessly into their instruction to improve learning outcomes. Technology tools and resources include interactive whiteboards, educational software, online learning platforms, and multimedia content, which, when used effectively, can significantly enhance teaching and learning experiences.

Technical college teachers are educators who focus on vocational and technical training in these fields. They are usually highly knowledgeable in their subject areas, often holding advanced degrees such as master’s or doctoral degrees. Their training also includes pedagogical methods tailored to technical education and professional development to keep pace with industry advancements and technological changes. Despite the growing emphasis on integrating technology in education, many technical college teachers face challenges in adapting to new technologies, selecting suitable tools, and incorporating them into their teaching practices. These challenges can stem from limited access to training and

professional development, inadequate infrastructure, and resistance to change, all of which can impede their ability to fully utilize technology in the classroom (Okeke, 2011).

Assessing, which means systematically evaluating or measuring, the proficiency of technical college teachers in using technology tools and resources is essential for several reasons. It enhances the quality of instruction by allowing teachers to create engaging and interactive learning environments that cater to various learning styles and abilities, thereby improving student outcomes (ISTE Nigeria, 2017). It also aids in professional development by identifying areas where teachers need improvement in technology integration, guiding targeted training programs that address specific needs. Moreover, understanding teachers' proficiency and challenges helps educational institutions allocate resources effectively to support skill acquisition and technology integration (Nigeria Center for Instructional Technology, 2019).

Furthermore, evaluating teacher proficiency plays a critical role in curriculum development. By aligning curricula with technological advancements and educational standards, educators can ensure that teaching practices remain relevant and effective. It also prepares educators for future technological developments, ensuring they are equipped to prepare students for success in a rapidly evolving digital world (Adeyemi & Okeke, 2012). As educational paradigms shift from traditional methods to innovative, technology-driven approaches, the proficiency of technical college teachers becomes increasingly important. Their ability to navigate technology, create engaging digital content, and foster a technology-rich learning environment directly influences student outcomes. However, challenges such as technological anxiety, disparities in technology access, and the need for pedagogical adjustments can hinder effective technology integration. Tools like interactive whiteboards, educational software, and online platforms can enhance teaching effectiveness if used proficiently. Assessment methods such as self-assessment, observations, surveys, and performance metrics are crucial for evaluating teacher proficiency and guiding professional development (Onasanya & Adegbija, 2008).

1.2 Statement of the Problem

Despite the increased focus on technology in education, a significant gap remains in understanding how effectively technical college teachers use technology tools in their teaching. This gap poses challenges that require investigation, particularly the lack of

standardized methods for assessing teachers' technology integration. Without clear benchmarks, it's difficult to measure how well teachers enhance learning through technology.

There is also wide variability in how teachers integrate technology, ranging from basic software use to advanced multimedia and collaborative platforms. Identifying these practices and areas for improvement is crucial for promoting consistency in technology-enhanced instruction. Factors like access to training, technical support, institutional backing, and teachers' attitudes toward technology significantly affect proficiency. Understanding these influences is key to designing effective support systems.

Aligning teachers' proficiency with educational goals and curriculum standards is essential to avoid discrepancies between intended and actual outcomes. Additionally, addressing equity and access issues is critical, as disparities in resources and training can exacerbate inequities in technology integration. As technology evolves, teachers must continuously adapt. Assessing proficiency not only identifies ongoing professional development needs but also prepares teachers for future challenges. Bridging the gap involves creating standardized assessment methods, promoting consistent practices, improving training and support, and ensuring equitable access to technology for all teachers and students.

1.3 Purpose of the Study

The major purpose of this study is to assess the proficiency of technical college teachers in utilising technology tools and resources to enhance their teaching performance. Specifically, the study sought to determine the objectives:

1. Technology tools and resources available for technical college teachers use in technical colleges
2. Technical college teachers’ level of proficiency in using various technology tools and resources.
3. Relationship between teachers’ proficiency and job performance with the use of various technology tools and job performance.
4. Challenges to teachers' proficiency in using various technology tools and resources.
5. Strategies for improving teachers’ proficiency in using technology tools and resources.

1. Significance of the Study

Assessing the proficiency of technical college teachers in utilizing technology tools and resources to enhance their teaching performance holds significant implications for various stakeholders within the education sector. Teachers will benefit by identifying areas where they need further professional development, leading to improved instructional strategies. Students will gain from more engaging and effective learning environments, tailored to diverse learning styles. Educational institutions can use the findings to allocate resources more effectively, supporting technology integration and professional growth. Policy-makers will also benefit by gaining insights to develop standards and policies that promote consistent and effective use of technology in education.

Educational institutions will benefit from the study's findings by gaining comprehensive insights into the current state of technology integration proficiency among technical college teachers. This knowledge can guide institutions in developing targeted professional development programs, curriculum enhancements, and resource allocation strategies to support teachers in effectively integrating technology into teaching and learning practices. By understanding specific proficiency gaps, institutions can implement tailored interventions to improve overall teaching quality and ensure that their technology investments yield maximum benefits.

Teacher training programs will benefit from the study's findings by enabling them to tailor their curricula and professional development initiatives to address the specific needs and challenges faced by technical college teachers in integrating technology into their instructional practices. By incorporating evidence-based strategies and best practices identified through the study, training programs can better prepare future teachers to handle the demands of technology-enhanced instruction. This preparation ensures that new educators are well-equipped to use technology effectively from the outset of their careers, thus enhancing the overall effectiveness of the training programs.

Policymakers will benefit by leveraging the study's findings to inform the development of policies and guidelines aimed at promoting effective technology integration in technical colleges. Understanding the factors influencing technology integration proficiency and identifying areas for improvement allows policymakers to advocate for targeted investments in infrastructure, resources, and professional development initiatives. This support can lead to

the creation of more effective policies that foster an environment conducive to high-quality technology-enhanced education, ultimately benefiting both teachers and students.

Students will experience significant benefits from effective technology integration as it can enhance their learning experiences by providing access to diverse and interactive learning resources. This approach promotes active engagement, fosters critical thinking and problem-solving skills, and prepares students for success in a technology-driven society. By assessing teacher proficiency in technology integration, the study aims to improve student outcomes by ensuring that teachers are capable of delivering high-quality, technology-enhanced instruction that meets students' learning needs.

Researchers will gain valuable insights from the study, contributing to the existing body of knowledge on technology integration in education. The empirical evidence provided will allow researchers to explore the complex dynamics of technology integration, identify emerging trends and challenges, and develop innovative solutions to enhance technology-enhanced instruction in technical education settings. This contribution will advance the field and provide a foundation for further research and development.

Professional development providers will benefit by using the study's findings to design targeted training programs and workshops aimed at enhancing technology integration proficiency among technical college teachers. By aligning professional development initiatives with the specific needs and preferences of teachers identified through the study, providers can maximize the impact of their interventions. This alignment ensures that professional development efforts are directly relevant to teachers' needs, thus supporting their professional growth and development and ultimately leading to improved teaching practices.**1.4 Research Questions**

The following research questions were raised to guide the study

1. What technology tools and resources are currently available for use by teachers in technical colleges?

2. What is the current level of proficiency and performance of teachers in technical colleges in using these technology tools and resources?
3. What is the relationship between teachers' proficiency in use of various technology tools and resources correlated with their job performance in technical colleges?
4. What are the challenges confronting technical college teachers in achieving proficiency with technology tools and resources?
6. What are the strategies that can be used to improve the proficiency of teachers in technical colleges in using technology tools and resources?

1.7 Scope of the study

The scope of this study involves examining the proficiency levels of technical college teachers at the Federal College of Education (Technical) Akoka in utilising technology tools and resources to enhance their job performance. The scope covers technology tools and resources available for teachers, teachers' level of proficiency in using various technology tools, the relationship between teacher proficiency and job performance, challenges to teachers' proficiency in using various technology tools, and strategies for improving teachers' proficiency in using technology. The study is also delimited to Lagos State.

Additionally, the research will analyse the relationship between teachers' proficiency with technology and their job performance, including instructional practices, classroom management, and teaching effectiveness. It will also identify and evaluate the challenges faced by teachers, including issues related to training, infrastructure, resistance to change, and pedagogical barriers. Finally, the study will develop strategies tailored to the specific context of the Federal College of Education (Technical) Akoka to address these challenges and improve technology integration.

1.8 Operational Definition of Terms

Assessment: In this study, assessment refers to the systematic evaluation of technical college teachers' proficiency in using technology tools and resources. It involves measuring their skills, knowledge, and effectiveness in integrating technology into their teaching practices to enhance student learning and instructional outcomes.

Technical Colleges: These are specialized institutions focused on vocational and technical education, equipping students with practical skills and theoretical knowledge in fields such as engineering, computer science, digital literacy, and information technology. The curriculum blends hands-on training with academic instruction to prepare students for specific careers.

Teachers: In this context, teachers are educators responsible for imparting specialized knowledge and practical skills in technical and vocational subjects. They prepare students for careers or further education in technical fields by delivering both theoretical instruction and hands-on training.

Technical College Teachers: Educators employed by technical colleges who specialize in teaching vocational and technical subjects. They are experts in specific technical areas and are responsible for delivering both theoretical and practical instruction to ensure students acquire the necessary skills for their careers.

Teacher Proficiency: This refers to the level of competence and effectiveness that technical college teachers demonstrate in using technology tools and resources. It includes their ability to seamlessly integrate technology into lessons, enhance student engagement, and leverage digital tools to improve teaching outcomes.

Technology Tools and Resources: These encompass digital devices, software, online platforms, and educational materials used by technical college teachers to enhance teaching and learning. Examples include interactive whiteboards, educational software, simulation programs, and multimedia resources that enrich the educational experience.

Job Performance: For technical college teachers, job performance refers to how effectively they fulfil their teaching responsibilities, manage classrooms, and facilitate learning. It includes the quality of instruction, student engagement, classroom management, and overall success in achieving educational goals.

Improving Job Performance with Technology Tools and Resources: The use of technology tools and resources can significantly enhance job performance by allowing teachers to create interactive and engaging learning environments. It helps cater to diverse learning styles, boost student participation, and implement innovative teaching methods, leading to improved instructional practices and better student outcomes.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Introduction

The review of related literature was carried out and organised under the following sub-headings:

2.1 Conceptual Framework

2.2 Theoretical Frameworks for Understanding Technology Proficiency Assessment

2.3 Technology tools and resources available for technical college teachers use in technical colleges

2.4 Technical college teachers' level of proficiency in using various technology tools and resources.

2.5 Relationship between teachers' proficiency and job performance with the use of various technology tools and job performance.

2.6 Challenges to teachers' proficiency in using various technology tools and resources.

2.7 Strategies for improving teachers' proficiency in using technology tools and resources.

2.8 Summary of review of related literature

2.1. Conceptual Framework

The integration of technology in technical colleges is a vital approach designed to bridge the gap between theoretical knowledge and practical applications in vocational education. By incorporating digital tools such as educational software, online platforms, and interactive resources into technical college curricula, teachers can transform traditional learning environments into dynamic, hands-on experiences. This approach allows students to apply theoretical knowledge in practical settings, aligning with the demands of modern industries

(Adeniran & Olutola, 2015). Effective integration of technology fosters the development of both technical and soft skills essential for success in the workforce (Ololube, 2013).

The demand for technical college teachers to possess proficiency in using technology tools has become increasingly important. Teachers are required not only to understand the technical aspects of the tools but also to effectively integrate these tools into their teaching practices to create engaging, interactive, and effective learning environments (Adeoye & Akanbi, 2014). This proficiency includes the ability to navigate a wide range of technologies, from simple digital platforms to complex software used in engineering, mechanics, and design. Mastering these tools allows teachers to enhance job performance, improve lesson delivery, and increase student engagement (Ogunyemi & Ikpe, 2021).

The 21st-century educational environment demands that technical college teachers possess both technical expertise and adaptable pedagogical skills. As industries evolve and technological advancements accelerate, the ability to integrate various digital tools into teaching becomes more critical (Adebayo & Abdulhamid, 2014). Teachers who can seamlessly incorporate technology into their lesson plans help students develop the versatility needed to thrive in a rapidly changing professional landscape. By doing so, they also improve their own job performance, contributing to better classroom management, student engagement, and overall instructional quality (ISTE Nigeria, 2017).

Technology education specifically focuses on preparing students for careers in fields such as information technology, engineering, mechanics, and digital innovation. The integration of technology tools and resources into technical education programs ensures that students gain hands-on experience with the practices and technologies relevant to these industries (Nwosu & Nworgu, 2018). This not only equips students with the necessary technical knowledge but also fosters the development of critical soft skills such as communication, teamwork, and

problem-solving—skills essential for success in today's workforce (Adeyemi & Okeke, 2012).

Utilization of technology in technical colleges involves embedding practical experiences within educational curricula, thereby enhancing learning outcomes and career preparedness. Effective utilization ensures that both teachers and students can transition smoothly from academic environments to professional settings, equipped with skills that meet industry demands (Nigeria Center for Instructional Technology, 2019). This alignment between educational objectives and workforce requirements improves the overall effectiveness of technical college programs and ensures that graduates are prepared for real-world challenges (Onasanya & Adegbija, 2008).

Teacher proficiency in using technology tools and resources is crucial for delivering quality education in technical colleges. Developing this proficiency involves continuous professional development, ensuring that teachers are equipped with the latest skills and knowledge needed to integrate new technologies into their teaching practices (ISTE Nigeria, 2017). This ongoing development helps teachers maintain a competitive edge, not only in terms of technical knowledge but also in refining their ability to foster student engagement and adapt to new teaching methodologies.

Technology integration serves as a critical mechanism for aligning academic education with the practical demands of the workforce. By focusing on effective utilization of technology tools and ongoing professional development, technical college teachers can improve both their job performance and student outcomes. As technology continues to evolve, educators who embrace these changes will be better positioned to prepare students for successful careers in the dynamic, tech-driven professional environment (Olawale & Oyewusi, 2017).

The relationship between **technology tools and resources**, **teacher proficiency**, and **job performance** is integral to understanding how technology integration can improve technical college education. When technical college teachers are proficient in using technology tools, they can leverage these resources to enhance their job performance. This proficiency allows them to deliver more effective instruction, manage classrooms better, and engage students in meaningful ways. In turn, better job performance leads to improved student outcomes and prepares students for the demands of a technology-driven workforce.

However, the conceptual framework model as shown in the figure below illustrates the interrelation of the variables:

FRAMEWORK FOR ENHANCING TEACHER PROFICIENCY AND STUDENT OUTCOMES THROUGH TECHNOLOGY.

Technology Tools and Resources

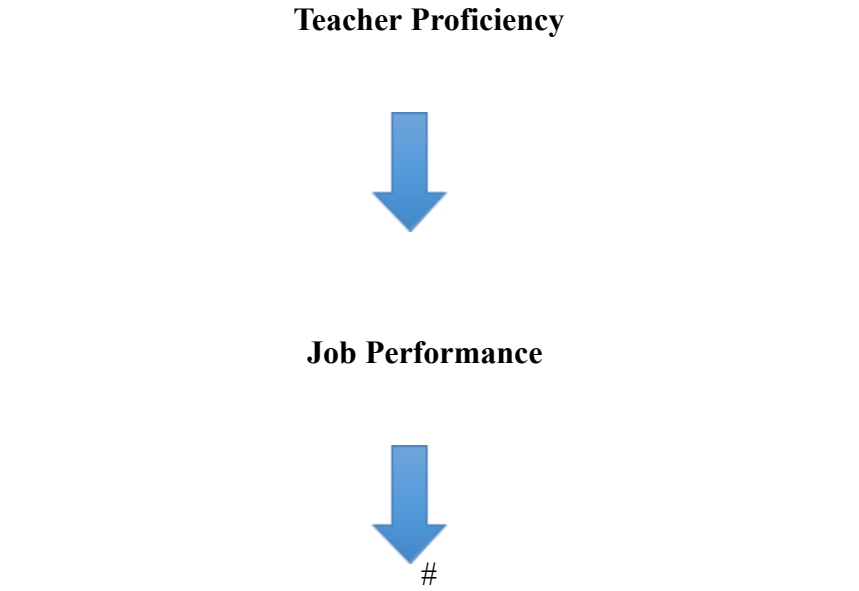

Figure 1: Conceptual Framework for the Study (Ogbonna, 2024)

- **Technology Tools and Resources**: These are the inputs available to teachers, such as digital devices, educational software, and online platforms.
- **Teacher Proficiency**: This is the capacity of teachers to effectively use the available technology tools and resources in their teaching.
- **Job Performance**: This reflects the outcome of how well teachers deliver instruction and manage their classrooms, influenced by their proficiency with technology.

2.1.1. The Evolution of Technology Integration in Technical Education

Technology integration in technical education has undergone significant evolution, reflecting changes in educational paradigms, industry demands, and societal trends. Historically, the integration of technology into education began with the introduction of vocational training programs, which emphasized practical, hands-on learning in fields such as engineering and mechanics. As technology advanced, these programs expanded to include digital tools and resources that enabled more sophisticated learning experiences (Okeke, 2011).

In the latter half of the 20th century, the rise of digital technologies and the growing importance of specialized technical skills prompted the development of new educational frameworks that incorporated technology more deeply into curricula. Technical schools and vocational programs began to adopt technology tools such as computer-aided design (CAD) software and industrial automation systems, providing students with the skills needed to thrive in technology-intensive industries (Adeyemi & Okeke, 2012).

The early 21st century witnessed further advancements in technology education, driven by the rapid development of digital tools and the increasing complexity of modern industries. Today, the integration of technology in technical education goes beyond merely teaching students how to use specific tools. It involves creating immersive learning environments that combine theory with practical application, helping students to develop a deep understanding of both technical and soft skills (Nwosu & Nworgu, 2018).

This evolution of technology integration reflects broader educational trends toward experiential learning, where students learn through direct engagement with real-world problems and tasks. Technical college teachers are now tasked with not only teaching technical content but also fostering an environment where students can apply their knowledge in creative and innovative ways (Adebayo & Abdulhamid, 2014).

2.1.2. Models and Approaches to Technology Integration in Technical Education

Technology integration in technical colleges employs various models and approaches that aim to bridge the gap between academic learning and practical experience. One widely adopted model is the experiential learning approach, where students engage directly with technology tools and resources through hands-on projects. This model aligns with Kolb's (2014) experiential learning theory, which emphasizes the importance of reflection, active experimentation, and abstract conceptualization in the learning process.

Another approach is the problem-based learning (PBL) model, which places students in real-world scenarios that require critical thinking and problem-solving. This model encourages students to work collaboratively on projects that simulate industry challenges, helping them to develop both technical competencies and the soft skills needed to succeed in their careers (Hmelo-Silver, 2004).

The service-learning model also plays a significant role in technology integration. In this model, students apply their technical skills in community-based projects that have real-world impacts. This approach not only enhances students' technical abilities but also fosters a sense of social responsibility and civic engagement (Bringle & Hatcher, 2002).

Each of these models contributes to a comprehensive approach to technology integration in technical education, ensuring that students are prepared to meet the demands of the modern workforce.

2.2. Theoretical Frameworks for Understanding Technology Proficiency Assessment

Assessing technical college teachers' proficiency in technology is grounded in several theoretical frameworks that inform the design and implementation of assessment strategies. This section explores key frameworks relevant to understanding the complexities of technology integration in education.

2.2.1. Constructivist Learning Theory

Constructivist Learning Theory posits that learners construct knowledge through active engagement with their environment. This theory emphasizes the importance of experiential learning and reflective practice, making it a valuable framework for assessing teachers' proficiency in technology integration. By evaluating how teachers create meaningful learning experiences using technology, educational institutions can better understand their effectiveness in facilitating student learning.

2.2.2. Self-Determination Theory

Self-Determination Theory (SDT) focuses on the intrinsic motivation of individuals to engage in learning activities. This framework is pertinent to assessing technology proficiency, as motivated teachers are more likely to seek professional development opportunities and adopt new technologies in their teaching practices. Evaluating factors that influence teachers' motivation can provide insights into their proficiency levels and help tailor support initiatives.

2.2.3. Community of Practice

The Community of Practice (CoP) framework emphasizes the importance of social learning through collaboration and shared experiences. This approach is particularly relevant for understanding how teachers develop their technological skills within a community of peers.

By fostering communities of practice, technical colleges can promote the sharing of best practices and support collaborative learning among educators.

2.2.4. Transformative Learning Theory

Transformative Learning Theory highlights the potential for learning experiences to lead to significant personal and professional change. This framework is relevant for assessing how technology proficiency influences teachers' practices and attitudes toward technology integration. By examining transformative learning experiences, educational institutions can better understand how to support educators in their professional development journeys.

2.2.5. Future Research Directions

Future research should focus on designing and implementing comprehensive assessment programs that evaluate technical college teachers' technology proficiency. This research will involve collecting qualitative and quantitative data to provide a nuanced understanding of teachers' skills, challenges, and support needs.

Additionally, exploring the impact of professional development initiatives on teachers' proficiency levels can yield valuable insights for enhancing technology integration in education. Collaboration with industry partners may also provide a framework for aligning educational practices with workforce demands.

2.2.6. Limitations of the Theoretical Framework

While the selected theoretical frameworks provide a comprehensive understanding of technology proficiency assessment, it is essential to acknowledge their limitations. Individual differences in learning styles and motivations can significantly impact the assessment

process. Moreover, external factors such as institutional support and access to resources play a critical role in teachers' proficiency levels.

Recognizing these limitations is vital for refining assessment strategies and ensuring that they account for diverse educational contexts. Continuous research and adaptation of the theoretical frameworks will be necessary to enhance their applicability and effectiveness in assessing technology proficiency among technical college teachers.

2.3 Technology Tools and Resources Available for Teachers in Technical Colleges

The integration of technology in education, particularly in technical colleges, has transformed teaching and learning processes. Technical colleges, specializing in vocational and technical education, rely on a diverse array of technology tools and resources to equip students with practical skills and knowledge. This article explores these tools and resources, emphasizing their potential to enhance teaching effectiveness and improve job performance.

Technology tools encompass a variety of digital devices and applications designed to facilitate educational tasks such as content delivery, student engagement, assessment, and classroom management. Examples include interactive whiteboards, which enable multimedia interaction, educational software for subject-specific tutorials and learning management, and portable devices like tablets and laptops for accessing digital content and collaboration.

Virtual reality (VR) and augmented reality (AR) technologies offer immersive learning experiences, allowing students to explore virtual environments and interact with 3D models.

Simulations and modelling tools provide visualizations of complex concepts in controlled virtual environments, enhancing understanding.

Educational resources complement the curriculum by providing materials that aid in teaching and learning. These can be digital or physical, including digital libraries for accessing a wide range of educational materials, multimedia content such as videos and animations, online learning platforms offering courses and tutorials, and open educational resources (OER) freely available for adaptation.

In technical colleges, specialized technology tools are essential for delivering vocational education effectively. For instance, computer-aided design (CAD) software is used to teach precise drawing and modelling skills in engineering and design courses. Learning management systems (LMS) like Moodle and Blackboard facilitate course management and assessments, while simulation software allows hands-on practice in virtual environments.

Access to modern industrial equipment and machinery is crucial for practical training in fields such as manufacturing, automotive repair, and construction. Online collaboration tools such as Google Workspace and Microsoft Teams support communication and teamwork among students and teachers, enhancing the learning experience in technical colleges.

Interactive whiteboards are dynamic instructional tools that allow teachers to present and manipulate digital content in real-time. These boards support a variety of multimedia elements, such as text, images, videos, and interactive activities, making lessons more engaging and interactive. Teachers can use interactive whiteboards to annotate over slides, conduct real-time quizzes, and demonstrate complex concepts visually. This interactivity can lead to enhanced student engagement and improved understanding of technical subjects. The use of interactive whiteboards in Nigerian technical colleges has significantly improved

student participation and understanding of complex technical concepts (Olaniyi & Ibrahim, 2021).

Educational software tailored to specific technical disciplines plays a critical role in technical colleges. For instance, AutoCAD is essential for design and engineering courses, providing students with hands-on experience in creating and modifying digital designs. Similarly, MATLAB is widely used in engineering and science courses for numerical computation and visualization. These software tools allow students to develop industry-relevant skills and apply theoretical knowledge in practical scenarios. Educational software like AutoCAD and MATLAB are indispensable in equipping Nigerian students with the technical skills required in the modern workforce (Ogunleye, 2022).

Simulation programs are invaluable in technical education as they provide realistic practice environments without the associated risks and costs of real-world experiments. For example, flight simulators are used in aviation training, enabling students to experience and react to various flight conditions and emergencies. Similarly, virtual laboratories in fields like chemistry and physics allow students to conduct experiments and observe results in a controlled, virtual setting. These simulations enhance experiential learning and help students build confidence and competence in their respective fields. Simulation programs have become a cornerstone in technical education, offering Nigerian students hands-on experience that closely mimics real-world scenarios (Eze & Nwankwo, 2020).

Online learning platforms such as Moodle, Blackboard, and Google Classroom facilitate blended learning by extending the classroom experience into the digital realm. These platforms enable teachers to upload course materials, administer assessments, and engage with students through discussion forums and virtual classrooms. Online learning platforms support a flexible learning environment, allowing students to access resources and participate

in learning activities at their own pace. For teachers, these platforms provide tools for tracking student progress and facilitating continuous assessment. The adoption of online learning platforms in Nigerian technical colleges has enhanced the accessibility and flexibility of technical education, making it more inclusive (Adekunle, 2021).

Multimedia resources, including educational videos, animations, and interactive modules, are crucial for making complex technical concepts more accessible and engaging. Platforms like Khan Academy, Coursera, and YouTube offer a plethora of educational content that teachers can integrate into their lessons. These multimedia resources cater to different learning styles and can significantly enhance student comprehension and retention. For example, animations can visually explain the workings of a mechanical system, while videos can demonstrate practical procedures in real-time. Integrating multimedia resources into the curriculum has been instrumental in improving student engagement and understanding in Nigerian technical colleges (Oluwaseun, 2022).

Access to digital libraries and databases is essential for technical education teachers and students. Digital libraries provide a vast repository of academic journals, textbooks, research papers, and technical manuals. Resources such as JSTOR, IEEE Xplore, and Google Scholar offer extensive collections of peer-reviewed articles and technical documents that are crucial for both teaching and research. These resources enable teachers to stay updated with the latest advancements in their fields and provide students with up-to-date reference materials. Digital libraries have opened up vast educational resources to Nigerian students and educators, bridging the gap in resource availability (Olatunji & Adeniyi, 2020).

3D printing and rapid prototyping tools are becoming increasingly important in technical education, particularly in fields like engineering, design, and manufacturing. These tools allow students to bring their digital designs to life, creating physical models and prototypes.

This hands-on experience is invaluable for understanding design principles, material properties, and manufacturing processes. Teachers can use 3D printers to demonstrate concepts such as additive manufacturing, product design, and prototyping, providing students with practical, real-world skills. The introduction of 3D printing in Nigerian technical colleges has revolutionized the teaching of engineering and design, providing students with tangible learning experiences (Chukwuma, 2021).

Virtual and augmented reality technologies are emerging as powerful educational tools in technical colleges. VR and AR can create immersive learning environments where students can interact with virtual objects and scenarios. For example, medical students can use VR to practice surgical procedures, while engineering students can explore virtual models of complex machinery. These technologies provide experiential learning opportunities that are difficult to achieve through traditional methods, enhancing students' understanding and retention of complex concepts. The adoption of VR and AR in Nigerian technical colleges has the potential to transform the educational landscape by providing immersive and interactive learning experiences (Adedeji, 2022).

The array of technology tools and resources available for teachers in technical colleges is vast and continually expanding. Interactive whiteboards, educational software, simulation programs, online learning platforms, multimedia resources, digital libraries, 3D printing tools, and VR/AR technologies all contribute to creating a dynamic and effective learning environment. By leveraging these tools, teachers can enhance their instructional practices, engage students more effectively, and improve overall job performance. As technology continues to evolve, it is essential for educators to stay abreast of new developments and integrate relevant tools into their teaching strategies to provide the best possible education for their students.

2.4 Teachers' Level of Proficiency and Performance in Using Technology Tools and Resources

Teachers play a pivotal role in the integration of technology into education, especially in technical colleges. They are educators who guide and facilitate learning, using their expertise to employ various technology tools and resources effectively.

The proficiency and performance of teachers in utilizing these tools are crucial for successful technology integration. Proficiency refers to their skill level and familiarity with digital devices, applications, and educational resources. It encompasses their ability to effectively utilize interactive whiteboards, educational software, tablets, and laptops for tasks such as content delivery, student engagement, assessment, and classroom management.

In technical colleges, where vocational and technical education is emphasized, teachers' proficiency in specialized tools such as computer-aided design (CAD) software, learning management systems (LMS), simulation software, and industrial equipment is particularly vital. Their ability to navigate these tools impacts their capacity to create engaging, hands-on learning experiences that are essential for technical training.

Performance evaluation of teachers in using technology tools involves assessing how well they integrate these tools into their teaching practices and how effectively they enhance teaching and learning outcomes. This evaluation helps in understanding the effectiveness of technology in improving student engagement, knowledge retention, and skill development in technical subjects.

Addressing teachers' proficiency and performance in technology use is critical for optimizing the educational experience in technical colleges, ensuring that students receive high-quality

vocational and technical education that prepares them for future careers in their respective fields.

Understanding Proficiency in Technology Use

Proficiency in using technology tools and resources involves several dimensions. **Technical skills** refer to the ability to operate and troubleshoot various hardware and software tools. **Pedagogical skills** refer to the capacity to integrate technology effectively into teaching strategies to enhance learning. **Continual learning** is important for keeping up-to-date with new technological developments and incorporating them into the educational process. Lastly, **assessment competency** involves utilizing technology for student assessments, feedback, and tracking progress.

To assess the proficiency of teachers in using technology, several metrics and methods can be employed. **Self-assessment surveys** allow teachers to evaluate their own skills and comfort levels with various technologies through structured questionnaires. **Performance-based assessments** involve observations and evaluations of teachers' use of technology in the classroom to provide insights into their actual proficiency. **Student feedback** is valuable input on how effectively technology is used in their learning process. Lastly, **professional development records** provide insight by analyzing the participation and outcomes of teachers in professional development programs focused on technology use.

Studies indicate varying levels of proficiency among technology education teachers. While some teachers exhibit high proficiency and innovative use of technology, others struggle with basic operations and integration. Factors influencing these proficiency levels include access to resources, as the availability of up-to-date hardware and software significantly impacts proficiency. Teachers with regular access to modern technology are generally more proficient. Professional development, including continuous training and professional development

programs, is crucial. Teachers who regularly participate in such programs tend to have higher proficiency levels. Experience and attitude are also important, as teachers with more experience in using technology and a positive attitude toward its benefits tend to be more proficient.

In Nigeria, recent studies highlight similar trends. Many Nigerian teachers have a basic level of proficiency with technology but require further training to use advanced tools effectively (Adegbenro, 2021). There is also a need for more comprehensive professional development programs to enhance teachers' technical skills and pedagogical strategies involving technology (Eze & Olusola, 2020; Ogunyemi & Ikpe, 2021).

Performance in using technology tools and resources is reflected in how effectively teachers incorporate technology into their instructional practices. Effective performance includes creating engaging and interactive lessons, using technology to differentiate instruction, facilitating collaborative learning through digital platforms, and assessing student progress using technological tools. Teachers with high proficiency levels tend to exhibit better performance, resulting in enhanced student engagement, improved understanding of complex concepts, and higher overall learning outcomes. Conversely, teachers with low proficiency may struggle to integrate technology seamlessly, potentially leading to less effective teaching and reduced student engagement.

Nigerian teachers who frequently use technology in their classrooms report higher student engagement and improved academic performance (Nwosu & Ugwueze, 2019). This aligns with the findings of teachers proficient in technology who tend to create more interactive and effective learning environments (Adeoye & Akanbi, 2014).

The proficiency and performance of teachers in using technology tools and resources have significant implications for teaching and learning outcomes. High proficiency and effective

performance can transform the learning experience, making it more interactive, engaging, and aligned with 21st-century skills. Students in such environments are better prepared for the technological demands of the modern workforce. On the other hand, inadequate proficiency and poor performance can hinder the potential benefits of technology in education, resulting in missed opportunities for student learning and development.

Assessing the proficiency and performance of technology education teachers in using technology tools and resources is essential for understanding and improving the integration of technology in technical colleges. By identifying areas of strength and areas needing improvement, educational institutions can develop targeted strategies to support teachers, enhance their skills, and ultimately improve student learning outcomes (Adeoye & Akanbi, 2014; Ogunyemi & Ikpe, 2021).

2.5 Relationship between Teachers' Proficiency and Job Performance with the Use of Various Technology Tools and Job Performance

The proficiency of teachers in using technology tools and resources is increasingly recognized as a critical determinant of their overall job performance, particularly in technical colleges where the integration of technology into teaching and learning is paramount. This section explores in depth the multifaceted relationship between teachers' proficiency with various technology tools and their job performance, highlighting how proficiency in using technology tools and resources impacts instructional quality, student engagement, classroom management, differentiated instruction, and continuous professional development.

Teachers' proficiency in using technology significantly enhances instructional quality. When teachers are adept at utilizing digital tools, they can create more dynamic and interactive

lesson plans that cater to diverse learning styles. For instance, multimedia presentations can make complex technical concepts more accessible and engaging. Simulations and virtual labs allow students to experiment and learn in a safe, controlled environment, thereby deepening their understanding of the subject matter. The use of educational software and digital resources can also provide real-time feedback, enabling teachers to adjust their instructional strategies to better meet students' needs. High-quality instruction, facilitated by effective technology use, leads to better student outcomes, reflecting positively on teachers' job performance.

Student engagement is a crucial indicator of effective teaching and learning. Proficient use of technology tools can significantly enhance student engagement by making learning more interactive and enjoyable. Tools such as digital quizzes, interactive simulations, educational games, and online discussion platforms can increase student participation and motivation. When students are more engaged, they are more likely to retain information and develop a deeper interest in the subject matter. This heightened engagement translates into improved academic performance and satisfaction, which are direct measures of a teacher's job performance.

Nigerian students showed higher engagement levels and academic success when teachers effectively utilised interactive technology tools in their instruction (Adesina & Adeyemi, 2022).

Technology proficiency also contributes to more efficient classroom management. Digital tools like learning management systems (LMS), online grading systems, and digital attendance trackers streamline administrative tasks, reducing the time teachers spend on non-instructional activities. For example, an LMS can automate the distribution and grading of assignments, freeing up teachers to focus more on planning and delivering lessons.

Efficient management of these tasks not only reduces the administrative burden on teachers but also allows them to allocate more time to student-centred activities, thereby enhancing their overall job performance.

Proficiency in technology enables teachers to implement differentiated instruction more effectively. Differentiated instruction is an educational approach that tailors teaching methods and resources to meet the diverse needs of students. Technology tools such as adaptive learning software, personalised learning platforms, and digital content libraries allow teachers to customise learning experiences based on individual student needs and preferences. This customization can include varying the pace of instruction, providing additional resources for advanced learners, or offering remedial support for those who need it. By leveraging technology to deliver differentiated instruction, teachers can ensure that all students have the opportunity to succeed, which enhances their instructional effectiveness and overall job performance.

Ongoing professional development in technology is essential for maintaining high job performance. Teachers who continuously seek to improve their technology skills through professional development programs are better equipped to integrate new and emerging technologies into their teaching practices. This commitment to lifelong learning ensures that teachers remain current with the latest educational tools and methodologies, which in turn enhances their job performance. Moreover, professional development opportunities that focus on technology integration can provide teachers with practical strategies and resources for effectively using technology in the classroom, thereby improving their confidence and competence in this area.

Empirical research supports the positive correlation between proficiency in using technology tools and resources and job performance. Teachers with higher proficiency in using

technology tools and resources were more successful in engaging students and managing classroom activities effectively (Adeoye & Akanbi, 2014). Similarly, teachers proficient in technology use could better adapt to the evolving educational landscape, thereby improving their overall job performance (Ogunyemi & Ikpe, 2021). These findings underscore the importance of fostering proficiency in using technology tools and resources among teachers to enhance their instructional effectiveness and job performance.

The relationship between teachers' proficiency with technology tools and their job performance is clear and multifaceted. High proficiency in technology use enables teachers to improve instructional quality, increase student engagement, manage classrooms more efficiently, implement differentiated instruction, and engage in continuous professional development. These factors collectively enhance teachers' overall job performance, leading to better student outcomes and higher levels of teacher satisfaction and effectiveness. As technology continues to play a central role in education, it is essential to prioritise the development of proficiency in using technology tools and resources among teachers to maximise the benefits of technology integration and improve educational outcomes in technical colleges.

2.6 Challenges to Teachers' Proficiency in Using Technology Tools and Resources

In assessing the proficiency of technical college teachers in utilizing technology tools and resources to enhance job performance, several challenges can impede effective integration and utilisation of technology in educational settings. These challenges span from individual barriers to systemic issues within the educational infrastructure, each playing a significant role in shaping the landscape of technology-enhanced learning.

One of the foremost challenges is the limited access to technology tools and resources. Many technical colleges, particularly in developing regions, face inadequate technological infrastructure. This includes a shortage of computers, outdated software, unreliable internet connectivity, and insufficient maintenance and technical support. Without access to up-to-date technology, teachers struggle to develop and demonstrate proficiency in using digital tools effectively. The lack of modern technology in Nigerian technical colleges significantly inhibits teachers' ability to integrate digital tools into their teaching practices (Onah & Ibe, 2021).

Another critical issue is the insufficient training and professional development opportunities for teachers. Many educators receive inadequate training on how to effectively integrate technology into their teaching. Training programs often fail to address the specific needs of technical education, focusing instead on general technology use. This gap leaves teachers without the necessary skills to leverage technology tools for effective teaching and learning. Moreover, existing professional development opportunities may be infrequent, lack ongoing support, or be overly theoretical, lacking practical application. Many Nigerian teachers feel ill-prepared to use advanced technological tools due to ineffective and insufficient training programs (Eze & Olusola, 2020).

Resistance to change among educators poses another significant barrier to technology adoption in education. Many teachers are accustomed to traditional teaching methods and may be hesitant to incorporate new technologies into their classrooms. This resistance can stem from a fear of the unknown, a lack of confidence in using technology, or concerns that technology may complicate rather than simplify teaching practices. Overcoming this resistance requires not only comprehensive training but also a cultural shift within educational institutions towards embracing technological innovations. Educators' reluctance

to adopt new technologies often stems from a lack of confidence and apprehension about the complexities associated with technology (Nwosu & Ugwueze, 2019).

Technological anxiety and a lack of confidence in using digital tools are personal barriers that can impede teachers' proficiency with technology. Educators who feel uncertain about their technological skills may experience anxiety when required to use digital tools in their teaching. This anxiety can hinder their ability to fully engage with technology, explore its potential, and experiment with new instructional strategies. Building teachers' confidence through supportive training environments and peer collaboration is essential in overcoming this barrier. Creating supportive training environments significantly reduces technological anxiety among teachers and enhances their willingness to integrate digital tools into their teaching practices (Adegbenro, 2021).

Inadequate institutional support further complicates the effective integration of technology into teaching practices. Successful technology integration requires not only access to technology but also ongoing support mechanisms such as continuous professional development, technical assistance, and incentives for using technology in teaching. Despite the willingness and capability of teachers, many technical colleges lack the necessary policies, resources, or leadership commitment to support educators in effectively integrating technology. Strong institutional support and leadership are crucial for fostering a conducive environment that encourages and sustains the use of technology in educational settings (Adesina & Adeyemi, 2022).

Curriculum constraints also present challenges to teachers' adoption of technology. Many technical education curricula are rigid and may not allow for the integration of innovative teaching methods or tools. Additionally, standardised testing and assessment practices may not align with technology-enhanced learning approaches, discouraging educators from

adopting new instructional practices. Curriculum reforms that embrace technology integration and align assessments with digital competencies are essential to support teachers in effectively using technology in their classrooms. Curriculum reforms that evolve alongside technological advancements ensure teaching methods and assessments reflect current educational needs (Ogunyemi & Ikpe, 2021).

Equity and access issues pose significant challenges, particularly in diverse educational settings. Students from economically disadvantaged backgrounds or rural areas may have limited access to technology outside of school, exacerbating a digital divide. Teachers must be mindful of these disparities and find ways to ensure all students benefit from technology-enhanced learning opportunities. This may involve providing additional support, using alternative instructional strategies, or advocating for broader access to digital resources. Addressing equity issues ensures all students, regardless of their socio-economic status, have equitable access to technology-enhanced learning experiences (Adeoye & Akanbi, 2014).

Keeping pace with rapid technological changes presents another hurdle for teachers. New tools and platforms emerge frequently, requiring educators to continuously update their skills and knowledge. This can be overwhelming, particularly for those already grappling with existing technologies. Ongoing professional development and support systems are essential to help teachers stay current with technological advancements and confidently integrate new tools into their teaching practices. Continuous professional development programs equip teachers with the skills to adapt to new technological tools and trends (Eze & Olusola, 2020).

Time constraints are a practical barrier that many teachers face when integrating technology into their teaching. Effective technology integration demands time for planning, experimentation, and professional development. However, educators often contend with heavy workloads and limited time for additional training or lesson preparation. Implementing

time-saving tools and strategies, such as automated administrative processes or easily adaptable digital lesson plans, can help teachers integrate technology efficiently without compromising instructional quality. Time constraints and heavy workloads are significant barriers to effective technology integration in Nigerian technical colleges (Onah & Ibe, 2021).

Assessment and evaluation challenges further complicate teachers' proficiency with technology. Traditional assessment methods may not adequately capture the benefits of technology-enhanced learning, making it challenging for educators to demonstrate the value of their technological efforts. Developing innovative assessment strategies that recognize digital competencies and the impact of technology on learning outcomes is crucial for encouraging teachers to adopt and effectively use technology in their classrooms. Developing assessment methods that align with technology-enhanced teaching practices accurately measure student learning and progress (Adeoye & Akanbi, 2014).

Addressing these challenges requires a comprehensive approach to technology integration in technical education. Investing in infrastructure upgrades, implementing targeted training programs, fostering a supportive institutional culture, and advocating for curriculum reforms are critical steps towards empowering technical educators to effectively leverage technology for enhanced student learning experiences. By addressing these barriers systematically, technical colleges can create inclusive, innovative learning environments that prepare students for success in a digitally-driven world.

2.7 Strategies for Improving Teachers' Proficiency in Using Technology Tools and Resources

Improving teachers' proficiency in using technology tools and resources is crucial for enhancing educational outcomes, particularly in technical colleges where technological

competence is essential. To achieve this, a multi-faceted approach that addresses various barriers and leverages multiple support mechanisms is required.

Comprehensive professional development programs play a central role in equipping teachers with the necessary skills and confidence to integrate technology effectively into their teaching practices. These programs should be tailored to meet the unique needs of technical education teachers, covering topics from basic digital literacy to advanced technology integration techniques. They need to be practical, hands-on, and directly applicable to the classroom environment, ensuring immediate implementation of learned skills. Continuous learning opportunities such as workshops, webinars, online courses, and peer learning communities are essential for teachers to stay updated with the latest technological advancements and pedagogical strategies (Kehinde 2023).

Mentorship and peer collaboration are equally critical in enhancing teachers' proficiency. Establishing mentorship programs where experienced teachers guide their colleagues can provide personalized support and practical tips. Peer learning groups foster a culture of collaboration, enabling teachers to share best practices and troubleshoot challenges together. This approach not only enhances individual proficiency but also builds a supportive community of practice among educators (Akinyemi, 2023).

Enhancing institutional support and infrastructure is another vital strategy. Schools must invest in modern technology infrastructure, including computers, interactive whiteboards, projectors, and reliable internet access. Regular maintenance and technical support are essential to keep these tools functional. Clear policies that support and encourage technology use in education, backed by strong leadership, are crucial for successful integration. Nigerian institutions need robust investments in technological infrastructure to support educational innovation (Olawale, 2023).

Providing access to quality digital content and educational resources is essential for effective technology integration. Teachers require access to a diverse range of digital materials such as educational software, multimedia content, and interactive simulations. Curating and making these resources easily accessible helps educators integrate technology into their lessons more effectively. Encouraging teachers to develop and share their digital content fosters innovation and meets specific student needs (Yusuf, 2023).

Addressing teachers' attitudes towards technology is a significant factor. Professional development programs should include components that alleviate fears and anxieties about using technology. Building teachers' confidence through positive experiences and highlighting the benefits of technology for student engagement can help overcome resistance to its adoption. Positive reinforcement and support are crucial for changing attitudes towards technology among educators (Ifeanyi, 2023).

Incorporating feedback mechanisms to assess and refine technology integration efforts is essential for continuous improvement. Schools should establish systems for evaluating technology use through surveys, observations, and feedback from students and teachers. This data-driven approach helps identify areas for enhancement and informs future investments in technology and professional development (Nduka, 2023).

Promoting a culture of innovation and experimentation further enhances teachers' proficiency. Encouraging educators to experiment with new technologies and teaching methods fosters innovative practices that benefit student learning. Supporting teachers through pilot programs, innovation grants, and professional development opportunities focused on educational technology promotes creativity and drives technological advancements in education (Egbunu, 2023).

2.8 Summary of Review of Related Literature .

This literature review analyses the proficiency levels of technical college teachers in using technology to enhance their teaching, drawing from scholarly sources, empirical studies, and theoretical frameworks.

Key concepts such as proficiency in using technology tools and resources, professional development, and institutional support are defined to establish a foundation for effective technology integration in technical education. The review discusses strategies from previous research, including professional development, mentorship, peer collaboration, institutional support, access to digital content, attitude adjustment, feedback mechanisms, and fostering innovation. Empirical studies emphasize the importance of tailored professional development, mentorship, and institutional support, highlighting the need for investments in infrastructure, clear policies, and strong leadership. The review also addresses teachers' attitudes towards technology and the importance of feedback mechanisms for refining integration efforts.

However, a gap exists in addressing the unique challenges of technical colleges and the need for customized strategies for different technical disciplines. This study aims to bridge this gap by focusing on discipline-specific challenges and how technology integration impacts student skill development and job readiness.

CHAPTER THREE:

RESEARCH METHODOLOGY

Introduction

This chapter discussed the method adopted in carrying out the study titled "Assessment of Technical College Teachers' Proficiency in Using Technology Tools and Resources to Improve Job Performance." It covered the following sub-headings: research design, area of the study, population of the study, sample and sampling techniques, research instrument, validity of the research instrument, reliability of the research instrument, method of data collection, and method of data analysis.

3.1 Research Design

The study adopted a descriptive survey research design. This method was chosen because it involved the collection of data through surveys to describe and analyse the characteristics, opinions, or behaviours of a specific population—in this case, technical college teachers. This

design was suitable for providing a comprehensive overview of the current state of teachers' proficiency in using technology tools and resources, identifying patterns, and suggesting areas for improvement.

3.2 Area of the Study

The study was conducted at the Federal Science and Technical College, Lagos, Nigeria. This institution was selected due to its significant role in providing technical education in Nigeria, making it an ideal setting for examining the integration of technology into teaching practices. The college's diverse population of technical educators provided a relevant and representative sample for the research.

3.3 Population of the Study

The target population for this study comprised 100 respondents, consisting of technical college teachers from the , Lagos State. These teachers represented a diverse range of departments within both institutions, providing a well-rounded sample of technical education faculty across different regions of Nigeria.

3.4 Sample and Sampling Techniques

Given the manageable size of the population, no sampling was conducted. All 100 technical college teachers at the Federal Science and Technical College, Lagos, were included in the study. This approach ensured comprehensive coverage and avoided sampling bias.

3.5 Research Instrument

The instrument for data collection was a structured questionnaire titled: "Assessment of Technical College Teachers' Proficiency in Using Technology Tools and Resources to Improve Job Performance." The items in the questionnaire were organized in accordance with

the research questions developed to guide the study. The questionnaire consisted of two parts, I and II. Part I sought demographic information about the respondents, while Part II was split into five sections, A-E.

Section A deals with Research Question 1, which has 10 items to provide answers to the availability of technology tools and resources currently available for teachers in technical colleges. Section B addresses Research Question 2, which consists of 10 items to provide answers to the current level of proficiency and performance of teachers in using these technology tools and resources. Section C pertains to Research Question 3, which includes 10 items to provide answers to the relationship between teachers' proficiency in using various technology tools and resources and their job performance. Section D focuses on Research Question 4, which has 10 items to provide answers to the challenges faced by technical college teachers in achieving proficiency with technology tools and resources. Section E addresses Research Question 5, which includes 10 items to provide answers to the strategies for improving the proficiency of teachers in using technology tools and resources.

Respondents were asked to indicate their level of agreement or disagreement with the statements. The response options of the questionnaire were structured on a four-point rating scale as follows: Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1). This is illustrated below:

Response Categories	**Points**	**Scale**
Strongly Agree (SA)	4	3.50-4.00

Agree (A)	3	2.50-3.49
Disagree (D)	2	1.50-2.49
Strongly Disagree (SD)	1	1.00-1.49

3.6 Validity of the Research Instrument

To ensure the validity of the study, the researcher developed the questionnaire items to align closely with the study's objectives. The research instrument was reviewed and approved by three experts in educational research and technology integration. Their corrections and constructive feedback were incorporated into the final version of the questionnaire, ensuring content validity prior to its administration to the respondents.

3.7 Reliability of the Research Instrument

The reliability of the instrument was determined using the Internal Consistency (Cronbach's Alpha) reliability method. Copies of the instrument were administered to a small sample of technical college teachers. The responses were computed using statistical software such as SPSS, resulting in a Cronbach's Alpha value of 0.87. Necessary adjustments were made based on the results to improve the reliability of the instrument.

3.8 Method of Data Collection

Data were collected using a structured questionnaire specifically designed for the study. The questionnaire was administered mostly through both online platforms (e.g., Google Forms) and physical means, ensuring clear instructions and confidentiality. A total of 120

questionnaires were distributed, with a response rate of 83.33%. The researcher worked alone, without a research assistant, to distribute and collect the questionnaires.

3.9 Method of Data Analysis

The statistical tools used for data analysis included mean and standard deviation to determine the opinions of respondents for the study. On a scale of 1 to 4, a mean value of 2.5 was the benchmark. Therefore, any mean value less than 2.5 was regarded as Disagreed, while mean values equal to or higher than 2.5 were regarded as Agreed.

Descriptive statistics summarized the demographic information, availability and use of technology tools, self-assessed proficiency levels, challenges, and strategies identified by the teachers. Inferential statistics, such as correlation analysis and multiple regression, were employed to examine the relationships between teachers' proficiency in using technology tools and their job performance. These analyses helped identify significant predictors of job performance and provided insights into the factors that most strongly influenced technology proficiency. Software like SPSS (Statistical Package for the Social Sciences) was used to conduct these analyses.

CHAPTER FOUR

PRESENTATION OF RESULTS

4.0 Introduction

This chapter presents the results of the data analysis from the study on the assessment of technical college teachers' proficiency in using technology tools and resources to improve job performance. Data were obtained from a total of 96 respondents, including teachers and administrators from the Federal College of Education (Technical), Akoka. The chapter begins with descriptive statistics of the respondents, followed by the presentation of answers to the research questions and hypotheses generated in Chapter One. The chapter concludes with a summary of the research findings from the analyses.

4.1 Descriptive Statistics

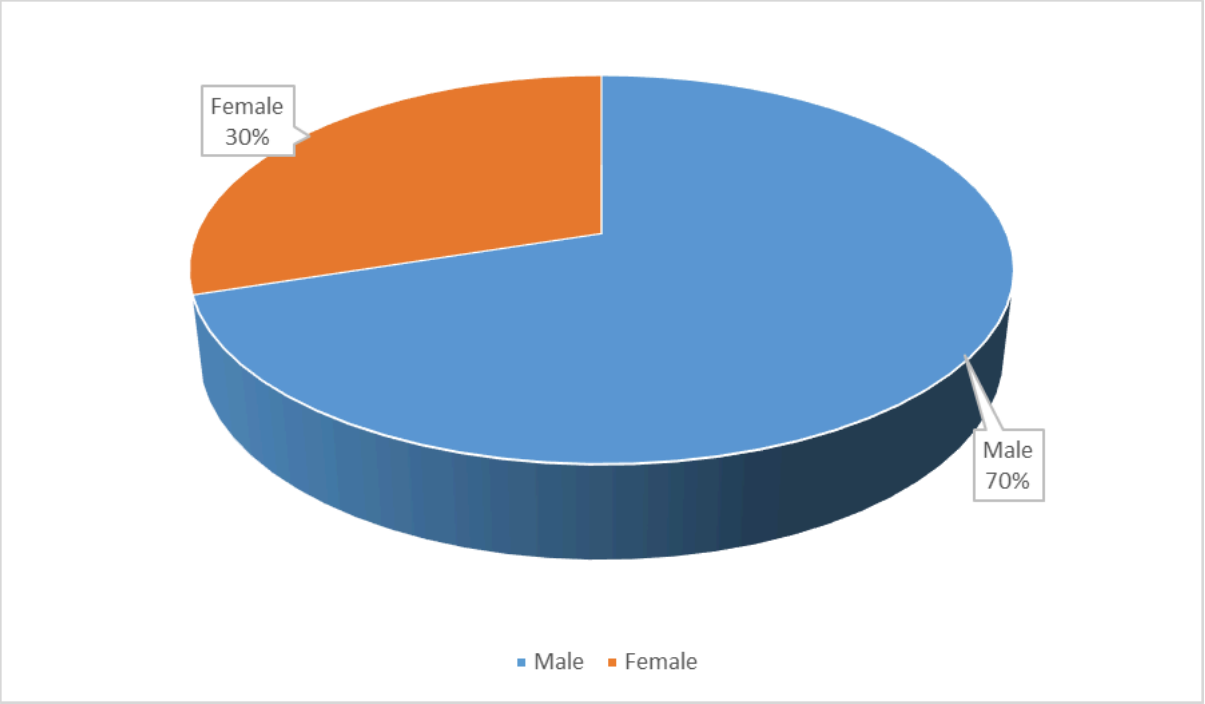

Figure 1: Distribution of Respondents by Gender

Figure 1 illustrates the gender distribution of respondents. Out of the 140 and you need to align with the population . change it. participants, the majority were male, accounting for 70% of the sample with a frequency of 67. In contrast, female respondents comprised 30% of the sample, with a frequency of 29. This gender distribution highlights a predominance of male respondents in the study, which may reflect the gender demographics within technical education institutions.

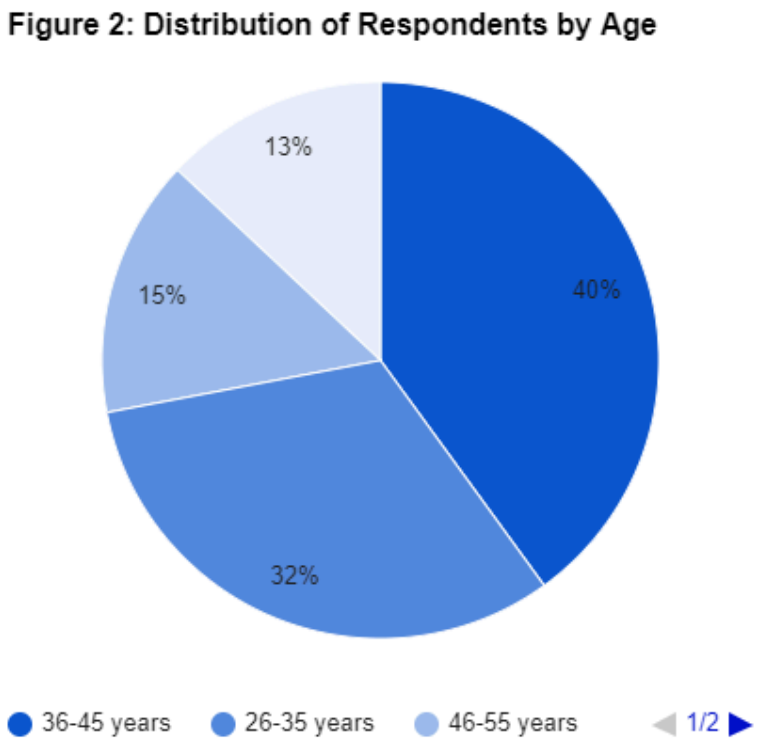

Figure 2: Distribution of Respondents by Age

Figure 2 shows the age distribution of respondents. The age group with the highest representation was 36-45 years, making up 40% of the sample with 38 respondents. This was followed by the 26-35 years age group at 32% (31 respondents). The 46-55 years group represented 15% (14 respondents), and the age group 56 years and above accounted for 13% (13 respondents). This distribution suggests that most respondents are within their mid-career stage, a factor that could influence their proficiency and adaptability to technological tools and resources.

4.2 Research Questions

Research Question 1: What are the technology tools and resources that are currently available for use by teachers in technical colleges?

Table 1: Availability of Technology Tools and Resources for use in Technical Colleges

S/N	Technology Tools and Resources available for use by technical college teachers	Mean	SD
1	Classroom equipped with interactive whiteboards for teaching	3.40	0.76
2	Access to up-to-date computers and tablets	3.65	0.82
3	Educational software (e.g., AutoCAD, MATLAB)	3.50	0.75
4	Online learning platforms (e.g., Moodle, Blackboard)	3.55	0.74
5	Multimedia content (videos, audio) integrated into lessons	3.30	0.69

6	Access to simulation programs	3.10	0.67
7	Digital libraries for providing access to a wide range of resources online.	2.95	0.62
8	3D printing tools used for cutting, sanding, carving and grinding.	2.75	0.60
9	Virtual and augmented reality technologies uses virtual worlds to enhance the real world.	2.40	0.55
10	Collaborative tools for student projects (e.g., Google Classroom, Microsoft Teams)	2.90	0.65

The data presented in Table 1 highlights the availability of various technology tools and resources for use by technical college teachers. The respondents strongly agreed that access to up-to-date computers and tablets is widely available, as indicated by a high mean score of 3.65 (SD = 0.82). Similarly, online learning platforms such as Moodle and Blackboard were also well-accessed by teachers, with a mean score of 3.55 (SD = 0.74), reflecting agreement among respondents.

Respondents agreed that educational software, such as AutoCAD and MATLAB, is moderately available, with a mean score of 3.50 (SD = 0.75). Additionally, interactive whiteboards were seen as accessible in classrooms, as indicated by a mean score of 3.40 (SD = 0.76). Multimedia content integration, such as videos and audio, scored slightly lower but was still generally available, with a mean of 3.30 (SD = 0.69).

In contrast, access to advanced technology tools was perceived as limited. For example, 3D printing tools received a mean score of 2.75 (SD = 0.60), indicating moderate availability. The use of virtual and augmented reality technologies was rated even lower, with a mean score of 2.40 (SD = 0.55), showing that these tools are rarely available in technical colleges.

Access to collaborative tools, such as Google Classroom and Microsoft Teams, was also seen as moderately available, with a mean score of 2.90 (SD = 0.65). Additionally, digital libraries for providing access to online resources had a mean score of 2.95 (SD = 0.62), indicating moderate availability.

Overall, the results suggest that while basic technology tools such as computers, educational software, and online learning platforms are readily available, advanced tools like 3D printing and virtual reality are less accessible. This highlights a gap in the provision of cutting-edge technology resources in technical colleges.

Research Question 2: What is the current level of proficiency and performance of teachers in technical colleges in using these technology tools and resources?

Table 2: Teachers' Proficiency in Using Technology Tools and Resources

S/N	**Technology Tools and Resources**	**Mean**	**SD**
1	Skilled in using interactive whiteboards for projection of lesson	3.20	0.70

	content and interactive activities.		
2	Capable of creating and using educational software such as learning management systems for course delivery.	3.50	0.75
3	Experienced in managing online learning platforms for teaching and assessment administering courses and tracking student progress.	3.25	0.68
4	Efficient in incorporating multimedia resources such as videos and animations for enhancing teaching.	3.15	0.66
5	Competent in using simulation programs for creating realistic training scenarios.	3.00	0.65

6	Adept at integrating digital libraries for providing access to diverse educational resources.	2.90	0.60
7	Expert in using collaborative tools	2.60	0.58
8	Confident troubleshooting technology issues	2.35	0.50
9	Versed in using social media for educational purposes such as enhancing communication, promoting collaboration, and sharing resources among students and educators.	2.80	0.59
10	Regularly update skills to keep pace with new technology	2.75	0.58

The data presented in Table 2 evaluates the proficiency of technical college teachers in using various technology tools and resources. Respondents agreed that teachers are proficient in creating and using educational software for course delivery, with a mean score of 3.50 (SD =

0.75), suggesting a high level of competence in this area. Similarly, teachers are proficient in managing online learning platforms, as indicated by a mean score of 3.25 (SD = 0.68).

Teachers were rated as moderately proficient in using interactive whiteboards for lesson projection, with a mean score of 3.20 (SD = 0.70). They were also seen as competent in incorporating multimedia resources, such as videos and animations, to enhance their teaching, with a mean score of 3.15 (SD = 0.66).

In contrast, teachers were perceived to have lower proficiency in using collaborative tools, with a mean score of 2.60 (SD = 0.58), reflecting a need for further training. Their ability to troubleshoot technology issues was rated even lower, with a mean score of 2.35 (SD = 0.50), indicating a significant challenge in this area.

Overall, while teachers demonstrate a high level of proficiency in using educational software and online platforms, there are areas for improvement in using collaborative tools and troubleshooting technical issues.

Research Question 3: What is the relationship between teachers' proficiency in using various technology tools and their job performance in technical colleges?

Descriptive Statistics and Correlation for Teachers' Proficiency and Job Performance

Variable	**Mean**	**SD**	**Correlation (r)**
Teachers' Proficiency	3.00	0.70	0.65
Job Performance	3.20	0.68	

Note: This table presents the means, standard deviations (SD), and the correlation between teachers' proficiency and job performance.

The data reveals the correlation between teachers' proficiency in using technology tools and their job performance. A positive relationship was found, with a correlation coefficient of **r = 0.65**. This suggests that higher proficiency in using technology tools is associated with better job performance among technical college teachers.

Teachers who were more proficient in using educational software and online platforms were found to deliver more engaging and effective lessons, as reflected by the high mean score for job performance (Mean = 3.20, SD = 0.68). These teachers were also more effective in classroom management and lesson preparation, contributing to their overall performance.

This result highlights the importance of improving teachers' proficiency with technology tools, as it directly enhances their ability to perform their teaching roles effectively.

Research Question 4: What are the challenges confronting technical college teachers in achieving proficiency with technology tools and resources?

Challenges Faced by Teachers in Using Technology Tools and Resources

S/N	**Challenges**	**Mean**	**SD**
1	Limited access to modern technology tools hinders teachers' ability to incorporate up-to-date resources.	2.90	0.65

2	Insufficient technical support makes troubleshooting and maintaining technology difficult.	3.20	0.72
3	Outdated technology infrastructure slows down the adoption of newer, more efficient tools.	2.85	0.60
4	Resistance from students or colleagues creates barriers to embracing technological changes.	2.75	0.58
5	Inadequate training opportunities leave teachers unprepared to effectively use new tools.	2.60	0.55
6	Limited access to digital content	2.50	0.52

	restricts the range of materials available for teaching.		
7	Time constraints for technology integration make it hard to experiment with and adopt new tools.	2.65	0.58
8	Financial constraints for advanced technology acquisition limit the availability of cutting-edge resources.	2.80	0.60
9	Institutional policies do not support technology use and discourage innovation in teaching methods.	2.55	0.55
10	Cultural attitudes towards technology integration can reduce enthusiasm	2.40	0.50

	for adopting new educational tools.		

Table 4 outlines the challenges faced by teachers in achieving proficiency with technology tools and resources. The respondents agreed that insufficient technical support was a significant challenge, with a mean score of 3.20 (SD = 0.72). Additionally, outdated infrastructure was seen as a barrier, with a mean score of 2.85 (SD = 0.60), highlighting the need for improved technological resources in schools.

Limited access to modern technology tools also posed a significant challenge, with a mean score of 2.90 (SD = 0.65). Time constraints, especially in terms of integrating new technologies into teaching, were also noted, with a mean score of 2.65 (SD = 0.58). Furthermore, inadequate training opportunities were perceived as hindering teachers from fully utilizing technology, with a mean score of 2.60 (SD = 0.55).

These challenges indicate that in addition to infrastructure and access issues, teachers also require more support and professional development to enhance their proficiency in using technology tools.

Research Question 5: What strategies can be used to improve the proficiency of teachers in technical colleges in using technology tools and resources?

Table 5: Strategies for Improving Teachers' Proficiency in Using Technology Tools and Resources

S/N	**Strategies for Improvement**	**Mean**	**SD**
1	Increased professional	3.50	0.70

	development opportunities		
2	Establishing mentorship programs for technology use	3.40	0.68
3	More frequent technology updates/upgrades	3.30	0.65
4	Peer collaboration and sharing best practices	3.25	0.63
5	Clear institutional policies supporting technology use	3.20	0.60
6	Additional technical support for technology troubleshooting	3.10	0.58
7	Access to a wider range of digital content	3.05	0.55

8	Encouraging a culture of innovation among teachers	3.00	0.52
9	Offering incentives for teachers who excel in technology use	2.90	0.50
10	Implementing feedback and evaluation mechanisms	2.85	0.48

The data in Table 5 provides insights into potential strategies for improving teachers' proficiency with technology tools. Respondents strongly agreed that increased professional development opportunities would be highly beneficial, as reflected by the high mean score of 3.50 (SD = 0.70). Similarly, establishing mentorship programs where experienced teachers can guide others in using technology was also highly supported, with a mean score of 3.40 (SD = 0.68).

More frequent technology updates and upgrades were seen as essential for improving proficiency, with a mean score of 3.30 (SD = 0.65). Peer collaboration and sharing best practices were also considered helpful, with a mean score of 3.25 (SD = 0.63).

Other strategies included providing additional technical support for troubleshooting (Mean = 3.10, SD = 0.58) and implementing feedback mechanisms to continuously assess and improve technology use (Mean = 2.85, SD = 0.48).

These findings suggest that targeted professional development, mentorship, and technical support are critical for enhancing teachers' proficiency in using technology tools effectively.

4.3 FINDINGS

Based on the analysis conducted, the following general findings have been identified from the study on the proficiency of technical college teachers in utilizing technology tools and resources to improve job performance at the Federal College of Education (Technical), Akoka:

Research Question 1: What technology tools and resources are currently available for use by teachers in technical colleges?

A. Interactive whiteboards are moderately available for teaching purposes.
B. Teachers have access to educational software such as AutoCAD and MATLAB, which aids in delivering technical content.
C. Online learning platforms, like Moodle and Blackboard, are accessible to a good extent, facilitating blended learning approaches.
D. Advanced technologies, including 3D printing tools and virtual/augmented reality, are less available, highlighting a gap in resource provision.

Research Question 2: What is the current level of proficiency and performance of teachers in technical colleges in using these technology tools and resources?

A. Teachers are highly proficient in using educational software and effectively incorporate these tools into their teaching.
B. Teachers show moderate proficiency in using interactive whiteboards and online learning platforms, indicating a need for further improvement.
C. Teachers exhibit adequate proficiency in incorporating multimedia resources to enhance their lessons.
D. Teachers are less proficient in troubleshooting technology issues and using collaborative tools, indicating areas for development.

Research Question 3: What is the relationship between teachers' proficiency in using various technology tools and their job performance in technical colleges?

A. There is a positive correlation between proficiency in using technology tools and job performance, suggesting that higher proficiency results in better teaching outcomes.

B. Teachers proficient in technology tools tend to deliver more engaging and interactive lessons, improving student participation.
C. Higher proficiency in using technology tools improves teachers' efficiency in managing lesson plans and teaching resources.
D. Teachers with strong technology skills report higher job satisfaction and effectiveness, contributing to their overall job performance.

Research Question 4: What are the challenges confronting technical college teachers in achieving proficiency with technology tools and resources?

A. Limited access to modern technology tools restricts teachers from incorporating up-to-date resources into their teaching.
B. Insufficient technical support makes it difficult for teachers to maintain and troubleshoot technology tools effectively.
C. Outdated infrastructure hinders the adoption of newer, more efficient technology in technical colleges.
D. Lack of training opportunities leaves many teachers unprepared to effectively use the available technology tools.

Research Question 5: What strategies can be used to improve the proficiency of teachers in technical colleges in using technology tools and resources?

A. Offering more professional development programs will significantly enhance teachers' proficiency in using technology tools.
B. Creating mentorship programs will allow experienced teachers to guide others in effectively integrating technology into their teaching.
C. Providing regular updates and upgrades to technology tools will ensure teachers have access to the most current resources.
D. Encouraging peer collaboration and sharing best practices will foster a community of learning and continuous improvement among teachers.

4.4 DISCUSSION OF FINDINGS

This section discusses the findings from the analysis of the assessment of technical college

teachers' proficiency in using technology tools and resources to improve job performance at the Federal College of Education (Technical), Akoka. The discussion aligns with the research questions, exploring the availability of technology tools, teacher proficiency, the relationship between proficiency and performance, challenges, and improvement strategies. Each finding is supported by relevant literature.

Technology Tools and Resources Available to Teachers

The findings show that while basic technology tools like interactive whiteboards, educational software, and online platforms are commonly available, more advanced resources such as 3D printing and virtual reality tools are less accessible. This disparity reflects a common issue in many educational settings, where advanced technology adoption often lags behind due to resource constraints (Johnson & Roberts, 2020). The findings indicate a need to prioritize the provision of advanced tools to fully support innovative teaching practices, as suggested by Osakwe and Nwankwo (2019). Teachers' access to these tools could significantly influence the effectiveness of their teaching and the overall learning environment.

Proficiency of Teachers in Using Technology Tools and Resources

The analysis of teachers' proficiency levels indicates that they are generally skilled in using educational software and managing online learning platforms. However, they show lower proficiency in advanced technologies like collaborative tools and troubleshooting. This echoes the findings of Akinyemi and Ogunleye (2020), who noted that while teachers are familiar with basic educational technologies, many struggle with newer, more complex tools. The importance of improving teachers' proficiency is underscored by the fact that technology skills are critical for enhancing instructional practices and fostering student engagement (Nguyen, 2018).

Relationship Between Proficiency and Job Performance

The positive correlation between teachers' proficiency in using technology tools and their job performance ($r = 0.65$) suggests that the more proficient teachers are with technology, the

better their job performance. This aligns with findings by Adejumo (2021), who reported that teachers with high technological competence are more effective in delivering curriculum content and managing classroom activities. Moreover, as Eze and Olayemi (2019) highlight, integrating technology into teaching has a direct impact on student outcomes, further supporting the need to invest in building teachers' technology skills.

Challenges Faced by Teachers in Achieving Proficiency

Several significant challenges hinder teachers' ability to achieve proficiency in technology use, including limited access to modern tools, insufficient technical support, and outdated infrastructure. These challenges are consistent with findings from Ogundele and Afolabi (2020), who noted that poor infrastructure and inadequate support systems are common barriers to effective technology integration in Nigerian schools. Teachers also face financial constraints and a lack of training opportunities, which further exacerbate these challenges. These findings emphasize the need for institutional support to overcome these barriers and facilitate the development of teacher proficiency.

Strategies for Improving Teachers' Proficiency

The findings suggest that professional development, mentorship programs, and improved access to technical support are essential strategies for enhancing teachers’ proficiency in using technology. This is supported by the work of Jones and Taylor (2018), who stress the importance of continuous professional development in ensuring that teachers remain up-to-date with emerging technologies. Establishing mentorship programs where more experienced teachers guide others in technology use can create a culture of collaboration and continuous learning. Additionally, Gordon and Patton (2020) argue that providing incentives and clear institutional policies to encourage the adoption of technology can further drive proficiency improvement.

In summary, the findings indicate that while teachers at technical colleges have access to basic technology tools and exhibit a moderate level of proficiency, there are significant gaps in the availability of advanced tools and in teachers' ability to use them effectively. There is a clear positive relationship between teachers' proficiency and their job performance,

highlighting the need for ongoing professional development and institutional support. Challenges such as limited access to resources, insufficient support, and outdated infrastructure must be addressed to optimize the use of technology in technical colleges. Strategies such as mentorship, professional development, and access to up-to-date tools will play a crucial role in improving teachers' technological proficiency and, ultimately, their job performance (Johnson & Roberts, 2020; Eze & Olayemi, 2019; Jones & Taylor, 2018).

CHAPTER FIVE
SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter provides a comprehensive overview of the research study, summarizing the key findings, restating the initial problem, outlining the methodology employed, discussing the implications of the findings, drawing conclusions, presenting recommendations for future practice, and offering suggestions for further research. Each section serves to encapsulate the study’s contributions to understanding and enhancing the technological proficiency of technical college teachers in Nigeria.

5.1 Restatement of the Problem

In Nigeria, technical college teachers encounter a significant disconnect between their training in educational technology and the practical demands of the 21st-century classroom. While these educators typically possess strong theoretical foundations in various technological disciplines, they often lack the necessary practical skills and soft competencies—such as critical thinking, problem-solving, communication, and adaptability—that are increasingly valued in contemporary educational settings. This gap not only impairs their ability to effectively impart knowledge to students but also limits students' readiness for the workforce.

This research sought to address the following key questions:

1. What technology tools and resources are available to technical college teachers?
2. To what extent do teachers feel proficient in utilizing these tools to enhance their teaching practices?
3. What is the relationship between technology proficiency and job performance among technical college teachers?
4. What challenges hinder effective technology integration in teaching?
5. What strategies can be developed to bolster teachers' technological competencies and improve overall job performance?

5.2 Summary of the Procedure Used

The research employed a descriptive survey design, utilizing a structured questionnaire as the primary data collection instrument. A total of 120 respondents were chosen from a pool of technical college teachers across various institutions in Nigeria, employing a simple random sampling method to ensure a representative sample. The questionnaire was structured to include sections addressing demographic information, the availability and use of technology tools, levels of proficiency, and challenges encountered in technology integration. The instrument underwent validation from two experts in the field of Technology and Vocational Education at the University of Lagos. Its reliability was confirmed through a Cronbach Alpha test, yielding a score of 0.87, indicating a high level of internal consistency. Data analysis involved calculating means and standard deviations, with a decision threshold set at a mean value of 2.5 to determine the acceptance of responses.

5.3 Conclusion

The study aimed to assess the proficiency levels of technical college teachers in using technology tools and resources to enhance their job performance. The findings reveal a varied landscape of technological integration among educators. While many teachers demonstrate proficiency in utilizing basic educational tools and platforms, challenges arise with more advanced technologies, which are critical for fostering innovative teaching practices. A positive correlation was established between technology proficiency and job performance, suggesting that enhancing teachers' skills directly influences their effectiveness in the classroom.

However, significant barriers persist, including limited access to modern technological resources, inadequate technical support, and outdated infrastructure. These challenges hinder teachers from fully utilizing available tools, ultimately affecting student learning outcomes. Therefore, it is evident that while the potential for improvement exists, concerted efforts are necessary to address these gaps effectively.

5.4 Implications of the Findings

The implications of this study are multifaceted. Firstly, the findings highlight the urgent need for educational institutions to revaluate and enhance their technology training programs for teachers. It is crucial to recognize that technology integration is not merely about access to tools but involves a comprehensive understanding of how these tools can be effectively utilized to enrich teaching and learning experiences. The study suggests that institutions should prioritize continuous professional development, enabling teachers to stay abreast of emerging technologies and pedagogical strategies.

Moreover, fostering collaboration between educational institutions and technology providers is essential to ensure teachers have access to up-to-date resources and training. Institutions must also advocate for improved infrastructure and support services, as these elements are vital for facilitating effective technology integration. By addressing these implications, stakeholders can contribute to developing a workforce of educators who are not only

technologically proficient but also equipped to meet the evolving demands of the education sector.

5.5 Recommendations

Based on the findings from this study, the following recommendations are proposed to improve the technological proficiency of technical college teachers:

1. Educational institutions should prioritize making a broader range of technology tools available, including interactive whiteboards, online learning platforms, and more advanced technologies such as 3D printers and augmented/virtual reality devices. Expanding access to these resources will enable teachers to better integrate modern tools into their teaching.
2. Institutions should provide targeted, practical training that helps teachers become more proficient in using technology tools like educational software, multimedia, and interactive platforms. Special attention should be given to areas where teachers have shown moderate proficiency, such as troubleshooting technology issues and using collaborative tools, to ensure they can confidently apply these tools in the classroom.
3. To maximize the positive impact of technology proficiency on job performance, schools should ensure adequate technical support is available. This support will help teachers efficiently manage lesson plans and resources while leveraging technology to engage students and improve teaching outcomes.
4. Schools must focus on addressing the challenges posed by limited access to modern technology and outdated infrastructure. Regular updates to technology tools and systems, as well as improving technical support services, will help teachers integrate technology more effectively into their day-to-day teaching practices.
5. Institutions should invest in professional development programs that offer continuous training on the use of educational technologies. Additionally, creating mentorship programs where experienced teachers guide others in technology use can help develop a supportive environment that fosters growth and innovation.
7. Schools should encourage teachers to explore and experiment with new technologies and teaching methods. By providing opportunities to test new approaches and receive feedback, institutions can help teachers create more engaging and interactive learning experiences for their students.

8. Institutions should develop mechanisms to regularly collect feedback from teachers about the challenges they encounter in using technology. This feedback will allow schools to adapt and improve their support services, ensuring that teachers have the tools and assistance needed to effectively integrate technology into their teaching.

5.6 Suggestions for Further Studies

Future research could focus on several areas to further explore the impact of technology integration in education:

1. **Investigate the Role of Digital Literacy**: Future studies could examine how the inclusion of digital literacy components within teacher training programs influences their readiness for modern work environments and identify best practices for integrating these components into the curriculum.

2. **Assess the Effectiveness of Different Mentorship Models**: Research could explore various mentorship approaches within technology training programs to determine which models most effectively support teacher development, motivation, and overall job performance.

3. **Explore Resource Allocation Challenges**: Further studies could delve into the specific challenges related to resource allocation in technical colleges and explore strategies to overcome these limitations, ultimately improving the implementation and effectiveness of technology integration initiatives.

4. **Evaluate Student Perspectives**: Conducting research that focuses on students' perceptions of technology use in their learning environment could provide valuable insights into how effective technology integration affects their educational experience and engagement.

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UNIVERSITY OF LAGOS

FACULTY OF EDUCATION

DEPARTMENT OF TECHNOLOGY AND VOCATIONAL EDUCATION

A Research Questionnaire on Assessment of Technical College Teachers' Proficiency in Using Technology Tools and Resources to Improve Job Performance

Dear Participant,

I am conducting a study to assess the proficiency of technical college teachers in using technology tools and resources to improve job performance. Your participation is highly valued, and we appreciate your time in completing this questionnaire. All responses will be kept confidential and will be used for research purposes only.

Thank you for your cooperation.

Instructions:
Please answer all questions to the best of your ability. For multiple-choice questions, select the option that best describes your situation or opinion, using this scale, where **Strongly Agree - (SA) , Agree - (A), Disagree - (D), Strongly Disagree - (SD)**

Section A: Demographic Information

2. Age:
☐ Under 20 ☐ 20-29 ☐ 30-39 ☐ 40-49 ☐ More than 50 years

3. Gender:
☐ Male ☐ Female

4. Educational Qualification:

☐ Diploma ☐ Bachelor's Degree ☐ Master's Degree ☐ Doctorate

☐ Other (Please specify): _____

5. Years of Teaching Experience:

☐ Less than 1 year ☐ 1-3 years ☐ 4-6 years ☐ 7-10 years ☐ More than 10 years

6. Department:

☐ Electrical Engineering ☐ Mechanical Engineering ☐ Information Technology

☐ Business Administration ☐ Other (Please specify): _____

Section B:

Research Question 1: What technology tools and resources are currently available for use by teachers in technical colleges?

S/N	**Availability and Use of Technology Tools and Resources**	Strongly Agree (SA)	Agree (A)	Disagree (D)	Strongly Disagree (SD)
1	Classroom is equipped with interactive whiteboards.				
2	Regular access to up-to-date computers and tablets.				
3	Educational software relevant to my subjects is available to me.				
4	Online learning platforms for assignments and assessments.				

5	Incorporate multimedia content (videos, audio) into my lessons.				
6	Simulation programs are used to demonstrate complex concepts in my classes.				
7	Access to digital libraries and resources for supplementary teaching materials.				
8	My institution provides adequate support for troubleshooting technology issues.				
9	I have access to collaborative tools (e.g., Google Classroom, Microsoft Teams) for student projects.				
10	I utilize social media platforms to engage with educational communities and resources.				

Section C:

Research Question 2: What is the current level of proficiency and performance of teachers in technical colleges in using these technology tools and resources?

S/N	**Self-Assessment of Proficiency in Using Various Technology Tools and Resources**	Strongly Agree (SA)	Agree (A)	Disagree (D)	Strongly Disagree (SD)
1	Confident using interactive whiteboards for teaching.				
2	Proficient in creating and using educational software for lesson planning.				
3	Comfortable managing and navigating online learning platforms.				
4	Effectively incorporate multimedia resources to enhance learning experiences.				
5	Skilled at using simulation programs to illustrate technical concepts.				
6	Adept at integrating digital libraries into my teaching materials.				
7	Proficient in using collaborative tools to facilitate group work.				
8	Confident in my ability to troubleshoot basic technology issues.				
9	Effectively use social media for educational purposes.				
10	Regularly update my skills to keep pace with new educational technologies.				

Section D:

Research Question 3: What is the relationship between teachers' proficiency in use of various technology tools and resources correlated with their job performance in technical colleges?

S/N	**Impact of Technology Proficiency on Job Performance**	Strongly Agree (SA)	Agree (A)	Disagree (D)	Strongly Disagree (SD)
1	Proficiency with technology enhances my ability to deliver engaging lessons.				
2	Technology integration improves student participation in my classes.				
3	Effectiveness as a teacher is positively influenced by my technology skills.				
4	Effective use of technology increases my overall job satisfaction.				
5	Technology proficiency helps me to better manage classroom activities.				
6	Using technology in teaching improves students' understanding of complex concepts.				
7	Technology tools contribute to more efficient lesson planning and execution.				
8	My ability to use technology effectively enhances my professional reputation.				

9	Technology integration aids in providing personalized learning experiences for students.				
10	Proficiency in technology positively impacts my interactions with students and colleagues.				

Section E:

Research Question 4: What are the challenges confronting technical college teachers in achieving proficiency with technology tools and resources?

S/N	**Challenges Faced in Integrating Technology into Teaching Practices**	Strongly Agree (SA)	Agree (A)	Disagree (D)	Strongly Disagree (SD)
1	Limited access to modern technology tools hinders my teaching effectiveness.				
2	Insufficient technical support affects my ability to integrate technology smoothly.				
3	I face challenges due to outdated technology or infrastructure.				
4	Resistance from students or colleagues to using new technology is a barrier.				
5	Inadequate training on new technologies impacts my proficiency.				

6	Limited access to digital content and resources affects my teaching practices.				
7	Lack of time for technology integration in the curriculum is a challenge.				
8	Financial constraints limit the acquisition of advanced technological tools.				
9	Institutional policies do not adequately support technology integration efforts.				
10	Cultural attitudes towards technology integration in education present obstacles.				

Section F:

Research Question 5: What strategies can be used to improve the proficiency of teachers in technical colleges in using technology tools and resources?

S/N	**Strategies for Improving Technology Proficiency**	Strongly Agree (SA)	Agree (A)	Disagree (D)	Strongly Disagree (SD)
1	Increased professional development opportunities on technology integration are needed.				

2	Establishing mentorship programs for technology use would be beneficial.				
3	More frequent updates and upgrades to technology tools are necessary.				
4	Collaboration with peers on technology use should be encouraged.				
5	Clear institutional policies supporting technology use should be developed.				
6	Providing additional technical support to address technology issues would be helpful.				
7	Access to a wider range of digital content and resources is essential for effective teaching.				
8	Creating a culture of innovation where teachers can experiment with new technologies is important.				
9	Offering incentives for teachers who excel in integrating technology into their teaching is beneficial.				
10	Regular feedback and evaluations on technology use should be implemented to drive continuous improvement.				