# Post Covid-19 and Technology Adoption Issues in Lagos State Secondary Schools

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## ABSTRACT

This is a comprehensive and well-structured research paper on the challenges and opportunities of technology adoption in Lagos State secondary schools post-COVID-19. The introduction effectively sets the stage by highlighting the global context, local impact, and specific challenges faced by Lagos State secondary schools. The statement of the problem, purpose of the study, and research questions are clearly defined and relevant to the topic. The methodology section outlines the quantitative research approach, the sample size, sampling technique, data collection method, and data analysis techniques. The data analysis section presents the findings in a clear and concise manner, using tables to summarize the results. The discussion section effectively interprets the findings, relating them to the existing literature and highlighting the implications for educational practices. The conclusion summarizes the key findings and provides a concise overview of the challenges and opportunities identified in the study. The recommendations section offers practical solutions to address the challenges and improve technology adoption in Lagos State secondary schools. Overall, this research paper demonstrates a strong understanding of the topic, employs a sound research methodology, and presents a comprehensive analysis of the challenges and opportunities of technology adoption in Lagos State secondary schools. The recommendations provided are practical and actionable, and if implemented, could significantly improve the quality of education in the state.

Keywords: Post COVID-19, technology adoption

## 1. INTRODUCTION

The global COVID-19 pandemic has significantly disrupted educational systems worldwide, compelling a swift transition to digital learning solutions (UNESCO, 2020). In Lagos State, Nigeria, the impact has been profound, particularly among secondary schools (Akinrinola, 2021). This shift towards technology-based education has illuminated several critical challenges and issues regarding technology adoption in these institutions.

A report by the Nigeria Bureau of Statistics (2021), reiterated that, Lagos State, known for its bustling economy and diverse population, faces unique educational challenges. Despite being one of the most economically vibrant states in Nigeria, the report pinned down a notable disparity in the availability and accessibility of technological resources across its secondary schools. This same view was shared by Adeoye (2020), he noted that the pandemic has exacerbated these disparities, revealing significant gaps in infrastructure, teacher preparedness, and student access to digital learning tools. Further to the above, a major issue worthy of attention is the uneven distribution of technological infrastructure. Many public secondary schools in Lagos State lack the necessary hardware, such as computers and internet connectivity, to facilitate effective online learning. This digital divide is so pronounced that schools often struggle with basic educational resources, let alone advanced technological tools (Adeoye, 2020).
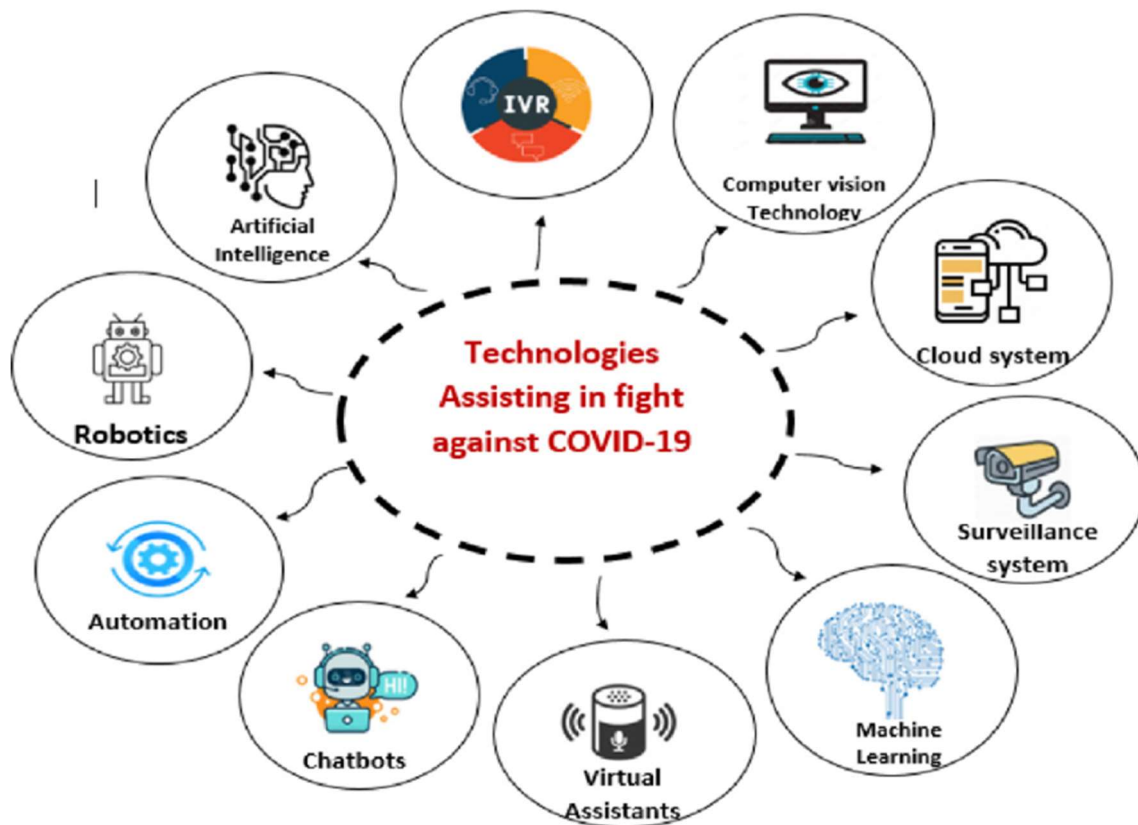


Fig 1: Scalable Technologies Adopted Post COVID
Source: https://www.researchgate.net/figure/Schematic-representation-of-various-technologies-assisting-in-COVID-19-pandemic_fig4_358644911

Teacher preparedness and proficiency in using digital platforms also pose significant challenges. It was noted that the sudden shift to online teaching required educators to adapt quickly to new technologies, often with little to no training. Ogundele (2021), observed that many teachers in Lagos State secondary schools were not adequately prepared for this transition, resulting in inconsistent delivery of online education and a steep learning curve for both educators and students. The socio-economic status of students was another factor that played a crucial role in technology adoption. Students from lower-income families in most case do not have access to personal computers or reliable internet at home, hindering their ability to participate fully in online classes. This further widen educational inequalities and affects students' overall learning experiences and outcomes. This research paper therefore aims to explore the various challenges faced by secondary schools in Lagos state in the adoption of technology in teaching and learning in the post COVID-19 era.

## 1.1 Statement of the Problem

The COVID-19 pandemic, no doubt, accelerated the global shift towards digital education; it has also exposed and intensified existing disparities in technological infrastructure and access. During the pandemic, despite the state's economic vitality, many secondary schools remain ill-equipped to meet the demands of modern, technology-driven education. The primary problem of these schools lies in the inadequate technological infrastructure. Many schools lack essential digital tools such as computers, reliable internet access, and interactive learning platforms. This deficiency hampered the ability of these schools to provide continuous and effective education during and after the pandemic. Other notable issues of concern include, substantial gap in the digital literacy and preparedness of teachers; socio-economic disparities among the students.

Addressing these issues is critical for ensuring that students in Lagos State secondary schools have equitable access to quality education in the post-COVID-19 era. This research therefore, aim to identify and analyze the specific challenges of technology adoption in Lagos State secondary schools, providing a comprehensive understanding of the infrastructural, educational, and socio-economic factors at play. By doing so, the study seeks to inform policy recommendations and practical solutions to enhance digital learning environments and bridge the educational divide in Lagos State.

## 1.2 Purpose of the Study

The purpose of this study is to investigate the challenges and issues related to the adoption of technology in some selected secondary schools in Lagos State following the COVID-19 pandemic. Specifically, this research will identify the extent of technology adoption in Lagos State secondary schools post-COVID-19.

It will amongst other things examine the barriers and challenges faced by educators and students in integrating technology into the educational process. It will analyze the impact of COVID-19 on the technological infrastructure and readiness of secondary schools in Lagos State. Also, it will assess the effectiveness of the strategies employed by schools to overcome technology adoption issues, and provide recommendations for improving technology adoption and integration in the educational system of Lagos State.

## Significance of the Study

The significance of this study lies in its potential to provide valuable insights and practical implications for various stakeholders in the educational sector of Lagos State. Specifically, this research is significant for the following reasons:

**Educational Policy Development:** The findings of this study will inform policymakers about the current state of technology adoption in secondary schools, highlighting gaps and areas needing intervention. This can guide the formulation of policies aimed at improving technological infrastructure and integration in the educational system.

**School Administration and Management:** School administrators and management teams will gain a better understanding of the challenges their institutions face in adopting technology. This knowledge can help them implement more effective strategies and allocate resources more efficiently to enhance technology use in teaching and learning.

**Teacher Training and Professional Development:** By identifying specific barriers to technology adoption, this study can inform teacher training programs, ensuring that educators are better equipped with the necessary skills and knowledge to integrate technology into their teaching practices effectively.

**Student Learning Outcomes:** Understanding the impact of technology adoption on student learning can lead to improvements in educational practices, ultimately enhancing student engagement, learning experiences, and academic performance.

**Parental and Community Involvement:** The study can raise awareness among parents and the broader community about the importance of supporting technological advancements in schools, fostering a collaborative approach to overcoming adoption challenges. Future Research: This research will contribute to the academic literature on technology adoption in education, particularly in the context of post-COVID-19 recovery. It can serve as a reference point for future studies and help build a body of knowledge that supports continuous improvement in educational technology integration. Economic and Social Development: By addressing technology adoption issues, the study can have broader socio-economic implications, as improved education through effective technology use can lead to a more skilled and adaptable workforce, driving economic growth and development in Lagos State. Overall, this study aims to provide a comprehensive understanding of the post-COVID-19 technology adoption landscape in Lagos State secondary schools, offering actionable insights to enhance the quality and effectiveness of education in the state

## Research Questions

1. What is the current state of technology adoption in secondary schools in Lagos State following the COVID-19 pandemic?
2. Are there primary barriers and challenges faced by educators and students in the adoption of technology in Lagos State secondary schools post-COVID-19?
3. Does the adoption of technology impacted the teaching and learning experiences in Lagos State secondary schools since the COVID-19 pandemic

## 2. METHODOLOGY

The methodology for this study is quantitative research methods.  The population sample for this is made 486 which comprises of 374 students and 112 teachers from six secondary schools in Lagos state, serving as a representative of the six educational districts in Lagos State.  A stratified random sampling technique was used to ensure proper representation from various schools. Data collection for the study was done using structured questionnaires administered to the samples.  The research instrument assessed the extent of technology usage, types of technologies adopted, perceived barriers, and the impact of technology on teaching and learning which this study sees as the issues concerning COVID-19 and technology adoption in Lagos State Secondary Schools. Data collected were analyzed using simple percentage method. To ensure content validity, questionnaire adopted for the study were reviewed by experts in educational technology and using Chronbach Alpha, the questionnaire was found to be reliable with 0.85 index at .05 level of significance.

## 3. PRESENTATION OF RESULTS

The data collected from the were analyzed according to the research questions;

**Research Question One:  What is the current state of technology adoption in secondary schools in Lagos State following the COVID-19 pandemic?**

**Table 1: Current state of Technology Adoption after COVID-19 Pandemic**

| S/No | Questions | A | % | D | % |
|------|-----------|-----|-----|-----|-----|
| 1 | Technology tools  are currently being utilized in Lagos State secondary schools for educational purposes | 145 | 30 | 341 | 70 |
| 2 | Students are proficient in using the adopted technologies for teaching and learning activities | 194 | 40 | 292 | 60 |
| 3 | Technological infrastructure (e.g., internet access, hardware, software) are available in Lagos State secondary schools and in good quantity | 165 | 34 | 321 | 66 |
| 4 | Technological tools form part of  the curriculum and daily classroom activities in Lagos State secondary schools | 194 | 40 | 292 | 60 |

From Table 1, a significant majority of respondents (70%) disagree with the statement that technology tools are currently being utilized in Lagos State secondary schools for educational purposes. This suggests that most respondents believe that technology is not being effectively integrated into the educational activities of these schools.

More respondents (60%) disagree with the statement that students are proficient in using the adopted technologies for teaching and learning activities. This indicates that there is a perceived lack of student proficiency in using technology for educational purposes.. The majority of respondents (66%) disagree with the statement that technological infrastructure is available in Lagos State secondary schools and in good quantity. This suggests that there are significant gaps in the availability and quality of technological infrastructure in these schools.

A majority of respondents (60%) disagree with the statement that technological tools form part of the curriculum and daily classroom activities. This implies that technological tools are not regularly included in the curriculum and daily activities in these schools. From the responses, it can be inferred that there is a general consensus among the respondents that technology integration in Lagos State secondary schools is inadequate.

The majority believe that:
- Technology tools are not being effectively utilized for educational purposes.
- Students lack proficiency in using the adopted technologies.
- Technological infrastructure is insufficient in terms of availability and quantity.
- Technological tools are not consistently incorporated into the curriculum and daily classroom activities.

These responses highlight the challenges faced by Lagos State secondary schools in terms of technology adoption and usage for educational enhancement.

**Research Question 2**  Are there primary barriers and challenges faced by educators and students in the adoption of technology in Lagos State secondary schools post-COVID-19?

**Table 2: Barriers and Challenges in the Adoption of Technology after COVID-19.**

| S/No | Questions | A | % | D | % |
|------|-----------|-----|-----|-----|-----|
| 1 | Lack of technological infrastructures (e.g., lack of internet connectivity, inadequate hardware) hinder technology adoption in Lagos State secondary schools | 437 | 90 | 49 | 10 |
| 2 | Teachers face pedagogical challenges when integrating technology into their teaching practices | 369 | 76 | 117 | 24 |
| 3 | Financial constraints affect the ability of schools to adopt and utilize technology in Lagos State secondary schools | 388 | 80 | 98 | 20 |
| 4 | Lack of technical and support hinder educators in the adoption of technological tools for teaching and learning in Lagos state secondary schools | 437 | 90 | 49 | 10 |

Inference from the figures available in Table 2, an overwhelming majority (90%) agrees that the lack of technological infrastructure significantly hinders technology adoption. This indicates that issues such as insufficient internet connectivity and inadequate hardware are major barriers.

A substantial majority (76%) agree that teachers face pedagogical challenges when integrating technology into their teaching practices. This suggests that many teachers may lack the necessary skills, training, or resources to effectively use technology in their teaching. A large majority (80%) agree that financial constraints are a significant factor affecting the ability of schools to adopt and utilize technology. This indicates that limited funding is a major obstacle to technology adoption. An overwhelming majority (90%) agree that the lack of technical support hinders educators in adopting technological tools. This indicates that there is a significant need for technical assistance and support to facilitate the use of technology in education. From the responses, it is clear that there are several major barriers to the adoption of technology in Lagos State secondary schools. The primary challenges identified include:

**Research Question 3: Does the adoption of technology impacted the teaching and learning experiences in Lagos State secondary schools since the COVID-19 pandemic**

**Table 3: Impact of Adoption of Technology on Teaching and Learning after COVID-19**

| S/No | Questions | A | % | D | % |
|------|-----------|-----|-----|-----|-----|
| 1 | Adoption of technology positively affect teaching practices and methodologies in Lagos State secondary schools since the COVID-19 pandemic | 408 | 84 | 78 | 16 |
| 2 | Use of technology positively influence teaching and learning outcome of students in Lagos State secondary | 388 | 80 | 98 | 20 |
| 3 | Use of technological tools and resources have been commonly adopted in Lagos State secondary schools, after the pandemic | 321 | 66 | 165 | 34 |
| 4 | There are challenges and opportunities in the integration of technology by teachers in Lagos State secondary schools since the COVID-19 pandemic | 330 | 68 | 156 | 32 |

Data from the Table 3 show that a significant majority (84%) agree that the adoption of technology has positively affected teaching practices and methodologies since the COVID-19 pandemic. This suggests that most respondents believe that technology has had a beneficial impact on how teaching is conducted. A large majority (80%) agree that the use of technology positively influences teaching and learning outcomes. This indicates that most respondents perceive a positive correlation between technology use and student performance. A majority (66%) agree that technological tools and resources have been commonly adopted in Lagos State secondary schools after the pandemic. However, with 34% disagreeing, it suggests that while there is a notable adoption of technology, there is still a significant portion of schools or respondents who feel that it is not yet widespread. A majority (68%) agree that there are both challenges and opportunities in the integration of technology by teachers since the pandemic. This indicates that while there have been positive aspects to technology integration, significant challenges remain.

## 4. DISCUSSION OF FINDINGS

Findings from Tables 1, 2 and 3 shows a significant majority (70%) of respondents believe that technology tools are not being effectively utilized in Lagos State secondary schools for educational purposes. More than half (60%) of respondents felt that students lack the proficiency in using the adopted technologies for teaching and learning activities. The majority (66%) of respondents indicate that technological infrastructure is insufficient in terms of availability and quantity. A majority (60%) also believe that technological tools are not regularly included in the curriculum and daily classroom activities. An overwhelming majority (90%) agree that the lack of technological infrastructure (e.g., internet connectivity and hardware) significantly hinders technology adoption. This is in agreement with Adeoye (2020) who claimed that the digital divide that exists in schools is so pronounced that schools often struggle with basic educational resources, let alone advanced technological tools.

A substantial majority (76%) agree that teachers face pedagogical challenges in integrating technology into their teaching practices. A large majority (80%) agree that financial constraints are a major factor affecting the ability of schools to adopt and utilize technology. An overwhelming majority (90%) agree that the lack of technical support hinders educators in adopting technological tools. This is reflected in the submission of Ogundele (2021) who observed that many teachers in Lagos State secondary schools were not adequately prepared for the transition from manual teaching to adopting technology completely, resulting in inconsistent delivery of online education and a steep learning curve for both educators and students.

A significant majority (84%) agree that technology adoption has positively affected teaching practices and methodologies since the COVID-19 pandemic. A large majority (80%) agree that technology use positively influences teaching and learning outcomes. A majority (66%) believe that technological tools and resources have been commonly adopted in Lagos State secondary schools after the pandemic, though 34% disagree, indicating uneven adoption. A majority (68%) agree that there are both challenges and opportunities in the integration of technology by teachers since the pandemic. There is a general consensus that technology integration in Lagos State secondary schools is inadequate, facing major barriers such as insufficient infrastructure, financial constraints, pedagogical challenges, and lack of technical support. Despite these challenges, there have been positive impacts on teaching practices and learning outcomes since the COVID-19 pandemic, with increased adoption of technological tools and resources. However, significant efforts are needed to overcome the persistent barriers to fully realize the benefits of technology in education.

## 5. CONCLUSION

The findings from the analysis of tables 1-3 highlight significant challenges in the integration and utilization of technology in Lagos State secondary schools. The majority of respondents indicate that technology tools are not being effectively utilized for educational purposes, students lack proficiency in using these technologies, and the technological infrastructure is insufficient. Furthermore, technological tools are not consistently included in the curriculum, and there are substantial barriers such as inadequate infrastructure, financial constraints, pedagogical challenges, and lack of technical support.

Despite these challenges, there have been positive impacts on teaching practices and learning outcomes since the COVID-19 pandemic, with increased adoption of technological tools and resources. This indicates that while the current state of technology integration is inadequate, there is potential for improvement and significant benefits to be realized with concerted efforts to address the existing barriers.

## 6. RECOMMENDATIONS

Based on the findings, the following recommendations are proposed to enhance technology integration and utilization in Lagos State secondary schools:
1.  Enhance Technological Infrastructure: Investment in Infrastructure: The government and stakeholders should prioritize investments in technological infrastructure, including internet connectivity, hardware, and software, to ensure that schools are adequately equipped.
    Regular Maintenance and Upgrades: Implement a system for the regular maintenance and upgrading of technological tools and infrastructure to keep them up-to-date and functional.
2   Improve Student Proficiency:  Technology Training Programs:  Develop and implement comprehensive technology training programs for students to enhance their proficiency and confidence in using technological tools for educational purposes.
    Incorporate Technology into the Curriculum: Ensure that technology is consistently integrated into the curriculum and daily classroom activities to provide students with regular exposure and practice.
3.  Support Teachers in Technology Integration:  Professional Development: Provide continuous professional development opportunities for teachers focused on integrating technology into their teaching practices. This should include training on pedagogical strategies, as well as technical skills. Technical Support Systems: Establish robust technical support systems to assist teachers in overcoming technical challenges and effectively using technological tools in their teaching.
4.  Address Financial Constraints:   Funding and Resources: Secure funding and resources from both governmental and private sectors to support the adoption and utilization of technology in schools. Explore partnerships with tech companies for donations or discounts on technological tools.
    Financial Planning: Develop financial plans and budgets that allocate sufficient resources for the sustainable integration of technology in schools.
5.  Leverage Post-Pandemic Momentum:    Build on Positive Impacts: Leverage the positive impacts of technology adoption during the COVID-19 pandemic to further promote its benefits and encourage continued use and integration.
    Monitor and Evaluate: Implement systems to monitor and evaluate the effectiveness of technology integration efforts, using feedback to make continuous improvements.

By addressing these recommendations, Lagos State secondary schools can overcome the current barriers and fully realize the benefits of technology in education, ultimately enhancing teaching practices and improving student learning outcomes.

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