School principals' implementation of Information and Communication Technology Policy in Lagos State secondary schools, Nigeria

by

Shobowale Aderonke Kemi

Submitted in fulfilment of the requirements for the degree

MASTER OF EDUCATION

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Department of Educational Management and Policy Studies

at the

Faculty of Education

UNIVERSITY OF PRETORIA

Supervisor: Prof Maitumeleng Nthontho

Co-Supervisor: Dr Nonjabulo Fortunate Madonda

2023

Declaration of Originality

I, Shobowale Aderonke Kemi (Student Number: 21668648), hereby declare that this study entitled **School principals' implementation of Information and Communication policy in Lagos State secondary schools, Nigeria,** which is submitted for the degree of Master of Education in the Department of Education Management and Policy Studies at the University of Pretoria has not previously been submitted by me for any other degree or examination at this university or at any other university. It is my own work, and information from other sources used are duly acknowledged by appropriate references.

Shobowale Aderonke Kemi

Date: 15 June 2023

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INVESTIGATOR	Mrs Aderonke Kemi Shobowale
DEPARTMENT	Education Management and Policy Studies
APPROVAL TO COMMENCE STUDY	09 November 2021
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This Ethics Clearance Certificate should be read in conjunction with the Integrated Declaration Form (D08) which specifies details regarding:

- Compliance with approved research protocol,
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- Informed consent/assent,
- Adverse experience or undue risk,
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Ethics Statement

The ethical standards listed above were adhered to in this dissertation. The ethical considerations upheld in the study are discussed in detail in Section 3.10.

Abstract

The study aimed to investigate how the secondary school principals in Lagos State implements the Information and Communication Technology (ICT) policy. The study provided an understanding of how the policy is implemented while making recommendations regarding the implementation processes. The policy implementation theory from the bottom-up approach viewpoint developed by Lipsky in 1980 was adopted as the theoretical framework for this study. This was considered applicable to this study because it provides a more feasible and dependable alternative to the top-down approach, which sees the government as the solitary player in policymaking. The study used a qualitative approach, while interpretivism was employed as a research paradigm. Eight school principals from Surulere and Mushin local governments in Lagos State were interviewed. This study used a computer-assisted qualitative data analysis software (CAQDAS) called Atlas ti version 9 to identify and code quotations which were further analysed and synthesised to form higher themes, some of which emerged to address the research questions.

The findings indicate that secondary school principals have a positive attitude towards ICT despite the odds involved in managing the implementation of ICT in their school environments. Results also revealed that they could not act as instructional leaders in implementing ICT in teaching and learning because of the unclarity of their roles in the policy guidebook. Lack of ICT equipment, poor internet network, limited financial support, poor maintenance, and poor implementation of government policies on ICT appeared as potential factors affecting the implementation of ICT in Lagos State secondary schools. Lastly, findings highlight possible strategies for addressing ICT policy implementation challenges in schools, such as shared vision, motivation of teachers and students, and consistent education and training.

Key words: Information and Communication Technology; ICT policy; policy development; policy implementation; school management, administration and leadership.

Abbreviations

ADIP	Asia-Pacific development information program
CERI	Centre for Educational Research and Innovation
CBT	Computer-based test
ICT	Information and communication technology
ICT4D	ICT for development
FMOE	Federal Ministry of Education
KPI's	Key performance indicators
NGO	Non-government organisations
NITDA	National Information Technology Development Agency
OECD	Organization for Economic Co-operation and Development
P1 - SA	Principal 1 from School A
P2 - SB	Principal 2 from School B
P3 - SC	Principal 3 from School C
P4 - SD	Principal 4 from School D
P5 - SE	Principal 5 from School E
P6 - SF	Principal 6 from School F
P7 - SG	Principal 7 from School G
P8 - SH	Principal 8 from School H
PTA	Parent Teacher Association

UNDP	United Nations development program
UNESCO	United Nations Educational, Scientific and Cultural Organization

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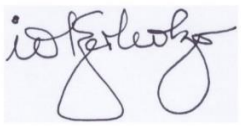
TO WHOM IT MAY CONCERN

This is to confirm that I have completed the language editing of the thesis **School principals' implementation of Information and Communication Technology policy in Lagos State secondary schools**, **Nigeria** by Shobowale Aderonke Kemi, submitted in fulfilment of the requirements for the degree Master of Education in the Department of Education Management and Policy Studies in the Faculty of Education at the University of Pretoria.

Yours faithfully



Isobet Oberholzer30

March 2023

Dedication

I dedicate this work to my understanding and supportive husband, Abayomi Oluwambe Shobowale, who gave me the privilege to pursue my academic ambition in life, and my adorable children Samuel, Daniel and Toyosi, as well as my parents, Hon. & Mrs. Adegoke, for their prayers and support throughout the course of my study.

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Glory to God Almighty for his enduring mercies; all things are possible in Him. Special appreciation to my parents, who planted this seed and for watering it from time to time.

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I am incredibly grateful to the University of Pretoria for allowing me to study at this great institution. Thank you for all the resources that were made available to me and that were of immense assistance to me throughout my study.

Special acknowledgement goes to the Lagos State Ministry of Education for permitting me to carry out this study.

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God bless you all.

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CHAPTER ONE

INTRODUCTION, RESEARCH PROBLEM AND METHODS

1.1 Introduction

Globally, the role of Information and Communication Technology (ICT) in all sectors of the economy, including the teaching and learning environment, has been considered indispensable (Jorgenson & Vu, 2016). The advancements in ICT have also propelled changes in pedagogy (Haßler, Major & Hennessy, 2016; Sinha & Bagarukayo, 2019). These changes range from the introduction of e-learning, virtual learning, and distance education, amongst others (Ifinedo, Saarela & Hämäläinen, 2019). Nevertheless, the efficient implementation of these emerging technologies into the teaching and learning system depends on having capable leaders and managers of ICT guided by sound policies (Haßler et al., 2016). The Organisation for Economic Co-operation and Development (OECD) (2017) in their studies also emphasised the need for a common understanding between stakeholders and policymakers for the effective implementation of ICT policies.

Nationwide, these perspectives have piqued the interest of governments at various levels and jurisdictions to develop ICT policies to improve the openness, access, availability, effectiveness, and efficiency of services in numerous fields of their economy, including the teaching and learning sector (Guvhu, 2018). For instance, the Hong Kong government launched the Empowering Learning and Teaching with Technology program to introduce ICT in schools (Hong Kong Education Bureau, 2012). The South African government also introduced an E-education policy in 2004 aimed at identifying shortages and proffering solutions to the technological problems in the education sector (Lekgothoane & Thaba-Nkadimene, 2019). Nigeria, as a developing country, also enacted the National Policy on Information and Communication Technologies (ICTs) in Education in April 2010, aimed towards providing quality education and global competitiveness (The Federal Ministry of Education (FMOE), 2019). The FMOE (2019), in its review of the national policy on ICTs in education, highlighted monitoring and evaluation, governance, human capital development, awareness and communication, research and development, infrastructure, and financing as its seven focal areas of policy

that is urgently needed for the modification of pedagogical activities and educational administration in Nigeria.

While ICT policies are becoming prevalent, and the inclusion thereof in secondary school educational settings is aimed towards improving the consistency, efficiency and efficacy of the learning process, it still remains quite constrained (Alenezi, 2015; Alenezi, 2017). For effective implementation of these policies, Schiller (2003) described the school principal as a significant driver of effective change in schools. However, Jita (2016) pointed out that the ICT vision policy lacked clarification on the school principals' roles in achieving the policy obligation, thus limiting its effective implementation. Quest (2014) also noted the non-identification of specific roles for school principals within the ICT policy structure as the major challenge in embedding technology into school practices. Therefore, investigating the insights of school principals' usage and inclusion of ICT policy in pedagogy may reveal gaps in policy implementation.

1.2 Statement of the research problem

Nigeria's ICT policy was introduced in 2010 and has been reviewed until 2019. Even though the policy implementation process is still ongoing, the school principals' ability to fully implement the ICT policy for education with the meagre resources and ICT tools provided by the government remains unclear and needs to be interrogated (Adeoye, 2015). A survey by the Federal Ministry of Education (2019) found that the majority of secondary schools in Nigeria were at the foundation level in terms of implementing ICT policy guidelines with their school principals and teachers embedding ICT differently in the school environment. Despite using the same ICT policy and working in similar socio-economic learning environments, the predicament of school principals implementing ICT policies differently still remains.

Furthermore, relatively limited research has been undertaken in Nigeria that directly looked at school principals' perspectives on implementing the ICT policy in pedagogic practices. Adeoye (2015) also suggested that evidence supporting the opinions of school principals concerning the implementation of ICT policy in the teaching and learning environment is not enough. The Covid-19 epidemic has compounded this need, which has caused countries to reconsider their ICT policy to keep up with rapid worldwide

changes. My study, therefore, focused on how school principals managed to implement information and communication technology policies in their schools. I also sought to understand their experiences and the strategies they used in implementing these ICT policies in education.

1.3 Purpose of the study

The purpose of this study comprised the study's aim and objectives, summarised below.

1.3.1 The study's aim

The aim of this study was to investigate how the secondary school principals implement the ICT policy in Lagos State, Nigeria.

1.3.2 The study objectives

In order to achieve the above aim, the following objectives guided the research process.

(a) To investigate the understanding of school principals' roles in implementing the ICT policy in Lagos State secondary schools.
(b) To establish the support given to school principals towards implementing ICT policies in Lagos State schools.
(c) To determine factors that influence the ICT policy implementation process in Lagos State secondary schools.
(d) To establish the apparent challenges school principals face during the implementation of ICT policy in Lagos State secondary schools.
(e) To identify strategies that can be used to improve the implementation of ICT policy.

1.4 Research questions

The research questions that guided the focus of my research comprised the main and subsidiary questions.

1.4.1 Main research question

How do school principals in Lagos State secondary schools implement the ICT policy?

1.4.2. Subsidiary questions

(a) How do school principals in Lagos State secondary schools understand their roles in implementing the ICT policy?
(b) What support do school principals in Lagos State secondary schools get to implement the ICT policy?
(c) What factors influence the ICT policy implementation process in Lagos State secondary schools?
(d) What are the apparent challenges school principals face during ICT policy implementation in Lagos State secondary schools?
(e) How do school principals in Lagos State secondary schools overcome the challenges they face in implementing the ICT policy in schools?

1.5 Rationale for the study

It is essential for 21st century school leaders to be technologically prepared to lead digital citizens to be globally competent (McLeod & Richardson, 2013). As a school administrator, I noticed that many school principals face difficulty in implementing the Information and Communication Technology (ICT) policy because there is not enough material stating their responsibilities towards ICT infusion in the learning environment. To buttress this point, Rivard (2010) noted that most schools find it challenging to understand the different policies and plans that are considered relevant to the effective implementation of ICT policy in the academic environment. Therefore, the rationale behind this study is to seek further understanding from school principals on ICT policy implementation.

In the literature, little attention is given to school principals regarding equipping them for their role as technology leaders (Redish & Chan, 2007), thereby making them technologically incompetent. Studies on ICT policy integration have majorly focused on teachers and their classroom practices, with little attention paid to the school principals to conform successfully to the constantly evolving ICT world (Leithwood, Harris, & Hopkins, 2008; Buabeng-Andoh & Issifu, 2015; Al Mofarreh, 2016; Alenezi, 2017), particularly in dealing with transformation impediments (Afshari, Bakar, Luan, Samah & Fooi, 2008). This study, therefore, sought to add to the body of knowledge by highlighting

and investigating the views/experiences of school principals on the ICT policy implementation in the teaching and learning environment in some selected schools. The study's findings are anticipated to contribute to bridging the technology gap by investigating secondary school principals' knowledge, perspectives, and practices on integrating ICTs for teaching and learning in Lagos State secondary schools.

1.6 Literature review

This section presents an overview of studies on secondary schools and ICT in education policy implementation in several developed and developing countries. The success and problems regarding integrating ICT policies into schools in developed and developing countries were explored with reference to Germany (Ottestad & Gudmundsdottir, 2018), Saudi Arabia (Suleiman, Yahya & Tukur, 2020), South Africa (Howie, 2010; Vandeyar, 2013; Lekgothoane & Thaba-Nkadimene, 2019) and Nigeria (Nwankwoala, 2014). Germany was used as an example of innovations occurring outside of Africa. The focus of this review of literature is the analysis of available studies on ICT policy implementation in schools, both locally and internationally, as it relates to this study.

1.6.1 Information and Communication Technology (ICT) defined

Information and Communication Technology (ICT) may be seen as an essential element in restructuring the school system from a global perspective (Flores & Derrington, 2018). ICT includes both stand-alone and online networked technologies, as well as those specialised in the teaching and learning environment (e.g., projectors) or utilised across educational contexts (e.g., educational video games) (Livingstone, 2012). The National ICT Policy for Education in Nigeria (FMOE, 2019) described ICT as the art and applied sciences which comprise data and information. This definition includes all equipment such as computers, programming, techniques, and concepts needed in the acquisition, encoding, stability, analysis, management, storage and retrieval of data and information.

Chowdhury (2019) pointed out that ICT has much potential to enable novel approaches that can improve school principals' and students' engagement. This merit has caused most governments to make significant investments in ICT with a high level of progress in implementing ICT policy (Hanafizadeh, Khosravi & Badie, 2019). As a result, ICT provides a vital basis for 21st century students, particularly for studying in an increasingly

challenging environment. However, in the context of developing nations, these outcomes are frequently not attained (Hanafizadeh et. al., 2019) and therefore are not explored to see how implementation might be improved. Thus, my study focused on understanding the intended outcomes of investing in ICT.

1.6.2 Development of the ICT policy

To effectively promote ICT in schools, school principals must be capable of developing a notion of sustainable technology usage that teachers can share. To support this argument, Yahya (2016) identified team teaching, shared planning time, shared decision-making, and chances to learn from colleagues as mechanisms that need to be developed for technology to be integrated into the everyday work of teachers. In a study on the role of school principals in harnessing the benefits of ICT policy in schools, Otto and Albion (2002) found that a school principal, being a decision-maker in the school, must be able to establish and formulate ICT objectives when it comes to technology integration. For these reasons, I was curious to uncover different ICT educational objectives that can be set to make the policy implementation process accessible.

1.6.3 ICT policy implementation

Many developing countries, including Nigeria, are revising their policy statements with much emphasis on 21st century knowledge and skills for lifelong students (Robberts, 2019). An analysis of policy implementation strategies indicates an effort to understand the correlation underlying the various characteristics that may influence policy implementation strengths or weaknesses (Chuayuk, 2006). For instance, Germany, in an attempt to sharpen its national educational policies, enacted the National Strategy for Education in a Digital World in 2014 with the aim of digitalising the field of educational plans and curricular development, continuing professional development for teachers, educational administration at all levels and a significant emphasis on developing digital skills for learning in all subjects (Ottestad & Gudmundsdottir, 2018).

The Nigerian National Policy on ICT in Education, reviewed in 2019, provides valuable insight into what all involved parties should expect from the implementation procedure to ensure that it contributes to the rapid transformation of teaching, learning, research, and administration. To effectively fulfil the policy objectives, the policy papers describe the

strategic plans, sub-strategies, operations, targets, executing agencies, deadlines, and key performance indicators (KPIs). Therefore, this study sought to establish the government's approach to developing the policy implementation guidelines.

1.6.3.1 ICT policy implementation in secondary schools

School principals and teachers throughout the world must be prepared not just for the 21st century classroom but also for the fourth industrial revolution and its difficulties (Battons, 2018). It becomes imperative that they have the necessary knowledge and abilities to alter and develop educational institutions and their digital citizens (Raman, Thannimalai & Ismail, 2019). According to Joy and Srihari (2015), the aim of ICT policy in secondary education is to educate students to be fully engaged in the development of a globalised society, therefore contributing to the nation's economic growth.

Therefore, it becomes a necessity for the government and policymakers to improve secondary education, mainly for the development of productive human resources (Evoh, 2007). Adeosun (2010), in his study on quality basic education development in Nigeria, mentioned the SchoolNet Nigeria project, Education Trust Fund, Computers in Schools project, and the One Laptop per Child project as some of the initiatives implemented by the Nigerian government towards ICT integration in secondary schools, most of which are driven by private enterprises. Despite all these, there is inadequate data-based evidence concerning how the policy is implemented in classrooms. Through this study, I was able to find out if these initiatives are still being implemented in secondary schools and the roles played by school principals in the implementation process.

1.6.3.2 Implementation design and process

One of the vital enabler components of the implementation process is a well-planned and organised implementation procedure (Amhag, 2017). An implementation policy must be designed to identify the extant and evolving needs and expectations for implementation and a strategy for assessing, evaluating, and collectively implementing change (Tearle, 2004). Tearle further pointed out that the process of implementing ICT policies should include a versatile and comprehensive blueprint accounting for all dimensions of ICT integration, taking into consideration time, operational awareness, and communication for relevant parties. To successfully incorporate ICT, the practical element of the

instructional setting must also be acknowledged. In other words, the instructional environment must be virtual and physical (Amhag, 2014). Marín, Salinas and De Benito (2014) established that giving an integrative feedback loop is a fundamental concern for ICT in the teaching and learning contexts, most especially in the secondary school settings.

1.6.3.3 Monitoring and evaluation of the ICT policy implementation process

The Federal Ministry of Education has recognised monitoring and evaluation as a genuine instrument in ICT in education for policy implementation tracking, effective use of resources, and enforcing the National Policy on ICT in Education in Nigeria (FMOE, 2019). According to Leithwood, Steinbach and Jantzi (2002) and Martin (2015), these relationships helped the school achieve its shared goals while increasing its sense of efficacy. It is therefore essential for school principals to acquire or encourage collaboration with their staff to thoroughly screen and evaluate ICT implementation in schools (Quest, 2014). The Nigeria ICT Policy in Education (2018) also saddles the school principal and other heads of institutions with the responsibility of carrying out an impact assessment of the policy. As a result, school principals should be aware of the timescale for technology integration and participate in the strategic plan for school monitoring and assessment. This study, therefore, sought how monitoring and evaluation aid the implementation process.

1.6.3.4 Factors affecting ICT policy implementation in schools

Despite empirical evidence highlighting the importance of ICT policy implementation in schools, school principals continue to encounter several barriers that affects its effectiveness and efficacy. Totolo (2011) identified time as the primary constraint school principals experience while carrying out their tasks. She further justified it in terms of the curriculum, which is overburdening, coupled with examinations and a shortage of resources, all of which can be time-consuming. Learning modern technologies and incorporating them into teaching and learning activities require time (Carlson & Gadio, 2002; Day & Sachs, 2004; Buckenmeyer, 2005; Keengwe, Pearson & Smart, 2009). Various scholars have been able to identify other issues such as the absence of a clear online syllabus, poor infrastructures and raw materials, miscommunications, cultural

differences, high cost of implementation, inadequate ICT knowledge and skills, and negative attitudes (Afshari et al., 2008; Quest, 2014; Chris, 2015). This study helped me to identify the barriers school principals encounter while implementing ICT policy in secondary schools.

1.6.4 School principals' challenges in implementing ICT policy in schools

It is crucial to note that a school principal's primary duty is to play a significant role in implementing ICT policies in the teaching and learning environment. The school principal as the head of the school must make some challenging choices to improve the learning environment (Afshari et al., 2008). According to Ogachi (2014), school principals play an essential key role in the deployment of ICT in education policies at school since they are in a position to promote the incorporation of technology in schools. In addition, he explained that school principals' abilities and attitudes regarding ICT tools have an impact on ICT policy implementation in secondary schools. As a result, it is projected that school principals will encounter several challenges individually and at school. In this context, Albugami and Ahmed (2015), in their qualitative study of ICT directors, school leaders, and teachers, discovered the need for policymakers and school principals to be fully prepared to overcome many constraints when integrating technology into Nigeria's education system.

Papaioannou and Charalambous (2011) also pointed out that school principals are happy to carry out their duties by following directions and advancements imposed by the ministry of education. However, the requirement to devote pivotal moments integrating these new technologies bothers them in this unique technical ICT atmosphere. Several studies have also found that many principals are either not actively involved in its implementation or lack significant expertise that can help with its implementation (Makhanu & Kamper, 2012; Mingaine, 2013).

Financial problems, poor teacher ICT skills, irregular power supply, and the unavailability of ICT facilities were all identified by Hennessey (2010) as barriers to effective technological development in schools in Africa. Khan, Hasan and Clement (2012) in their study also pointed out organisational issues, information quality, and methodological factors as variables that can facilitate ICT implementation in schools. Other scholars

highlighted the attitude of teachers and students towards the innovation process as critical factors that affect the school principals towards enacting the ICT policy implementation in their schools (Makhanu, 2010; Mingaine, 2013). Thus, I sought to elaborate further on the challenges faced by Lagos state secondary school principals in Nigeria while implementing ICT policy in their schools.

1.6.5 Strategies school principals use to overcome the ICT implementation challenges

Many researchers have identified the school principal as a major determinant of ICT policy implementation in secondary schools (Makhanu & Kamper, 2012; Mingaine, 2013). School principals as technology leaders must be able to manage change and facilitate the adoption and usage of technology in their schools. Boit, Menjo and Kimutai (2012) pointed out that school principals must be fully engaged in the application of new ICT-assisted programs to motivate school students and teachers. Studies by Foskett and Lumby, 2003; Everard, Morris, and Wilson (2004) and Van Niekerk (2009) also found that school principals must continually push teachers to execute ICT policies. School principals that actively provide timely assistance and motivate students, teachers, and other school personnel to embrace technology deployment influence the effectiveness of ICT implementation in their schools (Makhanu, 2010).

In support of this, the literature points out that well-informed school principals with positive perceptions of ICT tend to give ICT policy integration a chance in their schools (Akbaba-Altun, 2006; Kalake, 2007). In contrast, teachers can be demotivated due to unfavourable remarks and attitudes from school leaders and a lack of understanding. Low motivation, according to Steyn (2004) and Van Niekerk (2009), can degrade and obstruct the achievement of ICT goals and development prospects. Thus, to effectively deploy ICT in schools, school principals must have the appropriate combination of expertise and enthusiasm. This study went further by identifying the various techniques school principals used to ensure that ICT policies are implemented efficiently in their schools.

1.7 Theoretical framework

I used the policy implementation theory from the bottom-up approach viewpoint developed by Lipsky in 1980 to examine ICT policy implementation by school principals

in Lagos State secondary schools. The bottom-up approach, according to Lipsky (1980), is characterised by its inclusion of street-level bureaucrats as policymakers. This can be attributed to the fact that their interactions with the individuals they manage will help them to have a more comprehensive insight into their needs (Hill & Hupe, 2014). The street-level bureaucrats in this study include school principals and teachers. School principals, for example, are in a better position to design mechanisms to satisfy the requirements of the entire school. The bottom-up approach covers the entire process of defining issues, designing and implementing policies from scratch, and then spreading laterally and beyond to the top. In this approach, the school principal as a bureaucrat, is involved in the decision-making of the policy, and thus will be able to formulate procedures and strategies that can assist in overcoming challenges, thereby resulting in a productive implementation process.

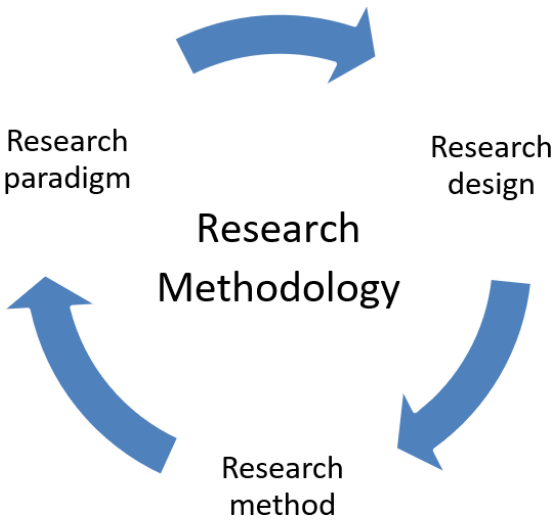
To fully understand school principals' implementation of ICT policy in secondary schools, the bottom-up approach is applicable to this study because it provides a more feasible and dependable alternative to the top-down approach, which sees the government as the solitary player in policymaking (Pülzl & Treib, 2007). To support this argument, DeLeon and DeLeon (2002) pointed out that whereas top-downers explicitly describe the aim and strive to identify failure or success, bottom-uppers may tamper with the implementation and advocate a policy that would at least partially accomplish the goal. The bottom-uppers, in other words, find and explain the degree of policy success with respect to the policy aim.

I decided to be guided by this theory because it argues for some factors which mainly determine the successfulness of the implementation process such as the involvement of school principals in the design of the policy standards and objectives, policy resources, and target group behaviours, amongst other factors. As a result, implementation is seen as a mechanism and outcome that incorporate decisions and activities required to put an authorised decision into effect in accordance with the law's objective (Paudel, 2009). In this study, I used this perspective to investigate how each participant view and perform their independent roles in ICT policy implementation in secondary schools.

1.8 Research methodology

The research paradigm, research approach, and research method are three components that are essential to the research process (Creswell, 2014:5). In attempting to carry out this study, I primarily considered the epistemological worldviews and presuppositions (research paradigm) on which I based my study, the research approach that is consistent with this worldview, and the research design, which is the particular method (procedures) that I used to put the approach into action (Creswell, 2014:5) and Figure 1.1 below illustrate the whole process.

Figure 1.1: Research methodology



Source: Researcher

1.8.1 Research paradigm

The interpretivist paradigm, which contends that there is no such thing as reality or truth and that reality is instead created by human interaction, contains the presumption on which my study was founded (Grix, 2018). My ontological and epistemological presumptions are based on the idea that the world we study is populated by humans, each of whom has their own ideas, meanings, and interpretations of an event, leading to a range of perspectives on the event. I chose this paradigm because it allowed participants to express their viewpoints, knowledge, and views about the issue under

investigation while also ensuring the objectivity of the study. Besides that, I believed that instead of simply observing and explaining people's worldviews and perceptions, I might learn a great deal about the social world by striving to grasp and make sense of their behaviour, views, and meanings.

1.8.2 Research approach

This study adopted a qualitative research approach. I used a qualitative research approach because I wanted to examine and understand the interpretation of participants in the research attributed to personal and societal events. Using a qualitative research approach also helped me better understand the school principals' experiences as they relate to the implementation of ICT policies, that is, how they perceive the policy and interact with their social environment, which helped me better understand the research problem. I also considered the qualitative research approach because I had limited understanding of how school principals implement ICT policies in their schools, and I knew the participants would be able to use words to explain their experiences, rather than a quantitative approach that collects data using figures (Du Plooy-Celliers, Davis, & Bezuidenhout, 2014).

1.8.3 Research design

The research design is the strategy that guided the collection, analysis, and interpretation of data for my study in order to respond to the research question (McMillan & Schumacher, 2014). I employed a case study design which is one of the designs under a qualitative research approach. It is a design that demonstrates a thorough examination of a specific research issue in relation to its practical setting (Gay, Mills & Airasian, 2009). What informed my choice of study is the fact that my study focused on human experiences as it examined the real-life justification of ICT policies in Lagos State secondary schools. In addition, the case study technique has also been highlighted as one of the social science research strategies used to examine policy implementation (Yin, 2012).

As a result, the case study research design enabled me to extensively evaluate the data within a specific context while concentrating on a limited number of people or a small

geographical location (Zainal, 2007). The case study design also gave a one-of-a-kind example of actual people in real settings (Cohen, Manion & Morrison, 2002).

1.9 Sampling technique

A sample is a portion that represents a whole. To achieve this study's aim and objective, I employed purposive sampling to select the school principals. Guest, Namey and Mitchell (2013) described purposive sampling as a technique in which the researcher selects study participants based on their role in the investigations. In this study, I used purposive sampling to select certain participants who exemplified some traits or behaviours relevant to my study (De Vos, 2012). I chose this approach because it allowed me to choose individuals with comparable experience who could offer in-depth information on how ICT policy is implemented in their schools.

I purposively selected eight secondary schools based on the fact that:

(a) There is an ICT laboratory at the school.
(b) It must have used ICT in its teaching and learning operations.
(c) The school principal must have at least three years of continuous experience at the same school and must show interest in engaging in the study freely.

This process eliminated biases and ensured that each school principal had an equal opportunity of being selected as a participant in the study.

1.9.1 Study sites

My study sites were eight schools in Surulere and Mushin local government areas of Lagos State that have ICT infrastructure. I selected these local governments for convenience purposes, considering the time and financial resources needed for the study.

1.9.2 Participants

The study's population included school principals in Lagos State public secondary schools. According to the Lagos State government, there are 670 school principals in junior and senior secondary schools (FMOE, 2018). I chose public secondary schools because I could easily access their database from the Ministry of Education's secretariat.

Eight principals from junior and senior secondary schools were selected for this study as it was not feasible to use the entire population. Participants were selected based on the existence of an equipped computer laboratory or a specific room for ICT at their schools, and the schools have been implementing ICT in their teaching and learning activities.

1.10 Data collection strategies

In a qualitative research approach, the procedure for collecting data involves defining the scope of the study through interviews, observations, and documents to acquire relevant information, as well as determining the method for documenting information (Creswell, 2014). The aim of collecting data for this research was to acquire useful information to answer my research questions regarding the implementation of ICT policies by school principals (Masha, 2017). In this study, I collected personal information from selected school principals using an individual interview method. These were “face-to-face, one-on-one, in-depth interviews” (Creswell, 2014). This technique granted me an in-depth study of the subject of school principals’ implementation of ICT policy in schools as discussed below.

1.10.1 Semi-structured interview

In order to acquire thorough information, I used a semi-structured interview method. This method helped me clarify the direction of the investigation (Maree, 2016). I conducted one-on-one interviews with the school principal in each school. To query and elucidate the school administrators’ responses, I needed them to respond to a set of pre-established questions. The interview questions and the school principals’ answers were both open-ended.

This strategy suited my study because I wanted to explore a specific line of inquiry, which was to understand how school principals implement ICT policies in their schools. Furthermore, semi-structured interviews with open-ended questions enabled me to facilitate the generation of ideas on innovation, adoption, and the school principals’ role in the implementation process (McMillian & Schumacher, 2014). This method also permitted me to search for more transparency in identifying the actual cause of my area of inquiry since I asked participants open-ended questions based on the research questions. This gave the participants an opportunity to share their knowledge regarding

ICT policy implementation and the challenges they face while implementing these policies.

1.11 Data analysis

The use of qualitative data analysis is helpful in explaining, analysing, and developing themes, comprehending groups, and investigating how same concerns apply and function in different situations (Cohen, Manion & Morrison, 2011). In this study, I analysed the interview data using inductive analysis. Through the inductive analysis process, I organised data into categories, patterns and correlations within which the categories are found (McMillan & Schumacher, 2010).

I used the following inductive process to analyse my data as recommended by Creswell (2014), McMillan and Schumacher (2014) and Maree (2016).

Collect data – I collected my data using the semi-structured interview technique as discussed in Section 1.10.

Describe data – I provided a thorough overview of my site, participants (while maintaining the confidentiality and ethical principles), the circumstances around data collection, and the participant selection procedure.

Organise data – I arranged the data based on audio recordings and back-up notes taken during the interview and properly labelled each as to where, when, and how I obtained it. Furthermore, I saved each interview set in distinct folders labelled adequately for easy retrieval when needed.

Transcribing data into segments – I transcribed and translated the data obtained through audio recording according to each school principal's interview with proper labels of when and where I interviewed the participants.

Code data – I divided each interview's recorded material into sub-themes of related thoughts and labelled them with easily identifiable descriptions or symbols.

Data interpretation – This was the last step of my data analysis, during which I analysed my findings. I analysed interview responses using narrative analysis. At this point, I was able to establish how school principals are applying policy implementation theory in

implementing ICT in education policies and how other school stakeholders are responding to it.

1.12 Trustworthiness of the research

In the qualitative research approach, the researcher must build relationships and understand the study's participants (Denby, Butroyd & Swift, 2008). In other words, a positive relationship must exist between the respondent and the investigator. The process of ensuring trustworthiness is based on certain evaluations such as credibility, transferability, dependability and confirmability (Elo et al., 2014).

In order to assure trustworthiness, I strove to capture a literal account of the participants' words as much as feasible, and I requested more clarification when the point expressed was unclear. For credibility purpose, I gathered data using a recording device, which I replayed to provide a thorough understanding of the participants' views until I was clear on the concerns. Before the interview began, I also explained the purpose of using the recording equipment and obtained their consent to use it. Prior to the interview, I provided the participants with the interview schedule in order to establish confidence and develop an accountable and interactive connection between the participants and myself.

The effort made to explain the reality of the study's findings is called validity (Zohrabi, 2013). To determine the validity of the transcripts, I supplied participants with copies of the transcribed data to double-check whether the information they gave was captured accurately. I also conducted a peer debriefing to increase the study's validity. I asked my colleague to assess my study and provide me with any pertinent questions, as well as to search for scope across numerous and varied sources of data to recognise recurring themes and to look out for data that is entirely different or inconsistent with the evolving theme.

1.13 Ethical considerations

As human beings are the primary aim of academic research, guaranteeing the participants' interests and well-being are my obligation (McMillan & Schumacher, 2014). To adhere to these ethical guidelines, I made every effort to accomplish the following: I

(a) Received ethical approval from the Ethics Committee of the University of Pretoria.
(b) Obtained authorisation from the Lagos State Ministry of Education and the school principals before commencing with data collection.
(c) Followed all the standards of the University of Pretoria's Research Ethics Committee regarding voluntary participant involvement, informed consent, participant safety, privacy, and trust.
(d) Did not subject the participants to undue physical or psychological harm.
(e) Supplied the participants with information on the study's purpose and nature, and provided them with the option to participate or opt out anytime they felt like it.
(f) Reported my research findings in a complete and honest mode.

1.14 Conclusion

In this chapter, I discussed the context of the study, the research problem, the motivation, and the core research and related questions. In Chapter 2, I examine pertinent and existing research on the subject and the theoretical foundations supporting the phenomenon under investigation.

CHAPTER TWO

SCHOOL PRINCIPALS IMPLEMENTING THE ICT POLICY

2.1 Introduction

The study aimed to examine how Lagos State secondary school principals implement ICT policies. I provided a background to this study in the previous chapter. In this chapter, I based the literature review on exploring school principals' implementation of The Information and Communication Technology Policy in Lagos State secondary schools. The literature focused on ICT and ICT policies buttressing their implementation in secondary schools from international and local perspectives. With reference to the purpose of this study, I established and explored the following concepts in this review of literature: ICT policy implementation design and process; school principals implementing ICT in schools; enabling factors of ICT policy implementation in schools; school principals' challenges in the implementation of ICT policies; and strategies school principals use to overcome the implementation challenges. I investigated the study's primary objective, ICT policy implementation by secondary school principals, using policy implementation theory from the bottom-up approach (Lipsky, 1980).

2.2 Information and Communication Technology (ICT)

Increasingly, the effects of globalisation on socio-economic and cultural interconnection are being incorporated into educational policy decisions worldwide with Information and Communication Technology (ICT) playing an important role (Buabeng-Andoh, 2012). ICT has been considered significant in fostering knowledge acquisition using digital tools such as computers, interactive blackboards, and changes in pedagogy ranging from virtual learning to distance education and e-learning, to mention but few. (Olla, 2013). This integration has a profound effect on secondary education. The Federal Ministry of Education in Nigeria (2019) defined ICT as the art and applied sciences that deal with data and information. It includes all types of digital machinery such as computers, hardware, and operating systems, as well as the instruments, techniques, practices, procedures, and mechanisms used in acquiring, representing, presenting, managing, organising, storing and retrieving data and information.

Deebom and Zite (2016) refer to ICT as the use of various techniques, digital communication-related technology products and other relevant resources in modern society to enhance the functionality, efficacy, and efficiency of predefined program strategies to achieve clearly defined goals. Zao, Lie and Conway (2006), as cited in Abdalla (2018), mentioned that the term ICT combines two terms, information technology (IT) and communication technology (CT). They went on to say that IT refers to equipment such as computers, printers, scanners, multimedia, and digital cameras, while CT refers to communication equipment including phones and web conferencing tools. Information technology (IT) refers to an entire industry that uses computers, networking, programming, and sometimes hardware to organise information (Flores & Derrington, 2018).

According to Webb (2002), ICT is utilised in education for three main purposes. Firstly, learning through ICT, that is, using a variety of digital devices to improve instructional practices. Here, the ICT facility becomes the entire learning environment performing the role of the teacher and tutor as well as providing learning materials. Secondly, the utilisation of ICT as a subject; that is, teaching students about numerous ICT disciplines, such as data processing, computer science and information technology (Abdalla, 2018). Thirdly, the use of ICT as a tool for learning.

In the National Education Policy (FMOE, 2013), the Nigerian government recognises the significance of ICTs in the contemporary world, thus, incorporated ICTs into Nigeria's school system. As such, the document states that basic ICT infrastructure and training would be provided from primary schools to higher institutions. In Nigerian secondary schools, computer studies are taught as a subject at both junior and secondary levels. At the junior level, it is being taught as a pre-vocational compulsory subject serving as a medium for introducing ICTs properly and at the secondary level, a compulsory vocational elective subject which must be passed by students offering it.

UNESCO (2021) defines information and communication technology (ICT) as a broad range of digital instruments that can transmit, save, acquire, or gather material. This means that ICT encompasses a wide range of technologies such as telephones, computers, TVs, video, DVDs, software, and hardware, to mention but a few. UNESCO (2021) buttressed this definition by stating that ICT is a resource that can enhance,

augment, and transform education for the future; thus, a greater analysis of this growth in technology is required for quality skills.

2.2.1 The significance of ICT in education

The importance of ICT in education has been recognised not only in Nigeria, but worldwide. The role of ICT in education has proliferated in recent years, and ICT has contributed significant changes to the educational sector by increasing access to practical pedagogical approaches. According to Alatawi (2018), the benefit of ICT seems suitable for responding to the issue of primary and secondary education as well as innovative competency, particularly in most African nations. Mellar, Kambouri, Logan, Betts, Nance and Moriarty (2007) further pointed out that incorporating ICT into teaching-learning activities will make the curriculum design more efficient and interesting to students, hence improving learning outcomes.

ICT has the ability to increase students' literacy, self-esteem, and competence when properly and efficiently blended into the curricula (Mellar et al., 2007). In other words, it becomes mandatory for students to acquire the appropriate skills needed for ICT usage to accomplish this. To buttress this point, Plowman and Stephen (2003) noted that there exists a relationship between general literacy and computer literacy regarding technology utilisation. Literacy, according to the authors, is about a dynamic and proficient command of a repertory of activities with texts from conventional and new communication technologies. In contrast, digital literacy is a set of interconnected abilities that is relevant to the modern world. Sanchez and Alemán (2011) in their study also reported that students, through ICT study, can now engage themselves in meaningful computer usage.

The Nigerian government acknowledges that ICT implementation in secondary school education is a significant factor. The Federal Ministry of Education, in its 2019 ICT Policy in Education handbook, asserts that ICT is vital to school principals, teachers, and students in fostering their high-thinking skills with a vision that supports a universally accessible, empowering, inclusive, and enriching education. Therefore, ICT in education policies have been created for a better understanding of ICT in the teaching-learning environment, and human resources in the academic environment have been urged to incorporate ICT to fulfil the necessary competences of the ever-changing global context.

In addition, Deebom and Zite (2016) mentioned that ICT usage in secondary school education could help to minimise teachers' workload by using it for lesson planning, instructional techniques, and formative assessment. The authors highlighted that through ICT, teachers would not only be knowledge transmitters but also coaches, facilitators, mentors, collaborators, and co-students. The importance of ICT application, in general, has led to establishing school reform policies to facilitate proper integration.

2.3 Policy perspectives on ICT in education

As defined by Anderson and Donchik (2016), a policy is a guide used to set directions and make decisions within an organisation's objectives, goals, and management philosophies. According to Peters (2013), a policy is the totality underlying government operations acted directly, indirectly or through agents which impact the lives of the citizens. Typically, Xu, Saïdi and Anderson (2012) defined policy as a theory or regulation used to guide actions and attain sensible outcomes. National ICT policies for education aim to provide a justification, set of targets, and plan for how educational standards may evolve as a result of the evolution of the internet and how its use in schools may benefit parents, teachers, students and the entire public (Kozma, 2008). Kozma continued by asserting that an ICT policy will be ineffective if there is no strategic reason to guide its use in educational settings.

Torjman (2005) described policy as a broad term encompassing many distinct aspects, but the challenge is to explain the definition of this phrase in a clear and concise manner. When it comes to how it influences the function of governing, according to Colebatch (2005), policy may offer stakeholders and observers a way to comprehend the difficulties of governance. Organisations must have a clear purpose in order to function efficiently. According to Fareo and Ojo (2013) and McPhee-Knowles (2014), organisations that thrive in policy execution are frequently ones where the leadership has created clear accountability and governance structures. Clear governance and accountability enable organisations to understand who is in control, particularly during policy execution.

From a structural point of view, the purpose of ICT policy in education is to contribute to the teaching and learning process by promoting digital-based innovations such as the introduction of e-learning resources and the provision of a laptop (e.g., the One Laptop

per Child project). By doing this, the operation and overall performance of a system as well as the intended outcomes for teachers, students or parents will be known (Centre for Educational Research and Innovation (CERI, 2009a). Kozma (2003) further pointed out that policies are of more outstanding merit because:

(a) It can help establish distinct priorities by including a complete direction on fairness.
(b) Policies may help in reducing conscious biases and discrimination.
(c) It could also aid the rapid reduction of discriminatory practices.
(d) Policies could help to promote the implementation of specific practices.

Kozma (2008), in his analysis of the national ICT policy statement, pointed out four justifications behind the investment in the use of ICT in education. As a result of these policies, social development, educational reforms, educational management, and economic development are all promoted. In Nigeria, these four policy justifications are not mutually exclusive because these points reinforce each other. For instance, in supporting economic growth and promoting social development, the Nigerian national policy on ICT in education has highlighted its mission to be meeting the country's human capital needs in order to achieve and improve sustainable socio-economic development, global competitiveness and individual survivability in a modern environment (FMOE, 2020).

Therefore, it becomes crucial for policymakers to be fully engaged in monitoring and evaluating ICT investments so that the aims, visions, and missions of ICT policies can benefit the students, principals, teachers, schools, communities and the economy at large.

2.3.1 Development of the ICT policy

Globally, any national ICT policy must consider policies for teaching-learning activities, the private sector, economic, state and district development and fostering research and development. The structural and technical difficulties involved in delivering ICT policies must also be taken into consideration (Heeks, 2005). Kozma (2013) argued that an ICT policy should be formulated based on the nation's needs and aspirations in order to promote the widest possible dispersion of ICTs. The development or planning of ICT

policy exists in different phases with several factors considered (Fishman & Zhang, 2003). Jones (2003) asserted that ICT policy plans act as models for how ICT-based instruction should be carried out. Thus, every nation, state, district, and school must develop an ICT policy plan. Dzidonu (2002) supported this argument by stating that African countries who want to experience rapid social and economic transformation in this digital age must design and develop integrated ICT-led policies, socio-economic development, policies, initiatives, and blueprints aimed at socio-economic development.

Avvisati, Hennessy, Kozma and Vincent (2013) in their study emphasised that the goal of developing an ICT policy and strategy should be to create high-quality frameworks, policies, objectives, and structures. They further explained that the blueprint paper acts as a roadmap to direct the creation of the other process components. The framework-based policy document aims to provide details of the government's main policy obligations and concerns. In contrast, a strategic plan provides an insight into the programs written in the policy document, that is, how they can be transcribed into tangible initiatives and programs for execution. Finally, the structures act as national co-ordinating authorities or organisational structures to aid in the creation, formulation, and deployment of programs and policies.

An analysis of policy development strategies indicates an effort to understand the correlation underlying the various characteristics that may influence policy implementation strengths or weaknesses (Chuayuk, 2006). According to Canter and Alison (2018), the phases of policy development (policy cycle) can be classified into five main categories: identifying the problem that the proposed policy is intended to address; putting it on the agenda; policy formulation, policy implementation and policy evaluation. Bacchi (2006) argued that the first phase of the policy cycle should be defining the problem rather than identifying the problem. He pointed out that policy design that prioritises defining the problem over identifying it is fundamentally compatible with socio-constructivist epistemology.

In its Asia-Pacific development information program (ADIP) in 2005, the United Nations Development Program (UNDP) highlighted that the first stage in establishing ICT policy formulation and development is to assess existing policies and plans. In Nigeria, for instance, the national implementation guideline for ICT policy in education was

developed after a careful evaluation of the existing policy (the national IT policy) and the vision statement. Secondly, the regional context must also be taken into consideration after which a comprehensive consultation with the main actors such as the governments, parliaments and policymakers will occur.

2.3.2 ICT policy implementation

Most governments across the globe have adopted national information and communication technology policies to act as a structure for integrating technology in all aspects of society, including education. The knowledge gap between rich and developing countries is well-known, especially as many developing countries, like Nigeria, revise their policy declarations to place a greater emphasis on 21st century knowledge and skills for lifelong students (Robberts, 2019).

For instance, the Hong Kong government, which has been implementing its ICT for education strategy since 1998, revised their policy statement through its Empowering Learning and Teaching with Technology program, an initiative to put ICT in schools (Hong Kong Education Bureau, 2012). Germany, in an attempt to sharpen its national educational policies, also enacted the national strategy for Education in a Digital World in 2014 with the aim of digitalising the field of educational plans and curricular development, continuing professional development for teachers, educational administration at all levels and a significant emphasis on developing digital skills for learning in all subjects (Ottestad & Gudmundsdottir, 2018).

In its review of ICT in education policy implementation, the South African government introduced an E-education policy in 2004 aimed at identifying and proffering solutions to technological problems in the education sector. (Lekgothoane & Thaba-Nkadimene, 2019). Kenya, as a developing country, also acknowledges the prospect behind formulating and implementing ICT policy in education, thus, enacted its national policy on education in 2006 with a vision tagged “A prosperous ICT-driven Kenya society” aimed towards improving the socio-economic lives of Kenyans by guaranteeing the provision of knowledge that will contribute immensely to the society (Mingaine, 2013).

Nigeria, being a developing country, established its national information technology policy in 2001. In March 2001, the Federal Executive Council established a national IT

policy, and implementation began in April with the foundation of the National Information Technology Development Agency (NITDA), which was entrusted with ensuring its proper implementation. Having realised that the Nigerian national policy did not adequately address the needs of the Nigerian education system as there was no guideline or recommendation on school technology plans, the Nigerian government established the National ICT for Development (ICT4D) strategic action plan committee to create a new ICT policy in the form of a strategic plan for the country.

The National Policy on Information and Communication Technology (ICT) in Education was enacted in April 2010 and aimed to provide quality education and global competitiveness (FMOE, 2019). In a bid to enhance the actualisation or implementation of the policy within a given timeframe, the national implementation guideline for ICT in education was developed in 2019 with the provision of useful insight on what all involved parties should expect from the implementation procedure and ensuring that it contributes to the rapid transformation of teaching, learning, research, and administration. To effectively fulfil the policy objectives, the policy papers describe the strategic plans, sub-strategies, operations, targets, executing agencies, deadlines, and KPIs.

This guideline which uses a multi-sectoral approach was formulated to guide stakeholders in ensuring an effective and efficient harmonised policy implementation, by providing realistic solutions for turning policy objectives into realistic actions and results (FMOE, 2019). The policy document highlighted human capital development, research and development, infrastructure, awareness, and communication, monitoring and evaluation, governance, and financing as its seven focal areas of policy that will speedily aid the reformation of educational leadership and schooling in Nigeria. The main thrust of the policy according to the implementation guideline document is that the government shall:

(a) Establish and sustain a common ICT infrastructure platform for education at all levels.
(b) Build and foster the growth, utilisation, and maintenance of ICT personnel essential for ICT-enhanced education.
(c) Ensure and encourage research and development in ICT generally and ICT in education in particular.

(d) Achieve a versatile convergence on ICT in education by engaging and supporting regular stakeholder meetings, community or public awareness, and inter-governmental interactions.
(e) Provide a suitable legal, regulatory and security framework to see to the achievement of ICT-enhanced education.
(f) Employ ICT in education finance and funding approaches that are unique and creative.
(g) Use monitoring and evaluation as a mechanism for tracking policy implementation, improved service delivery, and adherence to ICT in education.

2.3.3 ICT policy implementation in secondary schools

School principals and teachers throughout the world must be prepared not just for the 21st century classroom but also for the fourth industrial revolution and its difficulties (Battons, 2018). It becomes imperative that they have the necessary knowledge and abilities to alter and develop educational institutions and their digital citizens (Raman et al., 2019). Joy and Srihari (2015) explained that the goal of ICT policies in secondary education is to educate students to be fully engaged in developing a globalised society, thus, contributing to the nation's economic and international development.

According to Payne (2008), successful educational policy implementation occurs when there is consistency, sustainability, peer interaction, retraining, and involvement. Ombiro and Kiplagat (2017) in their study established that the majority of secondary schools are implementing ICT policies by adopting technological devices to augment conventional learning modalities as well as antiquated administration and management procedures. As a result, students, teachers and school principals require computer skills to function. The Kenyan educational sector, according to Mingaine (2013), also acknowledges that the implementation of ICT in secondary schools will enhance the promotion of knowledge and communication exchange in the academic settings.

The Nigerian national ICT policy in education implementation strategy for secondary schools has been restructured to enhance blended learning with the following goals:

(a) Provision of e-resources such as e-books, e-library, and other digital learning materials for learning. The implementation is said to be successful if 50% of

secondary schools have proper access to e-resources within a timeframe of three years.

(b) Establishment of multimedia classrooms such as the provision of multimedia projectors, interactive boards, internet facilities and projectors. This also includes global collaboration on virtual learning. The implementation process is considered successful if 75% of secondary schools have access to this equipment within a timeframe of three years.

(c) Establishment of functional ICT resources/learning with well-informed teachers.

Therefore, it becomes a necessity for the government and policy stakeholders to improve secondary education mainly for the development of productive human resources (Evoh, 2007). Adeosun (2010), in his study on quality basic education development in Nigeria, mentioned the SchoolNet Nigeria project, Education Trust Fund, Computers in Schools project, and the One Laptop per Child project as some of the initiatives implemented by the Nigerian government towards ICT integration in secondary schools, most of which are driven by private initiatives.

According to Cohen and Hill (2008), policies can also fail to significantly affect classrooms when they:

(a) Lack direct comparisons to teaching design.

(b) Fail to train teachers on the execution of policies and their educational consequences.

(c) When there is a lack of programmes and activities affiliated with the policies' intentions.

2.4 Factors enabling ICT policy implementation in secondary schools

Research evidence on ICT policy implementation in schools has claimed that various factors can facilitate the successful implementation of ICT policies into the school curriculum (Drent & Meelissen, 2008; Eickelmann, 2011; Albugami & Ahmed, 2015; Strydom, 2015; Yahya, 2016; Njoroge, Ngugi & Kinzi, 2017). According to Gudmundsdottir (2010), ICT integration in schools is intensely subjective to the school context and all of the complex social situations involved with the school. Howie (2010) further stated that, before any ICT integration strategy can be implemented, the

inhabitants of the community, as well as the distinguishing features of each individual school's students must be considered.

Yahya (2016) pointed out that school structure and culture, training, carefully planned implementation process, monitoring and evaluation of the ICT policy implementation process, leadership, and vision are the main facilitators of ICT policy implementation in schools. Cheung and Wong (2012), in their study on the factors facilitating the implementation of curricular reform in Hong Kong, discovered that teachers' professional development and administrators' leadership qualities substantially impacted efficient and effective implementation. Petko (2012), in his study on the pedagogical belief of teachers and their use of digital media in classrooms, also identified leadership and training, ICT infrastructure and a clear vision as the enabling factors of ICT implementation in schools.

In this study, I have chosen to discuss school leadership and training, school vision, ICT implementation design and process, and monitoring and evaluation of the ICT policy implementation process as the facilitators of ICT policy implementation in schools.

2.4.1 Leadership and training

The literature review on enabling factors of ICT policy implementation has revealed that strong leadership and continuous training are crucial to the successful implementation of ICTs in schools (Alajmi, 2011; Newhouse, 2012; Strydom, 2015; Yahya, 2016). According to Alajmi (2011), teachers' continuous training in ICT for pedagogy is hugely essential to the successful implementation of ICT. Law, Lee and Chan (2010) also claimed that school principals serve as the middleman between the government and the school through policy implementation and assessment. They have the power to transform the teaching and learning culture of a school towards innovation (Bocconi, Kampylis & Punie, 2012). Thus, they are called innovative change leaders (Al Sharija & Watters 2012).

An effective school principal, according to Newhouse (2012), is someone who possesses both managerial and interpersonal skills, allowing him or her to communicate and collaborate with a wide range of teachers. To properly integrate ICT policies in schools, school principals must create an atmosphere for an innovative culture so that all staff members participate in the innovation process. Twenty-first century education does not

only support new technological advancement but also school principals with a high sense of literacy in technology (Amhag 2014). That is, school principals may not necessarily be too familiar with related technologies. Instead, what matters most is their innovative approach towards modernising traditional pedagogy.

Flanagan and Jacobsen (2003) pointed out that school principals are constantly assigned challenging and unfamiliar roles; thus, they need professional development training to direct and guide staff in cross-curricular ICT integration. Afshari et al. (2012) also emphasised the need for school principals to fully understand the prospects behind cross-curricular ICT integration. Wong, Li, Choi and Lee (2008) also identified that school principals must be ready to facilitate ICT implementation in their schools through their ability to empower and rely on teachers, establish clear shared visions, maintain innovative teaching practices and embrace staff development.

However, it is saddening that the appointment of school principals in developing countries, including Nigeria is based on seniority, that is, years of experience. Zhou, Gao and Chimhowu (2019) buttressed this point by stating that the position of a technology leader should be acquired through professional development and expertise in a set of learnable skills and practices. According to Howie (2010), selecting school principals based on seniority can lead to an autocratic leadership style which is likely to affect the ICT goals and visions of the school.

2.4.2 School vision of ICT

For proper integration of ICT into teaching and learning activities in schools, national policies should provide a clear and shared vision which will serve as a means of guiding and supporting schools nationally (Kozma, 2013). Kozma further explained that providing school leaders with educational policy goals and rationales to assist them in strategising their cross-curricular ICT integration effort aids ICT integration. Such policy goals include teacher professional development, provision of ICT infrastructures, provision of technical support, content development, curricular and pedagogical change.

School principals must have a clear vision of the effective usage of technology which must be shared by the teachers (Yahya, 2016). To successfully incorporate ICT into the classroom, the school's structure must be modified to facilitate the usage of technology

across departments and school borders (Derrington & Sharratt, 2009). It is necessary to create a suitable framework that will allow teachers to fully incorporate technology into their regular educational operations. These frameworks include teamwork, collective decision-making, shared planning time, and peer learning opportunities. These methods are vital because teachers' roles have evolved in the digital era to include giving pupils structure, tracking their progress, and evaluating their successes (Kozma, 2003).

Globalisation drives most of the energy in ICT educational frameworks. (Ololube, 2014; Tella, Adaraloye & Akanbi, 2014). Aside from the changing environment of global education, the geography and size of the population also determine the implementation of ICT. In order to remain competitive, small and medium-sized businesses have embraced ICT for their educational purposes (to educate their employees). Additionally, ICT encourages practical, marketable skills that allow developing economies to effectively integrate into the global digital economy. Content creation and technical help are examples of this (Ewurah, 2017).

The school vision for ICT depicts a time when ICT systems, digital materials, pedagogical practices, and syllabus structure have advanced to the point where meaningful learning outcomes for students have been accomplished (Gareth, 2008). This is due to the primary purpose of incorporating ICT into the learning process. Thus, the concept behind it should be achievable. It should be a realistic long-term goal for the school, with the main objective of improving teaching and learning (Marn & Tur, 2014).

2.4.3 ICT implementation design and process

The existence of a unifying framework, as well as how its formulation procedure may have an impact on full policy implementation (Bell & Stevenson, 2015). Fullan (2015) supported this point by stating that issues regarding the main features of a policy not raised during the policy formulation phase are likely to affect the implementation design and process. Thus, it is crucial to consider other factors such as policy justification, policy logic and its feasibility according to how they determine and influence policy implementation (OECD, 2017).

One of the critical enabler components of the implementation process is a well-planned and organised implementation procedure (Amhag, 2020). Implementation policy must be

designed to identify the extant and evolving needs and expectations for implementation and a strategy for assessing, evaluating, and collectively implementing change (Tearle, 2004). Tearle further noted that the process of implementing ICT policies should include a versatile and comprehensive plan that caters for all dimensions of ICT integration, taking into consideration time, operational awareness and communication for relevant parties.

It is commonly agreed that ICT in secondary educational contexts works best when it is linked to social media that students already use (Amhag, 2020). To successfully incorporate ICT, the practical element of the instructional setting must also be acknowledged. That is, the instructional environment must be virtual and physical. As illustrated by Marn and Tur (2014), this synergy or cybernetic feedback system is a core design and operational concern for ICT in teaching and learning contexts, especially sophisticated ones like secondary education circumstances.

2.4.4 Monitoring and evaluation of the ICT policy implementation process

A monitoring and evaluation blueprint with appropriate methodologies is required as part of any implementation plan to ensure the performance of planned activities and the achievement of targets. Quest (2014) analysed that during the course of implementing policies, monitoring and evaluation facilitate feedback on what is working and what needs to be changed. The Nigerian National Policy on ICT for Education in its policy statement, defined monitoring and evaluation as the means by which the effectiveness and efficiency of the policy implementation objective in relation to its key outcomes are determined (FMOE, 2020). The policy thrust further explained that monitoring and evaluation is a veritable tool for carrying out periodic assessments of the impact and extent to which the policy objectives have been achieved (FMOE, 2020).

Facilitating a successful ICT policy implementation in schools requires school principals to first secure an agreement with their immediate authorities. According to Leithwood (2006), these agreements aim at driving the school to actualise its shared objectives. Rogers and Finlayson (2003) supported this point in their theory of innovation dissemination by stating that school principals should be allowed to explore

new technologies. Monitoring and evaluation enable school principals to set out timelines for ICT implementation in order to meet their strategic plans.

According to Quest (2014), monitoring and evaluation are necessary from a variety of perspectives. It enables senior policymakers and administrators to see the impact of funding in the implementation process. Also, donor partners can assess their contributions effectively. Finally, it helps to guarantee that initiatives meet their long-term objectives.

2.5 Factors prohibiting implementation of ICT policy in secondary schools

Despite the apparent advantages of ICT-based educational models in improving teaching practices and student learning results, secondary educational institutions continue to encounter implementation challenges ranging from the student's age, the ICT literacy of teachers and principals, as well as power dynamics. The OECD (2017) added co-ordination issues, reactions from policy implementers, insufficient resources, and the inability to actualise the changes as hindrances to ICT policy implementation. Also, failed policies persist in many schools, thus proving that the policy implementation issue remains under investigation (Kipsoi, Chang'ach, & Sang, 2012).

According to Ainley, Enger, and Searle (2008), there is currently insufficient understanding of ICT usage in learning environments. However, various scholars have been able to identify the absence of a clear online syllabus, poor infrastructures and raw materials, miscommunications, cultural differences, high cost of implementation, inadequate ICT knowledge and skills, and negative attitudes as the major causes of these challenges (Afshari et al., 2008; Quest, 2014; Chris, 2015). Ololube (2014) further pointed out that a shortage of ICT equipment happens to be the major hindrance to ICT implementation in primary and secondary schools. Kozma (2008) identified ICT infrastructure deployment, maintenance and sustainability of ICT resources, teachers' knowledge of ICT literacy and creating relevant content/syllabus as the prohibiting factors of ICT policy implementation in schools.

Hu (2012), in his study on policy implementation in the changing urban education, classified the obstacles to successful ICT policy implementation in schools as internal and external factors. The internal factors are those factors relating to the teachers and

school principals, such as their understanding of ICT usage, perceptions towards the integration of ICT, ICT literacy level and their readiness to use ICT in the academic environment (Hu, 2012; Khan, Hasan & Clement, 2012; Fu, 2013; Yahya 2016). On the other hand, external factors relate to ICT facilities such as a lack of infrastructural facilities and skilled technical support. Fu (2013) added that school vision on ICT administrative support and accessibility to ICT resources are external factors that impede the successful implementation of ICT policies in the academic environment.

In the Nigerian context, lack of infrastructural facilities, lack of professional development, poor maintenance of ICT equipment, lack of reliable electricity, inadequate training for school principals and teachers, improper integration of ICT into the school curriculum, inadequate educational software, limited school budget, and a poor ICT policy/implementation strategy are the prohibiting factors of ICT policy implementation in schools (Adomi & Kpangban, 2010; Muhammad, Turburku, Muza & Gwandu, 2019).

In the following sub-sections, I discuss these obstacles in detail.

2.5.1 Inadequate ICT infrastructures and poor maintenance

ICT infrastructure is inadequate and not given in sufficient depth to all educational institutions to allow optimal use of education systems (Hinostroza, Labbé & Claro, 2005; Reeves, 2008; Brun & Hinostroza, 2014; Pradhan, Mallik & Bagchi, 2018). According to Aguayo (2016), the use of ICT in education can be considered cost-effective, particularly in terms of staffing, because one teacher can access many students through the use of the internet and/or interactive white board. Nonetheless, the cost of ICT tool procurement ranging from hardware, software, upgrading, and maintenance is exceptionally high (Twinomujuni, 2011). Investing in ICT for schools may be regarded as an extra expenditure, and many schools in developing countries struggle to fund considerable ICT deployment (Mingaine, 2013).

According to Farrell (2007), the most significant barrier to ICT acceptance and adoption in schools has been the expensive cost and upkeep of ICT infrastructure. In many Nigerian schools, a lack of funding for educational activities remains a concern (Mingaine, 2013). Hennessy, Harrison and Wamakote (2010) claim that one of the most challenging issues in using ICT in schools is matching instructional aims with economic

realities. When funds are scarce, school administrators make a bet on what should be prioritised (Twinomujuni, 2011). In the face of the rising need for educational resources, many schools are struggling to sustain and satisfy academic commitments such as purchasing textbooks and hiring competent teachers (Dzidonu, 2010). As a result, several schools are having difficulty allocating their limited educational budget to developing ICT infrastructure.

School principals as technology leaders lack ICT facilities to deploy for the use of the teachers and students in their schools. School principals lack appropriate ICT facilities to deploy for the benefit of instructors and students in their schools. Abubakar (2016) surveyed students' opinions on whether ICT facilities are readily available in their schools and how often they are used. He discovered that facilities such as interactive boards, computers and printers are not readily available nor widely used in classrooms and offices, and students cannot access the computer laboratory. On the other hand, the employment of digital devices for computer-based tests (CBT) during examinations is sporadic, as smart boards and internet connections have been noted as underutilised.

Fakeye (2010) asserted in his report, which was presented in Ibadan, that many of the surveyed schools lacked computers, which prevented them from accessing the internet. Furthermore, schools that own computers primarily use them for administrative rather than educational purposes (Abubakar, 2016). Despite attempts to ensure the availability and practical use of ICT facilities in schools, the degree of conformance remains low since many schoolteachers lack ICT training (Abubakar, 2016).

2.5.2 Teachers' perceptions

Teachers' instructional methodology significantly influences the learning environment's culture (Cheal, Geer & White, 2012), leading to fundamental issues when incorporating ICT into teaching methods for the first time. As Moebs (2014) has shown, teachers usually employ routine teaching strategies rather than altering them to support ICT adoption in the classroom. This, the author claimed, resulted from their lack of regard for the media as method-altering.

Teachers' actions have a tremendous influence on the learning environment's culture. A lack of creativity frequently leads to poor academic achievement (Collarbone, 2003). As

Marn and Tur (2014) highlighted, teachers frequently fail to include the informal aspects, that is, the personal and emotional factors into their ICT educational planning, resulting in an overly formal approach.

2.5.3 Lack of administrative and technical support

Prior to the widespread adoption of ICT in secondary school settings, a large number of school principals were practising teachers (Marn & Tur, 2014). Teachers encounter technology in the classroom, as Collarbone (2003) observed, but administrators may endure cognitive dissonance, in which they may not comprehend the importance of technology in educational settings. Collarbone attributed it to a lack of direct, day-to-day interaction in a 21st century classroom (Collarbone, 2003). Furthermore, Ravitch (2013) stated that in some circumstances, administrative personnel might be overly committed to the integration of new technology, while educational needs outstrip teachers' ability to adapt in the classroom. In the light of contemporary privatisation practices under the context of global governance systems at all levels, administrative infrastructure is frequently deplorable (Ravitch, 2013).

Technical assistance is critical in preserving teachers' and school principals' trust in the dependability of access to ICT software and other equipment (Makhanu, 2010). In their study of the level of ICT adoption in Malaysian secondary schools, Lau and Sim (2008) found that instructors saw a lack of technical assistance as a major barrier to ICT implementation in schools. Teachers who are aware that there is no technical assistance when ICT device issues arise will most likely avoid using the machinery out of fear. Additionally, technical support is essential to help teachers effectively utilise ICT in the classroom and save time on configuration and other problems. Also, maintaining teachers' and administrators' trust in the dependability of access to ICT software and other equipment requires technical support (Makhanu, 2010).

2.5.4 Poor implementation of government policies on ICT

The Nigerian government has developed numerous solid educational policies in many areas of education, but the implementation of these policies still remains a major obstacle. Among the policies enacted in the educational sector is the ICT policy in education implementation guidelines, but the government continues to encounter

hindrances in implementing these educational policies created and developed for the country's educational progress.

Ajisafe (2014) pointed out that the National ICT Policy in Education of Nigeria states that the government will provide training and digital resources such as computers and interactive whiteboards to primary and secondary schools. Unfortunately, the implementation of these polices in Nigerian public schools have not progressed beyond the fundamental level (Adomi & Kpangban, 2010). Farrell and Shafika (2007) asserted that while ICT is at the centre of educational transformation worldwide, not all countries are currently able to integrate ICT into their educational institutions fully.

Abubakar (2016) interviewed some school principals on these policies and any other ICT interventions, and a high percentage of answers to this question claimed in various ways that ICT policy implementation is bad, with some even questioning whether the policy existed at all. According to the number of interviews, Abubakar concluded that poor policy implementation is primarily caused by a lack of political leadership, corruption, and instability in the country. The low use of ICT in the Nigerian school system is due to the inadequate implementation of ICT education policies in secondary schools.

2.5.5 Lack of reliable electricity

The importance of electricity in implementing and using ICT in schools cannot be under-emphasised. Studies by Makhanu (2010) pointed out that electrical energy is inextricably tied to any nation's economic development's natural, economic, and social components. The electricity consumption at institutions in developing countries is expected to rise, owing to the rise in student population as well as the expansion of technologies. Schools in developing nations such as Nigeria will continue to rely on the energy grid for power due to a lack of alternate power sources such as solar panels. This, in turn makes it difficult to access ICT as well as work towards achieving sustainability.

The teachers' ability to use ICT in the classroom is strongly reliant on the availability of the necessary devices and their knowledge of how to use them (Ajayi & Ekundayo, 2009). Nevertheless, because of unstable power supply, most schools find it difficult to use ICT facilities. Many schools do not have ICT facilities. Abubakar (2016) in his study highlighted that Northern Nigerian schools lack efficient ICT facilities, making it difficult

for teachers to use them. Inadequate teacher professional competency, erratic power supply, instability, and a lack of funds are among the other challenges.

In order to adopt ICT, school principals in these schools must explore alternative or backup power sources. Smaller technology, such as chargeable mobile android phones and laptops, can be powered by these alternative energy sources.

2.5.6 Inadequate ICT training for school principals and teachers

Teachers' professional ICT expertise and development are considered vital to the success of ICT implementation in schools. Studies by Hennessy et al. (2010) noted that teachers are more willing to implement ICT programs in schools if they believe they would meet their own or their students' requirements. Teachers that have received sufficient training on how to integrate technology can provide critical guidance on how to do so. Unfortunately, teacher training on technology adoption and use has been minimal and weak in most underdeveloped countries.

Makhanu (2010) established that the syllabus or curriculum used in training teachers in developing countries like Nigeria is faced with certain limitations as highlighted below.

(a) The curriculum focuses on teachers' orientation on technology leaving behind the cultural and organisational elements of ICT, leading to graduating students with poor management skills needed to cope with the difficulty of planning, assessing and integrating ICT in the academic environment.
(b) Most of the syllabi prepared for teachers' training are replicated or adopted from the curriculum of developed nations without any or few revisions to suit the contexts and specific needs of the country's schooling system.
(c) Most of these training courses do not handle evolving concepts such as the internet as some training programs are designed to produce persons with specialised talents that, in most cases, do not correspond to the needs of the educational organisation or reflect technological advances. Thus, leading to the inability to design or develop instructional software to match local academic requirements in teaching, learning, and administration.

(d) Lastly, most schools find it difficult to fund the training of teachers in technology because of the cost involved in ICT training. This, in turn leads to training few teachers for this cause.

The most important component in the acceptance and utilisation of ICT in the classroom, according to Buabeng-Andoh (2012), is to cover the expense of teacher training for those who are already in the field. Jimoyiannis and Komis (2007) argued that teachers were mostly concerned about the amount of time it takes to understand how to use new technologies and because they receive their training through in-service courses conducted during the holiday, thereby leading to inadequate time for exploration.

2.6 Strategies school principals use to overcome the challenges during the implementation of the ICT policy

The ICT policy implementation success is a critical factor responsible for the survival of any organisation, including schools as it has been confirmed to ensure continuity and sustainability (O'Brien, 2013; Wischnevsky, 2004). Therefore, policymakers and other stakeholders must establish a means of attaining success when dealing with ICT policy implementation. In the school setting, it is posited that the perceptions and attitudes of the school principals and teachers regarding the usage of ICT play significant roles when integrating new technology (Alghamdi, & Prestridge, 2015; Howard, Chan, & Caputi, 2015).

Many researchers have identified the school principal as a critical component of ICT policy implementation in secondary schools (Hargreaves, Kvalsund & Galton, 2001; Neufeld, Dong, & Higgins, 2007; Makhanu & Kamper, 2012; Mingaine, 2013). Han (2002) highlighted that school principals' existing perceptions, skills and working habits would determine their acceptance and implementation modes. Chang (2012), in his studies, buttresses this point by stating that school principals who promote and help propel teachers to incorporate technology in their pedagogical activities clearly understand the benefit of ICT usage in education.

School principals as technology leaders must be able to manage change and facilitate the adoption and usage of technology in their schools. Boit et al. (2012) pointed out that school principals must be fully engaged in the application of new ICT-assisted programs

to motivate school students and teachers. Studies (Van Niekerk, 2009; Everard, Morris, & Wilson, 2004; Foskett & Lumby, 2003) also found that school principals must continually push teachers to execute ICT policies. School principals should actively provide timely assistance, motivate students, teachers and other school personnel to embrace technology deployment, and influence the effectiveness of ICT implementation in their schools (Makhanu, 2010).

In contrast, inadequate knowledge coupled with negative thoughts and comments from school principals may lead to low teacher motivation, which in turn can affect the advancement of the teaching-learning process. In support of this argument, Steyn (2004) and Van Niekerk (2009) stated that low motivation can distract and impede school functioning as well as the achievement of ICT policy objectives and developmental opportunities. School principals with negative attitudes put the success of the policy implementation plans at a greater risk.

For positive integration of technology in the school, a shared vision and an ICT policy plan are required (Alghamdi & Prestridge, 2015). Misunderstanding or miscommunication between the opinions of the school principals and teachers can cause a major impediment to implementing ICT policies in the academic environment (Prestridge, 2012; Teo, Milutinović, & Zhou, 2015; Shin, 2015). Thus, the school principal as a technology leader must clearly state his/her vision and understanding of the ICT policy in education, which must be transformed into practical steps to provide teachers with an atmosphere for learning how to effectively use ICT in the classroom (Law, Pelgrum & Plomp, 2008; Kim & Lee, 2013). School principals are expected to give ample time and motivation to teachers to learn how to use this technology and to provide digital research materials so that teachers can be more familiar with the digital tools (Jones, 2004).

School principals as technology leaders are expected to make an extensive and sustained effort to tackle problems arising from ineffective technology implementation in their schools (Makhanu, 2010). There is no doubt that school principals who can encourage students, teachers, and non-teaching staff and give timely support can successfully implement ICT in their schools. They should develop strategies for dealing with the problems that their schools are having with regard to implementing ICTs. School

principals must be creative, proficient, and laser-focused when dealing with the issues that arise when implementing new technologies in the classroom. As a result, it can be argued that the behaviours of school principals are found to be essential for the effective and efficient implementation of ICT policy.

2.7 Theoretical framework – policy implementation theory using the bottom-up approach

The bottom-up approach was developed by Lipsky, Hanf, Hjern and Porter in 1978, having identified the shortcomings of the top-down approach. Pülzl and Treib (2007) buttressed this point by stating that the bottom-up approach was developed as a solution to the challenges of the top-down approach. Hanf and Scharpf (1978) explained that the bottom-up strategy finds groups of stakeholders active in the delivery of services in one or more designated locations and asks them about their aims, approaches, actions, and contacts. These contacts are used to develop a connectivity framework for identifying the stakeholders engaged in the design, funding, and implementation process locally, regionally and nationally.

According to Sabatier (2005), this approach adds local actors such as school principals and teachers as top policy decision-makers. Lipsky (1980) also stated that the bottom-up approach is characterised by the inclusion of street-level bureaucrats as policymakers. As a result, goals, plans, and actions are implemented with a specific focus on individuals whom the policy will directly impact.

The bottom-up approach defines the policies, its formulation and execution from the foundation and then extends around or upwards to the top (Sabatier, 2005). DeLeon and Steelman (2001) further explained that bottom-uppers tend to represent the interest of the community, whereas top-downers may work towards forcing policy on a group of interest. These authors argued that bottom-up implementation is “more practical and realistic” and significantly more “democratic” than top-down implementation. Their argument supported the notion that democratic judgments result from prevailing opinions and logical discussions among all concerned parties, so the bottom-up method is more associated with proper democratic governance.

The bottom-up approach condemns the idea of authoritarian instructions and focuses on the field players at the bottom of the political-administrative system (O'Toole Jr, 2000). The bottom-up approach assumes that street-level bureaucrats should be involved in the policy decision-making process rather than government and legislative. These field players, also known as street-level bureaucrats, according to Lipsky (1980), are a group of actors from various organisations which include among others the schools, health organisations, security agencies, and legal offices. In the context of this study, school principals and teachers refer to street-level bureaucrats. This can be attributed to the reason that their interactions with the individuals they manage will help them to have a more comprehensive insight into their needs (Hill & Hupe, 2014). These street-level bureaucrats' decisions, habits, and techniques for dealing with uncertainty and job constraints essentially become the public policies they implement.

In this approach, the school principal as a bureaucrat is involved in the decision-making of the policy. Thus, they will be able to formulate procedures and strategies that can assist them in overcoming challenges, resulting in a productive implementation process. The bottom-up approach recognises that one size or measure does not fit all situations. As a result, street-level bureaucrats frequently work in scenarios that necessitate varied answers to the many characteristics of the problem.

To fully understand school principals' implementation of ICT policy in secondary schools, the bottom-up approach is applicable to this study because it provides a more feasible and dependable substitute to the top-down approach, which sees the government as the solitary player in policymaking (Pülzl & Treib, 2007). To support this argument, DeLeon and DeLeon (2002) pointed out that whereas top-downers explicitly describe the aim and strive to identify failure or success, bottom-uppers may tamper with the implementation and advocate a policy that would at least partially accomplish the goal. The bottom-uppers, in other words, find and explain the degree of policy success with respect to the policy aim.

This theory guides this study because it argues for some factors which mainly determine the successfulness of the implementation process such as the involvement of school principals in the design of the policy standards and objectives, policy resources, and target-group behaviours, amongst other factors. As a result, implementation is seen as

a mechanism and outcome that incorporates decisions and activities required to put an authorised decision into effect in accordance with the law's objective (Paudel, 2009).

Despite the benefits the bottom-up approach has over the top-down approach, it also has its own flaws. One of its weaknesses, as observed by Hill and Hupe (2014), is that it places too much importance on the self-governance of street-level bureaucrats. Meanwhile, policy regulation is expected to be done by stakeholders whose power to formulate policies is derived from their appointment. Regardless, the bottom-up approach signifies a more dependable solution for resolving the inadequacies of the top-down approach to the study of the policy implementation process.

2.8 Conclusion

In this chapter, a variety of pertinent material, including journals, books, theses, and internet sources, was examined, and the following ideas were reviewed in relation to the research issue:

(a) The global, continental, and Nigerian outlook on the implementation of ICT policies in secondary schools.
(b) The roles of school principals in the implementation process.
(c) Challenges faced by school principals during the implementation of ICT policies in their schools.
(d) Strategies used in overcoming the ICT implementation challenges.
(e) The theoretical framework upon which the research was conducted.

The numbered points served as my reference point towards navigating the research problem. The next chapter, Chapter 3, presents in detail the research approach, design and methodology I used in this study. It also explains the ethical principles I observed in this study.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

The purpose of this study was to investigate how school principals in Lagos State implement the ICT policy. In the previous chapter, I reviewed and discussed literature on ICT policy implementation design and process, school principals' implementation of ICT policy in schools, enabling and prohibiting factors of ICT policy implementation in schools, and strategies school principals use to overcome the implementation challenges. In this chapter, I present the detailed research design and methodology adopted for this study. In doing so, I address the research paradigm, research approach, research design, population, and sampling design used in the study. I further discuss the data collection strategies and data analysis procedures that were implemented and conclude by examining how trustworthiness was ensured in the study and the ethical considerations.

3.2 Research paradigm

I used the term paradigm to describe the perspectives, opinions, or beliefs of a researcher that informs the significance or phenomenon studied (Mackenzie & Knipe, 2006). Maree (2016) asserts this by defining research paradigm as a set of assumptions about an essential aspect of realism that has contributed to the emergence of a particular worldview. The three approaches to a research paradigm are positivism, interpretivism and the critical theory approach. The supposition upon which I base this study is in the interpretivist paradigm, which holds that there is no such thing as reality or truth but that reality is constructed by human interaction (Hammersley, 2013).

My interpretative ontological assumptions were founded on the concept that the world we examine is inhabited by individuals with diverse perspectives, interpretations, and meanings regarding an occurrence, resulting in various views on the occurrence. Epistemologically, participants cannot access external reality directly without being sourced by their worldviews, beliefs, and experiences, among other things, thus making it subjective (Flick, 2004). This study fits into the assumption because it allowed the

participants to express their personal beliefs, knowledge and views on the subject in study, ensuring the objectivity of the study**.** Using the interpretive paradigm, I obtained a comprehensive view of the school principals on their experiences regarding the ICT policy implementation in their respective schools, making sense of their behaviour, perceptions, and variations rather than just watching and explaining people's worldviews and interpretations (Cohen et al., 2007).

3.3 Research approach

I followed a qualitative approach to investigate how school principals in Lagos State secondary schools implement ICT policies. I opted for this research approach with the aim of "defining, comprehending, and analysing individuals' experiences, how they interact with each other, and how they communicate ideas" (Lichtman, 2017). Several authors and researchers such as (Maree, 2016; Creswell, 2014; Joseph & Russell, 2012; Leedy & Ormrod, 2010) have characterised the qualitative research approach as follows:

Qualitative data gives a lot of different views and perspectives about the topic in study.

(a) It can provide a more explicit depiction of the physical and social world that quantitative information cannot interpret.
(b) It involves exploratory research questions.
(c) It involves inductive and deductive data analysis.

The qualitative technique used in this study allowed me to gain a better, more descriptive and in detail understanding of the experiences of school principals concerning ICT policy implementation. That is, how they perceive the policy and interact with their social environment, allowing me to understand the research problem clearly. I ensured the study took place within a natural context and was actively involved in interacting with the research participants. However, the time-consuming aspect of qualitative analysis is one major obstacle I faced (Guest et al., 2013). This included data transcription, painstaking coding and the demanding task of data analysis. However, to overcome this challenge, I selected eight school principals so that I could conduct a full and in-depth data analysis in a timely manner. Another issue is that the contextualised data and interpretations made it difficult for me to transmit my findings, but I addressed this by providing detailed descriptions of the interview and the participants.

3.4 Research design

The role of a research design in this study was to coach me towards the data collection and analysis (Pandey & Pandey, 2015). Based on my experience with this study, I discovered that a research design served as a blueprint that helped me while I sought answers to the research questions during the collection, processing, and interpretation of the data (McMillan & Schumacher, 2014). In other words, it acted as a guide to the conclusion of my studies (Okeke & Van Wyk, 2016).

In this study, I employed a case study research design to investigate current events in the context of school principals' daily lives, especially "where the boundaries between the environment and incidence are intuitively unclear" (Maree, 2016). The primary goal of a case study is to identify and investigate anything unique about the case, which will then be applied to similar situations in the future. Case study research, as Maree (2016) describes it, entails a systematic inquiry into an event or sets of related events with the purpose of describing the phenomenon under consideration.

I considered the case study research design appropriate for this study because it focuses on human experiences. Thus, I got a clear insight into how school principals implement ICT policies and the challenges they face while implementing these policies. Case study technique has also been highlighted to be among the social science research strategies that can be used to examine the policy implementation process (Yin, 2012). As a result, the case study research design allowed me to carefully examine the data in a particular context while concentrating on a small group of people or a small geographic area (Zainal, 2007).

One major challenge I experienced while employing case studies was that they were not intended to be easily evaluated, thus making my results prone to biases and subjectivity (Cohen et al., 2013). However, I overcame this barrier by presenting my report in a simplified language so that an average reader could relate to it and possibly adapt its findings to a similar situation (Maree, 2016).

3.5 Sampling techniques

A sample is a component that exemplifies the total. A subset of a specific population is selected for research through sampling (Guest et al., 2013:42). The sample reflects the whole so that generalisations about the whole based on the sample's data can be made (Byrne, 2001). I adopted purposive sampling technique in the selection of participants and the location of this study. Purposive sampling technique is a non-probability sampling approach that I utilised to proactively choose the most productive research sites, participants, and documents that fit the criteria for my study (Maree, 2016). Creswell (2014) pointed out that choosing participants and locations in qualitative research should be done purposively so that the researcher clearly understands the research problem. The proposition behind using the purposive sampling technique was that having known the purpose of my study, I found it necessary to gather diverse viewpoints and opinions from various individuals and incorporate them into the sample. This approach is supported by scholars such as Mason (2002) and Robinson (2014).

One major limitation I experienced in purposive sampling was that my sample did not represent a larger population of the sample, and it, therefore, implies limited external validity (Joseph & Russell, 2012; Flick, 2018a). To overcome this limitation, I made sure this study is not designed for simple generalisation purposes but rather to give a deep insight into the experiences of Lagos State secondary school principals' experiences of implementing ICT policies in their various academic environments. Also, my focus was generally on sample adequacy rather than the absolute size, as my intention was not to generalise the findings. This is supported by the statement made by Landsverk, Brown, Chamberlain, Palinkas et.al. (2012) that "the sufficiency of sampling is frequently justified by the reaching of the saturation threshold," which qualitative researchers believe to be a sufficient criterion for ensuring the integrity of findings (Guest, Bunce & Johnson, 2006). I detailed the research sites and participants utilising purposive sampling below.

3.5.1 Study sites

I purposefully selected eight secondary schools in the Surulere local government and Mushin local government areas of Lagos State based on the criteria that they have an ICT laboratory or fully dedicated computer room. Also, they must have been

implementing ICT in their teaching and learning activities (Etikan, Musa & Alkassim, 2016). The location of secondary schools in Lagos State was found on the Ministry of Education website for easy accessibility. Although secondary schools in these two local governments may not have more amenities than those in other local governments, I chose these local governments for convenience, considering the time and financial resources incurred for the study. I was also not interested in the number or location of schools. Instead, I focused on the depth and saturation of the data (Roulston & Choi, 2018). In other words, any public secondary school in Lagos State was qualified to participate in this study.

3.5.2 Participants

Participants in this study were required to have an understanding of the process and/or operations and/or experiences in public secondary schools regarding the implementation of ICT policy in education (Cohen et al., 2002). Therefore, I selected my participants based on their significance to my research study (McMillan & Schumacher, 2014). According to the Lagos State school census report year 2015-2016, there are 670 school principals in Lagos State public secondary schools. I have chosen public secondary school principals because I can easily access their database at the Ministry of Education secretariat. Four (4) junior secondary school principals and four (4) senior secondary school principals were selected for this study as it was not feasible to use the entire population. I chose this set of respondents because they were 'information-rich sources' (Guest et al., 2013; McMillan & Schumacher, 2014). McMillan and Schumacher defined information-rich instances as samples that are well-informed and have a thorough comprehension of the research.

3.6 Data collection strategies

In qualitative research, data collection refers to the identification and collection of data on verbal and/or nonverbal material with the aim of evaluating and understanding occurrences through the subjective experiences of the participants (Flick, 2018b).

The data collected for this study was designed to acquire useful information to answer my research questions about the implementation of ICT policies by school principals (Hamilton, 2011; Masha, 2017). I collected my data through the semi-structured interview

method to have an in-depth study of the subject of school principals' implementation of ICT policy in schools.

3.6.1 Semi-structured interview

An interview, according to Cohen, Manion, and Morrison (2011), is "a conversation of ideas between two or more individuals on a topic of common understanding, acknowledging the importance of human interactions in information generation, and emphasising the cultural norms underlying research results." A semi-structured interview is characterised by the fact that it is an unstructured, unrestrained, and thorough interview method (Joseph & Russell, 2012). I involved the participants in a question-answer session using open-ended questions to elicit information on the subject matter (McMillan & Schumacher, 2010; Frey, 2018; Roulston & Choi, 2018). The school principals were interviewed individually during their leisure time within a time frame of 30 minutes, and I used audio tape to have verbatim recordings of the conversation.

I considered a semi-structured interview appropriate because it enabled the participants and myself to be involved in an interactive session. Due to its flexibility, I could go deeper into the original questions based on the participant's responses (Olsen, 2014; Lichtman, 2017). To allow the participants to openly express their thoughts and experiences regarding the subject matter without feeling intimidated by other school principals, I conducted one-on-one interviews with the school principals at their respective schools (Cohen et al., 2002). One major challenge I had during the interview was that the respondents were distracted by issues unrelated to the study. However, I was vigilant about this and gently guided the participants back to the topic of the interview.

3.7 Data analysis

Data analysis in qualitative research entails analysing and critically evaluating paragraphs, sentences, and words to give meaning to them and interpreting and theorising those data by organising, simplifying, and summarising them (Smit, 2002). In other words, it implies gaining an understanding of the content of the acquired data (Creswell, 2014). The ability of data analysis in qualitative studies to identify, analyse, and utilise the data in the manner that respondents define the situation is what makes it unique (Cohen et al., 2002).

In this, I analysed the data obtained from interviewers using inductive thematic analysis, a method in which qualitative data (referred to as themes) is organised into categories and patterns, and correlations within the categories are found (McMillan & Schumacher, 2010). Thematic analysis enabled me to identify and analyse significant patterns in a dataset. It also provided me with a thorough and complex explanation of data (Braun & Clarke, 2006). In other words, the primary purpose of employing this method was to provide a detailed description and explanation of the responses.

I carefully examined the data utilising Braun and Clarke's (2006) six phases of thematic analysis to understand what it encompasses. Having identified the themes and sub-themes, I transcribed the data collected from the interviews with the participants and coded the data to denote each theme. Then, I grouped the responses according to each research question. A detailed analysis of these themes was used to structure and guide the description of the findings. The rationale behind using thematic analysis is that it follows a paradigm of interpretive/constructive approach, which is the paradigm used for this study to largely qualitative techniques (Guest, MacQueen, & Namey, 2012). Also, the thematic approach has been proven to be a simple and highly flexible approach for researchers with less or no experience in qualitative research (King, 2004). Though data using inductive thematic analysis can be time-consuming because of its procedures, its advantages still outweigh its demerits.

3.8 Trustworthiness of the research

Trustworthiness means recognising and analysing the methods used in verifying the accuracy of the interviews and findings (Creswell, 2014). Therefore, the researcher must build relationships and understanding with the study's participants (Denby et al., 2008). The process of ensuring trustworthiness is based on certain evaluations such as credibility, transferability, dependability and confirmability (Elo et al., 2014).

For credibility purposes, I strove to capture a literal account of the participants' words as much as feasible, and I requested more clarification when the point expressed was unclear. In addition, I gathered data using a recording device, which I replayed to provide a thorough understanding of the participants' points until I was clear regarding the concerns. Before the interview began, I explained how to use the recording equipment

and obtained their consent to use it. Prior to doing the interview, I supplied the participants with the interview schedule in order to establish confidence and develop an accountable and interactive connection between the participants and myself.

Transferability assumes that other patterns will emerge in the subject being investigated and is based on the assumption that study results can be transferred (Elo et al., 2014). To make the research findings more transferable, I offered an in-depth explanation of the purpose of my study, my position as the researcher, my participants' details, the locations and context of where data will be collected, including data analysis strategies to obtain thick and rich data.

Confirmability refers to the extent to which findings obtained can be verified by other experts in the field, and the interpretation of the findings can be established (Elo et al., 2014). For this purpose, I supplied the participants with copies of the transcribed data to double-check if they gave accurate information, a term referred to as member-checking (Cohen et al., 2002; Creswell, 2014; Lichtman, 2017). The purpose of the member checks was also to enable me to illuminate the findings and check the authenticity of my work from multiple perspectives (Firmin, Sheard, Carbone, & Hurst, 2012). In addition, I had a peer debriefing with a colleague, asking her to assess my research and ask pertinent questions. I also searched for scope across numerous and varied data sources to recognise recurring themes and look out for data that is entirely different or inconsistent with the evolving theme.

Dependability is the extent to which a researcher may do the same inquiry with the same individuals in the same setting. (Creswell, 2008; Yin 2009). In their study, Elo et al. (2014) defined dependability as the security and stability of data across time in regard to contextual variances. I verified that my data was appropriately evaluated and interpreted. I also ensured that my research strategy was thoroughly implemented and the research process was completed to verify that the findings were reliable, presenting extensive reports.

3.9 Limitations of the study

I consider my sample size as the major limitation of the study as only four schools in Surulere and four schools in Mushin local government area in Lagos State were

considered for this study. Thus, making the study not to represent a population and may not be generalised but to understand in detail the experiences of school principals in implementing ICT policy in secondary schools. Another limitation of my study was the fact that I used one method to generate my data (interviews). This I overcame by probing my participants for further details on their practices and experiences.

3.10 Ethical considerations

The fundamental goal of academic research is human beings. Therefore, ensuring the right and safety of the participants becomes the researcher's obligation (McMillan & Schumacher, 2014). Because human beings are the fundamental goal of educational research, guaranteeing the rights and safety of participants becomes the researcher's responsibility (McMillan & Schumacher, 2014). To fulfil the ethical requirements for this research, I made every attempt to do the following before and throughout the research:

3.10.1 Permission

Prior to embarking on fieldwork, I obtained ethics approval from the University of Pretoria, Faculty of Education ethics committee, and I fulfilled them by obtaining authorisation from the Lagos State Ministry of Education before going to the schools. I sent an invitation letter to the school principals seeking their permission to be interviewed. The following information were provided in the letter:

(a) The purpose of the study.
(b) The time frame and location of the study.
(c) Provisions were made to protect the privacy, anonymity, and safety of the participants.

3.10.2 Voluntary participation and informed consent

Another critical factor that is key to conducting research in an ethical manner is voluntary participation and informed consent. Stake (2000) asserted the need for participants to be well-briefed on the study focus before consenting to participate. Thus, eligible participants having understood the purpose of the study must give their consent voluntarily (Joseph & Russell, 2012).

To comply with the principles of informed consent and voluntary participation, I sent a well-briefed invitation letter to participate and a consent letter to each participant (school principal). The letter's content included information on the study, the nature of the research, and the part they are anticipated to play before the interview. The consent form also explicitly stated that they had the option to participate and the liberty to withdraw from participation at any time.

3.10.3 Confidentiality and anonymity

An individual's right to private information is referred to as confidentiality, while anonymity indicates the protection of the participants' privacy by preventing their names from being included (Seroto, Booyse, Roux, Seroto & Wolhuter, 2011). I ensured that no identifiable information was included in this study to guarantee compliance with confidentiality issues and the anonymous provision of the research ethical guidelines. Also, I paid careful attention to my transcription, data analysis and report writing. I also considered the safety of the research environment while conducting my interviews. Lastly, the schools I discussed in this study were based on their geographical location and demographic characteristics and pseudonyms were employed to protect the confidentiality of the schools and respondents (Christians, 2000; Mertens, 2017).

3.10.4 Participant's well-being

It is vital to prevent any form of physical or psychological damage to the interviewees (Seroto et al., 2011). For this reason, I took into consideration the participant's well-being before conducting my research study (Joseph & Russell, 2012). In accordance with the ethical concept of participant well-being, I made sure that no sensitive or humiliating matters that may be psychologically hurtful were mentioned. In addition, I made sure I established a trusting relationship with my participants.

3.11 Conclusion

In this chapter, I presented the research paradigm (ontology, epistemology, and research approach) and an extensive discussion on the rationale behind my choice of research methods.

In the next chapter, Chapter 4, I present the study findings that evolved from the data collected.

CHAPTER 4

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

4.1 Introduction

The purpose of this study, as indicated in previous chapters, is to investigate how school principals in Lagos State secondary schools, Nigeria, implement the Information and Communication Technology (ICT) policy. In Chapter 3, I outlined the study's research design and methods; examined the research tools, population, sample strategy, and the purpose for why they were chosen. Furthermore, I discussed the methods I used for obtaining data and analysis as well as the ethical concerns I took into account while conducting the research study.

In this chapter, I present the experiences of Lagos State secondary school principals in implementing the ICT policies as narrated by participants. I collected my data through semi-structured individual interviews and analysed it using thematic analysis strategy. My role as a researcher was to transcribe interviews, code the data, analyse, interpret, and create themes and sub-themes (Wu, Thompson, Aroian, Mcquaid & Deatrick, 2016). While generalising my findings, I used direct quotes from the respondents to confirm and analyse the results. Before I present the data, I found it imperative to declare my position in this study, whether or not it had the potential to influence the research process and if so, how I dealt with that.

4.2 Personal declaration

Qualitative research focuses on gathering rich and relevant data on a phenomenon in order to gain a comprehensive knowledge of the subject under study (Mihai & Nieuwenhuis, 2015). Thus, I saw the interpretative nature of the event being studied as a major limitation that may jeopardise my credibility (Creswell, 2014); hence I found it necessary to declare my position in this study.

At the time that I collected data, I was an education administrator in one of the private secondary schools in Lagos, Nigeria. In this position, my job was to ensure the proper utilisation of educational activities, human and material resources; provision of financial

and logical advice to parents; and encouraging/developing students' interest in their subject areas.

One possible drawback that I presumed was my biases. Since I was a private educational administrator, I decided to conduct this study with school principals in public secondary schools. Furthermore, because I had no prior relationship with the schools under investigation or the areas in which the schools are situated, I can guarantee that I entered the field as an unbiased individual. This, in my opinion, ruled out the potential of individual bias influencing the trustworthiness of the research.

4.3 Study sites and participants' profiles

In this section, I gave descriptions of the eight secondary schools and school principals that participated in this study. These descriptions enabled me to identify their differing and similar characteristics that could have the potential to influence their management roles. For confidentiality and anonymity purposes, I used acronyms to represent the eight schools and the school principals that I interviewed. In order to adhere to ethical principles (Maree, 2016:114), I kept the schools and school principals anonymous by referring to them as School A (SA) to School H (SH) and principal one (P1) to principal eight (P8). I present an overview of the schools and participants in Table 4.1 immediately after the descriptions.

4.3.1 School A (SA)

School A (SA) was a senior secondary school located in the Itire-Ikate local community development area of Surulere local government and fully funded by the Lagos State Ministry of Education. The learning environment comprised of boys and girls (mixed school). As a senior secondary school, classes ranged from senior secondary class one to senior secondary class three. The school had approximately 1,520 students and 52 teachers. The school also had an ICT room, though not fully equipped, but functional.

4.3.1.1 Principal one (P1)

Principal one (P1) had 13 years of experience as a school principal in the senior secondary school. He had a bachelor's degree in Political Science Education and a National Certificate in Education (NCE) in History and Yoruba.

4.3.2 School B (SB)

School B was a junior secondary day school located in the Idi-Araba area of the Mushin local government area of Lagos State, fully funded by the Lagos State Ministry of Education, with the majority of the students being Muslims. In a junior secondary school, classes ranged from junior secondary class one to junior secondary class three. Each class level had nine arms bringing the number of classrooms in the school to 27. The school had approximately 1,320 mixed-gender students and 65 teachers. The school had a computer laboratory with very few computers and one interactive board.

4.3.2.1 Principal two (P2)

Principal two (P2) had been a school principal for eight years. She served as a senior school principal for three years and was a junior school principal for the past five years. She had a master's degree in Guidance and Counselling Psychology.

4.3.3 School C (SC)

School C was a senior secondary school for girls located in the Ilasamaja area of the Mushin local government and was fully funded by the Lagos State Ministry of Education. The school had a fully equipped and functional ICT room with technical support staff monitoring the equipment. As a senior secondary school, classes ranged from senior secondary class one to senior secondary class three. Each level had a science, commercial and art department. The school had approximately 987 students and 40 teachers.

4.3.3.1 Principal three (P3)

Principal three (P3) had served in different capacities as a teacher, educational inspector and school principal for over 15 years. He had a master's degree in Educational Leadership and Management and a bachelor's degree in English Education.

4.3.4 School D (SD)

School D was a day-only senior secondary school located in the Masha area of the Surulere local government, fully funded by the Lagos State Ministry of Education. The school's ICT room was fully equipped with enough computers, internet resources,

printers, and an interactive board, with the principal entirely in charge of its supervision. In a senior secondary school, classes ranged from senior secondary class one to senior secondary class five. Each level had a science, commercial and art department. The school had approximately 1,070 students and 48 teachers.

4.3.4.1 Principal four (P4)

Principal four (P4) had a strong background in Computer Science. He had served as a Computer Science teacher for eight years before attaining the position of a senior secondary school principal 13 years ago. He had a bachelor's degree in Computer Science Education and a postgraduate diploma in Educational Management.

4.3.5 School E (SE)

School E was a junior secondary school for boys located in the Odi-Olowo local community development area of the Mushin local government and was fully funded by the Lagos State Ministry of Education. In a junior secondary school, classes ranged from junior secondary class one up to junior secondary class five, with each level divided into seven classes (JSS1a – JSS1g). The school had approximately 1,200 students and 45 teachers. The school had a computer laboratory with many computers and printers.

4.3.5.1 Principal five (P5)

Principal five (P5) served as a senior school principal for nine years and a junior school principal for the past six years. He had a master's degree in Educational Management and Leadership.

4.3.6 School F (SF)

School F was a day-only senior secondary public school located in the Surulere local government area and was fully funded by the Lagos State Ministry of Education. In a senior secondary school, classes ranged from senior secondary class one to senior secondary class three. The school had approximately 1,520 students and 53 teachers with a small computer room that was locked; hence I could not determine how it was equipped.

4.3.6.1 Principal six (P6)

Principal six (P6) was a school principal for six years after several years of active service as a Business Studies teacher. He had a master's degree in Business Education and a bachelor's degree in Business Education.

4.3.7 School G (SG)

School G was a day-only senior secondary public school located in the Palm Avenue area of the Mushin local government area and fully funded by the Lagos State Ministry of Education. The school had an ICT room with a few computers and ICT gadgets. In a senior secondary school, classes ranged from senior secondary class one to senior secondary class three. The school had approximately 950 students and 40 teachers.

4.3.7.1 Principal seven (P7)

Principal seven (P7) had 22 years of experience in the teaching and learning environment. She started her teaching career as a primary school teacher. She was later transferred to a senior secondary school and taught Government as a subject for ten years before being promoted to the vice-principal position. She performed outstandingly and was promoted to a school principal nine years ago. She had a master's degree in Educational Leadership and a bachelor's degree in Social Studies Education.

4.3.8 School H (SH)

School H was a day-only senior secondary public school located in the Palm Avenue area of the Mushin local government and was fully funded by the Lagos State Ministry of Education. The school had a computer laboratory with functional ICT equipment. In a senior secondary school, classes ranged from senior secondary class one to senior secondary class five. The school had approximately 1,160 students and 45 teachers.

4.3.8.1 Principal eight (P8)

Principal eight (P8) had worked as a government teacher for 15 years before attaining the position of junior secondary school principal four years ago. She had a master's degree in Educational Psychology and a bachelor's degree in History and Diplomatic Studies.

I involved a total of eight secondary schools comprising four junior secondary schools and four senior secondary schools from the Surulere local government area and the Mushin local government area in Lagos State in the study, and a total of eight participants, one from each school were interviewed. The junior secondary school comprised three levels (JSS1, JSS2. JSS3), equivalent to grades 7,8,9 for the ages 13-16. Upon the successful completion of JSS3, students are awarded a Basic Education Certificate (BEC), after which they are promoted to senior secondary school. The senior secondary school comprised SS1, SS2, and SS3, equivalent to grades 10, 11, and 12. The majority of these students fall in the 16 – 19-year-old age bracket. At the secondary level, students are tested and counselled into one of three areas of concentration (science, art, commercial). In their twelfth year, students are allowed to write the Senior School Certificate Examination (SSCE).

I selected the schools based on the criteria that they have an ICT laboratory or fully dedicated computer room and have been implementing ICT policies in their teaching and learning activities. In table 4.1 below, I presented the biographical information of the participants in the study.

Schools (S)	Principals (P)	Local Government Area (LGA)	Portfolio	ICT infrastructure	Years of experience as a school principal
SA	P1	Surulere local government	Senior secondary school principal	Computers, laptops, printers, scanners, projectors.	13 years
SB	P2	Mushin local government	Junior secondary school principal	Computers, interactive board, printers, scanners, projectors.	8 years
SC	P3	Mushin local government	Senior secondary school principal	Computers, laptops, printers, scanner, projectors, interactive board.	15 years
SE	P5	Surulere local government	Junior secondary school principal	Computers, scanners, projectors, and printers.	15 years
SF	P6	Surulere local government	Junior secondary school principal	Unknown	6 years
SG	P7	Mushin local government	Senior secondary school principal	Computers, laptops, printers, scanner, projectors, interactive board.	9 years
SH	P8	Mushin local government	Junior secondary school principal	Computers, laptops, printers, scanner, projectors.	4 years

Table 4.1: Codes used for study sites and participants' experience.

Having discussed the study sites and profiles of the participants in this study, I will proceed to present the data collection procedure.

4.4. Data collection procedure

The primary research question that drove this study reads: "How do school principals in Lagos state implement ICT policies?" This question was followed by five sub-questions from which I grouped the themes during the interviews, and they read as follows:

(a) How do school principals in Lagos State secondary schools understand their roles in implementing the ICT policy?

(b) What support do school principals in Lagos State secondary schools get to implement the ICT policy in Lagos State secondary schools?
(c) What factors influence the ICT policy implementation process in Lagos State secondary schools?
(d) What are the apparent challenges school principals face during ICT policy implementation in Lagos State secondary schools?
(e) How do school principals in Lagos State secondary schools overcome the challenges they face in implementing the ICT policy in schools?

The above questions directed me to the field, and the findings of the study were derived entirely from semi-structured interviews, which yielded textual data. I went to the eight schools and engaged the school principals in one-on-one individual interviews. I conducted the interviews in their respective offices within an approximate timeframe of 30 minutes, using English language as my medium of communication. I scheduled my interview with the school principals according to their time preferences. During the interviews, I made decisions on the ordering, framing and timing of the questions during the interview (McMillan & Schumacher, 2014). I designed the interview questions in accordance with the research questions.

I began by extending a warm welcome to my participants and thanking them for taking part. I gave a brief introduction of myself and the reason for the interview. Furthermore, I explained the interview procedure described in the invitation previously received and confirmed my intention to uphold the ethical principle of informed consent. I then stopped to ask and check that they understood my explanation and were still willing to participate in the study. After I confirmed my alignment with the participant(s), I gradually engaged the participants by asking the interview questions. In the last session, I summarised vital elements from the discussion and confirmed my comprehension of those points with my participants (Maree, 2016).

4.5 Data analysis process

Data analysis in qualitative research is characterised by its ability to categorise, clarify, and make meaningful use of the data in the way participants describe the situation (Cohen et al., 2002). My role as a researcher was to analyse the data obtained from

interviewees using inductive thematic analysis. I followed the steps outlined by Creswell (2014), McMillan and Schumacher (2014) and Maree (2016) in analysing my data.

Collect data – I collected the data by conducting a semi-structured interview with participants.

Describe data – I provided a full explanation of the research sites, participants (while retaining anonymity and ethical norms), data collection settings, and the appropriate sampling technique.

Organise data – I organised the data based on recorded conversations and backup notes made during the interview and correctly labelled each with the location, date, and how it was obtained. Then, I saved each set of interviews in distinct folders adequately labelled for easy retrieval when needed.

Transcribing data into segments – I converted the verbatim data I had recorded using an audio recorder from the participants into a written format, including the appropriate dates and locations for the interviews.

Code data - I divided the transcribed data from each individual interview and divided it into sub-themes of related thoughts and labelled them with easily identifiable words.

Data interpretation – This was the final phase of data analysis, during which I examined the results. Interview responses were analysed using narrative analysis. At this point, I was able to establish how school principals applied policy implementation theory in implementing ICT policies and how other school stakeholders responded to it.

The emergent themes were in line with the research questions about school principals' understanding of the implementation of the ICT policy in Lagos State secondary schools. To buttress my point, Ezzy (2002) pointed out that data analysis in qualitative studies relies on emerging themes of knowledge without prior construction. Below, I present the data as I collected it from the participants after which I analyse, interpret and draw conclusions.

4.5.1 School principals' understanding of their roles in implementing ICT policies

The participants' understanding of their role in the implementation of ICT policies is crucial to its successful execution. Without an understanding of their literacy in ICT, they may find it challenging to fulfil their roles in implementing ICT policies in their schools.

> *My role in the implementation process is very crucial and tasking. As the school head, my role is to understand the ICT policy and strategy needed for its implementation. It is when I understand this fully that I can impact the factors involved in joining me to fully implement these policies, talking about the staff and students so that they can actively participate in the implementation process.* P5 – SE.

> *My role in this aspect is to ensure that things are done effectively and efficiently as designed in accordance with the government policy because if we do not do it that way, we will have issues with the government. I work with my teachers to ensure that ICT policy is being embraced in my school. For instance, writing lesson notes is no longer done manually. It is being done electronically.* P3 – SC.

> *My role as a leader of the school is to be in charge of organising manuals, then directing the school according to what will benefit both teachers and students using the ICT policy in education as a manual.* P1 - SA.

> *I ensure that all students and teachers are able to use this equipment effectively. I ensure that students are independent on their own. In their leisure time, they can go to the computer room and operate the system without supervision. I also ensure that the equipment we have at our disposal is well taken care of.* P4 – SD.

While some participants believed that their participation in the implementation process is significant, others regarded teachers as the major ICT policy implementers.

> *As a school principal, I have a crucial role to play in the implementation process. I do not consider myself as the main factor*

> *here. We must consider other factors such as teachers, students, school buildings, school preparations, external supervision, and administration.* P2 – SB.
>
> *My role as the general overseer of the school is to ensure that the teachers who are the main implementers of this policy perform their duties effectively.* P8 – SH.
>
> *My role in the implementation process is really not clear except for the fact that I know I have to monitor and ensure that my teachers follow the policy guidelines. I see the teachers as the main implementers of this policy because they are the ones who majorly impart knowledge to students.* P6 – SF.
>
> *My role is to ensure that policy is adhered to, as the policy seems to focus more on the teachers. So, all I have to do is monitoring and supervision*. P7 – SG.

Most school principals stated in their narratives that they play an important role in the ICT policy implementation process. The school principals saw themselves as intermediaries between the government and the school through policy implementation and assessment. They saw themselves as technology leaders meant to play the monitory and supervisory role in ensuring that the policy guidelines are strictly followed. Although the ICT policy did not specify their role in the implementation process, it can be deduced that by seeing themselves as technology leaders. School principals in this study demonstrated a positive attitude by motivating and propelling the teachers to incorporate technology into their pedagogical activities.

Their narratives also indicated that they *created an atmosphere for innovative culture* so that the staff and students were included in the innovation process. The school principals confirmed that human and physical resources such as teachers, students, external monitoring and supervision, and school facilities were essential to implementing ICT policy in secondary schools.

It is vital to indicate that some school principals felt uncertain about their role in implementing the ICT policy. They believed that teachers should be in charge of implementing ICT policies since they are the ones who utilise ICT. Most of the school principals confirmed teachers as the main factor that can aid the achievement of school policy goals and objectives. It would therefore be interesting to find out about the support school principals receive for them to execute their roles, and below, I have presented their experiences in this regard.

4.5.2 Support school principals get to implement ICT policy

In response to the question, "What support do school principals in Lagos State secondary schools get to implement the ICT policy?" the participants explained the kind of support, where and how they have been receiving it for the successful implementation of the ICT policies in their schools.

> *So far, the government has only supported my school once by providing us with chairs and tables in the ICT room with very few computer systems. The Parents Teachers Association (PTA) also volunteered to set aside some funds from their dues to meet up with the school ICT demands.* P1 – SA.

> *The government has been able to provide us with computers and internet facilities. The government also provided the students with mobile phones to encourage mobile learning, and the Parents Teacher Association (PTA) also supports this by paying the network service provider monthly.* P3 - SC.

> *For the past years, our PTA has been supporting us immensely. Some PTA members donated computers, while others sent money to access internet facilities. Also, the government is playing a significant role by sending the personnel to train us on ICT use on a termly basis.* P4 – SD.

> *We have been getting tremendous support from the government who train teachers on the use of ICT. Recently we received the ICT*

> *equipment that aids the ICT department in its implementation process. The support of the PTA has also been very fantastic. They recently donated fourteen desktop computers to the school, which is laudable.* P5- SE.

> *The government equipped the ICT room with enough computer systems, printers, and projectors and some parents volunteered to see to the maintenance of the ICT gadgets. I want to thank my three mathematics students who represented the school in a quiz competition organised by a private parastatal. They returned with nine computer systems, a projector, and an interactive blackboard as the competition's overall winner.* P7 – SG.

> *The government fully provides for the school's ICT room.* P8 – SH.

While most participants applauded the Lagos State government and other supporting bodies, some school principals had a different story.

> *My school received a few computers from the government some years back.* P2 – SB.

> *The government seems to have forgotten about us regarding the ICT infrastructure. For instance, it has been years since we reported the damage to our computer laboratory due to some robbery. Till today, they have not attended to this matter, and the room is dysfunctional.* P6 – SF.

Participants' narratives show that there has been support towards the ICT policy implementation from sources such as the government, Parents Teacher Associations, and a few NGOs. According to these narratives, support came in different forms, including maintenance of computer labs and the provision of equipment. It also transpired that the ICT teaching staff and management of the schools received the necessary training that capacitates and empowers them towards the effective and efficient use of the ICT equipment. These narratives show that stakeholders in the participating areas

recognise the importance of collaborative engagement in successfully implementing ICT policies.

Participants in this study further indicated that government and private sector support does not always come in the form of “aid”. That is, schools need to participate in competitions in order for them to win prizes. In this way, not only does the school benefit but students’ intellectual well-being and self-reliance outlook are also enhanced since they learn that hard work pays dividends. Having explored the various means by which school principals get support towards the effective and efficient implementation of ICT policy in their schools, I went ahead to ask for their opinion about the strategies they use to implement the ICT policy in their schools and thus present their narratives in the next section.

4.5.3 Strategies school principals use to implement the ICT policy in their schools

> *Provision of enough funds for internet facilities, ICT equipment/gadgets and training about the use of ICT helps stakeholders to actively participate in the ICT policy implementation.* P1 – SA.

> *Part of the strategy I used in implementing ICT policy in my school is my display of active leadership since the innovation of this policy. My positive attitude towards using computers has influenced my staff to embrace the importance of computer-integrated learning.* P2 – SB.

> *There is a need for each school to have a standby computer engineer to fix the systems in case of breakdown. Also, government should continue to review their policies and make policies that will be motivational, interesting and encourage people to key into the area for teachers to develop interest in the program.* P3 – SC.

> *The main strategy that can aid the implementation process is consistent training organised by the government to school principals and teachers. Also, in order for teachers to have a strong interest in ICT, there is a need for a clear vision of the ICT policy.* P5 – SE.

Principal 6 from School F shared the same view by saying:

> *One factor that I know can facilitate ICT policy implementation is that there must be a clear vision of the ICT goals.* P6 – SF.

Principal 7 from School G also pointed out that:

> *The government must have a clear vision of this policy, that is, policy formulators and the government must make sure the concept behind ICT policy implementation in schools should be a realistic long-term goal that can be achievable.* P7 - SG.

In contrast, Principal 8 from School H noted that ICT policy implementation goes beyond providing computers alone.

> *There must be a kind of periodic monitoring and assessment by the policy formulators to know the impact and extent to which the policy objectives have been achieved in schools and also to enable them to identify the challenges faced by each school principal.* P8 – SH.

The participants' responses indicated that various strategies aid the successful implementation of ICT policies into the school curriculum. It also showed that before any ICT integration strategy can be implemented, the community's inhabitants and the distinguishing features of each school's students must be considered. The participants identified the provision of ICT resources and funding as the most facilitating factors that can aid the successful implementation of ICT policy in their schools. If this equipment is provided in schools, the practical aspect of the implementation process will be appropriately dealt with successfully.

Another facilitating factor mentioned by the participants is constant training on ICT by the government. The 21stcentury education does not only support new technological advancement but school principals with a high sense of literacy in technology (Amhag, 2014). Thus, school principals, as innovative changemakers, need professional development training to direct and guide staff in cross-curricular ICT integration.

Clear visions of ICT goals have also been identified as an enabling factor of ICT policy implementation. There is no doubt that when school principals are provided with the

educational policy goals and rationales with their roles clearly stated, it will assist them in strategising their cross-curricular ICT integration effort. Also, according to Marn and Tur (2014), the primary goal is for ICT to become an integral part of the learning process, and the concept behind it should be achievable with a realistic long-term goal.

Monitoring and evaluation were also identified as factors to be considered in implementing the ICT policy. There is no doubt that proper monitoring and assessment will enable school principals to set out timelines for ICT implementation in order to meet up with its strategic plans.

4.5.4 Challenges school principals face during ICT policy implementation

After probing the participants on the strategies used to implement ICT policy in their schools in the previous research question, I asked the participants in this study: "What factors hinder the implementation of ICT policy in secondary schools?" I had to delve more into understanding the problems that school principals confront while implementing ICT policies in their schools.

In responding to this question, most participants unreservedly shared the same opinions on the lack of ICT and financial resources as their significant challenges. majority of the participants pointed out the lack of ICT resources as the fundamental obstacle that tampered with the effective implementation of ICT policy in his school.

> *My school is currently experiencing a shortage of ICT resources such as computer systems and digital blackboard; we also need a standard computer laboratory for students as well as constant power supply for the smooth running of ICT-enabled activities. P1 – SA.*

> *The ministry in charge of the provision of these facilities must provide us with another computer laboratory with more computers because the students are too many, and we also need a teacher or facilitator who can inspire the teachers to use ICT.* P2 – SB.

> *There is a need for government to put in more resources by organising seminars, thereby creating opportunities for our staff to be more*

> *exposed so that they can understand the ICT policy guidelines.* P3 – SC.
>
> *Finance is one of the major problems. At times students damage these facilities when they use them, and it is expensive to repair.* P4 – SD.
>
> *Our major problem in this school is the internet. We do not have good internet facilities, and we do not have enough computers to run all these things. As you can see, we have many students in this school, and the number of computers is minimal. We do not have ICT gadgets like projectors, television, or printers. Each class need to have one of these gadgets before we can effectively implement this policy.* P5 – SE.
>
> *The ICT tools we have are not sufficient for the students, and this results in the poor implementation of the policy.* P6 – SF.

The participants also identified the policy's poor design as another challenge that affected the implementation process.

> *P2 – SB said: "The policy was designed randomly, and we do not have any complete benefit from it. It is only a name of a unit in the ministry or educational department, but we have nothing to gain from it. The policy did not specify the specialities to be involved in the implementation process and did not consider the different conditions at schools".*
>
> *The school principals are not carried along in the formulation of these policies and the principals are the ones to educate the staff, who then educate the students.* P1 – SA.

Challenges arise due to a lack of clarity in their roles as school principals and teachers.

> *The policy formulators tried their best in bringing this idea, but the major thing I observed is that the roles of the teachers and principals*

> *are not clearly stated. I am just using my initiative to guide the teachers. When the role is not clearly stated, it will affect us achieving the goals of the policy.* P5 – SE.
>
> *When there is an issue with the ICT tools, we end up packing them into the storeroom where it eventually rusts, and this is because we do not have ICT technical support staff.* P7 – SG.

The participant narratives revealed that, of the external elements stated thus far, 'finance' had a major impact on other determinants. Hence, the participants believed that a lack of funding is the primary cause of their schools' limited hardware and software, technical assistance, and career growth. The participants noted that investing in ICT for schools may be considered unnecessary and that the high cost and ongoing maintenance of ICT infrastructure have been the biggest obstacle to ICT policy acceptability and implementation in schools.

The participants also reported that technical support was a challenge for them. Teachers who know there is no technical assistance when ICT device issues arise will most likely avoid using the machinery out of fear. Furthermore, technical support is essential to helping teachers to effectively adopt ICT during class and not waste time on configuration or other issues. Technical support is critical in sustaining teachers' and principals' credibility in the dependability of availability to ICT applications and other hardware.

While the internet offers teachers and principals a lot of potential, it also has its share of drawbacks. For example, it is expensive to provide internet connectivity to every school. When it comes to internet usage, it is difficult to keep an eye on teachers' and students' use of the web to ensure they are not visiting socially or educationally inappropriate websites, which would divert them from their intended goal.

Another challenge reported by the school principals was the poor implementation guideline. This shows that the participants were ready to participate in the policy formulation. Since they are the primary implementers of these policies, their input will go a long way in successfully implementing them as they will be able to identify their roles in the implementation process.

In summary, the following are the challenges school principals face during the implementation of ICT policies in their schools:

(a) A lack of funds
(b) A lack of ICT resources and internet facilities
(c) Inadequate training from the government
(d) Poor technical assistance
(e) Poor implementation guidelines.

4.5.5 Strategies used to overcome the challenges of ICT policy implementation

Finally, having identified the challenges school principals face during the implementation of ICT policy, it is essential to establish, based on the school principals' experiences, the strategies they had in place to overcome the challenges they encountered in the implementation of the ICT policies in their schools. Therefore, I asked the participants this question: "How do school principals in the Lagos State secondary schools overcome the challenges they face in implementing the ICT policy in schools?"

In responding to this question, the participants emphasised the need for the government, private organisations, and PTAs to support this move, mainly in terms of the provision of ICT resources. This can be confirmed from their statements.

> *As the head of the school, I have written several letters to the government indicating the need for more ICT equipment in my school. While awaiting government response, I ensure that the little equipment we have is being used with adequate monitoring so that we are not left behind in the implementation process.* P1 – SA.

> *I used my initiative to organise a seminar for my staff with support from the PTA executives. Resource persons for the seminar were members of the PTA who were into ICT, and they volunteered to train the teachers on a termly basis.* P3 – SC.

> *Part of the strategies I use in overcoming these challenges is by reaching out to private bodies and our parent-teacher association, as well as our old students, to support this course by donating ICT tools*

> *to the school and this really worked for us. We now have enough computers and projectors donated to us from all these sources I mentioned.* P8 – SH.

Based on their statements, it can be deduced that the school principals have not been getting tremendous support from the government and, in a bid to see to the effective implementation of the ICT policy, they proffered solutions by reaching out to and partnering with other stakeholders in the community to provide funds and ICT tools or resources to schools to aid teaching and learning activities.

To address the problem of school principals not being involved at the policy formulation stage, the participants gave their views on the way forward.

> *There is a need for us to be involved in the review of these policies since we are the main implementers of the policies.* P3 – SC.

Principal 1 from School A, in his observation about school principals not being carried along in the formulation of the policies as they are the ones to educate the staff who will, in turn, educate the students, was of the opinion that*:*

> *If school principals are carried along, it will go a long way in the implementation of this policies.* P1 – SA.

Principal 7 from School G, who appreciated the government and policy formulators on this brilliant idea, also highlighted that their roles as principals and teachers are not clearly stated. Thus, his suggestion for overcoming these challenges was the inclusion of school principals and teachers in the review of the ICT policy in education.

> *I am just using my initiative to guide the teachers because our roles are not clearly stated, but if the government can include us in the review of the policy, our input will go a long way or else, it will affect us from achieving the goals of the policy.* P7 – SG.

The above comments by the school principals revealed that they support the implementation of ICT policies in their schools and, thus, were ready to work with the government in tackling what they see as challenges encountered during the implementation of ICT policies in their schools. This affirms with the policy

implementation theory from the bottom-up approach, the theoretical framework of this study which posits that street-level bureaucrats should be involved in the policy decision-making process rather than government and legislative. It is, therefore, vital that policymakers and other stakeholders, including school principals, work in accordance to establish a means of attaining success when dealing with policy implementation. Undoubtedly, the principal plays a vital role in the effective and efficient implementation of ICT policy in secondary schools.

4.6 Conclusion

In this chapter, I gave the profiles of the schools and other participants and presented the results of my research based on information gathered from one-on-one interviews with the heads of eight different schools (A - H). I also interpreted my findings and drew conclusions in order to answer the research questions. Major findings revealed that the school principals played a vital role in the ICT policy implementation process even though the policy did not specify their roles. It was also established that sources such as the government, PTAs and a few other NGOs showed tremendous support towards the ICT policy implementation. Based on the findings, lack of funds, ICT resources and internet facilities, inadequate training from the government, poor technical assistance, and poor implementation guidelines were highlighted as the challenges school principals faced in implementing ICT policies in their respective schools.

The focus of the next chapter is a discussion of the results in relation to the reviewed literature and the theoretical foundation upon which the study was built. There are also recommendations and ideas for further study.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The purpose of this study was to investigate how school principals in Lagos State secondary schools, Nigeria, implement the Information and Communication Technology (ICT) policy. In Chapter 4 I presented the research findings on the experiences of school principals in implementing information and communication technology policy in four junior secondary and four senior secondary schools in Nigeria. These arose from the information gathered during my interviews with school principals. This chapter presents an overview of the study with reference to the literature review, research questions and study findings. The findings from the empirical research I conducted assisted in proffering answers to the research question on how school principals in Lagos State secondary schools implement the ICT policy.

The interview questions reported in Chapter 4 were based on five research subsidiary questions that supported the main research questions: “How do school principals in Lagos State secondary schools implement the ICT policy?” The key findings from the participants’ responses are listed below.

(a) In spite of the lack of specific roles in the ICT policy, school principals acknowledged that they play a pivotal role in the implementation process. Thus, they demonstrated a positive attitude by motivating and propelling teachers to integrate technology into their pedagogical activities.

(b) The school principals understood the power of collaborative participation in other to aid the successful implementation of ICT policy in their schools, reached out to other bodies and got support from stakeholders such as parents-teachers associations (PTAs), old student associations, private companies, and non-governmental organisations (NGOs). This support came through staff training in ICT, technical assistance, and provision of ICT equipment such as computer systems, printers, and projectors, to mention but a few.

(c) The strategies revealed by the school principals to aid the successful implementation of ICT policies included the provision of ICT resources, which

appeared to be the most facilitating factor, constant professional training, having a clear vision of ICT goals, and monitoring and evaluation.

(d) Despite the school principals' generally successful ICT policy implementation techniques, challenges such as lack of funds, a lack of ICT resources and internet facilities, inadequate training from the government, poor technical assistance, and poor implementation guidelines hampered its success.

(e) The school principals launched constructive engagement to address the concerns of implementing ICT policies in their schools by using their initiatives after studying the policy handbook to guide their teachers, seeking support from the PTA and old students' association for technical assistance and reaching out to private organisations for financial assistance to purchase ICT equipment.

5.2 Discussion of the findings

The main aim of my study was to investigate how school principals in Lagos State secondary schools were implementing information and communication technology (ICT) policy. This chapter compares the experiences of school principals in the implementation process, where they get support, the facilitating factors of the implementation process, the challenges they encountered, and the solutions to these challenges to existing research findings in the reviewed literature on the topic. Based on the findings, recommendations are offered, followed by proposals for future research. The findings are addressed in detail below.

5.2.1 School principal's understanding of their roles in ICT policy implementation

To establish how ICT policies are being implemented in Lagos State secondary schools, it was essential to comprehend the roles of school principals in the implementation process. The eight school principals ascribed several meanings to and voiced various understandings of their roles in implementing ICT policies in their schools. They expressed their understanding of their roles in three ways:

(a) They considered themselves an intermediary between government and schools by fulfilling monitory and supervisory roles.

(b) They viewed themselves as technology leaders and thus demonstrated a positive attitude towards teachers to incorporate technology in their pedagogical activities.

(c) They considered other supporting staff as support structures, thus creating an atmosphere for an innovative culture.

The characteristics of these three major perspectives of their responsibilities in the implementation process are addressed further below.

5.2.1.1 School principals as intermediaries between government and the school

The empirical investigation's data revealed that the majority of participants considered themselves as intermediaries between the government and the school employees. Therefore, as school heads, they understood their roles to be monitoring, supervising and assessment to ensure that the policy guidelines are strictly adhered to. This supported Moore's (2016) assertion that it is critical for principals to comprehend their roles in helping to integrate ICTs into teaching methodologies. P7 – SG summed up the general view in this way:

> *My role is to ensure that policy is adhered to as the policy seems to focus more on the teachers, so all I have to do is monitoring and supervision.* P7 – SG.

In line with the above participant's view, Harris & Jones (2017) opined that the supervision and monitoring of teachers remain core responsibilities of school principals towards ensuring the quality of teaching and learning as well as ensuring that government policies are well adhered to. In order to track how policies are being implemented in schools, the Nigerian Federal Ministry of Education highlighted monitoring and evaluation as viable tools in ICT education (FMOE, 2019).

It was clear from the opinions of the school principals that they understood that proper implementation of ICT policy entails that the government policy handbook should be read and properly understood for them to take the lead in getting the teachers to develop a clear vision of the policy goals.

> *As the school head, my role is to understand the ICT policy and*

> *strategy needed for its implementation so that I can impact the factors involved in joining me to fully implement these policies, I am talking about the staff and students so that they can actively participate in the implementation process.* P5 – SE.

This agreed with Gracia and Quezada's (2016) claim that the management of monitoring and assessment systems is one of the fundamentally significant ways of ensuring policy implementation and educational development in secondary schools. This gave credence to the policy implementation theory from the bottom-up approach by Lipsy (1980) that the government should involve the street bureaucrats, who in my study are the school principals and teachers, in the policy formulation and decision-making process since they are the primary implementers of the policies.

5.2.1.2 School principals as technology leaders demonstrating a positive attitude toward teachers

The findings from this study indicated that despite their roles not being specified in the policy handbook, the school principals still aligned themselves with 21st century development, thus referring to themselves as technology leaders. Demski (2012) described technology leaders as school principals who can successfully carry out technology implementations in their schools. My findings also revealed the importance of teachers in the implementation process. One of the principals summed it up as follows:

> *I ensure that all students and teachers are able to use this equipment effectively. I ensure that students are independent on their own. In their leisure time, they can go to the computer room and operate the system without supervision. I also ensure that the equipment we have at our disposal is well taken care of.* P4 – SD.

According to empirical data, school principals diligently encourage and assist their staff. They also demonstrated their accountability by ensuring teachers had access to high-quality professional growth. According to McLeod (2015), school principals' numerous obligations hinder their ability to carry out educational changes, which highlights the significance of assigning tasks and responsibilities to teachers and ICT specialists in various subject teams. It is still evident that if ICTs are to be effectively used by staff in

delivering the school curriculum, school principals must assure the participation of all stakeholders in decision-making.

5.2.1.3 School principals creating an atmosphere for innovative culture

The study findings revealed that the school principals created an atmosphere for innovative culture in such a way that all staff were included in the policy implementation process. They saw themselves as a key driving factor in the use of ICT in schools and confirmed both human (teachers) and physical (building, ICT facilities, etc.) resources as the major implementer of the policy.

> *I have a vital role in the implementation process, but the principal is not the main factor as there are many other factors such as teachers, students, school buildings, school preparations, external supervision and administration.* P2 – SB.

This statement supported Bellibas, Bulut, Hallinger and Wang's (2015) claim that school principals need to re-evaluate their leadership responsibilities in order to foster a positive and supportive relationship with teachers and improve the efficiency with which ICT policies are implemented in classrooms. To buttress the point on the roles of school principals in policy implementation, Ng, Nguyen, Dong, Benjamin and William (2015) pointed out that the roles of 21st century school principals are to enable, facilitate and create a conducive climate for teachers by motivating and stimulating their creativity, enthusiasm as well as the sense of belonging in others to excel in their ICT implementation practices.

As a result, school principals must be positioned to serve as role models, facilitators, monitors, supporters, and links among teachers for mentoring in order to establish a school atmosphere of experimenting with new methods of management, instruction, and learning (Arokiasamya, bin Abdullah & Ismail, 2015). Despite the fact that the policy did not specifically state what their duties were, the study participants were able to describe what those roles were and how they were played.

5.2.2 Support school principals receive to implement ICT policy

The data collected provided evidence of the support the school principals received towards implementing ICT policies in their schools. Firstly, they are majorly supported by the government to aid the implementation process, and secondly from the PTA. Findings confirmed that the school principals understood the power of collaborative participation for successful ICT policy implementation.

5.2.2.1 Support from the government

The majority of the participants in this study affirmed that the government had been of tremendous support to their schools in terms of providing an enabling environment for the implementation of ICT policy in their schools. P7 – SG said that the government equipped their ICT room with enough computer systems, printers, and projectors and some parents volunteered to see to the maintenance of the ICT equipment. The results reflected Abdul Razzak's (2015) assertion that the government bears the primary duty of giving school administrators all the assistance they need to integrate ICTs successfully into their classes.

The results showed that schools with enough support from the government had a greater performance level in implementing ICT policies. Three out of the eight school principals responded that the government's involvement in ICT implementation at their schools was not satisfactory when questioned about ICT implementation support from the government. It is important to note that School A had the least government funding yet moved forward with the deployment of ICT. This suggested that even if government assistance was essential for the adoption of ICT, schools that did not get it continued with its implementation.

5.2.2.2 Support from PTA

It was also established that the Parent-Teacher Association (PTA), a volunteer organisation of parents and teachers in a specific school, supported the policy implementation course. P5 – SE attested that the support of the PTA has been fantastic. They donated fourteen desktop computers to the school. It can be affirmed that this association clearly understood its roles and responsibilities. The PTA did not only provide

the schools with ICT equipment but also provided technical assistance and offered professional development training to the staff in order to ensure the effectiveness of the ICT policy implementation.

5.2.3 Strategies for implementing ICT policies in secondary schools

The strategies revealed by the school principals to aid the successful implementation of ICT policies included the provision of ICT resources, which appeared to be the most enabling factor, display of active leadership, constant professional training, having a clear vision of ICT goals as well as monitoring and evaluation.

5.2.3.1 Display of active leadership

Findings revealed that school principals demonstrated active leadership through their positive perceptions toward ICT adoption in their schools by executing the appropriate contingency measures. The school principals also considered the desire for change management and continuity among the various key implementers. P2 – SB explained*:*

> *Part of the strategy I used in implementing ICT policy in my school is my display of active leadership since the innovation of this policy. My positive attitude towards the usage of computers has influenced my staff to embrace the importance of computer-integrated learning.* P2 – SB.

According to Maio-Taddeo (2007), school leaders with positive actions, attitudes and visions have the potential to impact the implementation of innovations.

ICT leadership is a social process involving intricate relational webs, various changing influences, and the intention to persuade followers to proceed in a particular path for integrating technological tools into education (Abdullah, DeWitt & Alias, 2013). In order to influence school compliance with ICT technical advances, school principals must be able to accept change and develop guidelines for ICT use in school administration among department heads and teachers. Additionally, it requires the development of ICT skills, a willingness to adapt, adherence to the government policy guidelines on the use of ICT, as well as monitoring, assessment, and the establishment of the school's vision. The aforementioned discovery further demonstrated that where a school principal lacks the

inventive driving force, other teachers will find it more difficult to employ it effectively and efficiently.

5.2.3.2 Professional training

Another strategy implemented by the school principals in this study is the organisation of constant professional training for the staff. Considering the uniqueness of ICT policy implementation in the academic environment, it is essential for school principals as technology leaders to carry out their own ICT needs assessment for training their staff based on the ICT resources available in the school. Doing this will make them more qualified to integrate ICT into their teaching and administrative duties.

> *The main strategy that can aid the implementation process is consistent training being organised by the government to school principals and teachers.* P5 – SE.

According to Steyn (2004), "Instructors' knowledge and expertise are prone to degradation and new growth in pedagogical philosophy, which sometimes renders certain teachers' skills and knowledge out of date and ineffective." Since technology is constantly changing, it is essential for school principals, teachers, and support staff to receive continuous ICT training in order to keep up with the global trend in ICT for educational issues.

Mukhari (2016) asserted that the school principal must offer and establish chances for teachers' professional development to gain and enhance their ICT abilities. This is done to ensure the implementation of the ICT policy goes smoothly. In order to support and encourage teachers to work together to address problems relating to individual or group learning, the principal must place a strong emphasis on learning. Teams can be created to assist instructors, encouraging them in a way that enables talented teachers to assist less experienced teachers in developing their ICT abilities (Al Sharija & Qablan, 2012).

5.2.3.3 Clear vision of ICT goals

Even though the roles of the school principals were not clearly stated, they still managed to ensure that their vision and mission aligned with the government policy on ICT in education, and they ensured that all teachers and stakeholders support it. A school's ICT

vision identifies a timeframe when the use of ICT systems, electronic resources, instructional strategies, and instructional techniques will have significantly improved student learning outcomes (Gareth, 2008). Findings from the study revealed that a school's ICT vision is essential to effective ICT implementation. P7 - SG summed it up in general:

> *The government must have a clear vision of this policy. That is, policy formulators and the government must make sure the concept behind ICT policy implementation in schools should be a realistic long-term goal that can be achievable.* P7 – SG.

Based on my findings, it can be deduced that there is a need for all stakeholders to have a common understanding of ICT instructions and ICT plans in the school.

5.2.3.4 Monitoring and evaluation

The monitoring of ICT implementation in secondary schools serves as a check and balance since it gives school principals timely information during the roll-out process as they plan the future of their institutional contexts. The school principals claimed that because it offers accurate on-site input, it prepares the way for an informed evaluation process. P8 – SH, in his explanation, noted that ICT policy implementation goes beyond providing computers alone.

> *There must be a kind of periodic monitoring and assessment by the policy formulators to know the impact and extent to which the policy objectives have been achieved in schools and also to enable them to identify the challenges faced by each school principal.* P8 – SH.

This viewpoint was supported by the Federal Ministry of Education's ICT policy handbook (FMOE, 2020), which identified monitoring and evaluation as a valuable instrument in ICT in education for tracking policy implementation, effective service delivery, and compliance.

As a result, it is necessary to train people in the monitoring and assessment of ICT integration for the various administrative roles in schools. This will aid in establishing and upholding standards for the integration of ICT into both teaching methods and overall

school administration procedures. Monitoring and evaluation should be prepared with both short-term and long-term objectives, just like any other significant school inspection effort. It is advised that the policy should provide a clear description of the review and analytical procedures to be followed. Analysing and evaluating policies ought to be a constant activity and the outcomes of this approach should be utilised to update and guide the policy's modifications. The formulated policy will be more viable and simpler for all parties to implement if all of these factors are considered.

5.2.4 Challenges faced during ICT policy implementation

The policy implementation conundrum remains unanswered, as evidenced by the fact that policy failures are still prevalent in many schools (Kipsoi, Chang'ach, & Sang, 2012). Findings from this empirical study acknowledged that the school principals appreciated the fact that their schools have ICT equipment such as desktop computers, overhead projectors, interactive boards, printers, and television sets, to mention but few. However, continued discussion made it clear that these were insufficient to serve the needs of the teachers, students, and the larger school community. This was primarily ascribed to a lack of resources. Inadequate technical support, as well as poor implementation guidelines, were other barriers that thwarted the effective implementation of ICT policies in schools. Details of the challenges are discussed below.

5.2.4.1 Insufficient funds and a lack of ICT resources

The school principals stated that funding remained the most challenging element, with a substantial impact on other external variables. Thus, they attributed the lack of ICT tools, technical assistance, and career growth in their schools to be a result of financial constraints. P4 – SD explained that finance was one of the major problems. He added that students might sometimes damage these facilities when they use them, and repairs are expensive. To support this claim, Farrell (2007) noted that the high cost of purchasing and maintaining ICT infrastructure has been a problem that prevented ICT from being adopted and used in schools.

According to Hennessy (2010), one of the most difficult issues in using ICT in schools is matching educational aims with economic pressures. Because integrating ICT necessitates huge capital inputs, schools must exercise caution when deciding on ICT

models. For example, the introduction of ICTs frequently necessitates the creation of specialised ICT rooms (computer labs), which can be costly. School principals should take the lead in advocating ICT deployment by enlisting all participants in the supply of ICT facilities in their schools. They should make a concerted effort to persuade governmental and non-governmental partners to encourage ICT integration in their schools. In order to persuade them to support the initiatives, it is the duty of school principals to tell parents about the costs and significance of integrating ICT in the classroom.

5.2.4.2 Poor ICT training

The findings revealed that school principals acknowledged the significance of ICT training and took a proactive role in training by pushing teachers to participate in ICT seminars organised by the Ministry of Education. However, there was some criticism that the training offered was insufficient.

> *There is a need for government to put in more resources by organising seminars, thereby creating opportunities for our staff to be more exposed, so that they will be able to understand the acquisition of the ICT skills.* P3 – SC.

This school principal demonstrated their openness to the advancements and transformations brought about by technological innovation. Most school principals appeared to be at the edge of educational reforms regarding ICT integration (Mwawasi, 2014). Thannimalai and Raman (2018) confirmed the need for school principals as technological leaders and teachers as implementers of ICT policies at their schools to have ICT skills. Based on this, it can be affirmed that teachers' self-esteem and use of ICT are hampered by a lack of knowledge. Additionally, staff training in ICT-related topics is anticipated to enhance teachers' overall performance in the classroom. It is acknowledged that plans must always be made for staff's professional and ongoing development, but ICT training is given top priority within these plans.

5.2.4.3 A lack of technical support

Another obstacle to the successful implementation of ICT policy in secondary schools identified by school principals arises when there is no technical personnel accessible in the event of equipment failure or damage. Principal 7 from School G (P7 - SG) explained this challenge:

> *When there is an issue with the ICT tools, we end up packing them to the storeroom where it eventually rusts, and this is because we do not have ICT technical support staff.* P7 - SG.

Mokgadi (2015), in his studies on the implementation of ICT in teaching and learning in the Rekopantswe area office schools also identified the lack of technical assistance to primary and secondary teachers as a hindrance to successfully implementing ICT in schools. It is undeniable that ICT support professionals in schools assist teachers in using ICT confidently in the classroom without wasting time by fixing both hardware and software bugs.

5.2.4.4 Poor implementation guidelines

Another impediment to the proper implementation of the ICT strategy was a lack of clarity on the roles of school principals. The principals admitted that they were ill-equipped to carry out ICT policies in their individual schools. Participants in the study agreed that policy reform is needed because they lacked the ability to decontextualise policy intent and hence had various interpretations of the policy guidelines.

> *The policy did not specify the specialities to be involved in the implementation process and did not consider the conditions of all schools that have big differences.* P2 – SB.

This was consistent with McLaughlin's (2008) study results on new opportunities for implementation research, policy, and practice in the United States, which found that school principals did not attempt, reject, or delay policy reforms, but they were unable to function as expected because they did not understand their role and responsibilities in the implementation phase and the policy purpose. My study participants all saw the need for their inclusion in the review of the policy to have a clear understanding of their role in

the implementation process. Their views were supported by UNESCO (2011), which indicated that ICT policy becomes acceptable if its formulation involves the major stakeholders.

5.3 Recommendations based on findings

The following are the recommendations about school principals' implementation of ICT policy in secondary schools.

(a) Even though the school principals embraced the implementation of ICT policies in their schools, the fact remains that their roles in the policy handbook were unclear. For that reason, a greater explanation of their roles in adopting or implementing the ICT policy should be examined. The study recommends that the Federal Ministry of Education in Nigeria should present coherent policy instructions on the tasks and functions of school principals in the implementation phase.

(b) This study also recommends that the government and policymakers should include school principals in the review of the policy. Their inclusion will aid the policy decision-making process and the successful implementation of ICT in education policy since they are the head of schools.

(c) Since inadequate funding has been identified as the major challenge faced by school principals towards the successful implementation of the ICT policy, there is a need for government to increase the ICT budget to empower the operations of the Ministry of Education and the department in charge of the distribution of ICT resources across schools. Furthermore, the government should allocate more funds in the ICT budget to address concerns such as ICT maintenance, facility and equipment costs that promote ICT learning activities, as they have been proven to delay the pace of ICT adoption and policy implementation in secondary schools.

(d) Functional computers and other ICT equipment should be made available to school principals. To develop a more robust and broadly inclusive ICT policy implementation process, it is recommended that secondary schools should have equal access to the same ICT resources. Also, ICT equipment should be

automatically supplied by the Ministry without little or no reminders from the school principals.

(e) For ICT to be used to its fullest potential in the teaching and learning environment, adequate and persistent technical assistance is also required. The services of specialised professionals are required in a situation where teachers struggle with the usage of technological tools in the classroom and when there is a need to solve technical challenges.

(f) It is crucial to invest in private and public collaborations to jointly fund ICT in schools to reduce the pressure on the government to supply ICT tools to schools and funding issues.

(g) More pertinent training programs for ongoing professional development should be designed to provide school principals and teachers with the ICT skills required to integrate ICT into pedagogical approaches.

5.4 Recommendations for further research

As the world rapidly transitions towards the information and communication technology (ICT) era with individuals becoming digital citizens, it is important to pay attention to how ICT policies can successfully be implemented in all secondary schools. Based on my findings, the following recommendations are made:

(a) The study focused on school principals' understanding of the ICT policy. Further research can be done, testing other variables such as teachers as instructional leaders and students knowing full well that the teachers are the main implementers of these policies.

(b) This study suggests that researchers gather more data from a larger number of participants in order to get a better understanding of how school principals decide to execute information and communication technology policy in their respective schools. This is primarily because larger sampling sizes would allow the investigators to identify potential core linkages and themes that might be overlooked in smaller sample sizes.

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ANNEXURES

ANNEXURE A: REQUEST TO CONDUCT RESEARCH IN MUSHIN AND SURULERE LOCAL GOVERNMENT AREA SECONDARY SCHOOLS (MINISTRY OF EDUCATION)

10, Waidi Apesin Street
Babalola Bus Stop,
Itire, Mushin,
Lagos State,
Nigeria.

14 October 2021

The Director
Lagos State Ministry of Education
Secretariat,
Obafemi Awolowo Way, Ikeja,
Lagos State.

Dear Sir/Madam

Request for permission to conduct research in Surulere and Mushin Local Government Area Secondary schools

I, Shobowale Aderonke Kemi, a student at the University of Pretoria, currently studying towards a Master of Education degree, hereby kindly apply for permission to conduct the study titled **"School principals' implementation of information and communication technology policy in Lagos State secondary schools"** at your school. The purpose of this study is to investigate how the school principals in Lagos State implement the ICT policy. In this letter, I would like to relate what will happen if such permission is granted. Once you understand what the study is about, such permission may or may not be granted. If you agree, you will be requested to release a signed letter permitting the study to take place in your school.

The following are the anticipated participants in this study:

- Four junior secondary school principals
- Four senior secondary school principals.
- Only participants who agreed and signed the informed consent will be legible to participate in this study.

The process of fieldwork will involve:

- Semi-structured interviews where the school principals will be requested to share their experiences on how they implement ICT policy in their school activities.
- If I am granted permission, I anticipate that data collection activities including member checking will last for two months. I estimate the research activities to take at least 30 to 40 minutes and the member checking to last for at least 30 minutes.
- All the research activities will be conducted after formal school hours. "Free period" will not be considered as an incentive".
- To ensure the anonymity and confidentiality of the participants, I will keep the names of the participants and those of the schools and contribution to the study anonymous except if it is their wish to be named.
- Participants are free to withdraw their participation at any time should they wish to do so, and their decision will not be held against them. In the event participants withdraw from the study, their data will be destroyed or discarded.
- It is unlikely that the participants in this study will be harmed.

- "My role in this study is that of a researcher not a counsellor". However, if a problem does arise, they can speak to me and I will consult on the issue, and/or refer them to someone who is best able to help. If there is a serious problem about participants' safety, I am required to inform the school psychologist/counsellor and University of Pretoria. I therefore include contact details for the Counsellor and Psychologist, and they are available free of charge:

  Ms Alexandra Norton

  Physical Ed S06

  Contact number: +27 (0) 61 005 1035

  Ms Ronél du Toit

  Physical Ed S06

  Contact number: +27 (0) 82 568 5793

- Participants will receive no incentives for participating in this study. However,

a) The school principals' possible reflection of their experiences of the ICT policy implementation process should make them feel good about their contribution towards policy reforms. Although I cannot guarantee this.

b) Principals' possible reflection of their role in promoting towards implementing ICT in teaching and learning activities should make them feel good about their contribution towards policy implementation. Although I cannot guarantee this.

- Member checking sessions will be conducted to confirm if my understanding and interpretation of the data are consistent with that of the participant. The participants will only have access to their own data and not everyone else's, but my supervisor will have access to all the data.
- The member checking will be done once the data has been transcribed and after the preliminary report has been written.
- We (my supervisor and I) also would like to request your permission to use your data, confidentially and anonymously, for further research purposes, as the data sets are the intellectual property of the University of Pretoria and, where relevant, project funders. Further research may include secondary data analysis and using the data for teaching purposes. The confidentiality and privacy applicable to this study will be binding on future research studies.

Should you have any questions or concerns pertaining to this study, do not hesitate to contact my supervisor or me on the contact details provided below.

Yours sincerely

Researcher: Shobowale Aderonke Kemi

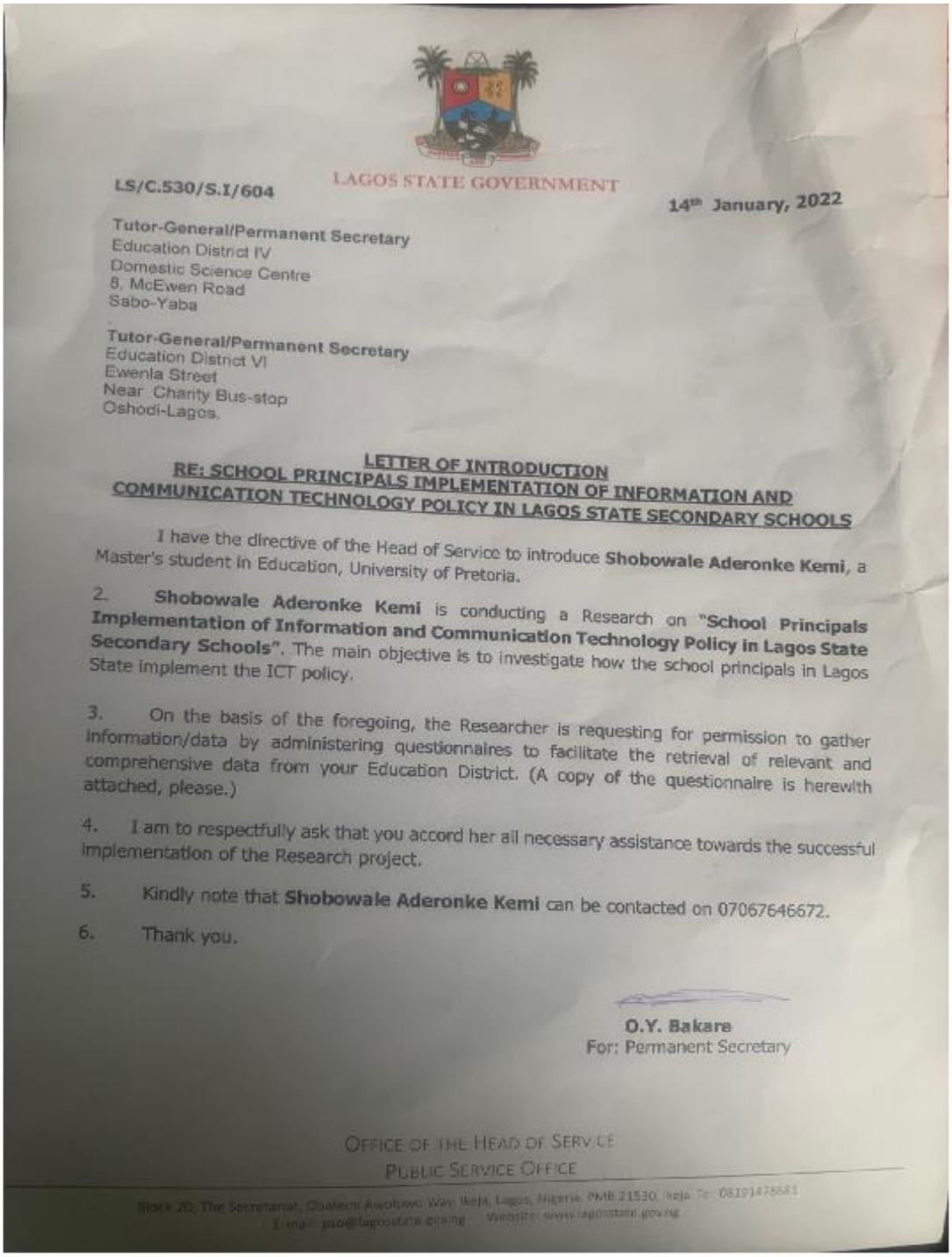
Student number: 21668648 **Sign:** 

Telephone: +2347067646672 **E-mail**: aderonkeadegoke687@gmail.com

Supervisor: Prof MA Nthontho **Sign**: 

Telephone: +27 (0) 12 420 2499 **E-mail**: maitumeleng.nthontho@up.ac.za

ANNEXURE B: LAGOS STATE MINISTRY OF EDUCATION – APPROVAL



LAGOS STATE GOVERNMENT

LS/C.530/S.I/604

14th January, 2022

Tutor-General/Permanent Secretary
Education District IV
Domestic Science Centre
8, McEwen Road
Sabo-Yaba

Tutor-General/Permanent Secretary
Education District VI
Ewenla Street
Near Charity Bus-stop
Oshodi-Lagos.

LETTER OF INTRODUCTION
RE: SCHOOL PRINCIPALS IMPLEMENTATION OF INFORMATION AND COMMUNICATION TECHNOLOGY POLICY IN LAGOS STATE SECONDARY SCHOOLS

I have the directive of the Head of Service to introduce **Shobowale Aderonke Kemi**, a Master's student in Education, University of Pretoria.

2. **Shobowale Aderonke Kemi** is conducting a Research on "**School Principals Implementation of Information and Communication Technology Policy in Lagos State Secondary Schools**". The main objective is to investigate how the school principals in Lagos State implement the ICT policy.

3. On the basis of the foregoing, the Researcher is requesting for permission to gather information/data by administering questionnaires to facilitate the retrieval of relevant and comprehensive data from your Education District. (A copy of the questionnaire is herewith attached, please.)

4. I am to respectfully ask that you accord her all necessary assistance towards the successful implementation of the Research project.

5. Kindly note that **Shobowale Aderonke Kemi** can be contacted on 07067646672.

6. Thank you.

O.Y. Bakare
For: Permanent Secretary

OFFICE OF THE HEAD OF SERVICE
PUBLIC SERVICE OFFICE

Block 20, The Secretariat, Obalende Awolowo Way, Ikeja, Lagos, Nigeria. PMB 21530, Ikeja. Tel: 08191478681
E-mail: pso@lagosstate.gov.ng Website: www.lagosstate.gov.ng

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ANNEXURE C: ETHICS CLEARANCE CERTIFICATE

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Make today matter
www.up.ac.za

FACULTY OF EDUCATION
Ethics Committee

RESEARCH ETHICS COMMITTEE

CLEARANCE CERTIFICATE	CLEARANCE NUMBER: **EDU107/21**
DEGREE AND PROJECT	MEd School principals' implementation of Information and Communication Technology Policy in Lagos State secondary schools, Nigeria
INVESTIGATOR	Mrs Aderonke Kemi Shobowale
DEPARTMENT	Education Management and Policy Studies
APPROVAL TO COMMENCE STUDY	09 November 2021
DATE OF CLEARANCE CERTIFICATE	09 December 2022
CHAIRPERSON OF ETHICS COMMITTEE:	Prof Funke Omidire

CC

Mr Simon Jiane
Prof Maitumeleng Nthontho
Ms Nonjabulo Fortunate Madonda

This Ethics Clearance Certificate should be read in conjunction with the Integrated Declaration Form (D08) which specifies details regarding:

- Compliance with approved research protocol,
- No significant changes,
- Informed consent/assent,
- Adverse experience or undue risk,
- Registered title, and
- Data storage requirements

Fakuiteit Opvoedkunde
Lefapha la Thuto

ANNEXURE D: REQUEST TO CONDUCT RESEARCH AT SCHOOLS (SCHOOL PRINCIPALS)

10, Waidi Apesin Street
Babalola Bus Stop,
Itire, Mushin,
Lagos State,
Nigeria.

8 October 2021

Dear School Principal

APPLICATION FOR PERMISSION TO CONDUCT RESEARCH AT YOUR SCHOOL

I, Shobowale Aderonke Kemi, a student at the University of Pretoria, currently studying towards a Master of Education degree, hereby kindly apply for permission to conduct the study titled **"School principals' implementation of information and communication technology policy in Lagos State secondary schools"** at your school. The purpose of this study is to investigate how the school principals in Lagos State implement the ICT policy. In this letter I would like to relate what will happen if such permission is granted. Once you understand what the study is about, such permission may or may not be granted. If you agree, you will be requested to release a signed letter permitting the study to take place in your school.

The following are the anticipated participants in this study:

- Four junior secondary school principals
- Four senior secondary school principals.

- Only participants who agreed and signed the informed consent will be legible to participate in this study.

The process of fieldwork will involve:

- Semi-structured interviews where the school principals will be requested to share their experiences on how they implement ICT policy in their school activities.
- If I am granted permission, I anticipate that data collection activities including member checking will last for two months. I estimate the research activities to take at least 30 to 40 minutes and the member checking to last for at least 30 minutes.
- All the research activities will be conducted after formal school hours. "Free period" will not be considered as an incentive".
- To ensure the anonymity and confidentiality of the participants, I will keep the names of the participants and those of the schools and contribution to the study anonymous except if it is their wish to be named.
- Participants are free to withdraw their participation at any time should they wish to do so, and their decision will not be held against them. In the event participants withdraw from the study, their data will be destroyed or discarded.
- It is unlikely that the participants in this study will be harmed.
- "My role in this study is that of a researcher not a counsellor". However, if a problem does arise, they can speak to me and I will consult on the issue, and/or refer them to someone who is best able to help. If there is a serious problem about participants' safety, I am required to inform the school psychologist/counsellor and University of Pretoria. I therefore include contact details for the Counsellor and Psychologist and they are available free of charge:

  Ms Alexandra Norton

  Physical Ed S06

  Contact number: +27 (0) 61 005 1035

  Ms Ronél du Toit

  Physical Ed S06

  Contact number: +27 (0) 82 568 5793
- Participants will receive no incentives for participating in this study. However,

c) The school principals' possible reflection of their experiences of the ICT policy implementation process should make them feel good about their contribution towards policy reforms. Although I cannot guarantee this.
d) Principals' possible reflection of their role in promoting towards implementing ICT in teaching and learning activities should make them feel good about their contribution towards policy implementation. Although I cannot guarantee this.

- Member checking sessions will be conducted to confirm if my understanding and interpretation of the data are consistent with that of the participant. The participants will only have access to their own data and not everyone else's, but my supervisor will have access to all the data.
- The member checking will be done once the data has been transcribed and after the preliminary report has been written.
- We (my supervisor and I) also would like to request your permission to use your data, confidentially and anonymously, for further research purposes, as the data sets are the intellectual property of the University of Pretoria and, where relevant, project funders. Further research may include secondary data analysis and using the data for teaching purposes. The confidentiality and privacy applicable to this study will be binding on future research studies.

Should you have any questions or concerns pertaining to this study, do not hesitate to contact my supervisor or me on the contact details provided below.

Yours sincerely

Researcher: Shobowale Aderonke Kemi

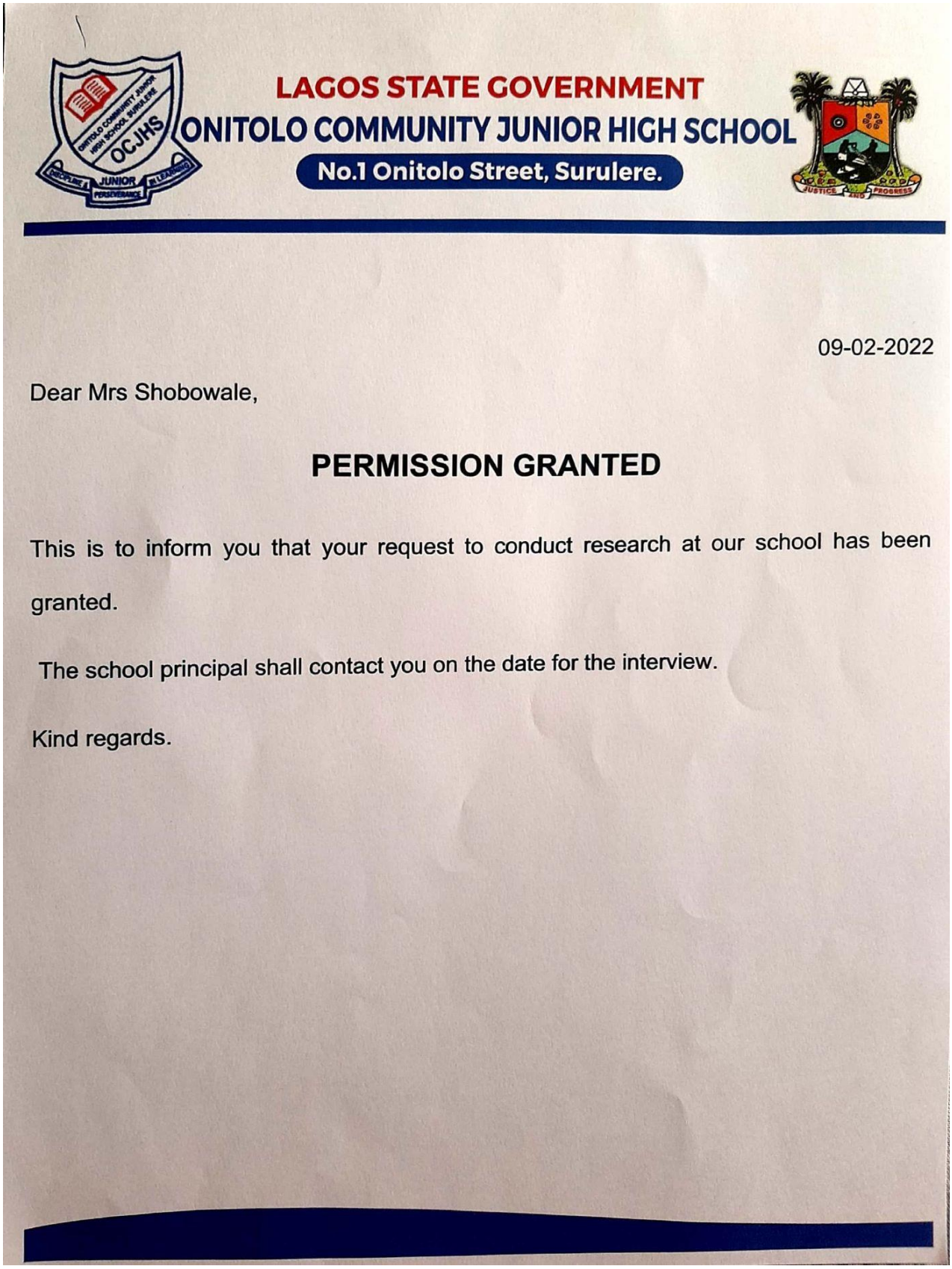
Student number: u21668648 **Sign:** _____

Telephone: +2347067646672 **E-mail**: u21668648@tuks.co.za

Supervisor: Prof MA Nthontho **Sign**: _____

Telephone: +27 (0)12 420 2499 **E-mail**: maitumeleng.nthontho@up.ac.za

ANNEXURE E: APPROVAL FROM SCHOOLS



LAGOS STATE GOVERNMENT
ONITOLO COMMUNITY JUNIOR HIGH SCHOOL
No.1 Onitolo Street, Surulere.

09-02-2022

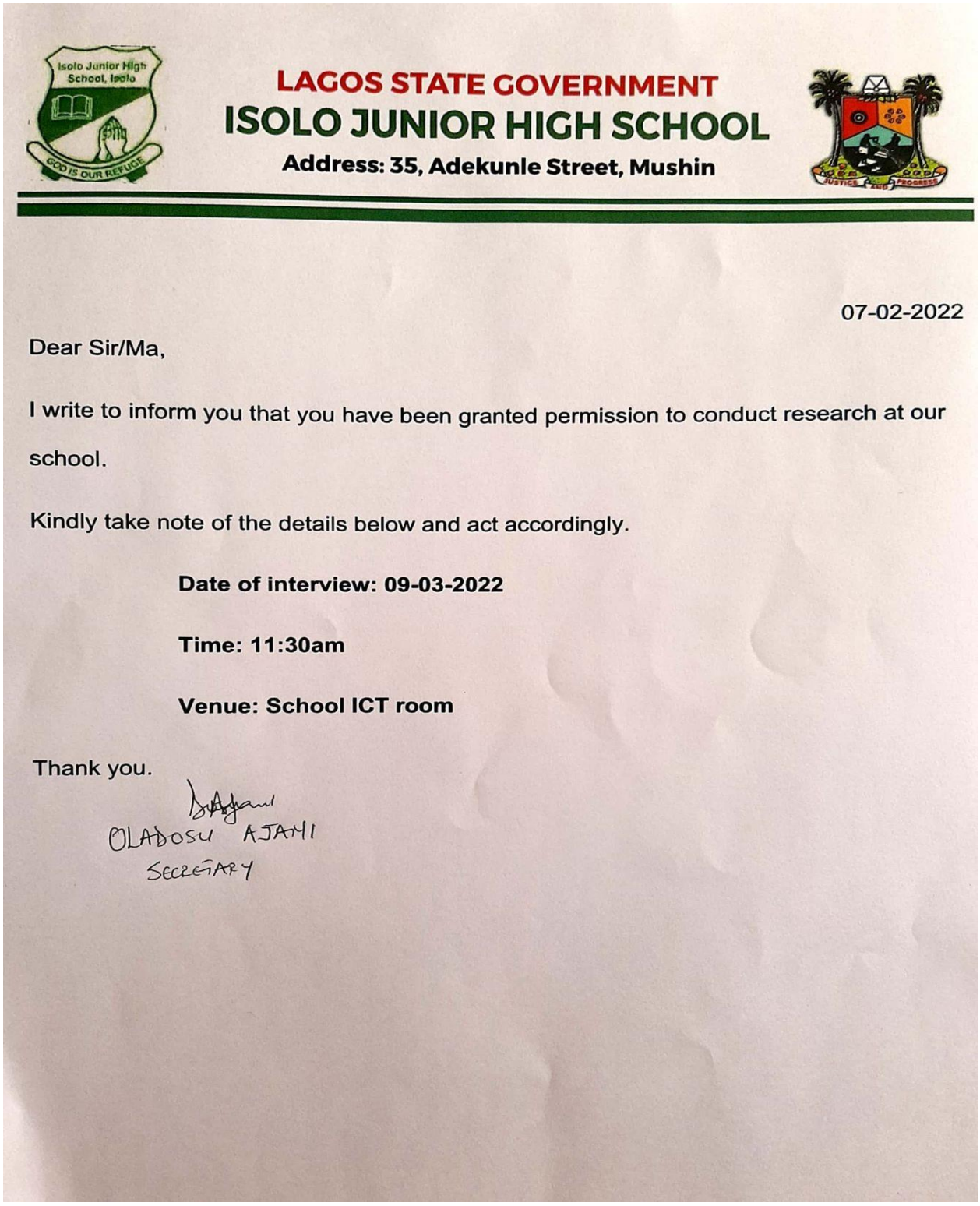
Dear Mrs Shobowale,

PERMISSION GRANTED

This is to inform you that your request to conduct research at our school has been granted.

The school principal shall contact you on the date for the interview.

Kind regards.



LAGOS STATE GOVERNMENT
ISOLO JUNIOR HIGH SCHOOL
Address: 35, Adekunle Street, Mushin

07-02-2022

Dear Sir/Ma,

I write to inform you that you have been granted permission to conduct research at our school.

Kindly take note of the details below and act accordingly.

Date of interview: 09-03-2022

Time: 11:30am

Venue: School ICT room

Thank you.

OLADOSU AJAYI
SECRETARY

LAGOS STATE GOVERNMENT

BIRCH FREEMAN HIGH SCHOOL

Address: 1, AKOBI CRESCENT, SURULERE

08-02-2022

Dear Mrs Shobowale

LETTER OF PERMISSION

This is to notify you that your request to conduct research on "school principals implementation of ICT policy in Lagos State secondary schools, Nigeria" at our school has been granted.

The interview date shall be communicated to you soonest.

Kind regards.

LAGOS STATE GOVERNMENT
ARCHBISHOP AGGEY MEMORIAL SECONDARY SCHOOL
Address: 10/12, BANIRE SUBERU STREET.

08-02-2022

Dear Mrs Shobowale

LETTER OF PERMISSION

This is to notify you that your request to conduct research on "school principals implementation of ICT policy in Lagos State secondary schools, Nigeria" at our school have been approved by the school principal.

The interview request has also been granted and slated for 15th of March 2022 by 11:00am.

Please be punctual.

Thank you.

LAGOS STATE GOVERNMENT

IDI-ARABA JUNIOR HIGH SCHOOL

Address: 102, LADIPO STREET, MUSHIN LAGOS.

07-02-2022

Dear Sir/Ma,

I write to inform you that your permission to conduct research at our school as well as your interview request with the school principal have been approved.

Kindly take note of the following.

Date of interview: 13-03-2022

Time: 10:00am

Venue: School Principal office

Thank you.

LAGOS STATE GOVERNMENT

GBAJA GIRLS JUNIOR HIGH SCHOOL SURULERE

Address: 5, Gbaja Street, Surulere

08-02-2022

Dear Mrs Shobowale

LETTER OF PERMISSION

This is to notify you that your request to conduct research on "school principals implementation of ICT policy in Lagos State secondary schools, Nigeria" at our school have been approved by the school principal.

The interview request has also been granted and slated for 15th of March 2022 by 11:00am.

Please be punctual.

Thank you.

LAGOS STATE GOVERNMENT

AJUMONI JUNIOR GRAMMAR SCHOOL, OKOTA

Address: 2, DIBOR STREET, ISOLO, MUSHIN

08-02-2022

Dear Mrs Shobowale

LETTER OF PERMISSION

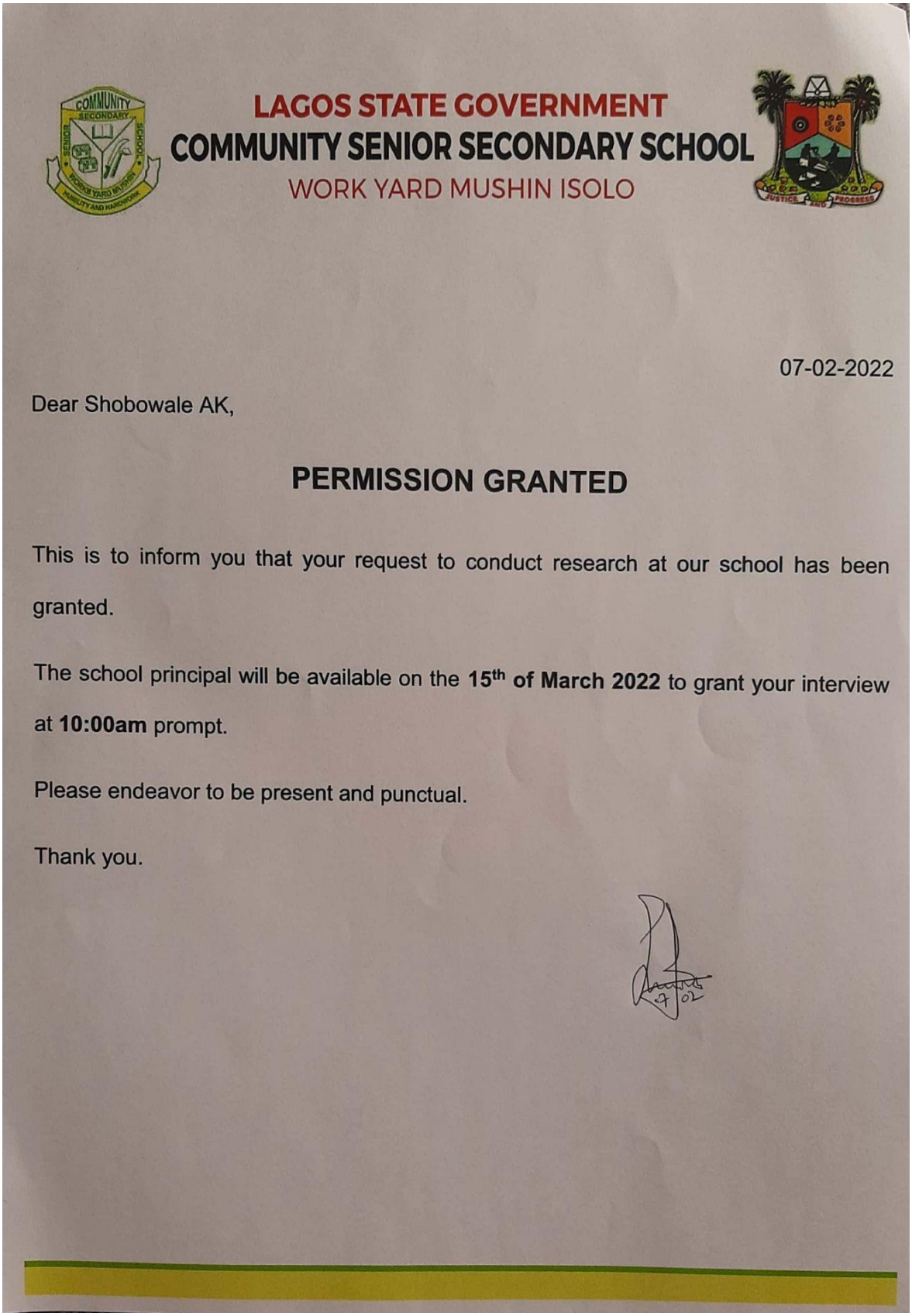
This is to notify you that your request to conduct research on "school principals implementation of ICT policy in Lagos State secondary schools, Nigeria" at our school have been approved by the school principal.

The interview request has also been granted and slated for 15th of March 2022 by 11:00am.

Please be punctual.

Thank you.

Kujovoji A.O.
Secretary



LAGOS STATE GOVERNMENT
COMMUNITY SENIOR SECONDARY SCHOOL
WORK YARD MUSHIN ISOLO

07-02-2022

Dear Shobowale AK,

PERMISSION GRANTED

This is to inform you that your request to conduct research at our school has been granted.

The school principal will be available on the **15th of March 2022** to grant your interview at **10:00am** prompt.

Please endeavor to be present and punctual.

Thank you.

ANNEXURE F: INVITATION LETTER TO PARTICIPANTS

10, Waidi Apesin Street
Babalola Bus Stop,
Itire, Mushin,
Lagos state,
Nigeria.

8 October 2021

Dear Participant,

INVITATION TO PARTICIPATE IN RESEARCH

I, Shobowale Aderonke Kemi, a student at the University of Pretoria, currently studying towards a Master of Education degree, hereby kindly apply for permission to conduct the study titled **"School principals' implementation of information and communication technology policy in Lagos state secondary schools"** at your school. The purpose of this study is to investigate how the school principals in Lagos state implement the ICT policy. In this letter I would like to relate what will happen if such permission is granted. Once you understand what the study is about, such permission may or may not be granted. If you agree, you will be requested to release a signed letter permitting the study to take place in your school.

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- All the research activities will be conducted after formal school hours. "Free period" will not be considered as an incentive".
- To ensure the anonymity and confidentiality of the participants, I will keep the names of the participants and those of the schools and contribution to the study anonymous except if it is their wish to be named.
- Participants are free to withdraw their participation at any time should they wish to do so, and their decision will not be held against them. In the event participants withdraw from the study, their data will be destroyed or discarded.
- It is unlikely that the participants in this study will be harmed.
- "My role in this study is that of a researcher not a counsellor". However, if a problem does arise, they can speak to me and I will consult on the issue, and/or refer them to someone who is best able to help. If there is a serious problem about participants' safety, I am required to inform the school psychologist/counsellor and University of Pretoria. I therefore include contact details for the Counsellor and Psychologist and they are available free of charge:

  Ms Alexandra Norton

  Physical Ed S06

  Contact number: +27 (0) 61 005 1035

  Ms Ronél du Toit

  Physical Ed S06

  Contact number: +27 (0) 82 568 5793
- Participants will receive no incentives for participating in this study. However,

e) The school principals' possible reflection of their experiences of the ICT policy implementation process should make them feel good about their contribution towards policy reforms. Although I cannot guarantee this.

f) Principals' possible reflection of their role in promoting towards implementing ICT in teaching and learning activities should make them feel good about their contribution towards policy implementation. Although I cannot guarantee this.

- Member checking sessions will be conducted to confirm if my understanding and interpretation of the data are consistent with that of the participant. The participants will only have access to their own data and not everyone else's, but my supervisor will have access to all the data.
- The member checking will be done once the data has been transcribed and after the preliminary report has been written.
- We (my supervisor and I) also would like to request your permission to use your data, confidentially and anonymously, for further research purposes, as the data sets are the intellectual property of the University of Pretoria and, where relevant, project funders. Further research may include secondary data analysis and using the data for teaching purposes. The confidentiality and privacy applicable to this study will be binding on future research studies.

Should you have any questions or concerns pertaining to this study, do not hesitate to contact my supervisor or me on the contact details provided below.

Yours sincerely

Researcher: Shobowale Aderonke Kemi

Student number: u21668648 **Sign:** _____

Telephone: +2347067646672 **E-mail**: u21668648@tuks.co.za

Supervisor: Prof MA Nthontho **Sign**: _____

Telephone: +27 (0)12 420 2499 **E-mail**: maitumeleng.nthontho@up.ac.za

Consent Form

I _____, the Principal/Director of

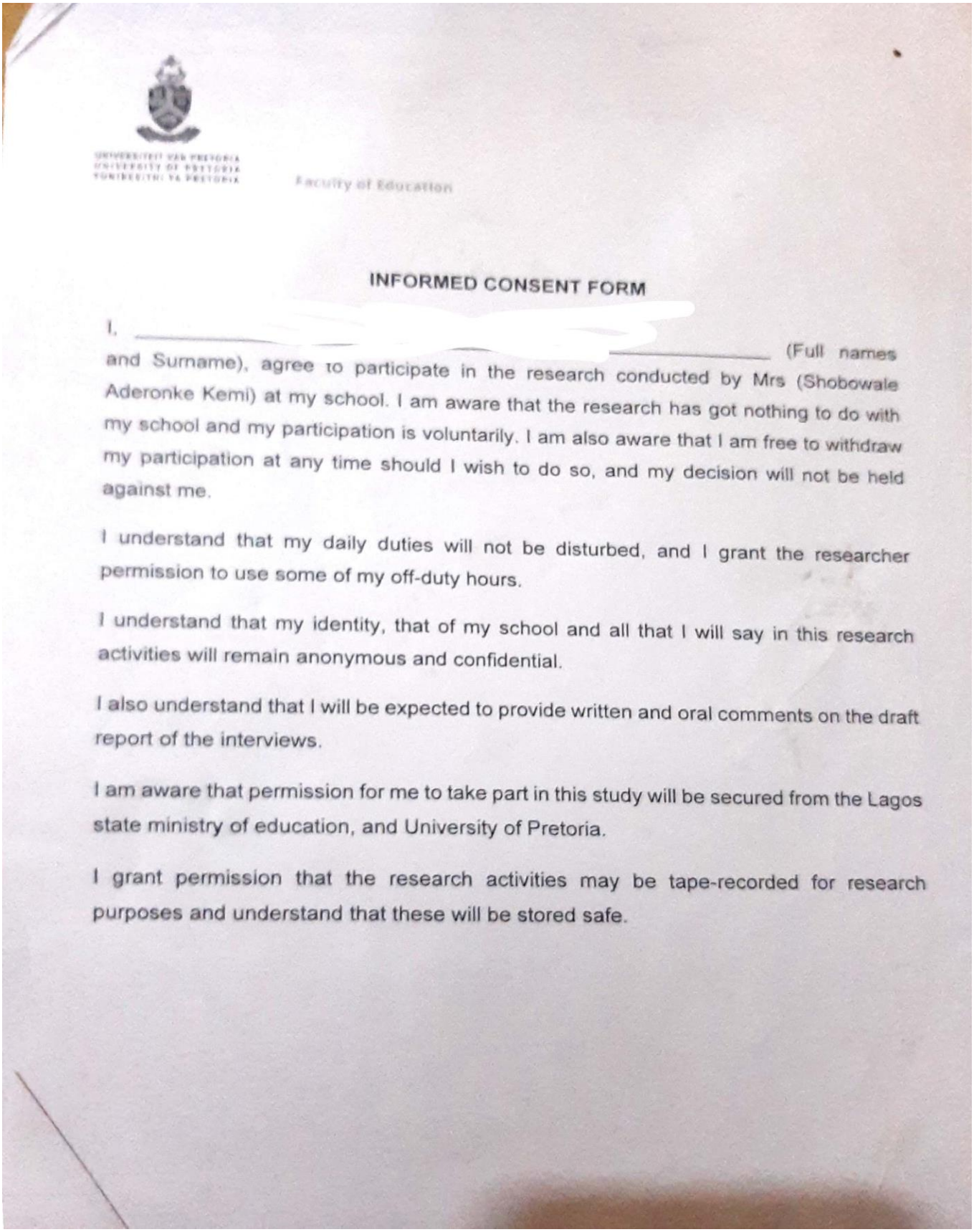
_____ Allow/Do not allow (delete what is not applicable) Mrs Shobowale Aderonke Kemi to conduct research titled: **"school principals' implementation of information and communication technology policy in Lagos State secondary schools"** in this school.

- I understand that:
  - Four junior secondary school principals and four senior secondary school principals will be interviewed.
  - The interviews will be conducted at venue and time that suit the teachers and parents but will interfere with school activities and teaching time.
  - The research activities may be tape-recorded for research purposes, and these will be stored safely.
  - The researcher subscribes to the principles of:
  - ***Voluntary participation*** in research, implying that the participants might withdraw from the research at any time.
  - ***Informed consent*** meaning that research participants must always be fully informed about the research process and purposes and must give consent to their participation in the research.
  - ***Safety in participation*** put differently that the human respondents should not be place at risk or harm of any kind.
  - ***Privacy***, meaning that the *confidentiality* and *anonymity* of human respondents should always be protected.

- ***Trust***, which implies that human respondents will not be subjected to any acts of deception or betrayal in the research process or its published outcomes.
- My data will be use, confidentially and anonymously, for further research purposes, as the data sets are the intellectual property of the University of Pretoria and, where relevant, project funders. Further research may include secondary data analysis and using the data for teaching purposes. The confidentiality and privacy applicable to this study will be binding on future research studies.

Signed: _____ Date: _____

ANNEXURE G: PARTICIPANTS' SIGNED CONSENT FORMS



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UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Education

INFORMED CONSENT FORM

I, _____ (Full names and Surname), agree to participate in the research conducted by Mrs (Shobowale Aderonke Kemi) at my school. I am aware that the research has got nothing to do with my school and my participation is voluntarily. I am also aware that I am free to withdraw my participation at any time should I wish to do so, and my decision will not be held against me.

I understand that my daily duties will not be disturbed, and I grant the researcher permission to use some of my off-duty hours.

I understand that my identity, that of my school and all that I will say in this research activities will remain anonymous and confidential.

I also understand that I will be expected to provide written and oral comments on the draft report of the interviews.

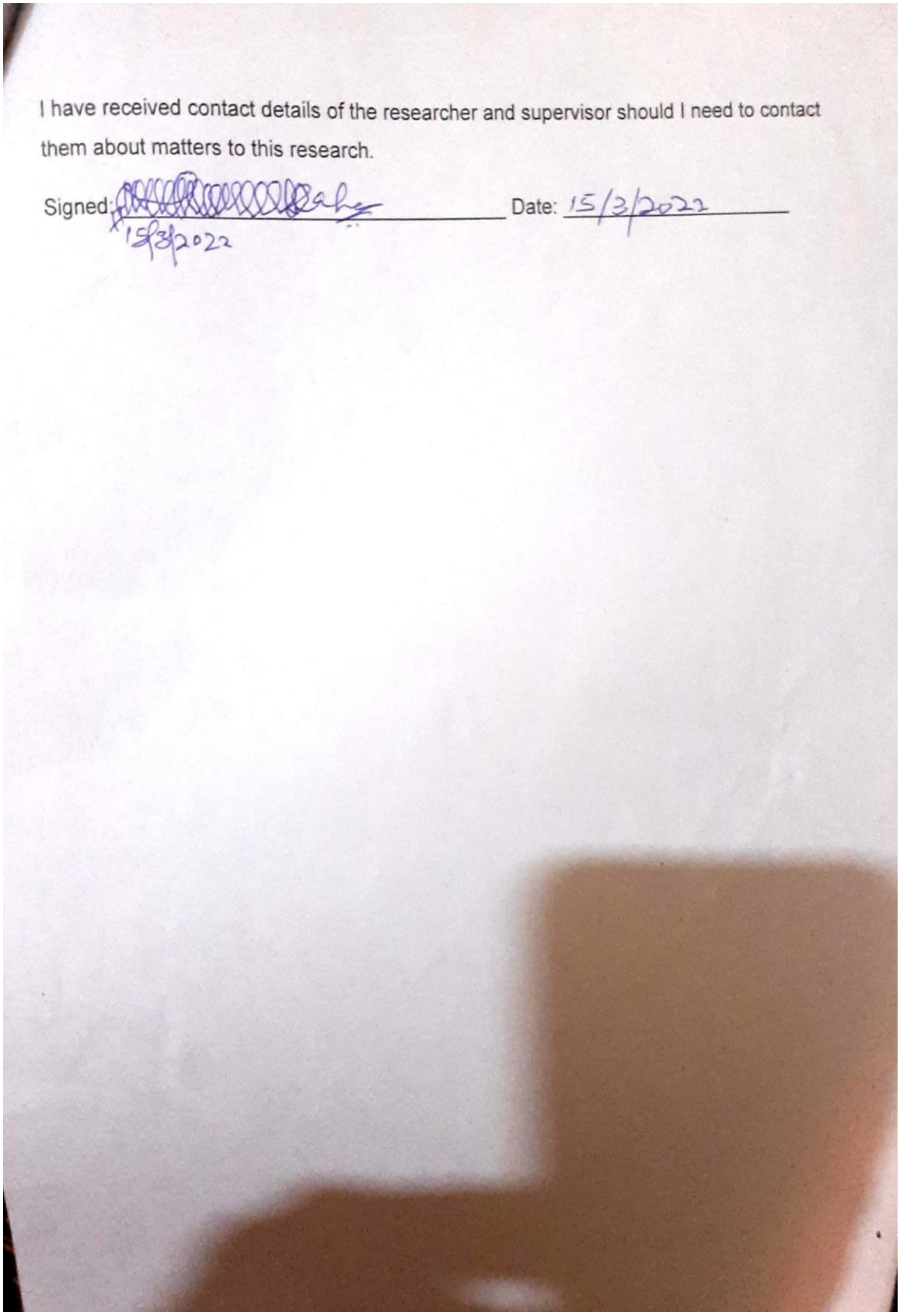
I am aware that permission for me to take part in this study will be secured from the Lagos state ministry of education, and University of Pretoria.

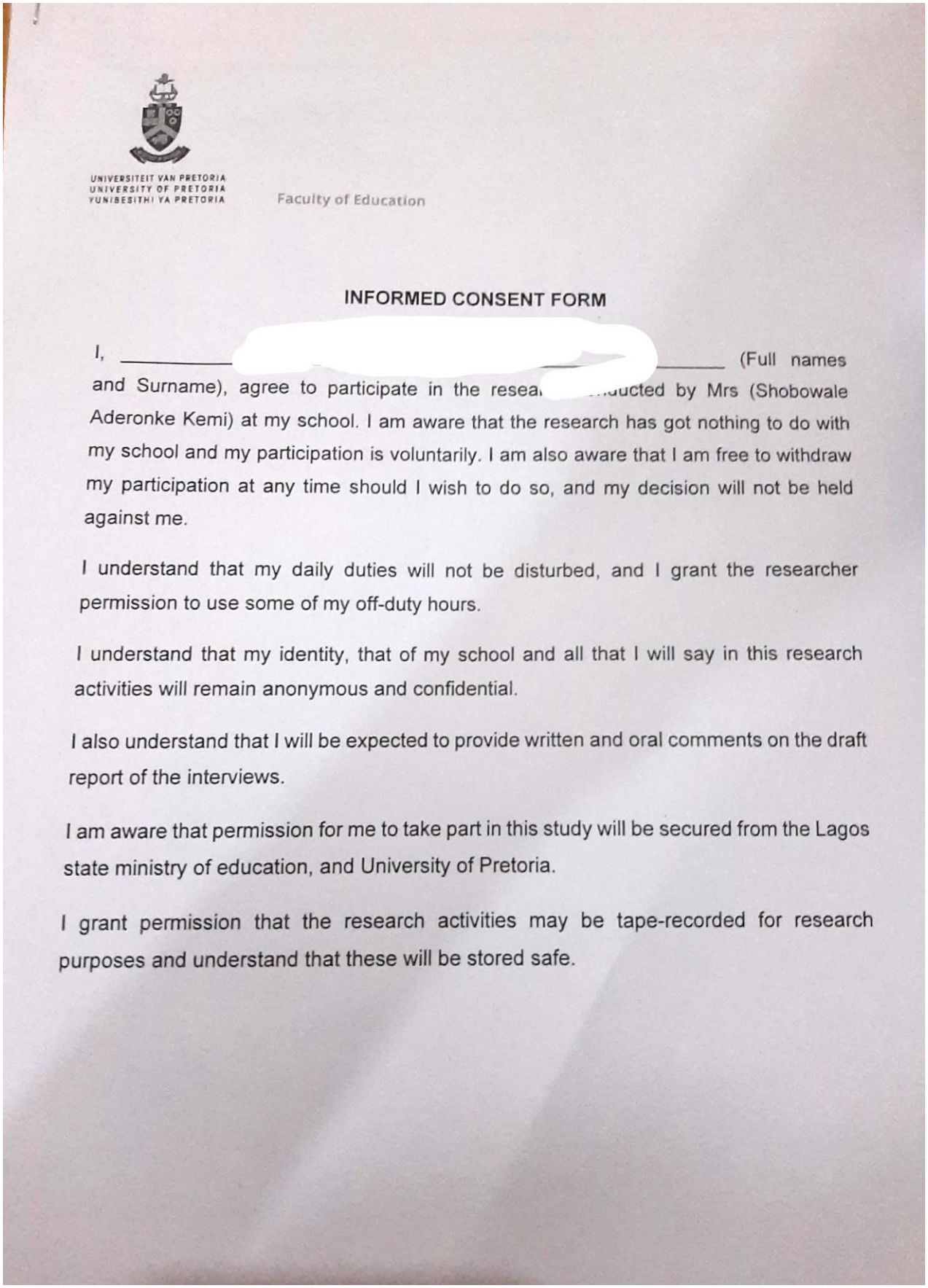
I grant permission that the research activities may be tape-recorded for research purposes and understand that these will be stored safe.

I have received contact details of the researcher and supervisor should I need to contact them about matters to this research.

Signed: _____ Date: 15/3/2022

15/3/2022





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Faculty of Education

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Signed: _____ Date: 9-5-2022

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Faculty of Education

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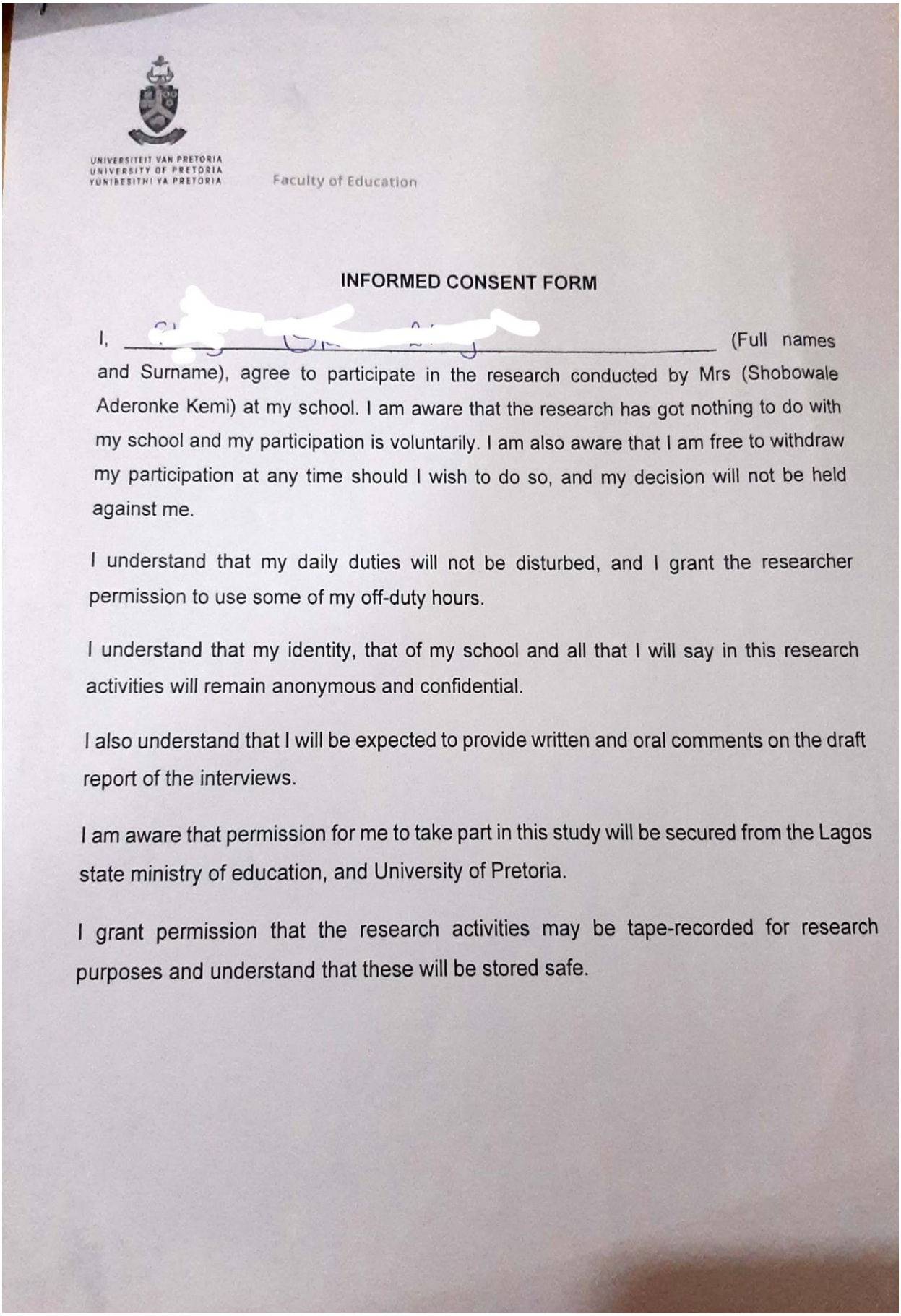
Signed: _____ Date: 9-3-2022



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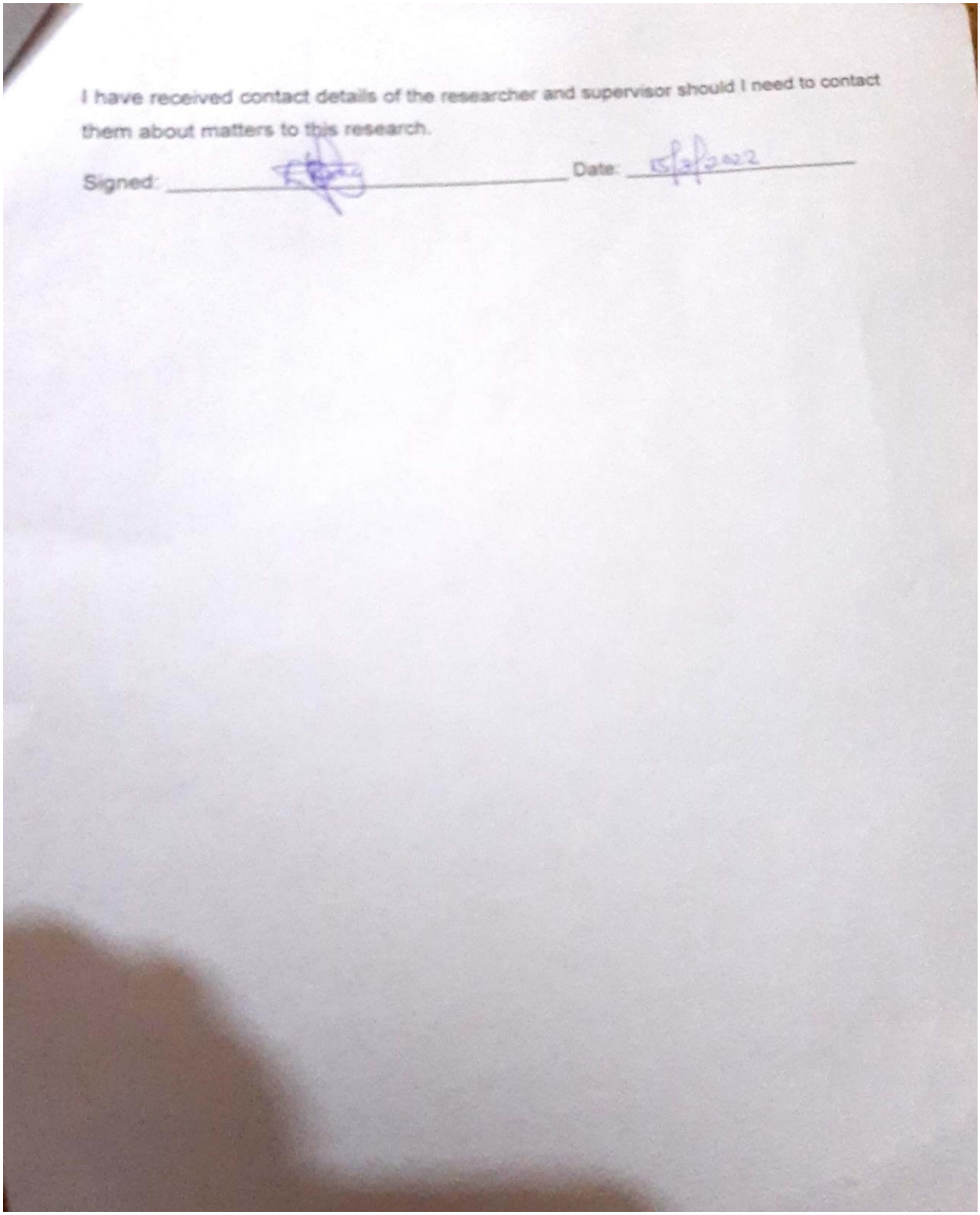
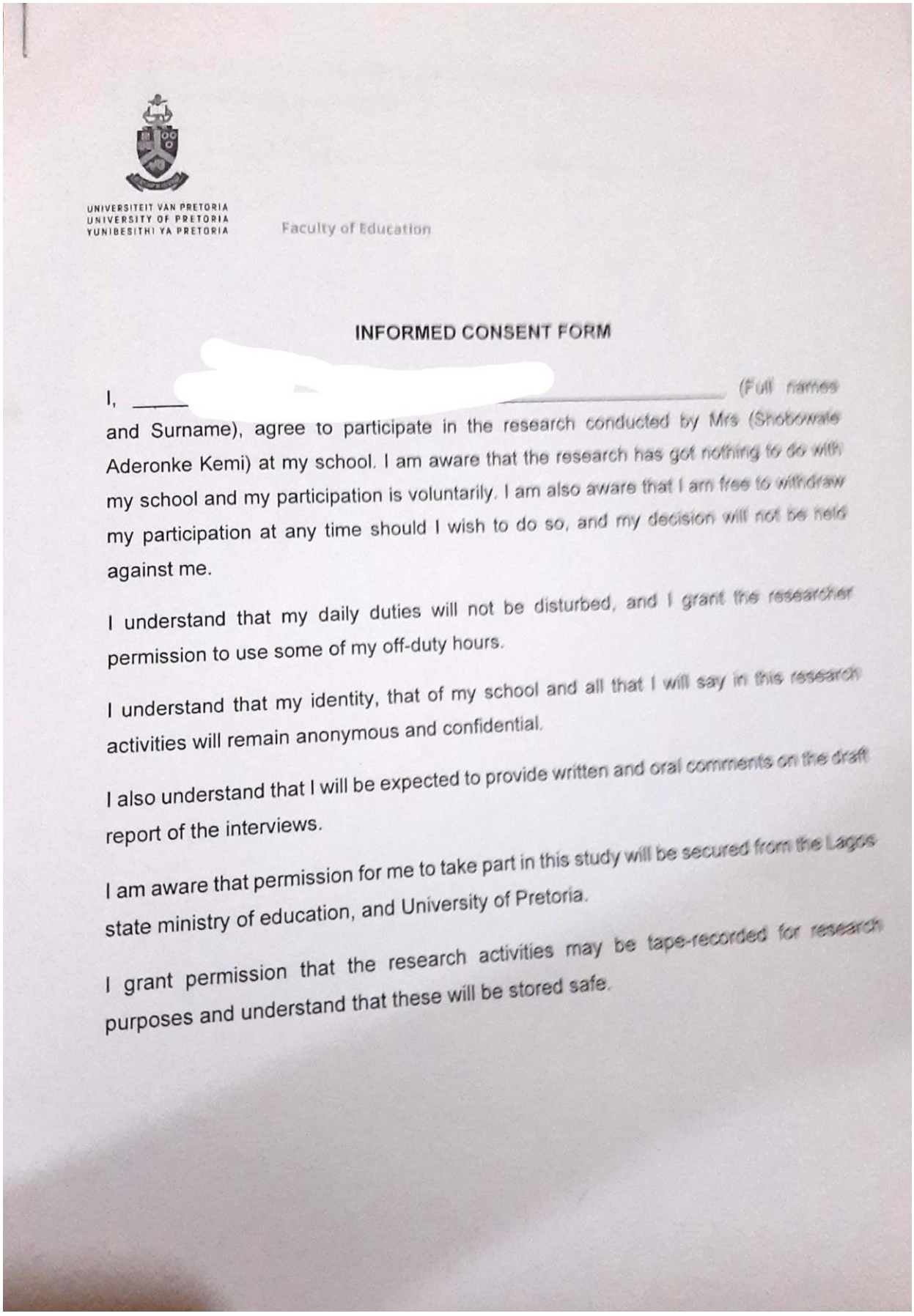


I have received contact details of the researcher and supervisor should I need to contact them about matters to this research.

Signed: _____ Date: 15/2/2022



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Faculty of Education

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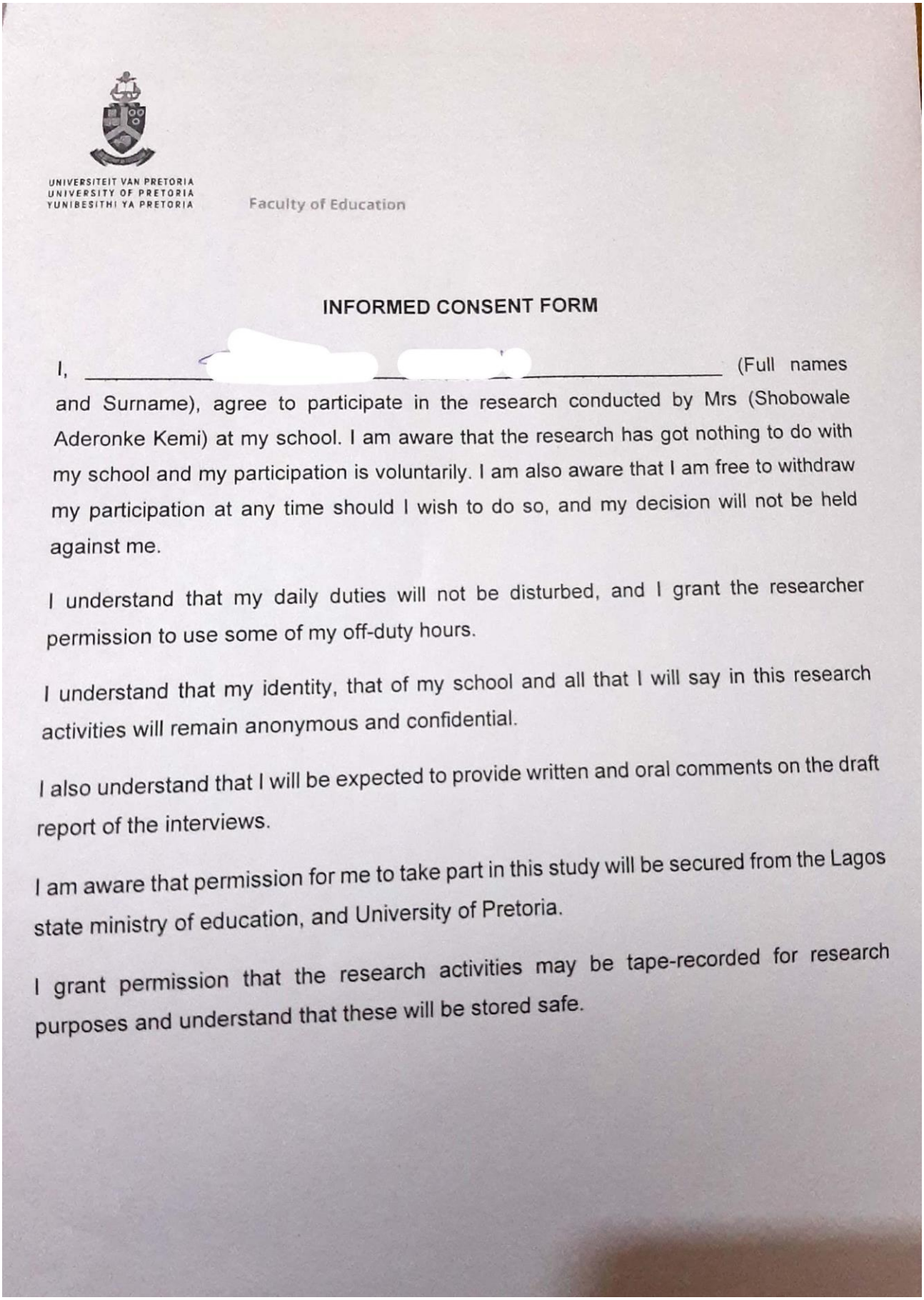
I grant permission that the research activities may be tape-recorded for research purposes and understand that these will be stored safe.

I have received contact details of the researcher and supervisor should I need to contact them about matters to this research.

Signed: _____ Date: 15-MARCH-2022



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YUNIBESITHI YA PRETORIA

Faculty of Education

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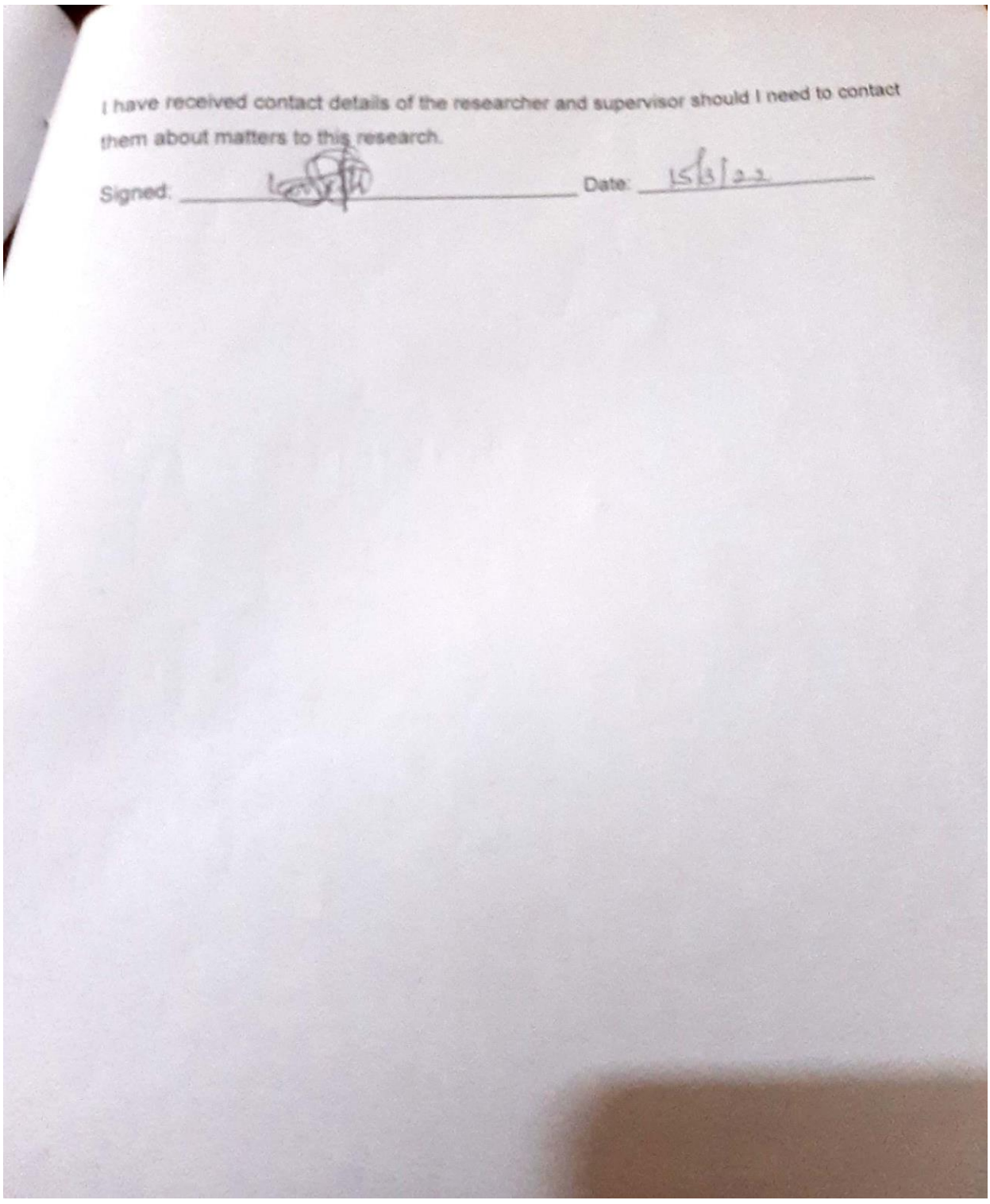

I have received contact details of the researcher and supervisor should I need to contact them about matters to this research.

Signed: _____ Date: 15/3/22

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Education

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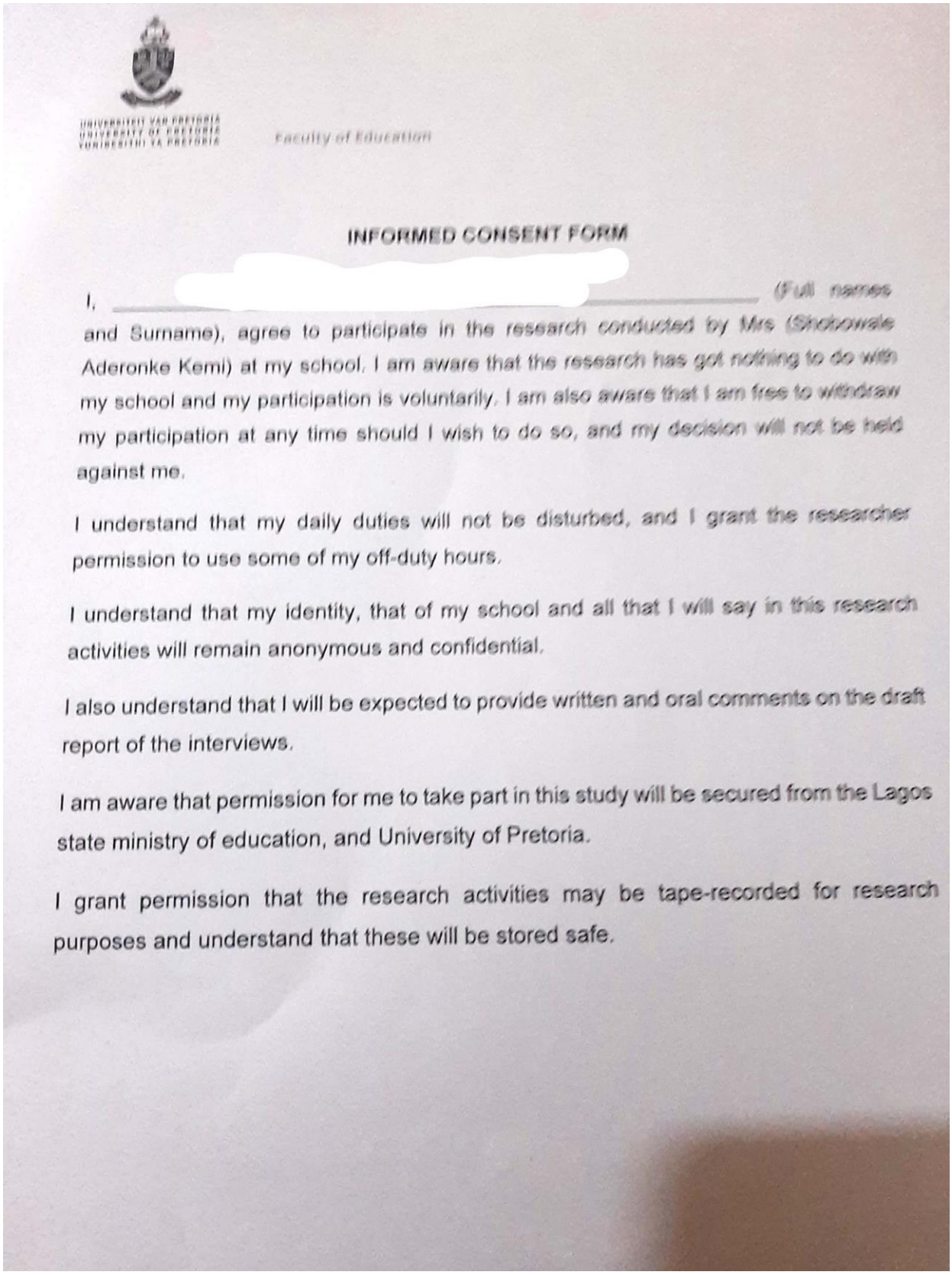
I have received contact details of the researcher and supervisor should I need to contact them about matters to this research.

Signed: _____ Date: 07-03-2022



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Faculty of Education

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I grant permission that the research activities may be tape-recorded for research purposes and understand that these will be stored safe.

I have received contact details of the researcher and supervisor should I need to contact them about matters to this research.

Signed: _____ Date: 9/3/2022

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

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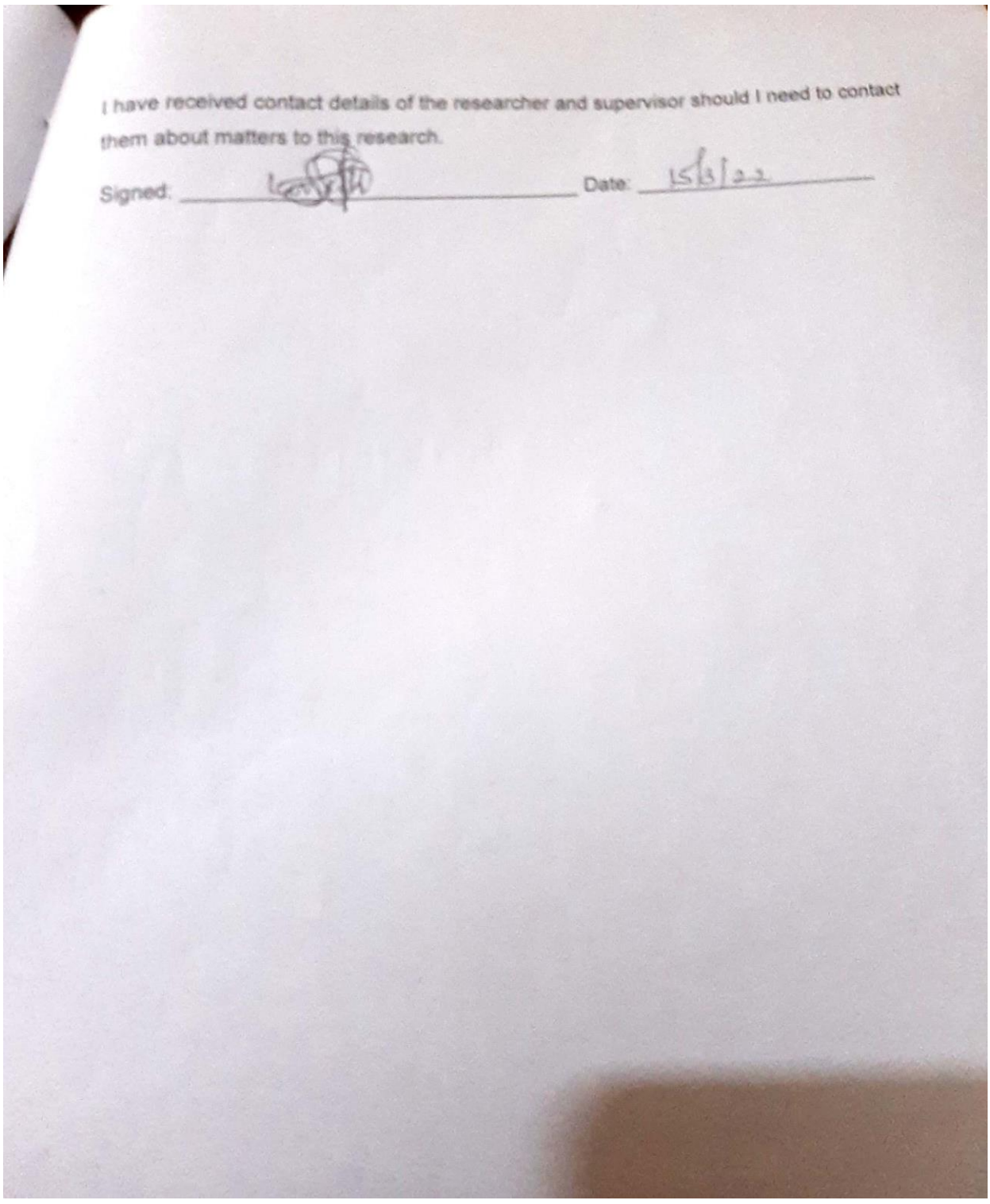

I have received contact details of the researcher and supervisor should I need to contact them about matters to this research.

Signed: _____ Date: 15/3/22

ANNEXURE H: INTERVIEW QUESTIONS

INTERVIEW SCHEDULE FOR SCHOOL PRINCIPALS

Time of interview:_____ Duration: _____

Date: _____

Place: _____

Interviewer: _____

Interviewee_____ Pseudonym: _____

Male/Female_____

Race: _____

Study title: School principals' implementation of information and communication technology policy in Lagos state secondary schools, Nigeria

Study purpose: To investigate how the school principals in Lagos state implement the

ICT policy.

Interview procedure: The interview will consist of twelve questions of which you are not obliged to answer all of them should you feel uncomfortable to do so.

Note: There are neither wrong nor right answers in this interview.

Remember:

1. Everything we share and discuss will be treated as confidential and will not be revealed to a third party. I am interested in your personal understanding and experiences of implementation of the language policy relating to foreign nationals.
2. You are welcome to seek clarity should the need be.
3. Everything we share and discuss will be audio recorded.
4. You can stop participating at any time without giving any reason.

Are there any questions that you would like to ask for clarification before we start?

Interview questions

1. What do you perceive to be the required ICT skills for the school principals to successfully manage the implementation of the ICT policy in schools?
2. Why should the school principals possess the ICT skills you mentioned above??
3. Do you think you have the ICT skills that you mentioned above??
   (a) If yes, kindly explain
   (b) If no, kindly explain
4. If you answered (a) in the above question, how did you obtain the ICT skills that you have?
5. If you answered (b) in the above question, how do you plan to obtain these required ICT skills?
6. What do you understand to be your role in the implementation of the ICT

policy in your school?

7. What kind of support do you get towards the implementation of the ICT policy in your school?
8. From whom do you get the support that you mentioned above?
9. What is your overall experience with the implementation of the Information and Communication Technology policy in your school?
10. In your opinion, what factors facilitate the successful implementation of ICT policy in your school?
11. In your opinion, what factors prohibit the implementation of ICT policy in secondary schools?
12. How do you overcome the hindrances brought by the factors you mentioned above?
13. To what extent do you think national ICT policy for secondary schools is well designed and serves the purpose it is intended to?

Is there anything else you would like to share regarding your experiences of implementation of ICT policies in secondary schools?

Concluding remarks

Thank you for taking your time to share with me this important and valuable information.

I kindly request that you avail yourself for further clarity should I need it.

Researcher: Shobowale Aderonke Kemi **Sign**: _____

Supervisor: Prof MA Nthontho **Sign**: _____