INFLUENCE OF TEACHERS’ DEMOGRAPHIC CHARACTERISTICS ON INFORMATION COMMUNICATION TECHNOLOGIES INTEGRATION IN INSTRUCTION IN LOWER PRIMARY SCHOOLS IN KIAMBU COUNTY, KENYA

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JULY, 2018
DECLARATION

I assert that this project report is my original work and has not been presented in any other university/institution. This project report has been complemented, and referenced works duly acknowledged through text data, graphics, pictures and tables have been borrowed from other works, including the internet. These sources are specifically accredited through referencing in accordance with anti-plagiarism regulations.

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TABLE OF CONTENTS

DECLARATION ........................................................................................................ ii

ACKNOWLEDGEMENT ...................................................................................... iii

TABLE OF CONTENTS ....................................................................................... iv

LIST OF FIGURES ............................................................................................... viii

LIST OF TABLES ................................................................................................. ix

ACRONYMS AND ABBREVIATIONS ................................................................. x

ABSTRACT ............................................................................................................ xi

CHAPTER ONE: INTRODUCTION AND CONTEXT OF THE STUDY ...... 1

1.1 Introduction .................................................................................................. 1

1.2 Background to the Study ............................................................................. 1

1.3 Statement of the Problem ........................................................................... 5

1.4 Purpose of the Study .................................................................................. 6

1.5 Research Objectives .................................................................................. 6

1.6 Research Questions ..................................................................................... 7

1.7 Significance of the Study ........................................................................... 7

1.8 Limitations and Delimitations of the Study .............................................. 8

1.8.1 Limitations of the Study ....................................................................... 8

1.8.2 Delimitations of the Study ................................................................... 8

1.9 Assumptions of the Study ......................................................................... 8

1.10 Theoretical and Conceptual Frameworks .............................................. 9

1.10.1 Theoretical Framework ...................................................................... 9

1.10.2 Conceptual Framework ..................................................................... 10

1.11 Operational Definition of Important Terms ....................................... 12

CHAPTER TWO: LITERATURE REVIEW ....................................................... 13

2.1 Introduction ................................................................................................. 13
2.2 Integration of ICT in Instruction.................................................................13
2.3 Age of Teachers and Integration of ICT in Instruction in Lower Primary
Schools............................................................................................................16
2.4 Gender of Teachers and Integration of ICT in Instruction .....................18
2.5 Teachers’ Teaching Experience and Integration of ICT in Instruction ........20
2.6 Teachers’ Professional Qualifications and Integration of ICT in Instruction .................................................................22
2.7 Summary of Literature Reviewed.............................................................25

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY ........27
3.1 Introduction..................................................................................................27
3.2 Research Design..........................................................................................27
3.3 Research Variables......................................................................................28
3.3.1 Dependent Variable .............................................................................28
3.3.2 Independent Variable ...........................................................................28
3.4 Study Location............................................................................................28
3.5 Target Population.......................................................................................30
3.6 Sampling Techniques and Sample Size ..................................................30
3.6.1 Sampling Techniques..........................................................................31
3.6.2 Sample Size..........................................................................................31
3.7 Research Instruments................................................................................32
3.7.1 Questionnaire for Teachers .................................................................32
3.7.2 Observation Checklist.........................................................................33
3.8 Piloting........................................................................................................33
3.9 Validity........................................................................................................33
3.9.1 Reliability..............................................................................................34
3.10 Data Collection Procedures....................................................................34
3.11 Data Analysis............................................................................................35
3.12 Logistical and Ethical Consideration

CHAPTER FOUR: DATA ANALYSIS, DISCUSSIONS AND PRESENTATION

4.1 Introduction

4.2 Rate of Return

4.3 Demographic Characteristics of the Respondents

4.3.1 Teacher’s Demographic Information

4.3.2 Head Teacher’s Demographic Information

4.4 Teachers Level of Integration of ICT in Instruction in Lower Primary Schools

4.4.1 Availability of ICT Resources

4.5 Teacher Age and Integration of ICT in Instruction

4.6 Teachers Gender and Integration of ICT in Instruction

4.7 Teachers’ Teaching Experience and Level of ICT Integration in Instruction

4.8 Professional Training and Integration of ICT in Instruction

CHAPTER FIVE: SUMMARY OF THE FINDINGS, CONCLUSION, RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

5.1 Introduction

5.2 Summary of Findings

5.3 Conclusion

5.4 Recommendation for the key stakeholders

5.4.1 Teachers

5.4.2 School Management

5.4.3 The County Government

5.5 Recommendations for Further Research
REFERENCES

APPENDICES

APPENDIX I: Questionnaire For Teachers

APPENDIX II: Questionnaire For Head Teachers

APPENDIX III: Observation Checklist

APPENDIX IV: Graduate School Approval

APPENDIX V: Research Authorization

APPENDIX VI: Research Clearance Permit

APPENDIX VII: Research Authorization From Nacosti
LIST OF FIGURES

Fig 1.1 Teachers Factors Influencing Use of ICT in Instruction ................................11

Fig 3.1: A map showing location of Githunguri Sub County ....................................29
LIST OF TABLES

Table 3.1 Number of Public Schools and Teachers in Githunguri Zone ................30
Table 3.2 Sampling Frame ..................................................................................32
Table 4.2: Head Teachers Demographic Information ...........................................41
Table 4.3: Field of Specialization of specialization ..............................................43
Table 4.4: Level of ICT Integration in Instruction of Lower Primary Schools ......44
Table 4.5: Availability of ICT resources in schools .............................................48
Table 4.6: Teachers Age and Integration of ICT In Instruction .............................50
Table 4.7: Teachers’ Gender and Integration of ICT in Instruction .....................52
Table 4.8: Teaching Experience and Level of ICT Integration in Instruction ........54
Table 4.9: Professional training and integration of ICT in instruction .................55
<table>
<thead>
<tr>
<th>ACRONYMS AND ABBREVIATIONS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ATCI</td>
<td>Attitude Towards Computer Instrument</td>
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<tr>
<td>DFES</td>
<td>Department for Education and Skills</td>
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<td>E learning</td>
<td>Electronic Learning</td>
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<td>ESP</td>
<td>Economic Stimulus Programme</td>
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<td>ICT</td>
<td>Information Communication Technologies</td>
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<td>KESSP</td>
<td>Kenya Education Sector Support Programme</td>
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<td>KIE</td>
<td>Kenya Institute of Education</td>
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<td>NI₃C</td>
<td>National ICT Integration and Innovation Centre.</td>
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<td>SPSS</td>
<td>Statistical Package for Social Sciences</td>
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ABSTRACT

Globally, the important role played by the use of Information and Communication Technology (ICT) in education has grown with states heavily investing in the procurement of ICT equipment and training of teachers. In the year 2014, the government of Kenya embarked on an ambitious programme that entailed the introduction of laptops in public primary schools. The success of this programme is however contingent on ICT skills of teachers in schools because this is vital in ensuring pupils reap maximum benefits of the programme. The study investigated the influence of demographic traits of teachers on ICT integration in instruction in lower primary schools in Githunguri zone, Kiambu County. Objectives of study were; to identify the level of ICT integration in instruction in lower primary schools; to investigate the influence of teachers’ age on integration of ICT in lower primary schools; to determine how teachers’ gender influence the integration of ICT and finally to establish how teachers’ professional training influences integration of ICT in lower primary schools. The Unified Theory of Acceptance and Use of Technology was used to guide this study. The study adopted descriptive survey design. The study targeted all lower primary school teachers and head teachers. Lower primary school teachers were purposively sampled from 13 public schools and head teachers. The study sample comprised of 7 head teachers and 49 teachers. The researcher utilized a structured questionnaire and observation schedules in collecting data. Data was analysed using descriptive statistics using Statistical Package for Social Sciences (SPSS). Results were presented using tables, figures and texts. Findings indicated that demographic factors influenced Teachers ICT integration in lower primary schools. The study recommended; training of teachers on integration of ICT in the learning and teaching activities and allocation of more resources to schools to support the utilization of ICT in learning and teaching.
CHAPTER ONE

INTRODUCTION AND CONTEXT OF THE STUDY

1.1 Introduction

This section is comprised of background information, problem statement, objectives of the study, study questions, significance of the study, the assumptions of the study, limitations and delimitations, theoretical and conceptual frameworks and operation definition of terms.

1.2 Background to the Study

The Integration of Information and Communication Technologies in pedagogical instruction is expected to enhance the quality of learning outcomes by improving the manner in which knowledge is disseminated; improves the effectiveness of learning process and improving efficiency of education services (Collins and Jung, 2003). Technology is one of the vital tools for learning as well as teaching. For a teacher to use technology effectively, he or she needs training, technical support, and opportunities to practice. The ICT competency framework that was provided by UNESCO and an international team of meticulous research and testing is ideal in equipping teachers with the requisite training, technical knowhow and opportunities to practice (UNESCO, 2012). It begins with basic computer literacy and later incorporates the elements that teachers should learn to use computers confidently.

Margaret (2005), defines ICT as technologies that assist in the processes of access, collection, manipulation as well as data presentation. ICTs refer to technologies and infrastructural systems that assist in data creation, storage, retrieval and information propagation (Mejium and Obilade 2006; Medow, 2000). In the field of education,
ICT has led to the fundamental change on how teachers transfer knowledge and skills to learners (Hahjighi and Ekkandari, 2012). The core objective of integrating ICT in education, as Wang and Woo (2007) explain, is to improve the manner in which knowledge is passed on to the learners. Integrating ICT in education improves the efficiency of the learning process and makes it more interesting thus enhancing better dissemination of knowledge.

According to Papaioannon and Charalambous (2011), integrating ICT in education system help augment students’ motivation, interest, self-esteem and confidence, creativity, interactivity, critical thinking and academic performance among others. According to Laaria (2013), ICT utilization within the education sector has the potential to improve enthusiasm, efficiency among teachers as well as improve their cooperation and planning in matters that pertain to student-centred education strategies, reduction of workload, and student-teacher relationship.

Many governments all over the world have made efforts to invest in ICT in education system. According to Volman (2005), governments in the western countries have made significant investments in educational ICT infrastructure in the last two decades, and students in these countries use computers in most of the educational applications. Olga (2008) notes that each student in France had a computer of his/her own at the beginning of 2005. According to Johnson (2009), UK government spent £2.5bn on ICT integration within the education sector between 2008 and 2009 while the United States government spent $6bn in 2009 and over $410 million of the New Zealand’s annual budget is allocated to educational ICT infrastructure. However, ICT integration in schools in many occasions is not proportional to the allocated resources. Olson and Gustavsson (2011) point out that by the summer of 2011, the majority of
Swedish pupils already had access to laptops and that around 150 schools in the country had every pupil with a computer.

As the implementation of ICT technologies increases in the Western and Asian countries, African countries are still lagging behind, thus widening the digital and knowledge gaps when compared to other continents. According to Kiptalem et al. (2010), countries in Africa struggle regarding accessing educational ICT facilities where the ratio of computers to students is 1:150 which is a great contrast with the 1:15 ratio in developed countries. Most countries in Africa have a shortage of teachers with ICT skills and knowledge that this has immensely impacted on the effective utilization of ICTs in schools. Pelgrum et al. (2010) indicated that school leaders identify lack of ICT-related skills and knowledge among teachers as a major barrier that impedes on ICT implementation within the educational sector.

Governments and education stakeholders all over the world identify teacher development as significant in implementation of ICTs within educational systems. Bell (1986) argues that ICT implementation in the education system is an individualized approach to teaching where in students can work independently enabling self-independence and mastery of ICT technologies.

In the year 2007, the Burundi government updated the 2004 ICT policy in a bid to improve the implementation of ICT in rural areas (Hare, 2007). Nonetheless, there is no particular policy for the implementation ICT in education despite acknowledging that ICTs are enablers of quality education. Thus, the implementation of ICT in education is not prioritized by such a government (Novetech, 2008; Hare 2007). According to Farewell (2007), Rwanda’s vision 2020, identifies ICT as a core pillar
anchored within the country’s information and communication policy. Rwanda’s Vision 2020 was initiated in 2000 with the aim of achieving a middle-income status by the year 2020. Despite the fact that Rwanda has an ICT education policy, the level of implementing ICT technologies in primary schools is still inadequate.

Farewell (2007) documents that ICT in education in Kenya is anchored within the 2005 Kenya Education Sector Support Programme that was developed by the Ministry of Education. In this regard, ICT is prioritized and set to mainstream ICT into the learning and teaching processes. In reference to the lower primary schools in Kenya, Begi (2007) cited some of the challenges derailing ICT implementation to include lack of adequate resources, inadequate teacher training as well as lack of the technical support in schools.

ICT has been prioritized by the Kenya Education sector support programme (KESSP) as a major factor that will facilitate the mainstreaming of ICT into the Kenyan Education system. Kenya’s Vision 2030 places emphasis on the significance of technology in improving productivity and efficiency in the social, economic and political dimensions. The country is aware of the critical function of ICT in enhancing quality in education. As a result, funds were disbursed to schools under the economic stimulus programme (ESP) in 2009 to facilitate the purchase of e-learning and ICT facilities (Ongeri, 2012).

However, according to Webuyele, (2003) and Wins & Lawles (2007), there is limited literature about the implementation of ICT in Kenyan classrooms. Kenyan government intends to augment the capacity of human resource in ICT by heightening ICT incorporation into the education system, providing ICT skills to teachers through
training and expanding the fibre optic network to cover schools. Kenyan government also intends to progressively provide free WI-FI in major towns in five years; (ICT Sector Policy guidelines, 2013). There is inadequate incorporation of ICT in Kenyan classroom which is further augmented by lack of ICT skills among teachers, insufficient resources and inadequate administrative support (Alma, 2014).

Various efforts have been rolled out in a bid to facilitate ICT integration in the education system, and this has led to significant development in the dissemination of education using e-learning platforms. Nevertheless, there is still a knowledge gap regarding the manner in which teacher factors influence the implementation of ICT into the learning and teaching processes. This study, therefore, sought to find out how demographic factors influence ICT integration in lower primary schools in Githunguri Zone, Kiambu County.

1.3 Statement of the Problem

Incorporation of ICT in the education system improves teaching and learning processes across all subjects and ages. It increases the motivation of children and enhances the process of addressing their individual learning needs. It also improves the enjoyment and interest in learning and augments self-directed learning.

Despite the strong emphasis that has been given on the importance of using ICTs in instruction, most teachers are not fully equipped to handle ICT instruction. Essentially, this is attributed to the high cost of application of ICTs in instruction as it necessitates curricula alterations, investing in ICT infrastructure, technical support and training of teachers. The lack of professional training persists and hence hampering the effectiveness of ICT incorporation in the lower primary schools. About
the learning and teaching process the aspect of age, gender, teaching experience and level of professional training plays an indispensable role. Given the paucity of literature on influence of demographic characteristics of teachers on ICT integration, this study sought to explore the influence of demographic characteristics of teachers’ on incorporation of ICT into the teaching/learning in lower primary schools in Githunguri zone of Kiambu County.

1.4 Purpose of the Study

The study established the level of ICT incorporation in instruction in the lower primary schools in Githunguri zone, Kiambu County. The study also explored the influence of demographic characteristics of teachers on the integration of ICT in instruction in lower primary schools.

1.5 Research Objectives

The study objectives were;

(i) To establish out the level of ICT incorporation in instruction in lower primary schools.

(ii) To explore the influence of teachers age on the integration of ICT in instruction lower primary schools.

(iii) To determine whether teachers’ gender influence the integration of ICT in instruction lower primary schools.

(iv) To find out whether teachers’ experience influences the integration of ICT in instruction lower primary schools.

(v) To establish teachers’ professional training influence the integration of ICT in instruction lower primary schools.
1.6 Research Questions

The study was guided by the subsequent research questions;

(i) What is the level of integration of ICT in instruction in lower primary school in Githunguri Zone, Kiambu County?
(ii) Does age influence teachers readiness to integrate ICT instruction in lower primary schools?
(iii) Does teachers’ gender influence the integration of ICT in instruction lower primary schools?
(iv) To what extent does the teaching experience of teachers influence the integration of ICT in instruction lower primary schools?
(v) Does teacher’s professional training influence the integration of ICT in instruction lower primary schools?

1.7 Significance of the Study

Findings of this study provide information regarding the integration of ICT in schools and the factors influencing it. The findings of this study may motivate lower primary school teachers to seek further skills and knowledge to facilitate ICT usage in their teaching practices. Study findings may also help learners in terms of having access to significant knowledge on ICT integration in education besides exposing them to meaningful utilization of ICT platforms. The findings may also be of benefit to the Kenya Institute of Curriculum Development (KICD) as it will provide information regarding the best way of rolling out a curriculum based on ICT facilities. The research may also help the Ministry of Education when developing policies edging towards ICT integration into the school curricula. Board of Management in schools
may use the findings to improve on the integration of ICT in schools. Finally, the study findings will add onto the existent literature hence generating empirical evidence on factors influencing ICT integration in instruction and precisely in the lower primary institutions.

1.8 Limitations and Delimitations of the Study

1.8.1 Limitations of the Study

Some participants might be reluctant to divulge the requisite information. To overcome the issue of the geographical location of some schools, the researcher used various means of transport including taxis and boda-bodas to reach some of the inaccessible areas. To overcome the issue of some of the participants who may be reluctant to divulge the requisite information, the researcher assured participants of confidentiality and anonymity of their identity.

1.8.2 Delimitations of the Study

The study was conducted in Githunguri Zone, Kiambu County. There could be many factors which influence integration of ICT in teaching and learning. However this study was delimited to the integration of ICT in the education system as well as the influence of teachers’ demographic characteristics on the integration of ICT in instruction.

1.9 Assumptions of the Study

In carrying out this research, the researcher was guided by the following assumptions:

(i) The respondents have a basic understanding of ICT and ICT tools used in teaching- learning.
(ii) All respondents were to be cooperative and honest in providing information required.

1.10 Theoretical and Conceptual Frameworks

The study was based on the Unified Technology Acceptance and Use of Technology Model.

1.10.1 Theoretical Framework

The theory upon which this study based on was the Unified Technology Acceptance and Use of Technology (UTAUT) by Davis (1989). The development of this theory entailed an appraisal and consolidation of previous models’ constructs of explaining the ICT usage. According to VenKatesh et al. (2003), UTAUT has four major constructs which include: effort expectancy, performance expectancy, facilitating conditions and social influence. Performance expectancy otherwise referred to as perceived usefulness is the extent to which individual teacher believes that utilizing a specific ICT tool improve his or her performance. In the context of this study, if lower primary school teachers’ believe utilizing a specific ICT tool improves their performance regarding disseminating knowledge to the pupils they may be persuaded to integrate ICT in their teaching endeavours.

Effort expectancy otherwise referred to as perceived ease of use, refers to the extent to which an individual believes that utilizing a specific ICT tool may be easy. In the context of this study, the perceived ease of use among lower primary school teachers is contingent on their ICT literacy as well as their experience with ICT tools.

Facilitating conditions, as explained by VenKatesh et al. (2003), refer to the extent to which ICT users believe there is an administrative and technical system put in place to
facilitate the use of a specific ICT tool. The facilitating conditions in this particular study ICT tools provided in public lower primary schools to help in the implementation of ICT. Examples of such ICT tools include functioning computers, good internet connection, devices for storing information, pertinent educational software, projectors, and printers.

VenKatesh et al. (2003) define social influence as the support provided by other people such as fellow experienced teachers, policymakers in the education sectors, school head teachers, and parents. In the context of this study, the researcher delved into the manner in which institutional support help in the integration of ICT in lower primary schools education system in Githunguri Zone.

In this study, the researcher adopted three of four UTAUT model constructs to identify the factors which affect integration of ICT technologies in lower primary schools in Githunguri Zone. The three modified constructs include Teachers’ perceived ease of use, availability of ICT facilities, and institutional support in the rolling out ICT in the education system.

1.10.2 Conceptual Framework

According to Kalas (2010), integration of ICT in the education system is important in improving the performance of learners and modernizing of the process of disseminating education. As a result, there was need to investigate the level of integration of ICT in the education system in a bid to get acquainted with the improvements that need to be made. Also, it was important to investigate how demographic characteristics of teachers influenced the integration of ICT in instruction.
Fig 1.1 Teachers Factors Influencing Use of ICT in Instruction

The figure shows influence of teachers’ demographic characteristics such as age, gender, teaching experience and professional qualifications on integration of ICT in instruction in lower primary schools in Githunguri zone.
1.11 Operational Definition of Important Terms

**Age**: Number of years an individual has lived.

**Gender**: Male or female.

**Information and Communication Technology (ICT)**: Refers to the equipment such as computers, radios, televisions, the internet, videos and digital cameras used in teaching and learning by teachers.

**Instruction**: Teaching and learning in lower primary schools.

**Integration of ICT**: Usage of computers, laptops, educational software, CDs and DVDs in instruction.

**Lower primary school**: Classes one, two and three.

**Professional qualification**: Highest level of training a teacher has acquired.

**Teaching experience**: Number of years teachers have been teaching in primary schools.
CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides a brief introduction of information communication technologies as well as elaborates on the ICT in education in the Kenyan context. Consequently, this review of literature focuses on each objective to be comprehensively delved into the manner in which age, gender, teacher experience and professional training influence the integration of ICT in instruction.

2.2 Integration of ICT in Instruction

The twenty-first century is characterized by numerous resources that can be utilized by teachers in the dissemination of knowledge and skills to their learners. The conventional reliance on a chalkboard and occasional use of locally available materials have been supplemented by a new kind of instructional support that involves the use of ICT technologies.

ICT technologies refer to the technologies (electronic or non-electronic) and infrastructural systems that facilitate the creation, storage, retrieval, and dissemination of information (Mehjium and Obilade 2006; Medow, 2000). In the field of education, ICT has led to the fundamental change on how teachers transfer knowledge and skills to learners (Hahjighi and Ekkandari, 2012). In this study, ICT referred to technologies that facilitate the access, collection, manipulation, and presentation of information related to the public lower primary schools.
Most countries all over the world have taken measures to facilitate the integration of ICT into the education system with the long-term goal of enhancing the quality of education at all levels. Given this, countries such as Australia have set goals for their schools about ICT integration into their daily operations. Similar trends are evident in countries such as the Philippines, Malaysia, Indonesia, Uzbekistan as well as Vietnam (IPs, 2003). Consequently, the emerging countries in Asia and the Pacific are aggressively training their teachers in all levels of education to utilize ICT in education with a different degree in scope so that they can integrate ICT into instruction. For this reason, this study determined the level of ICT integration and found the demographic factors that influence ICT integration in instruction in lower primary schools in Githunguri zone.

Kenya promulgated a National ICT policy in January 2006 aimed at improving the livelihoods of Kenyans by ensuring the availability of accessible, efficient, reliable and affordable services. The secondary school policies guide the integration of ICT in and learning by articulating the expected teacher and student characteristics and experiences, and how they will be used to enhance the use of ICT in enhancing teaching and learning. The Ministry of Education developed a Kenya Sector Support Programme (KESSP) in 2005 that basically featured ICT as one of the priority areas with the aim of mainstreaming ICT into the teaching and learning process. The National ICT policy embedded this intent as a national priority and provided the impetus for the Ministry to develop its sector policy on ICT in education. In June 2006, the Ministry introduced the National ICT Strategy for Education and Training. The ICT policy for the education sector document consists of the following components, each with its own statement of strategic objectives and expected
outcomes: ICT in Education policy, Digital Equipment, Connectivity and network infrastructure, access and equity, technical technologies, digital content, harnessing emerging technologies, integration of ICT in education, training (capacity building and professional development) and research development.

Essentially the pervasive utilization of ICT in most institutions is due to the rise of knowledge economies that also demand employees who wield the skills of operating ICT tools. As a result, there is an apparent consensus that this begins with a teacher at all levels of education integrating ICTs in the education system. This is premised on the fact that when learners are provided with the opportunity to watch their instructors use ICT, it also serves as a point of transfer of skills and behaviour in itself. (Olivier 2004), explains that there was a need for learners to experience their teacher utilize models of ICT usage before implementing them to their own profession so that they can be confident. As earlier mentioned, ICT integration in education in Kenya has been emphasized as the county seeks to participate in the global knowledge economy. The Kenyan government has reiterated the significance of ICT integration in education in the varied economic blueprints such as vision 2030. Others include the National ICT Policy of 2006, KESSP (2005-2010). According to Kiadomboet al. (2012), the Kenyan government has been investing in capacity building institutions of learning through installing ICT infrastructure such as the provision of educational materials in digital formats through KICD and NIsC. The development of electronic content for both primary and secondary schools is anticipated to enhance access as well as improve the quality of education so that pupils’ performance will improve. However, despite the recognition in blueprint and strategic plans in most schools, the implementation of ICT policy in education is marred by varied challenges (Njagi and
Oboko, 2013). One of the major challenges that have been identified as the absence of a clearly defined Ministry of Education framework that guides the integration of ICT in the education system. In addition, Wagnes (2005) argue that the absence of accepted standards and methodologies for assessing the effects of ICT in primary schools as another impediment of ICT integration.

One of the determinants of ICT integration that have been identified in the Kenyan education system is the attitude of teachers and students regarding the use of ICT technologies (Kamau, 2012; Kyals and Nzuki, 2014; Omollo et al. 2013). However, there was a paucity of research focusing on primary schools and particularly so in the lower primary schools which serve as the basis for this study.

2.3 Age of Teachers and Integration of ICT in Instruction in Lower Primary Schools

According to Jegede (2009), informal observations had confirmed that “you cannot teach an old dog new tricks” in reference to teachers who have matured in age and their implementation of ICT in the education system. This portrays a dangerous scenario as well as explains the uninviting landscape in the integration of ICT in the primary school education system. This is because the elderly teachers are more often than not in administrative positions in schools mandated with implementing schools strategic plans as well as implementing policies. Oscarson (1976) established that there was a significant correlation between age and attitude towards technologies. This was further elaborated to mean that the old teaching staff was more adoption prone when it came to the uptake of technology as opposed to younger teaching staff that were more welcoming to the integration of technology. In a study conducted by Jennings and Onwuegbuzie (2001), younger teachers were found to have more
positive attitudes towards the implementation of ICT in the education system than their older counterparts.

Nevertheless, there are emerging studies that have suggested that gap of ICT related behaviours with regard to age groups has narrowed significantly. This was especially evident in research studies in developed countries, for instance, Help guide (2004) noted that compared to earlier years the older American teachers were exhibiting improved computer-related behaviours. This was also acknowledged by Luchetta (2000). Nonetheless, the narrowing gap on ICT behaviour is not a universal phenomenon as Hernes, Hestman, and Haeland (2000) upon examining the case of Norway established that there is a negative correlation between teachers’ age and Internet use skills. Liang and Chao (2000) conducted a study on Taiwan teachers and established that the literacy of Internet use was higher among younger teachers when compared to their older counterparts.

Adams (2002) in a study focusing on faculty members of an institution of higher learning summarized the following age-related concerns when it came to integration of ICT higher level of computer integration is recognized and evident among those between the ages of 18 and 24, greater integration was more at display among the females as opposed to the males. The least demonstration of ICT integration in teaching practice was noted among those who had middle years of teaching tenure that was between 10 and 19 years of experience, It was interesting to note that those who had less than 10 years of practice, as well as those who had 20 or more years of practice, demonstrated greater technology integration and last, but not least it was noted that an estimated 25% of the respondents in the faculty did not participate in innovation.
The ultimate conclusion made by Adam in reference to staffs’ age and ICT integration is that regardless of their age it was important for them to learn and understand the use of new technologies and subsequently diffuse them in teaching. Additionally, a study by William, Wilson, Richardson, Tuson, and Coles (2000) took a different approach where they made a comparison of the age and attitude towards ICT use between secondary and primary schools teachers in Scotland. In view of this, they found out that there was no distinguished difference in attitude across age groups among the secondary school teachers. However, it was established that most of the older primary teachers had a negative attitude towards the integration of ICT technologies.

In the Canadian context, Lam (2000) established that the age of teachers had an effect on the implementation of ICTs in the education system. There is a literature gap with regard to the impact of teachers’ age on the integration of ICT in the education system in Africa and in Kenya. Kurga (2014) upon studying the influence of age in the adoption of E-learning approach in Kenyan Secondary schools found out that the impact of age on the attitude of teachers towards integration of E-learning is not significant. Essentially, the existing body of literature reports mixed results and evidence differences in primary and secondary contexts as well as in geographical dimensions. As such, there was need for studies that can illuminate the case in secondary and primary schools in Africa. This study, therefore, aimed at establishing the influence of teachers’ demographic characteristics on the integration of ICT in the lower primary schools in Githunguri, Kiambu County.

2.4 Gender of Teachers and Integration of ICT in Instruction

The influence of gender in ICT usage has been noted in several research studies. Volman and Van Eck (2001) argue that teachers of the female gender have lower
levels of ICT implementation attributable to lack of interest, low technical skills, as well as lack of access. Their male counterparts have been cited in several studies to have higher levels of ICT implementation (Wozneyet al., 2006; Kay, 2006). Likewise, Jamieson-Proctor et al. (2006) found that female teachers in Queensland State in Australia were integrating technology less in their lessons when compared to the males. Nonetheless, there are also studies that have exemplified a rise in female teachers’ usage of ICT in the education system. For instance, Breisser’s (2006) study of the midwestern US basic schools showed the perception of ICT competence among female teachers were improving while that of their male counterparts remained stagnant. Consequently, as earlier highlighted Adams (2002) observed that teachers of the female gender exhibited more use of ICT when compared to the male teachers. Other emerging studies also detail that the gender gap in ICT integration in education has significantly reduced over the years. This is backed up by the greater number of females as opposed to males utilizing web 2.0 and internet technologies (Yukselturk&Bulut, 2009). This study therefore sought to find out the influence of Gender and integration of ICT in instruction in lower primary schools in Githunguri zone.

In a context of university students, Markauskaite (2006) sought to study the gender differences of first-year student teachers. The results indicated that significant gender differences in ICT capabilities with the males recording higher scores. There are scholars such as Norris et al. (2003) that have argued that gender is a determining factor in the integration of ICT in the education system. Moreover, it is argued that the inequalities of gender in the integration of ICT in the education system can easily be bridged through quality preparation and enhanced ICT competencies.
Kurga (2014) carried out a study aimed at establishing the effects of age, gender, and level of training in the implementation of e-learning strategies in the study of business studies in Kenyan Secondary schools and concluded that gender had no impact on teachers’ perception towards the implementation process. The existing body of literature is also marred by different results in respect to the influence of gender in ICT integration. It is from this lack of conclusive results that demands more research studies in all levels of education and across the geographical divide to determine the influence of gender on the integration of ICT in teaching-learning.

Although the studies have identified the influence of gender and teachers integration in teaching and learning, there is no study that has established the influence of gender on teacher integration of ICT in lower primary schools in Githunguri Zone. As a result, this study determined the level of ICT integration in Githunguri Zone.

2.5 Teachers’ Teaching Experience and Integration of ICT in Instruction

Much of the existent literature focuses on the aspects of age and gender and their influence on ICT integration in education in general. Nonetheless, researchers are now focusing on aspects of teaching experience as well as training. The U.S. National Centre for Education Statistics (2000) notes that teachers with less experience have a higher likelihood of integrating ICT in their education activities when compared to their more experienced counterparts. According to the report, teachers with a teaching experience of three years had spent 48% of their teaching time on computers, while those with a teaching experience of 4 to 9 years had spent 45% of their teaching time on computer, those with a teaching experience of 10 to 19 years had spent 47% of their teaching time on computers and those with a teaching experience of over 20 years had spent 33% of their teaching time on computers. The justification for these
disparities is that fresh teachers have more experience on the use of technology. Nonetheless, this justification fails to explain the reason why teachers with a teaching experience of 10 to 19 years had spent more time on computers than those with a teaching experience of 4 to 9 years.

A similar study carried out in Malaysia had shown different results. Lau and Sim (2008) delved into the level of ICT implementation among 250 secondary school teachers and found that the likelihood of using computers in class was higher in older teachers than their younger counterparts. This was attributed to the rich experience possessed by the older teachers when it came to classroom management, teaching as well as using computer technology that can easily be integrated into their kind of classrooms. Russell (2003) study established that regardless of the younger teachers being more technologically savvy, their integration of ICT in the education process was lower than that of older teachers. The reasons for this disparity is that young teachers focus more on using ICT rather than integrating the dissemination of education teaching and secondly young teachers are usually encountering some challenges in their first years of teaching and therefore use a lot of time getting acquainted with the school’s policies and curriculum.

There are several qualitative studies that have investigated the integration of ICT in teaching-learning. Morbey (2002) delved into factors that lead to the successful integration of ICT in Canada and established that there was no correlation between teaching experience and the integration of ICT in the education system. This evidences that successful ICT integration is a rather complex issue but ICT skills is not a precise indicator of ICT integration.
Essentially, most of the existing body of literature edges towards the conclusion that teaching experience has some effect on the success of the integration of ICT in the education system. Gorder (2008) summed up a review of the literature by indicating that teacher experience does show a relationship with actual utilization of technology. In addition, the findings of the study also suggested that the effective implementation of ICT was contingent on the technological comfort levels as well as the freedom to tailor the education content to suit the needs of the students. Therefore, this study sought to clarify the manner as to whether teaching experience influences the integration of ICT in lower primary schools in Githunguri Zone.

2.6 Teachers’ Professional Qualifications and Integration of ICT in Instruction

According to Wozney et al. (2006), teachers’ level of professional training is one of the fundamental factors that impinge on the success of the integration of ICT in the education system. Teachers with some training on use of ICT tools were more competent and confident in terms of rolling out ICT strategies in the education system. According to Wozney et al. (2006), ICT training improves teachers’ attitudes towards use of ICT and helps them to reorganize the task of technology in the context of the education system. This means that there is a correlation between professional training and the success of ICT integration in the classroom. Muller et al. (2008) conducted a study involving 400 pre-tertiary teachers and found out that professional training and teacher development alongside the continuous support of good practice were the leading factors that impinge on the success of ICT integration in the education system.
Professional training is a key factor that impinges on the success of ICT integration in the education system. It is not an indicator of successful implementation of ICT (Sandholtz and Reilly, 2004). It is thus argued that pedagogical ICT training that does not factor in technical issues and technical support does not essentially result in effective ICT integration in the education system. This is because technical issues are very significant for teachers in applying technology in the education system. Brinkerhoff (2006) research had revealed that quality professional training improves the use of ICT in the education process. The question that emerged then was what amounts to a quality training program?

Lawless and Pellgrino (2007) argued that a high-quality training program can be identified by the duration of time it takes for training. To this end, the longer the duration of training the more qualitative the training program is. Essentially, longer duration of training allows teachers to be introduced to new technologies, engage in team teaching activities as well as be helped to design clear lesson plans and lesson activities in an ICT environment that is suited for identified students. Teachers have a higher likelihood of integrating ICT in teaching and learning process if they are exposed to training that covers technology, subject matter, and values. This study focused on the influence of professional training and integration of ICT in teaching and learning in lower primary schools in Githunguri zone.

The success of integrating ICTs into teaching and learning in developed and developing countries like Kenya depends on how teachers have been prepared to use the technologies. Since teachers are the backbone in curriculum implementation and integrating ICT in schools, they should be properly trained in the use and integration of ICT in teaching and learning. When properly trained, teachers’ ability to select,
integrate and evaluate computer tools to support teaching and learning will improve. However, training of teachers on adoption and use of ICT in most of the developing countries has not been appropriate due to some of the challenges faced (Makhanu, 2010).

For instance, the curricula used for training in most cases are oriented towards teaching technical aspects of technology ignoring organizational and social aspects of ICT. Training of teachers should, therefore, focus on the ICT pedagogical issues of ICT utilization in the classroom situation and not just on ICT skills. Pre-service teacher education can provide teachers with adequate opportunities to experiment with ICT before using it to teach students.

Evidently, there exists a strong correlation between teacher’s knowledge regarding the application of ICT in the education process and their comprehension of the content knowledge being disseminated. Lawless and Pellegrino (2007) observed that teachers who integrate technology with the latest trends in teaching practice have the potential to improve the performance of students. Subsequently, Chen (2008) discussed that enhanced teaching and learning of the syllabus requires professional training courses that are tailored to identify beliefs that pertain to the success of teaching policies as well as those that improve the implementation of ICT in the education process.

Essentially, the existing literature puts emphasis on the need to give teacher trainees the opportunity to use ICT in their programs prior to using them in real life teaching responsibilities. Training programs for teachers on ICT integration should allow practice with technology as well as collaboration among peers thus encouraging the creation of a culture that embraces technology in schools and more so in the dissemination of education.
The existing literature is essentially based in the developed countries in the world which can be attributed to the available infrastructure and access to technology among schools. The developing countries, on the other hand, are grappling with the lack of basic infrastructure that can allow for basic integration of technology in the classroom such as electricity, computers as well as internet facilities.

Nonetheless, African countries are gradually but slowly initiating projects that will allow for integration of ICT in all levels of education. The Kenyan context serves as an ideal example where the current Jubilee government that seeks to introduce laptops to class one pupils. Though noble and innovative there are serious technical aspects that need to be addressed for the integration of ICTs in the education system to be effective.

The lack of ICT training could be due to a lack of serious focus on ICT in the teacher training program. ICT was integrated in the Kenya primary teacher education (PTE) syllabus in 2008 so that by the time teachers are posted to teach they are expected to have ICT knowledge. Still there remains the need to find out the extent of primary school teachers perceived ability to teach using ICT based on their training. As such this study was conducted to establish lower primary school teachers’ readiness to integrate ICT in primary school teaching and learning.

2.7 Summary of Literature Reviewed

The review of literature revealed a gap in knowledge regarding the integration of ICT in primary school education. The review of literature also gives a view of how if implemented, the use of ICT in lower primary schools can bring a positive impact in learning. Careful planning and implementation along with clearly identified goals are
basic requirements. The integration of ICT is basic requirements. The integration of ICT in instruction in lower primary school increases teacher and pupils’ productivity and more effective learning. However, the majority of studies have mostly delved into the integration of ICT in secondary and university education. Only a few studies have delved into the integration of ICT in lower primary schools, and none of them has particularly focused on the Githunguri Zone. As a result, this study sought to investigate the level of ICT integration in lower primary schools as well as the impact of the teachers’ demographic characteristics on the integration of ICT in the lower primary schools in Githunguri Zone, Kiambu County.
CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter provides detailed information on how gathering and analysis of data for this study was carried out. The first section of this chapter explains the research design that was adopted in the collection of data. Target population, sampling techniques used, sample size, methods and instruments that were used to collect data, procedures which were used to collect data, methods of analyzing data and logistical, ethical considerations.

3.2 Research Design

This study adopted survey design in the collection of data. According to Karasar, (2005) the survey methodology assists researchers in the acquisition of general results regarding the participants. One of the major reasons why the method was ideal for this study is that it enables the researcher to gather the required data from a small sample within a short period of time. Robson (1997) points out that in most cases surveys are used in cross-sectional studies. In other words, they focus on the sample’s composition to get details regarding the population’s state of affairs. As Cohen et al. (2000) explain, a survey study is also convenient when the researcher has limited time and resources. The survey that was conducted in this study evaluated the independent variables which were; gender, age, teaching experience as well as dependent variable, i.e., teachers’ attitude towards the use of ICT. The study was quantitative in nature where data was collected using questionnaires. The analysis of questionnaires is less complicated because their results are in an immediately usable form in addition
to that, the administration is also less complicated because all items have alternative answers. Questionnaires are also quite economical.

3.3 Research Variables

They are described in the following subheadings:

3.3.1 Dependent Variable

The dependent variable was the use of ICT technologies in instruction. The ICT used in lower primary schools include computers, projectors, digital cameras, digital microphones, mobile devices, smart boards and the internet. They can be used in the search for new information network with other teachers around the globe to be updated on latest trends in education and deliver instruction in creative ways.

3.3.2 Independent Variable

The study’s independent variables were the demographic characteristics of teachers that impinge on the use of the ICTs in the education process. They included: Age, gender, Teaching experience and professional qualifications

3.4 Study Location

The study was carried out in Githunguri zone in Kiambu County. Kiambu County is a county in the former central province of Kenya. The county is adjacent to the northern border of Nairobi County. It is divided into 12 sub counties, Githunguri being one of the sub counties. It is divided into four zones which are; Githunguri zone, Githiga zone, Komothai zone and Ngewa zone.
Githunguri zone is the home sub county of the researcher, and the researcher felt obliged to educational problems bedeviling the region starting with teachers who are ICT literate to offer globally competitive teaching and learning to pupils in lower primary schools. In addition to this, the zone has been selected due to its highest net attendance rate in primary schools compared to other zones. Still most schools have got more computers hence the need.

Fig 3.1: A map showing location of Githunguri Sub County
3.5 Target Population

The target population was lower primary teachers in public primary schools in Githunguri Zone. The population of this study was made up of ninety-eight teachers of lower primary schools and thirteen head teachers in all public primary schools in the zone. Out of these, the researcher picked a sample of seven (7) head teachers and forty-nine teachers (49) to represent the entire target population.

Table 3.1 Number of Public Schools and Teachers in Githunguri Zone

<table>
<thead>
<tr>
<th>Primary</th>
<th>Public</th>
<th>Teachers</th>
<th>Headteachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Githunguri T/ship</td>
<td>146</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>2. Ciiko</td>
<td>98</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>3. Gathanji</td>
<td>102</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>4. Kiandiga</td>
<td>36</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>5. A.K Magugu</td>
<td>110</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>6. Kanyore</td>
<td>138</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>7. Riamute</td>
<td>63</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>8. Githunguri Primary</td>
<td>86</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>9. Gathangari</td>
<td>122</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>10. Miiri</td>
<td>158</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>11. Mathanja</td>
<td>76</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>12. Kiairia</td>
<td>99</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>13. Kahunira</td>
<td>117</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1351</strong></td>
<td><strong>98</strong></td>
<td><strong>13</strong></td>
</tr>
</tbody>
</table>

From the above Githunguri zone has a total of 98 teachers in lower primary schools.

3.6 Sampling Techniques and Sample Size

Sampling techniques and the sample size of the study are discussed under the following subheadings;
3.6.1 Sampling Techniques

Purposive sampling technique was used to select the zone. The researcher used random sampling technique to select schools, head teachers and teachers to be part of the study from lower primary schools. This technique gives every member of the population an equal chance of being selected as a representative of the population.

3.6.2 Sample Size

The sample for this study was drawn from lower primary school teachers from within Githunguri zone. Githunguri zone has 13 public primary schools. The number of head teachers and teachers in these schools is 13 and 98 respectively. Out of this number 7 head teachers and 49 teachers were selected to represent the population in the study. According to Mugenda and Mugenda (2013), the selected sample in a descriptive study should be above 10% of the population for it to be truly representative of the population. The 7 head teachers and 49 teachers that were selected represented 50% of the population, and this enabled the attainment of valid results.
Table 3.2 Sampling Frame

<table>
<thead>
<tr>
<th>POPULATION</th>
<th>PERCENTAGE</th>
<th>SAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEADTEACHER</td>
<td>13</td>
<td>50%</td>
</tr>
<tr>
<td>TEACHERS</td>
<td>98</td>
<td>50%</td>
</tr>
</tbody>
</table>

From the above table, Githunguri zone has got a total of 98 teachers in the lower primary schools out of these; the researcher selected 49 teachers and 7 Headteachers.

3.7 Research Instruments

They are discussed under the following subheadings;

3.7.1 Questionnaire for Teachers

The researcher used questionnaires to collect data from lower primary school teachers. The questionnaire comprised both closed-ended and open-ended questions. The questionnaire was ideal for this study because it enabled the collection of data from many participants in a short period of time and in a relatively cost-effective way. The questionnaire used in this study had four sections. Section A gathered information about the respondents’ background. Section B collected data on ICTs availability in primary schools. Section C gathered information on the use of ICT. Section D gathered information regarding the teachers’ attitude towards the use of ICT in instruction.
3.7.2 Observation Checklist

An observation checklist was utilized to collect data on the ICT technologies and the manner in which the teachers utilized them. An observation checklist was preferred to supplement the questionnaire and to verify the information obtained from the respondents through the questionnaire. The researcher made a list of various ICTs that were used in lower primary teaching to ascertain their availability in the primary schools and how they were used. The observation checklist helped the researcher to gather crucial information that was not captured in the questionnaire.

3.8 Piloting

A pilot study was conducted in two primary schools in Githunguri zone in a bid to test the research instruments validity and reliability. The pilot study helped in substantiating if the questions in the questionnaire were easy to interpret and whether they acquired responses needed for the participants. The participants of the pilot study included two teachers and one head teacher who did not participate in the main study.

3.9 Validity

Validity refers to the extent to which a test measures what it is intended to measure (Kodhari, 2009). Content validity in this study was achieved by ensuring that content being presented to the participants was devoid of any information that can be misinterpreted. The questionnaire and the observation checklist were piloted in two primary schools to establish if they were valid.
3.9.1 Reliability

Reliability is the extent to which different questions measure similar characteristics. The reliability of the instruments of this study was ascertained using the method referred to as the test-retest method. This method entails administering instruments twice to the same respondents after a period of about 14 days and in a bid to enable the comparison of the data collected all rounds.

3.10 Data Collection Procedures

The collection of data was carried out in two stages:

Stage 1: Administration Of Questionnaires

The researcher administered a carefully structured questionnaire to participants. A questionnaire was used to collect primary data from lower primary school teachers and head teachers. The questionnaire was used to determine the level of integration of ICT in instruction in lower primary schools. The questionnaires contained fixed alternative questions that were self- administered and deemed most convenient to individual member of the sampled schools in lower primary schools in Githunguri zone.

Stage 2: Observation Checklist

In this study observation checklist was used to determine the availability and use of ICT resources in lower primary schools in Githunguri zone. The researcher made observation of items listed on the observation schedule during the actual data collection in lower primary classes.
3.11 Data Analysis

Data analysis was carried out using descriptive statistics. Descriptive statistics such as frequencies and percentages were calculated using SPSS, and the presentations of the results were done using figures, tables, and texts.

3.12 Logistical and Ethical Consideration.

The researcher took into consideration various logistics and research ethics in carrying out the study. The logistical and ethical considerations were important to ensure the research to be carried out is smooth and meets the legal guidelines and is humane. The researcher obtained a permit from NACOSTI as well as from Kenyatta University Graduate School to be able to undertake this study in the selected area without hindrance. With the introduction letters from the two offices, the researcher did not face challenges in getting permission to carry out his study in the public primary schools. The researcher informed the participants the purpose of the study so that they take part in the study based on adequate information on its purpose. Their consent was obtained before collecting data from them.

The researcher did not use any influence or coercion to make the respondents participate in the study. The respondent was not being required to write any personal details on the questionnaire and as such their identities were not known. This will ensure confidentiality and privacy as a questionnaire cannot be traced to a specific respondent.
CHAPTER FOUR

DATA ANALYSIS, DISCUSSIONS AND PRESENTATION

4.1 Introduction

This chapter presents the results and analysis within the framework of the set study questions, which were presented in tables and figures. The overall purpose of this study was to establish the influence of teachers’ demographic characteristics on information and communication technologies integration in instruction in lower primary schools in Kiambu County, Kenya. It presents the rate of return and demographic characteristics of the respondents who are teachers and head teachers in the sampled schools in Githunguri Zone, Kiambu County. The analysis was guided by the questions on the research instruments. The study was conducted in seven schools and 49 respondents participated. It was carried out in a period of two weeks where the researcher left the questionnaire with the respondents to fill them at their convenience since the school had just opened and the teachers had very limited time and tight schedule to operate within.

4.2 Rate of Return

The researcher administered a total of 56 questionnaires to the sampled teachers in seven public primary schools in Githunguri zone, Kiambu County. The study recorded 100% response rate which according to Owens (2002), a return rate of 75% and above is deemed representative study since it reduces the level of sampling bias.
4.3 Demographic Characteristics of the Respondents

The demographic aspects of the respondents covered in this section include; gender, age, teachers’ level of education, headteachers academic qualification and teaching experience.

4.3.1 Teacher’s Demographic Information

The demographic characteristics of teachers was established and presented in results. The findings in the Table 4.1 below show the demographic results of the teachers who participated in this study.
Table 4.1: Teachers Demographic Information

<table>
<thead>
<tr>
<th>Gender</th>
<th>F</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>17</td>
<td>35</td>
</tr>
<tr>
<td>Female</td>
<td>32</td>
<td>65</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>49</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 20 years</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>21-30 years</td>
<td>13</td>
<td>27</td>
</tr>
<tr>
<td>31-40 years</td>
<td>11</td>
<td>22</td>
</tr>
<tr>
<td>41-50 years</td>
<td>15</td>
<td>31</td>
</tr>
<tr>
<td>Over 50 years</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>49</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Teacher’s Level of Education</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A’ level certificate</td>
<td>13</td>
<td>27</td>
</tr>
<tr>
<td>Diploma</td>
<td>19</td>
<td>39</td>
</tr>
<tr>
<td>Advanced level (AO)</td>
<td>17</td>
<td>34</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>49</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Teaching Experience</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2-5 years</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>6- 10 years</td>
<td>13</td>
<td>27</td>
</tr>
<tr>
<td>11- 15 years</td>
<td>15</td>
<td>31</td>
</tr>
<tr>
<td>16-20 years</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Over 20 years</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>49</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
The results in the Table 4.1 above indicate that majority 65 % (32) of the teachers from the sampled schools were female where else only 35% (17) of the teacher were male. The findings can be attributed to the fact that more female teachers were willing to participate in the study as compared to their male counterparts as the study used simple random sampling. Also, this can be attributed to the fact that most female preferred teaching in primary schools as compared to males. Still more female teachers prefer teaching in lower primary than male teachers.

The results also show that, majority of the teachers 31% (15) are in the age bracket of 41-50 years, followed by 27% (13) of the teachers who are in the age bracket of 21-30 years, 22% (11) of the teachers were in the age bracket of 31-40 years, whereas only 4% (2) of the teachers were above 50 years. This show that most teachers were relatively mature in terms of age and were able to provide sufficient information on the influence of teachers’ demographic characteristics on information and communication technologies integration in instruction in lower primary schools in Kiambu county. This findings were inline with Gill and Dalgarno’s (2008) study on influences of pre-service teacher preparedness to use ICT in the classroom which established that younger respondent to have higher confidence in their ability to teach using computers than older respondents.

Concerning teacher education levels, the study established that a majority of the teachers 39% (19) have Diplomas and were seconded by 34% (17) of the teacher who had an Advanced level (AO), and lastly, 27 % (13) of the teacher had attained A level education. This means that a good number of the teachers had passed through a system of education where different communication channels about the use of ICT
have been employed hence they were aware of technological changes in the educational sector. As stated by Rogers (2003) communication channels used to spread the word about an innovation determines its rate of adoption.

Regarding teachers years of teaching experience, the study established that majority 31 % (15) of the teachers had taught in primary schools for a period of 11-15 years and were seconded by 27% (13) of the respondents who indicated that they had worked for a period of 6-10 years. 24%(12) of the respondents indicated they had worked for 16-20 years,10%(5) have worked for more than 20 years, and lastly 8%(4) have worked for a period of 2-5 years. This shows that a good number of the teachers had taught for a significant period of time and they were in a better position to address the items in the research instrument. This is also inline with Simonson (2008) who put on record in his study that teachers’ skills are related to their use of ICT in the teaching-learning process. Further, Bordbar (2010) reported that teachers’ competence in computer use is a good predictor of ICT integration in teaching.

4.3.2 Head Teacher’s Demographic Information

The findings in the Table 4.2 below show the demographic information of head teachers who participated in this study.
Table 4.2: Head Teachers Demographic Information

<table>
<thead>
<tr>
<th>Gender</th>
<th>F</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>4</td>
<td>57</td>
</tr>
<tr>
<td>Female</td>
<td>3</td>
<td>43</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>7</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>21-30 years</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>31-40 years</td>
<td>2</td>
<td>29</td>
</tr>
<tr>
<td>41-50 years</td>
<td>3</td>
<td>43</td>
</tr>
<tr>
<td>Over 50 years</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>7</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Years of Experience</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2-5 years</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>6-10 years</td>
<td>4</td>
<td>57</td>
</tr>
<tr>
<td>11-15 years</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>16-20 years</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>7</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Highest Professional Qualifications</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Diploma</td>
<td>3</td>
<td>42</td>
</tr>
<tr>
<td>B.ED</td>
<td>2</td>
<td>29</td>
</tr>
<tr>
<td>M.ED</td>
<td>2</td>
<td>29</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>7</td>
<td>100</td>
</tr>
</tbody>
</table>

The finding as established in Table 4.2 above represents head teachers’ demographics. From the findings majority, 57% (4) of the head teachers were male, while 43% (3) of the respondents were female. This is because most of schools are headed by male Head teachers.
The study established that majority of the head teachers 43% (3) were between the age brackets of 41-50 years of age. They were followed by 29% (2) who were in the age brackets of 31-40 years of age whereas 14%(1) and 14%(1) of the head teachers were in the age brackets of 21-30 years and over 50 years respectively. The age of the head teachers is likely to influence their perceptions towards ICT adoption in lower primary schools.

Pertaining to years of experience the study established that majority 57%(4) of the head teachers had served for a period of 6-10 years and were followed by 14% (1), 14% (1) and 14% (1) who had served for a period of 2-5 years, 11-15 years and 16-20 years respectively.

Lastly, regarding highest professional qualifications the study found out that 42% (3) of the respondents indicated that they had attained at least a Diploma. They were followed by 29% (2) and 29% (2) of the respondents who had attained B.ED and M.ED levels of education. Findings of the head teachers’ qualifications imply that most of them were well trained to give informed views pertaining to the use of ICT in lower primary schools.

**4.3.3 Field of Specialization**

Teachers were required to indicate their field of specialization, and the results are as presented in Table 4.3 below.
Table 4.3: Field of Specialization

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1 teacher</td>
<td>27</td>
<td>55%</td>
</tr>
<tr>
<td>ECDE</td>
<td>22</td>
<td>45%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>49</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

The study findings in table 4.3 above established that majority 55% (27) of the teachers were professional P1 teachers, while 45% (22) were early childhood education trained teachers. This affirms that most of the teachers are professional in their field and actually understand the value of integration of information communication technology in the instructions of lower primary school learners.

4.4 Teachers Level of Integration of ICT in Instruction in Lower Primary Schools

The first objective of the study aimed at establishing the level of integration of ICT in instruction in lower primary schools. Research instruments used to achieve these objectives were questionnaires and observation checklist and the results are presented in Table 4.4.
Table 4.4: Level of ICT Integration in Instruction of Lower Primary Schools

The table below shows the integration of ICT in instruction in lower primary schools in Githunguri Zone.

The result in the Table 4.4 above show the usage of information and communication technology in teaching. It is clear that majority of teachers 63% (31) do not at all use ICT in lesson planning. Also, the study found out that majority 47% (23) of the respondents indicated that they do not at all use ICT in record keeping and were seconded by 33% (16) of the respondents who indicated that they rarely use ICT in record keeping. Usage of ICT in lesson planning recorded a mean of 2.9 which implies that there is less integration of ICT in teaching of lower primary schools.
On assessment and evaluation, the study affirmed that most teachers 55% (27) do not at all use ICT in teaching of lower primary school learners and were followed by 35% (17) of the respondents who indicated rarely. A mean of 4.1 accounts for teachers implied that ICT is integrated in assessment and evaluation of learners in their schools. Regarding the usage of ICT in teaching and learning the study established that majority of the respondents 43% (21) do not at all use ICT in instructing learners in lower primary schools followed by 27% (13) of the respondents who rarely use that, while on the other hand 18% (9) of the respondents indicated that they often used ICT in teaching and learning and were seconded by 12% (6) who indicated that they always use ICT. A mean of 3.8 represented respondents who integrated ICT in teaching and learning of lower primary school going children which is very minimal affirming the adoption is to a small extent.

The study affirmed that 100% of the respondents indicated that they do not at all develop their ICT skills. This was affirmed by a mean of 4.7 of the respondents who not by chance incorporated ICT skill in their teaching.

Also, the study further established that most 53% (26) teachers indicated that they do not use ICT facilities in creating making schemes of works and were seconded by 39% (19) of the respondents who rarely use ICT in making schemes of works. Not at all do most 76% (37) teacher drill and practice usage of information and communication technology and were followed by 24% (12) who rarely do that. With a mean of 3.2 this clearly indicated that ICT has been minimally adopted in making of schemes of work.
Teachers do not use the ICT gadgets in entertainments like playing games this was confirmed by 45% (22) of the respondents who indicated that and were followed by 33% (16) of the respondents who indicated they rarely do that as this was affirmed by a mean of 3.36 of those who used ICT gadgets in entertainments like playing games.

Regarding communication, the study found out that most 86% (42) of the respondents do not look at all us ICT in communication and were followed by 14% (7) whereas 100% of the teachers also did not use ICT in their research. This findings were affirmed by a mean of 4.3 and 4.7 respectively confirms that teachers are comfortable in ICT usage for communication and research purposes. Lastly pertaining the preparing of teaching and learning materials the researcher established that majority 27% (13) of the respondents do not at all use ICT and were seconded by 27% (13) who indicated that they rarely do so. A mean of 3.1 affirms that most of the respondents are not able to use ICT in preparing teaching and learning materials which might be as results of lack of required skills or unavailability of the ICT resources in their schools.

The 21st century is characterized by heightened integration of ICTs across all facets of life. The rise of economies that are knowledge based as well as rapid improvements made in technology fuel the need to incorporate ICTs into the teaching and learning experiences of learners across all levels. ICT utilization in institutions of learning has several merits including creating an enabling environment for learners in terms of access to digital data as well as comprehension of technical concepts (Brush, Glazewski and Hew 2008). Further, it promotes learning that is self-directed thus learners are able to organize, select and interpret data (Catro, Sanchez and Aleman 2011). The quality of learning and the teaching process is also improved by
incorporation of ICTs (Shann FU, 2013; Andoh, 2012). Thus in today’s, learning environment, ICT is a prerequisite factor. This forms the basis for why learning institutions need to incorporate ICTs with the ultimate aim being to develop learners that are well equipped in today’s digital world. From this vein, Ogutu (2008) the goal of the Government of Kenya of having ICT facilitate the quest of universal education can only be realized through multi-sectoral training of teachers, schools as well as learners. Besides training, the government also needs to invest on the requisite ICT infrastructure.

Aktaruzzaman, Shemim and Clement (2011) observed that ICT implementation necessitates a multi-sectoral approach that goes beyond installing of ICT infrastructure and providing computers. Teachers are a significant population in the successful integration of ICTs as they are the primary actors in the process of implementation (Biko&TzitoPoules 2011). Given that teachers lead in lesson planning and execution, their attitudes towards technology utilization, level of ICT training and self-efficacy in the utilization of ICT greatly influence the learning and teaching processes. There are studies that evidence that the beliefs and attitudes of teachers in technology greatly influence the acceptance and successful ICT incorporation in the learning and teaching processes (Hanng&Leaw 2005; Hew & Brush 2007; Keengwe&Onchari 2008). The teachers’ perception on ICT usefulness is likely to influence their attitudes. Thus, Mingdine (2013) stated that the willingness of teachers to adopt and incorporate ICT in teaching and learning is likely to be influenced by the usefulness of technology.
Wang Woo (2007) precisely stated that the chief aim of integration of ICT is to impart learners with knowledge. ICT integration in the education sector is linked to benefits of enhanced efficiency besides making the learning process fascinating to the learners. Additionally, Sang Brank and Tondeur (2010) ICT integration in education heightens value addition to learners as they are offered with increased opportunities to codify knowledge besides participating in a learning environment that is highly modernized.

4.4.1 Availability of ICT Resources

For an institution to fully integrate information and communication technology in its learning, there should be resources that fully support the integration. The researcher used an observation checklist to ascertain if the schools have ICT resources. The findings are as presented in table 4.7 below.

Table 4.5: Availability of ICT resources in schools

<table>
<thead>
<tr>
<th>ICT AVAILABLE RESOURCES</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Computers:</td>
<td>22</td>
<td>29%</td>
</tr>
<tr>
<td>2 Printers:</td>
<td>6</td>
<td>14%</td>
</tr>
<tr>
<td>3 Mobile phones</td>
<td>49</td>
<td>86%</td>
</tr>
<tr>
<td>4 Laptop:</td>
<td>12</td>
<td>29%</td>
</tr>
<tr>
<td>5 Projector:</td>
<td>13</td>
<td>14%</td>
</tr>
<tr>
<td>6 Internet:</td>
<td>13</td>
<td>43%</td>
</tr>
<tr>
<td>7 Switchboard:</td>
<td>21</td>
<td>29%</td>
</tr>
<tr>
<td>8 Video player:</td>
<td>10</td>
<td>57%</td>
</tr>
<tr>
<td>9 CDS and DVDs:</td>
<td>32</td>
<td>71%</td>
</tr>
<tr>
<td>10 Radio:</td>
<td>39</td>
<td>86%</td>
</tr>
<tr>
<td>11 TV:</td>
<td>6</td>
<td>86%</td>
</tr>
</tbody>
</table>
The researcher established that only a few 22 (29%) schools in Githunguri had computers in their premises. Also only 6 (14%) out of the seven school sampled for this study had a printer. 49 (86%) of the school had mobile phones, 12 (29%) of the school had laptops, and only 13 (14%) school had a projector. 13 (43%) school had an internet connection, and 21 (29%) had switchboards. The study also found that not all school had video players as only 10 (57%) had them, 32 (71%) schools had CDS and DVDs, Most 39(86%) and 6(86%) schools had radios and Televisions respectively.

The lack of adequate ICT resources in schools can be explained by insufficiency of funds and low levels of ICT training among the teachers. The findings concur with a study by JISC (2004) that established that some of the major barriers in developing maturity when it comes to utilization of technology in learning include teachers’ attitude, lack of access, lack of training on the utilization of the ICT resources as well as inadequate ICT skills in general. More precisely, when it comes to trainees’ attitudes there is an indication of lack of independence in learning and devoid of commitment to take responsibility for self-learning. Other challenges noted include lack of a standard course curriculum, learning materials as well as inadequate learning resources that integrate the utilization of ICTs. Additionally, there is also the barrier of phobia towards technology among teachers and teacher trainees this deems their confidence and readiness to utilize ICT support in the teaching and learning process. This is further aggravated by the lack of qualified professional in ICT to support teachers in incorporation of ICTs in schools and particularly in the learning and teaching process. This can be attributed to the high levels of ‘brain drain’ whereby professionals in these areas opt to look for better-paying jobs in other countries where
they are well compensated for their services (Minishi-Majanja 2007; Alemneh and Hastings 2006).

4.5 Teacher Age and Integration of ICT in Instruction

The second objective of the study aimed at establishing age and integration of ICT in instruction in lower primary schools. Research instruments used to achieve this objective were questionnaires and observation checklist and results presented in Table 4.6.

Table 4.6: Teachers Age and Integration of ICT In Instruction

<table>
<thead>
<tr>
<th>Age Bracket</th>
<th>Frequency</th>
<th>Percentage of ICT in Integration</th>
<th>Mean in integration of ICT instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 20 Years</td>
<td>16</td>
<td>34%</td>
<td>3.8</td>
</tr>
<tr>
<td>21 – 30 Years</td>
<td>12</td>
<td>24%</td>
<td>3.5</td>
</tr>
<tr>
<td>31 - 40 Years</td>
<td>10</td>
<td>20%</td>
<td>3.0</td>
</tr>
<tr>
<td>41 - 50 Years</td>
<td>6</td>
<td>12%</td>
<td>2.8</td>
</tr>
<tr>
<td>Over 50 Years</td>
<td>5</td>
<td>10%</td>
<td>1.7</td>
</tr>
</tbody>
</table>

The study established that majority of teacher 30% (16) were below 20 Years of age. They were followed by 24% (12) who were in age bracket of 21-31 years then 20% (10) in age bracket of 31-40 years, 12% (6) were in age bracket of 41-50 years and whereas 10% (5) were over 50 years. The results imply that young teachers integrate ICT in their teachings more than older teachers.

The age of teachers is one of the major factors that denote readiness for integration of computer utilization in teaching. A study by Gill and Dalgarno (2008) provided that younger teachers have higher levels of confidence in their ability to utilize computers to teaching as opposed to their elderly counterparts. The study by Gill and Dalgarno
(2008) focused on preparedness of pre-service teachers on ICT utilization in the classroom context. There was reluctance to integrate ICT in teaching among the elderly teachers who exhibited comfort with the conventional methods of teaching. Elder, Meelissen and Ruth (1987) conducted a study on the utilization of computers in government financial organizations and found out that when compared to the young employees the elderly employees were more likely to experience techno-stress.

One of the significant variables in all studies touching on Kenyan teachers is age. Over the last two decades there was irregular hiring of teachers. This is bound to result in extensive age disparity among the teachers in public primary schools. This has the potential of affecting the level of computer utilization and self-efficacy in ICT integration in the classroom context.

Higher positive attitude in reference to computer utilization is evidenced among younger teachers as opposed to the older teachers. This could be explained by arguing that younger teachers are recent college graduates and thus more likely to perceive ICT training given the integration of ICT into the 2008 primary teacher education curriculum. Thus, there is some level of ICT training among the teachers that graduated after 2008. This training is likely to have influenced on the teachers attitudes towards the usefulness of computers.

Further, when it comes to exposure and practice in utilization of computers or related gadgets the younger teachers have an upper hand when compared to the older teachers. As such, this accounts for the positive attitudes on the usefulness of computers and the subsequent appreciation of its potential in teaching among the younger teachers. This is in congruence with study results by Cavas Cava Keraonglan
as well as Tweed (2013) who indicated that young science teachers in Turkey had higher positive attitudes towards using ICT in teaching when compared to their elderly colleagues.

The age of teachers is likely to influence their perception towards ICT adoption in lower primary schools. Oscarson (1976) established that there was a significant correlation between age and attitudes towards technology. This was further elaborated to mean that the old teaching staffs were more adoption prone when it came to the uptake of technology as opposed to younger teaching staffs that were more welcoming to the integration of technology. In a more recent study conducted by Jennings and Onwegbuzu (2001), younger teachers were found to have more positive attitudes towards the implementation of ICT in education system than the older counterparts.

### 4.6 Teachers Gender and Integration of ICT in Instruction

The third objective of the study aimed at establishing teachers’ gender and integration of ICT in instruction.

#### Table 4.7: Teachers’ Gender and Integration of ICT in Instruction

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Mean in ICT integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>22</td>
<td>45%</td>
<td>3.6</td>
</tr>
<tr>
<td>Female</td>
<td>27</td>
<td>55%</td>
<td>2.9</td>
</tr>
<tr>
<td></td>
<td>49</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>
The findings as presented in the table above represent majority 55% (27) of teachers were male while 45% (22) were female respondents. The results imply that female teachers have low level of ICT integration compared to male counterparts.

Research studies concerning teachers’ gender and ICT integration have shown that female teachers have low levels of computer use due to their limited technology access skills and interests (Volmen & Van 2001). The male teachers on the other hand used more ICT in their teaching and learning processes than their female colleagues (Kay, 2006; Wozney 2006).

In a self-reported ICT literacy and ICT experience among graduate trainee teachers in their first year Markauskaite (2006) found that there were significant gender variations when it came to ICT capabilities with reference to both longitudinal and situational sustainability. The score were higher among the males as opposed to the female colleagues.

Male teachers are likely to influence the integration of ICT in lower primary school in instruction. Volmen and Van (2001) argue that teachers of the female gender have lower levels of ICT implementation attributable to lack of interest in technical skills as well as lack of access their male counterparts have been cited in several studies to have higher levels of ICT implementation (Wozney et al 2006; Kay: 2006).

4.7 Teachers’ Teaching Experience and Level of ICT Integration in Instruction

The forth objective of the study aimed at establishing teachers’ teaching experience and ICT in integration instruction.
Table 4.8: Teaching Experience and Level of ICT Integration in Instruction.

<table>
<thead>
<tr>
<th>Years Of Experience</th>
<th>Frequency</th>
<th>Percentages</th>
<th>Mean in integration of ICT in teaching and learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-5yrs</td>
<td>15</td>
<td>31%</td>
<td>3.8</td>
</tr>
<tr>
<td>6 – 10 Years</td>
<td>13</td>
<td>26%</td>
<td>3.5</td>
</tr>
<tr>
<td>11- 15 Years</td>
<td>9</td>
<td>18%</td>
<td>2.9</td>
</tr>
<tr>
<td>16- 20 Years</td>
<td>7</td>
<td>14%</td>
<td>2.4</td>
</tr>
<tr>
<td>Over 20 Years</td>
<td>5</td>
<td>11%</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>49</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

In terms of teaching experience the study established that majority of teachers 31% (15) had served for a period of 2-5 years followed by 26% (13) followed by 18% (9) teachers then 14% (7) teachers and lastly 11% (5) respectively. The results imply that teachers with less teaching experience integrate ICT more than teachers with more teaching experience.

A report by the National Center for Education Statistics (2013) indicates that teachers who have fewer years of experience are more likely to use computers in their classes than teachers with a lot of years of experience. This may be assumed that it is because of the fact that new teachers who have been exposed to computers during their training and therefore have more experience in using the tool.

The teaching experience of teachers is likely to influence the ICT integration in instruction in lower primary school. The U.S Watimel Centre for Education Statistics (2000) notes that teachers with less experience have a higher likelihood of integrating ICT in education activities when compared to their more experienced counterparts. Fresh teachers have more experience on the use of technology.
4.8 Professional Training and Integration of ICT in Instruction

The last objective aimed at establishing the influence of teachers’ professional training on integration of ICT in instruction.

Table 4.9: Professional training and integration of ICT in instruction

<table>
<thead>
<tr>
<th></th>
<th>Number of teachers</th>
<th>Percentage of ICT integration</th>
<th>Mean in integration of ICT in teaching and learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>10</td>
<td>20%</td>
<td>3.0</td>
</tr>
<tr>
<td>Certificate</td>
<td>11</td>
<td>22%</td>
<td>3.2</td>
</tr>
<tr>
<td>Diploma</td>
<td>13</td>
<td>27%</td>
<td>3.6</td>
</tr>
<tr>
<td>BED</td>
<td>15</td>
<td>31%</td>
<td>3.9</td>
</tr>
<tr>
<td></td>
<td>49</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

Lastly regarding professional qualification, the study found out that 31% (15) of the respondents indicated that they had attained degree. They were seconded by 27% (13) Diploma, certificate 22% (11) and lastly 20% (10) of the respondents had attained P1.

The results implies that teaches with higher professional training integrate ICT in instruction than teachers with less professional training.

The other significant factor is preparedness of teachers in regard to utilization of ICTs in the teaching and learning process. It is requisite for teachers to be ready for the integration process to go on smoothly. This means that the teachers must be able to handle ICT gadgets such as computers and the related software. Drent and Meelisen (2008) stated that the efficient integration and utilization of ICT in schools is dependent on the level and quality of training among the teachers. Within a school context Simonson (2008) provided that skills possessed by teachers influenced the utilization of ICTs in teaching.
Further, Broade (2010) reported that teacher competence in computer use is a good prediction of ICT integration in teaching. The training offered to teachers has to be relevant and adequate in regard to ICT utilization. Majority of the existent studies in ICT training, focus on secondary school teachers. Andoh (2012) noted that the aspect of technology was emphasized in teacher training institutions as opposed to focusing on how teachers can embrace technology during teaching. Similarly, Mureithi (2000) noted that ICT training in the Kenyan context is often limited to the aspect of literacy in ICT.

Teacher training and curriculum should incorporate usage of ICT in teaching and this will make it easier for them to utilize ICT resource in their schools in teaching lower primary school children. According to Venezky (2004) the most significant support required by schools when it comes to incorporation of ICT is professional development among teachers. However, the aspect of professional development is not included in most schools’ budget. Programmes that are considered to be highly effective utilize local expertise such that teachers with technical knowhow aid their colleagues who have limited ICT skills. This noted to create a conducive learning environment for teachers to attempt entrenching ICT into the process of teaching and learning. The most significant aspect in the quest to promote change and thus integrate ICTs into teaching and learning is in reference to teacher-level factors. Thus Zhao and Frank (2003) recommend that teachers should be given time to learn from each other as opposed to spending money and time on external in-service programs.
When the government through the Ministry of Education makes it mandatory for a lower primary school student to be taught using ICT, this will ensure all teachers are equipped with the required knowledge on ICT usage and the school will be facilitated with ICT resources so that to ensure that there is adherence to the government policy.
CHAPTER FIVE

SUMMARY OF THE FINDINGS, CONCLUSION, RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

5.1 Introduction

This chapter finalizes the study by proving the summary of key findings, conclusions, and recommendations. The summary, conclusions, and recommendations are aligned with the specific objective of the study. The chapter also presents recommendations for further studies.

5.2 Summary of Findings

The main purpose of this study was to establish the influence of teachers’ demographic characteristics on information and communication technologies integration in instruction in lower primary schools in Kiambu County, Kenya. The study was guided by the following objectives; To find out the level of integration of ICT in instruction in lower primary education schools, to investigate the influence of teachers’ age on the integration of ICT in lower primary schools, to determine how teachers’ gender influence the integration of ICT in lower primary school, to find out how teachers’ level of experience influences the integration of ICT in lower primary school and lastly to establish how teachers’ professional training influences integration of ICT in lower primary schools.

The study found out that teacher demographic factors highly influence the integration of ICT in teaching lower primary school children. Findings indicated that most of the sampled schools had teachers who were 30 years and above. This affects the integration
of ICT in teaching as most of them are reluctant to teach using information technology or lack the required skill to teach using ICT devices like computers.

According to teachers age the study found that majority of teachers below 20 years integrate ICT in instruction. Younger teachers have higher confidence in their ability to teach using computers than older teachers. Older teachers expressed reluctance to adopt to teaching using ICT claiming that they were more comfortable with the old techniques of teaching.

Pertaining to teacher’s gender, the study found that female teachers have low levels of ICT integration due to their limited technology access, skills and interests. Male teachers use more ICT in their teaching and learning processes. Male teachers are likely to influence integration of ICT in lower primary schools in teaching and learning.

In terms of teaching experience the study found that majority of teachers who have fewer years of teaching experience are more likely to use computers in teaching and learning in their classes than teachers with a lot of years of experience. This is due to the fact that new teachers have been exposed to computer during their training and therefore have more experience in using the tool.

Lastly, regarding professional training and integrating ICT in teaching and learning the study found that teachers’ level of education greatly affects ICT integration as few who are highly qualified preferred using ICT while more teachers with certificates and diplomas did not see the need of adopting ICT in their teaching.
5.3 Conclusion

The study revealed that teacher demographic factors greatly influenced integration of information and communication technology in the teaching of lower primary school children in Githunguri zone. Younger teachers easily use information and communication technology in teaching where older one find it difficult due to lack of tech-know how. Also, the level of experience affected as that teacher who were under-qualified were reluctant to use. In addition teacher with many years teaching experience were reluctant to integrate ICT in teaching of lower primary students.

Most schools sampled in this study lacked enough ICT resources to integrate in teaching and learning in lower primary schools. This is as a result of lack of better government policy that support ICT integration, teachers with the inadequate skill set for teaching using ICT facilities and low financial allocation by the government to primary schools to allow procurement of ICT resources.

5.4 Recommendation for the key stakeholders

From the findings of this study the researcher came up with the following recommendations, meant to address specific entities to whom may find them relevant for implementation:

5.4.1 Teachers

The results of the study indicated that computer competency, confidence of the teacher influences integration of ICT in teaching, and learning as competent teachers did not have fear to use technology. The Ministry of Education should offer compulsory ICT training to teachers in Universities and Colleges to enhance ICT
skills. There is also a need for stakeholders in education to frequently organize in-service training for teachers on ICT issues and emerging trends.

5.4.2 School Management

The findings indicated that school managers influenced integration of ICT in teaching and learning. The Ministry of Education should ensure that school managers come up with policies on ICT integration in their schools, which should be in line with the National ICT policy.

The school management should ensure that every school has adequate ICT resources which are in good condition. Still they should employ technicians to ensure that the gadgets are in good order.

The school management should also ensure that the computer rooms are well reinforced to prevent theft.

5.4.3 The County Government

The results of the study indicated that ICT infrastructure influenced integration of ICT in teaching and learning. The government through the Ministry of Education should ensure that schools are well equipped with ICT infrastructure especially computers and electricity connection. Kenya Institute of Curriculum Development should ensure digital content prepared is disseminated to schools for use in all subjects.

5.5 Recommendations for Further Research

Based on the delimitations of this study, the researcher suggests further related research in the areas below:
The study was done in Githunguri zone, Kiambu County which is semi-urban regions in Kenya. There is need to conduct the study in other Counties with similar geographical conditions in the Country where Information and Communication Technology has not been integrated.

The study focused mainly on teacher-based factors such as teachers’ age, gender, teaching experience and professional training. Further studies should be carried out on other factors that hinder Information and Communication Technology integration in lower primary schools.

There is need to conduct a study on how government policy in curriculum change will improve on ICT teaching integration of lower primary schools across the country.
REFERENCES


Gill and Dalgarno’s (2008) study on influences of pre-service teacher preparedness to use ICT in the classroom found younger respondents to have higher confidence in their ability to teach using computers than older respondents.


Margaret (2005) Education and training management ICT Dublin City University.

New York


APPENDICES

APPENDIX I: Questionnaire For Teachers

Indicate your response by either providing the answer or putting a tick in the space provided.

SECTION 1: BACKGROUND INFORMATION OF THE STUDY

1.1 Respondent gender: Male [ ] Female [ ]

1.2 Respondent age group:
   1) Below 20 years [ ]
   2) 21-30 years [ ]
   3) 31-40 years [ ]
   4) 41-50 years [ ]
   5) Over 50 years [ ]

1.3 Respondent teaching experience:
   1) 2-5 years [ ]
   2) 6-10 years [ ]
   3) 11-15 years [ ]
   4) 16-20 years [ ]
   5) Over 20 years [ ]

1.4 Respondent level of education:
   1) O’ level certificate [ ]
   2) A’ level certificate [ ]
   3) Diploma [ ]
   4) Advanced level (AO) [ ]
   5) Others specify
      ……………………………………………………………………………………………

1.5 Respondent field of specialization:
   1) TTC [ ]
   2) Others (specify)……………………………………………………………………
### How teachers use ICT

<table>
<thead>
<tr>
<th></th>
<th>Always</th>
<th>Often</th>
<th>Rarely</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lesson planning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Record keeping</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Assessment and evaluation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Teaching and learning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Developing ICT skills</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Making schemes of work</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Drill and practice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Entertainment like</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Playing games</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Communication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Research</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Preparing teaching</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>And learning materials</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX II: Questionnaire For Head Teachers

SECTION A: BACKGROUND INFORMATION OF RESPONDENT

1.1 Your Gender
   Male ( )
   Female ( )

1.2 Your age range.
   (i) Below 20 years ( )
   (ii) 21-30 years ( )
   (iii) 31-40 years ( )
   (iv) 41-50 years ( )
   (v) Over 50 years ( )

1.3 Number of years you have worked
   (i) 2-5 years ( )
   (ii) 6-10 years ( )
   (iii) 11-15 years ( )
   (iv) 16-20 years ( )
   (v) Over 20 years ( )

1.4 Highest professional qualification you have attained
   (i) certificate ( )
   (ii) diploma ( )
   (iii) B.ED ( )
   (iv) M.ED ( )
<table>
<thead>
<tr>
<th>S/Number</th>
<th>Item</th>
<th>Available</th>
<th>Frequency of use</th>
<th>Quantity (no.)</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Computers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Printers</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>3</td>
<td>Mobile phones</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Laptop</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Projector</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Internet</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Switchboard</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Video</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>CDs/DVDs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Other software programs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Radio</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>T.V</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Other (specify)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### APPENDIX III: Observation Checklist

<table>
<thead>
<tr>
<th>ICT AVAILABLE RESOURCES</th>
<th>WAYS USED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computers:</td>
<td></td>
</tr>
<tr>
<td>2. Printers:</td>
<td></td>
</tr>
<tr>
<td>3. Mobile phones</td>
<td></td>
</tr>
<tr>
<td>4. Laptop:</td>
<td></td>
</tr>
<tr>
<td>5. Projector:</td>
<td></td>
</tr>
<tr>
<td>6. Internet:</td>
<td></td>
</tr>
<tr>
<td>7. Switch board:</td>
<td></td>
</tr>
<tr>
<td>8. Video:</td>
<td></td>
</tr>
<tr>
<td>9. CDS and DVDS:</td>
<td></td>
</tr>
<tr>
<td>10. Radio:</td>
<td></td>
</tr>
<tr>
<td>11. TV:</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX IV: Graduate School Approval

KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: dean-graduate@kun.ac.ke
Website: www.kun.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 810901 Ext. 4150

FROM: Dean, Graduate School
TO: David Kiboro Karanja
C/o Early Childhood Studies Dept.

DATE: 12th June, 2017
REF: E55/CE/24037/2012

SUBJECT: APPROVAL OF RESEARCH PROJECT PROPOSAL

This is to inform you that Graduate School Board at its meeting of 07th June, 2017 approved your Research Project Proposal for the M.Ed Degree Entitled, “Influence of Teachers’ Demographic Characteristics On Information and Communication Technologies Integration in Instruction in Lower Primary Schools in Kiambu County, Kenya”.

You may now proceed with your Data Collection, Subject to Clearance with Director General, National Commission for Science, Technology and Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed Supervision Tracking Forms per semester. The form has been developed to replace the Progress Report Forms. The Supervision Tracking Forms are available at the University's Website under Graduate School webpage downloads.

Thank you.

GIDEON KAIME NYI
FOR DEAN, GRADUATE SCHOOL

cc. Chairman, Early Childhood Studies Department.

Supervisor: Dr. Nyakwara Begi
C/o Department of Early Childhood Studies
Kenyatta University
APPENDIX V: Research Authorization

KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 8710901 Ext. 57530

Our Ref: ES5/CE/24037/2012
DATE: 12th June, 2017

Director General,
National Commission for Science, Technology
and Innovation
P.O. Box 30623-00100
NAIROBI

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION FOR DAVID KIBORO KARANJA – REG. NO.
ES5/CE/24037/2012

I write to introduce Mr. David Kiboro Karanja who is a Postgraduate Student of this University. He is registered for M.E.D degree programme in the Department of Early Childhood Studies.

Mr. Kiboro intends to conduct research for a M.E.D Project Proposal entitled, “Influence of Teachers’ Demographic Characteristics on Information and Communication Technologies Integration in Instruction in Lower Primary Schools in Kiambu County, Kenya”.

Any assistance given will be highly appreciated.

Yours faithfully,

[Signature]

MRS. LUCY N. MRAABU
FOR: DEAN, GRADUATE SCHOOL
APPENDIX VI: Research Clearance Permit

THIS IS TO CERTIFY THAT:
MR. DAVID KIBORO KARANJA
of KENYATTA UNIVERSITY, 315-900
KIAMBU, has been permitted to conduct
research in Kiambu County
on the topic: INFLUENCE OF TEACHERS’
DEMOGRAPHIC CHARACTERISTICS ON
INFORMATION AND COMMUNICATION
TECHNOLOGIES INTEGRATION IN
INSTRUCTION IN LOWER PRIMARY
SCHOOLS IN KIAMBU COUNTY, KENYA

for the period ending:
20th February, 2019

Applicant’s Signature

Permit No : NACOSTI/P/18/40715/21162
Date Of Issue: 20th February, 2018
Fee Received: Ksh 1000

Director General
National Commission for Science,
Technology & Innovation

CONDITIONS
1. The License is valid for the proposed research,
research site specified period.
2. Both the License and any rights thereunder are
non-transferable.
3. Upon request of the Commission, the Licensee
shall submit a progress report.
4. The Licensee shall report to the County Director of
Education and County Governor in the area of
research before commencement of the research.
5. Excavation, filming and collection of specimens
are subject to further permissions from relevant
Government agencies.
6. This Licence does not give authority to transfer
research materials.
7. The Licensee shall submit two (2) hard copies and
upload a soft copy of their final report.
8. The Commission reserves the right to modify the
conditions of this Licence including its cancellation
without prior notice.

CONDITIONS: see back page
APPENDIX VII: Research Authorization From Nacosti

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Ref: No. NACOSTI/P/18/40715/21162

Date: 20th February, 2018

David Kiboro Karanja
Kenyatta University
P.O. Box 43844-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on “Influence of teachers’ demographic characteristics on information and communication technologies integration in instruction in lower primary schools in Kiambu County, Kenya” I am pleased to inform you that you have been authorized to undertake research in Kiambu County for the period ending 20th February, 2019.

You are advised to report to the County Commissioner and the County Director of Education, Kiambu County before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit a copy of the final research report to the Commission within one year of completion. The soft copy of the same should be submitted through the Online Research Information System.

GODFREY P. KALERWA MSc, MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Kiambu County.

The County Director of Education
Kiambu County.