

**ACCESS TO AND USE OF WORK RELATED INFORMATION BY PRIMARY
SCHOOL TEACHERS IN KIHARA EDUCATIONAL ZONE, KIAMBU
COUNTY, KENYA**

BY

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**A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE
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DECLARATION

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DEDICATION

This work is dedicated to my mother Marion, my children Caroline and Samuel for their support, patience and perseverance during my study period.

ABSTRACT

Primary school teachers require relevant and timely information in order to perform their roles effectively. However, teachers in most public primary schools in Kenya have limited access to information sources partly because their information needs have not been adequately identified. Information sources accessed and used are usually limited to text books which are mostly geared towards preparing pupils pass examinations. The aim of this study was to investigate access to and use of work related information by primary school teachers at Kihara Educational Zone with a view to make recommendations for improving information services to primary school teachers. The objectives of the study were to: establish the various work roles and tasks undertaken by primary school teachers in the schools; determine the information needs of primary school teachers; ascertain the information sources accessible and preferred by primary school teachers; examine the challenges encountered by teachers in accessing and using the information sources; and recommend ways of improving information access among primary school teachers. The study was informed by the general information seeking of professionals' model by Leckie et al. The study employed mixed methods research and concurrent triangulation design. The study population consisted of 137 teachers and 8 head teachers. Census was used to collect quantitative data from teachers through self-administered questionnaires, while qualitative data was collected from head teachers using semi-structured interviews. Quantitative data was analyzed using descriptive and inferential statistics. Content analysis was used for qualitative data to identify trends and themes that were coded to show frequencies and relationships. The findings revealed that teachers in addition to teaching roles undertook many other roles such as administrators, mentors, counsellors, curriculum evaluators, assessors, role models and resource persons which needed varying types of information as input. Teachers needed information on teaching methods, classroom management, pupils' motivation, assessment, professional development and current affairs. Further findings revealed that the schools had inadequate information sources to satisfy all teacher information needs. Teachers depended on limited information sources such as approved textbooks, personal notes and colleagues. Use of mobile technology was mainly to access current news and as means of communication. Challenges included: unavailability of needed resources such as audio-visuals, electronic sources and related technologies; lack of school libraries; absence of computers and broadband Internet connectivity; inadequate information literacy skills and heavy workload. In conclusion, primary school teachers performed many roles and tasks that required access to and use of varied information to satisfy their information needs. Teachers relied heavily on text books because these were readily available, easy to access and use. The study recommends regular information needs assessment among teachers; establishment of modern school libraries based on teachers' information needs; implementation of integration of information and communication technologies in teaching and learning; regular on-job training courses to improve information literacy among teachers and provision of computers and internet broadband connectivity in schools.

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LIST OF ABBREVIATIONS

DECIDOC	-	Defence Scientific Information and Documentation Centre
ECDE	-	Early Childhood Development Education
IAALD	-	International Association of Agricultural Librarians and Documentalists
ICT	-	Information and Communications Technology
IFLA	-	International Federation of Library Associations and Institutions
IPS	-	Internet Protocol Suite
ISB	-	Information Seeking Behaviour
KENET	-	Kenya Education Network Trust
KIE	-	Kenya Institute of Education
KNBS	-	Kenya National Bureau of Statistics
NACOSTI	-	National Commission for Science and Technology and Innovation
NIT	-	National Institutes of Technology
SCI	-	Schools Connectivity Initiative
SDGs	-	Sustainable Development Goals
SMS	-	Short Message Service
TSC	-	Teachers Service Commission

CHAPTER ONE

INTRODUCTION AND BACKGROUND INFORMATION

1.1 Introduction

Information can be described as a basic resource needed in all aspects of human endeavour. It is data of value that gives meaning and actively informs some phenomena of interest. Information is useful in planning, decision-making and evaluating any programme. Information resource and asset has become the driving force of modern society and every sector is experiencing heightened need for accurate, reliable and timely information (Apata & Ogunrewo, 2010). In the contemporary society, the problem is not scarcity of information, but how to access it on time and in useable form. Information in itself has no inherent value but only has value when accessed and used (Nair, 2006).

‘Access to information’ is a thought that is conceptually, methodologically and theoretically underdeveloped; hence, lacks unified definition (Oltmann, 2009 & Mathiesen, 2014). Various terminologies, such as “access to information and knowledge resources”, “freedom of information”, “free dissemination of information”, “access to information”, “information access”, are used in the literature though all of which suggest lack of conceptual clarity. As a concept, it touches on every aspect of human life from economic well-being, privacy rights, workplace management, and policy and decision making to people’s daily errands (McCreadie & Rice, 1999b). It’s a fundamental human right recognised by Article 19 of the Universal Declaration of Human Rights that states:

“Everyone has the right to freedom of opinion and expression, this right includes freedom to hold opinion without interference and to seek, receive and impart information and ideas through any media regardless of frontiers.”

The concept of access to information is broad and covers many issues surrounding information sources availability, language, affordability, format, and even mode of access. Burnett et al. (2008) summarized these into three main components: physical, intellectual, and social. Physical access includes “the physical structures that contain information, electronic structures and paths that are travelled to get to information”. Intellectual access refers to understanding information in a document, including “how the information is categorized, organized, displayed, and represented”. Social access implies elements of one’s social world, including social norms and worldviews that influence access and use of information, and how and why a particular piece of information is needed. Buckland (1990) describes information access as locating (access to catalogues, directories), identifying (bibliographic access), and pricing (money, effort, time, user-friendliness). While Kabalo (2016) notes that access to information and its utilisation should not have boundaries. Information should always be accessible to those in need, on time and in the right format regardless of religion, race and nationality. This would necessitate a good information infrastructure that forms a solid base upon which information services develop.

Access to information is therefore both physical and intellectual process. Physical access involves teachers getting the actual information source including self, other teachers, organisations and documents (textbooks, magazines). Intellectual access, referred to as “information use” is the final step of information seeking process. Information use begins with the recognition of the need of information, locating the information needed to close the gap and finally putting the sort for information into use to solve the problem or make decision. It is therefore, what happens once information is accessed and retrieved (Bartlett & Toms, 2005). In this study, information use is the process of incorporating the information found from the various information sources

into the existing knowledge base of the teacher. It requires teachers to have other skills like literacy for comprehension, contextualisation and application to meet the specific information need.

1.2 Background Information

1.2.1 Access To and Use of Information in Primary Schools

Teaching is an information-rich profession, with teachers always handling information to effectively accomplish the many roles they perform in a school. Being tutors, facilitators, administrators, curriculum evaluators, assessors, mentors, entertainers, role models and resource persons are some of these roles. Each role is realized through one or more tasks where every task requires information as an input. As noted by Kalunda and Otanga (2015), teachers not only need to have mastery over the subjects, but are always in search of necessary professional skills that equip them to teach children of different ages, abilities, aptitudes and background and are committed to personal development. The teacher is the locus of classroom instructional activity and curriculum delivery and effective teaching and learning only takes place where teachers and learners have access to necessary information materials and resources (Adeoye & Papoola, 2011).

Teachers, particularly those working in the primary education sector, are responsible for making and implementing decisions that affect the lives and prospects of a nation's future generation as well as the welfare of a country. Bitso (2013) observed that teachers on one hand are responsible for imparting social practices associated with information such as information literacy, information seeking and information use. Teachers are responsible for laying a strong foundation upon which every pupil can pursue further learning, and at the same time identify and nurture pupils' potential at an

early stage in life. In addition, teaching profession has also changed over the years according to Burke (1996). This author states that:

“Conceptual basis of primary school teaching has changed dramatically in the present century. From being a ‘craft’ involving skills acquired through apprenticeship and/or a short teacher training course that enabled teachers to carry out traditional task of controlling schools and what goes on in them, it has evolved to a point where policy and practice have a more comprehensive theoretical base.”

Thus, a teacher is no longer just transmitter of knowledge but now have a communicative role where a teacher serves more as a facilitator and mentor. Smith (2004) emphasized the need for teachers to be knowledge hungry themselves, critical and reflective thinkers in order to deal with the enormous changes that are taking place in the present knowledge and information society. Teachers in the 21st century need to be adequately skilled in a number of competencies, some of which are information literacy skills to allow the selection and usage of tangible and intangible resources appropriate for reading, instructional and learning, communication, collaboration, creativity and innovation. Furthermore, teachers need technology skills, life and career, social and cross cultural skills. Such competencies develop the teaching force that is capable of moving beyond the confines of course books and textbooks. It supplements and enriches work done by the pupils in the classroom and encourages independent access to information arousing the interest of pupils in matters outside curriculum.

Teachers in most public primary schools in Kenya do not enjoy same privileges found in private schools where some with good school libraries are managed by trained librarians and assured of good Internet connectivity. Mostly teachers in public schools work under situations marked by scarcity of information services and most of the times serving as the only source of content taught. The worst hit are public schools in rural areas where information provision infrastructure is lacking or inadequate. In these areas,

most schools do not have electricity needed to support information related technologies and library services are non-existent, and where such exist, the services are underutilised because they are mainly developed without ascertaining the information needs of teachers. This limits information sources accessed and used by teachers to textbooks, curriculum materials, colleagues and personal notes. Access to and use of limited information sources by teachers means that pupils in these public schools are not exposed to variety of information sources which may impact negatively on their development of free personal enquiry, reading culture and the habit of using information resources at this early age.

1.2.2 Primary Education in Kenya

Primary education forms the basic cycle of formal education in Kenya as it serves as the core of development and progress. It officially starts at six years of age and runs for eight years. It provides functional and practical education to majority of children who terminate their formal education at the end of the cycle while at the same time catering for those wishing to continue with schooling. It is through primary education, that pupils are taught how to read, write and calculate and teachers lay the foundation that prepares them to participate fully in the social, economic and political life of the nation (Akinbote, 2007).

In terms of growth, Kenya's primary education has expanded drastically since independence as reflected in the increased enrolment in schools, the number of teachers and the number of schools. According to statistical abstracts (KNBS, 1967; 2019) the total number of primary schools has risen from 6,058 at independence to around 37,910 by 2018. Student enrolment rose from 891,000 in 1963 to about 10.5 million in 2018, and the number of trained teachers in primary schools rose from 22,772 in 1963 to

215,363 in 2018. These statistics show that, overall, Kenya as a country has recognised the need for basic education.

In addition to quantitative changes, the government has experimented on a number of other changes that have affected the entire educational spectrum, both structurally and curriculum. Prior to 1984, Kenya had a 7-4-2-3 education system denoting 7 years of primary school, 4 years of lower secondary, two years of upper secondary and minimum three years of university education. This was replaced by the 8-4-4 system, a three-tiered formal education system composed of eight years of primary cycle, four years of secondary cycle with a minimum four years of university education. In 2018, the Government introduced a new education structure and curriculum 2-6-6-3 to replace the 8-4-4 system.

These changes have impacted on the education system and brought about challenges as noted by several assessment studies (Abagi & Odipo, 1997; Rosenberg (ed.), 1998; Wambua & Murungi, 2018). Some of the challenges include overcrowded classrooms, inadequate instructional materials, increased workload among the teachers and limited funds. There is also disparity among the primary schools related to source of funding. Primary education in Kenya is provided in partnership by the government, communities, parents, private entrepreneurs and non-governmental organizations (NGOs) which create inequality in resources available for teachers' use. These challenges mean that teachers may not access the information sources needed in terms of amount desired and content. Quantitative increase means the volume of resources needed continue to increase to cater for the larger number of pupils. Changes in curriculum lead to new content requiring new information sources for teaching and development of new skills.

1.2.3 Primary Schools in Kiambu County

Kiambu County is one of the 47 counties in the Republic of Kenya created under the Kenya Constitution 2010. Initially, it existed as Kiambu District although the creation of the County after 2010 amalgamated other administrative units such as Thika District. The county lies between latitudes 00 25' and 10 20' South of the Equator and Longitude 360 31' and 370 15' East. It borders Nairobi and Kajiado Counties to the South, Machakos County to the East, Murang'a County to the North and North East, Nyandarua County to the North West, and Nakuru County to the West as indicated in Figure 1.1.



Figure 1.1: Location of Kiambu County in Kenya
Source: Survey of Kenya, 2014

The County has a total of 948 primary schools out of which 476 are public and 472 private with a teacher population of 21,090 (Kiambu, 2018). Public schools are grouped

into educational zones depending on the level and distance for ease of management and oversight. Although most of the public schools in the County have access to electricity, piped water and physical infrastructure (such as classes and toilets) are in serviceable condition there is no well-established information infrastructure. There are no functional school libraries or availability of broadband Internet connectivity in the zone.

1.2.4 Kihara Educational Zone

Kihara Educational Zone is one of the three educational zones in Kiambu East Education Division. The other two are Karuri and Ndumberi Educational Zones. Kihara Zone borders Githunguri and Limuru regions to the north, Kikuyu to the west, Ruiru to the east and the Nairobi estates of Runda, Closeburn, Nyari, Kitsuru and New Muthaiga to the south as shown in Figure 1.2.

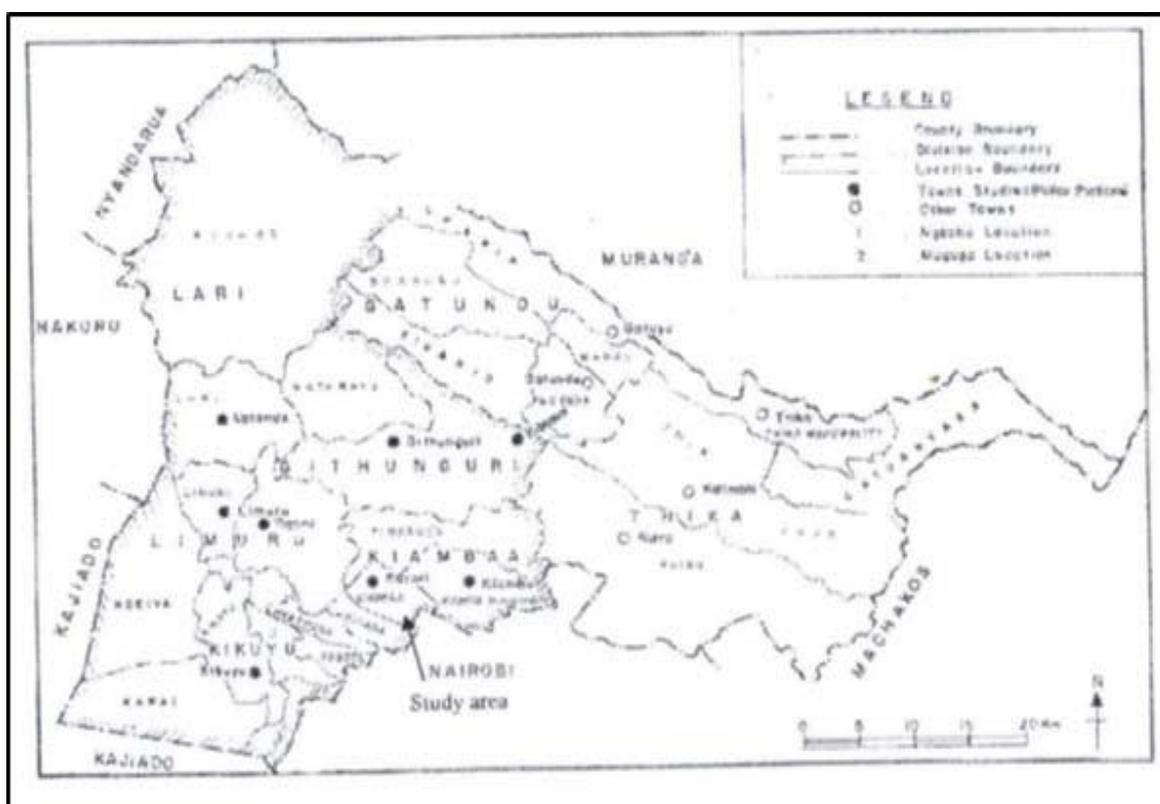


Figure 1.2: Map of the study area within Kiambu County; the arrow shows Kihara Educational Zone

Source: Survey of Kenya, 2014

The Zone has eleven (11) public primary schools as shown in Table 1.1 with a target teacher population 179 teachers and 11 head teachers, totalling (190).

Table 1.1: Public Primary Schools in Kihara Education Zone

Name of the School	Number of Teachers
1. Gachie Primary	23
2. Gacharage Primary	15
3. King'othua Primary	12
4. Lower Kihara Primary	16
5. Kihara Primary	15
6. Muthurwa Primary	13
7. Muya Primary	15
8. ACK Karura Primary	16
9. Ndenderu Primary	21
10. Stephen Kamuiru Primary	26
11. Wangunyu Primary	18
TOTAL	190

The public primary schools in Kihara Zone are no exception compared to other public schools in Kenya. The Zone is in a rural setting where information provision infrastructure is lacking or inadequate. All the eleven schools lacked the needed infrastructure to support information related technologies and library services were non-existent. What was termed as a school library was shelves of outdated, worn out and irrelevant materials, which the schools in the Zone had received as a donation.

1.3 Statement of the Problem

Teaching is an information rich profession requiring constant access and use of different information sources which allow teachers to effectively accomplish the many roles and tasks they perform in a school. Teachers need both physical access and adequate skills to search, select and use information from the pool of available print and digital

resources, a reality that remains out of reach to many public primary school teachers in Kihara Educational Zone.

Teachers in this zone have limited access to work related information sources, partly because their information needs have not been adequately identified. Subsequently the information sources they access are limited to textbooks and course books which are mostly geared toward preparing pupils pass examinations. Occasionally, head teachers in the zone have received book donations again on assumption that teachers will find them useful. In view of this, the study sought to investigate access and use of work related information by primary school teachers in Kihara Educational Zone and make recommendations that would assist in improving information services to better serve their information needs.

1.4 Aim of the Study

The aim of this study was to investigate access to and use of work related information by primary school teachers in Kihara Educational Zone with a view to make recommendations for improving information services to those teachers.

1.5 Objectives of the Study

Objectives of the study were to:

1. Establish the various work tasks undertaken by primary school teachers in Kihara Educational Zone.
2. Determine the work-related information needs of primary school teachers in the Zone.
3. Ascertain the information sources they access and prefer to use.
4. Examine the challenges encountered by primary school teachers in the Zone in accessing and using the information sources.

5. Recommend ways of improving information access among primary school teachers in the zone.

1.6 Research Questions

The following research questions guided the researcher in gathering information needed for the study:

1. What roles and associated tasks do primary school teachers undertake in their school?
2. What information do primary school teachers need to do their job?
3. Which information sources do primary schools teachers access and prefer to use?
4. What challenges do primary school teachers in Kihara Educational Zone face when accessing and using information sources?
5. How could information access for primary school teachers in Kihara Zone be improved?

1.7 Assumptions of the Study

The study had the following assumptions:

1. Information sources made available to primary school teachers through the Ministry of Education may not fully satisfy their information needs. The sources are mostly limited to textbooks and course books which may not satisfy all the information needs considering the many work roles teachers undertake.
2. Ascertaining teachers' work related roles, associated tasks and information needs will help improve the information sources provided for the teachers use.

1.8 Significance of the Study

Theoretical significance: The study was designed to contribute to the body of knowledge on information behaviour of professionals with a special reference to

primary school teachers. There is general lack of research exploring access to and use of work related information among primary school teachers from information science point of view in Kenya. This study added to the understanding of primary school teachers' information needs, identifying the various information sources they access and prefer to use as they undertake their work related tasks.

Policy related significance: The study revealed the prevailing conditions of information services available in the various primary schools. Such information will assist both school management and policy makers in identifying the strong and weak areas in relation to information provision in the public primary schools.

Practical significance: The study and the findings could serve as point of reference for teacher librarians in Kenya developing their school library collections, upgrading facilities and improving services to help meet information needs of teachers in the various primary schools.

1.9 Scope of the Study and Limitations

1.9.1 Scope of the Study

The study focused on teachers employed and working in the eleven public primary schools in Kihara Educational Zone, Kiambu County. Included were head teachers and other teachers who were responsible for teaching one or more subjects. Excluded were all non-teaching staff.

The study only covered work-related information. Work or job related information refers to information needed by a teacher to accomplish a task such as lesson planning, grading pupils, class management and mentoring. The study excluded personal

information needs such as information relating to teacher's health, family matters, politics, and housing.

1.9.2 Limitations of the Study

The study had some unavoidable limitations. The study depended on having access to primary school teachers in their respective schools. It was not possible to reach all the teachers targeted due to a number of reasons. During the study period, some teachers were on long leave, some were not willing to participate and in one school head teacher limited the number of teachers to participate in the study. Another limitation resulted from using the questionnaire which limit the respondents into a particular response categories. There was also no option to ask the researcher a question limiting the respondents to the text in the survey itself.

The study mitigated this limitations by employing different data collection methods including questionnaire, semi structured interview and observation. The different methods allowed the researcher not only to validate findings but also probe for more information. The semi structured interview, for example, helped the researcher explore for more specific information.

1.10 Summary

This chapter has introduced the research problem and provided background information on the state of information services in public primary schools in Kenya and in particular Kihara Educational Zone in Kiambu County. Primary schools education within this zone has been well elaborated. From the statement of the problem, fundamental knowledge gaps in relation to access to and use of work related information among primary school teachers have been highlighted. The research matrix has been well explained in terms of the aim of the study together with the objectives and research

questions. The chapter has also described the significance and rationale of this research problem. Fundamental concepts within the research framework have been contextualized and operationalized.

1.11 Operational Definitions of Terms

Information: Reitz (2006) defines information as data presented in a comprehensible form and its meaning attributed within the context of its use. Information is data, facts and ideas in any medium that humans use when performing day-to-day activities (Msoffe, 2015).

Access to information: The teachers' ability to obtain information from the variety of information sources. It covers the information infrastructure, communication channels, delivery systems and access points needed for the acquisition, processing and use. Various factors influence access to information such as availability of information sources, physical distance, costs, convenience, skills of intended user and perceived relevance. Users tend to make use of information sources perceived to be relevant and accessible physically (Msoffe, 2015).

Information behaviour: The ways in which people seek and utilise information. In library and information sciences, it refers to a sub-discipline that engages in a wide range of types of research conducted in order to understand the human relationship to information (Bates, 2010). For purposes of this study, information behaviour refers to the many ways teachers seek and use information for teaching, decision making and assessing the pupils.

Information literacy: Although this is a common concept in education and information science fields, it lacks a unified definition. In the education field, the term is used

interchangeably with information technology or information communication technology. For purposes of current research, information literacy is an understanding and set of abilities enabling teachers to recognise when information is needed and have the ability to define, locate, evaluate and use effectively the needed information (Bundy, 2004). It is a set of skills involving the ability to access, evaluate and use information from multiple sources.

Information need: The term is often understood in information science as evolving from a vague awareness of something missing and as culminating in locating information that contributes to understanding and meaning (Kuhlthau, 1993). It begins at the earliest hint that information may be of interest (Westbrook, 1999) or needed to fill a gap in existing knowledge.

Information source: Any physical carrier of information, and there are four types of sources, namely: 1) self, 2) other people, 3) organisations, and 4) documents. According to Byström & Järvelin (1995) an information source contains, or is expected to contain, relevant information for the worker to use. The current study considers an information source as an item that has information relevant to primary school teachers.

Information use: Wilson (2000) refers to information use as “the physical and mental acts involved in incorporating the information found into the person’s existing information base. Included are acts such as marking sections in a text to note their importance and comparison of new information with existing knowledge. Citing Bartlett and Toms (2005), information use occurs once information is obtained, applied to accomplish a task and/or resolve a problem. It is the final step of information seeking process.

Internet: A worldwide system of networks and computers connected over international telecommunication backbone and routed using Internet protocol suite address, so as to allow participants to dialogue with each other and to find, use and exchange information resources on computers of other schools, academic institution, private companies, government agencies and individuals.

School Library: A school library is not just a storehouse of information sources, but a vigorous and dynamic space in a school capable of supporting a wide range of learning activities by providing access to variety of information sources and services. It provides learning opportunities that enable school pupils at an early age to become efficient and effective in the pursuit of information.

Teacher: A person whose occupational activity is the transmission of knowledge, attitudes and skills to students or pupils enrolled in an educational programme, in this case a school. Excluded from this definition are non-teaching staff, school administrators as well as teachers without active teaching responsibilities.

Teaching resource: Stock/reserve upon which a teacher can draw whenever necessary for teaching purposes.

Teachers Advisory Centre: Place where primary school teachers access information resources and expertise to help develop professional competence. These information resources started in 1970s to provide professional services to teachers to enable them to perform effectively in classrooms.

Work-related information: Refers to job specific information that help primary school teachers effectively accomplish their work roles and associated tasks. Primary school teachers undertake various roles beyond formal teaching such as being managers,

counsellors, custodians, assessors, planners, facilitators, role models, communicators and entertainers. Each of the roles is accomplished through a number of specific tasks that need information as an input.

Work role: Distinct set of interlinked human activities (Huvila, 2006). Work is a vague concept and may vary from one individual to another; it is described as something to which tasks belong. It is a mega concept including identifiable work tasks.

Work task: This refers to what teachers undertake to complete the responsibilities for their job, which could be a set of instructions that specify what to do. Each specific task therefore becomes a motivation for information seeking.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter covers the development of research on information behaviour among professionals. Topics of concern include understanding work-related activities that trigger the need to access and use information, information needs, information sources and preferences, and barriers to information access and use with focus on primary school teachers in Kihara Educational Zone, Kiambu County. The chapter begins with the theoretical framework that guided the study.

2.2 Theoretical Framework

The ways in which people access and use information to meet work-related information need have become an important area of research in library and information science. Numerous studies have examined these, especially how professionals employed in specific occupations gather and use information in the course of their daily work. This has resulted in the development of several models that provide frameworks for studying user information behaviour. Some of these models study users from information behaviour, information seeking and information needs perspectives, while others focus on information searching and retrieval. The models are broadly grouped into ‘general process models’, ‘behavioural models’, ‘information search and retrieval models’, ‘task-based models’ and ‘digital environment models’ (Bitso, 2011 & Kundu, 2017). This study applies a work-task approach to studying information behaviour of public primary school teachers in Kihara Educational Zone.

2.2.1 Work-Task Approach

Literature identify several models that focus on work-task concept in understanding information behaviour (Byström & Hansen, 2005; Byström & Järvelin, 1995; Marchionini, 1995; Vakkari & Hakala, 2000; Savolainen, 2012). As noted by Byström (2007) task-based approach provides grounds for combining two research areas in information studies, namely information retrieval and information seeking.

Work role and its associated tasks are identified as key trigger of information seeking process among professionals in literature. Several studies argue that information seeking is task-based behaviour leading into a number of information behaviour models. Such models include Paisley's (1968) conceptual framework of the scientist within systems, Blom's (1983) task performance model, Byström and Järvelin (1995) task-based information model, and Leckie et al. (1996) general model on the information seeking behaviour of professionals. Of these models, the one proposed by Leckie et al. (1996) has been tested against teachers (Mundt et al., 2006 & Bitso, 2011) and was employed in this study. The general model is used to investigate primary school teachers' information behaviour in relation to tasks, information needs and sources; it is relevant in explaining the general patterns of information seeking and use of professionals.

2.2.2 Information Seeking General Model

The Leckie et al.'s (1996) information seeking general model was found applicable as a theoretical framework for this study that focuses on primary school teachers because it was developed after studying professionals within the work place. It includes variables such as work roles, tasks, information needs and sources of information that help address the research questions. As noted by Bitso (2011), the model is simple to understand, follow and has been applied in a number of studies involving professional

information seeking behaviour. Landry (2006) used the model in studying dentists' information seeking behaviour, while Du Preez and Fourie (2009) used it to study the information behaviour that incorporated the work role component in their model. Bitso (2011) used it to study the information needs and information-seeking patterns of secondary level geography teachers in Lesotho.

The Leckie et al. (1996) model has six components – (1) work roles, (2) tasks, (3) characteristics of information needs, (4) awareness of information needs, (5) sources of information, and (6) outcomes as shown in Figure 2). The feedback loop is a key component of the model in that it triggers the information seeking activity (“Information is sought”) to restart or stop depending on the outcome, either satisfaction or non-satisfaction of the information need (Leckie et al., 1996 & Leckie, 2005).

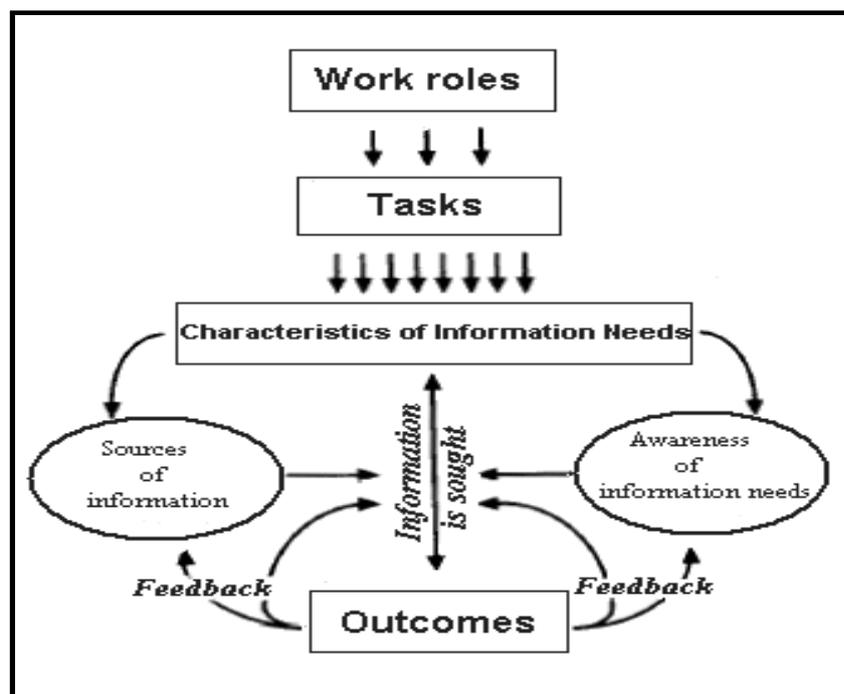


Figure 2.1: Leckie et al. Model of Information Seeking among Professionals

The basic assumption of this model is that a person associated with any profession plays one or more roles in their respective fields; such roles may include being service provider, educator, researcher or manager. This is work role, and work role accomplished through specific tasks requires information as an input. The tasks trigger an information need that in turn leads to information seeking activity (Leckie et al., 1996). Understanding the broader working context of individual's work, is therefore, key to determining information needs in this model.

Bitso (2011) interprets the work context for teachers in terms of the work roles and associated tasks that are performed, information sources available in the schools, accessibility, and teachers' perception of the information content of the resources. The work roles and related tasks prompts specific information needs that in turn trigger the information seeking process as depicted in the model. The characteristics of information needs vary depending on factors such as sources available, intended use, characteristic of individual user (age, education, profession, specialisation and career stage) and the environment within which the teachers operate. Characteristics of an information source that could affect information seeking are familiarity, trustworthiness, packaging, timeliness, cost, perceived quality, relevance and accessibility. According to Leckie et al. (1996) accessibility is important since professionals prefer sources that are easily accessible and familiar, thereby satisfying the Zipf (1949) principle of least effort.

Another factor depicted in the model and useful in studying the teachers' information behaviour is that information need is not constant. Intervening factors including individual attributes and circumstances, such as age, profession, specialisation, career stage, urgency of task and geographic location, may affect information need and ultimately access and use. Primary school teachers' information needs vary depending

on level and subject taught, individual attributes and other roles played in the school. Information sources and awareness of information determine information seeking behaviour. Professionals will tend to consult familiar sources and those that they trust. Sources successfully used before and which are accessible in terms of time, distance and costs always come first. The use of various information sources depends on the nature of information need. Teachers use different sources for preparing content for different lessons; for example, teachers teaching English will require use of different resources from the ones used in planning and teaching Social Studies.

As mentioned earlier, the model also incorporates a feedback mechanism, which is determined by outcome. Outcome is the result of information seeking process triggered by a specific task that need information and occurs when a teacher obtains and uses the information to complete the task. Sometimes the teacher may not access the needed information to accomplish the task within the current school environment and needs to extend beyond the sources within the school. According to Prabha et al. (2007) outcome does involve decisions on when to stop searching for information. In the current information society where too much is accessed online through the Internet, users should make decisions when to stop searching more information.

2.3 Work Roles and Associated Tasks of Teachers

The concept of work roles and tasks has received growing attention in studies on information behaviour (Byström & Hansen, 2005; Byström & Jarvelin, 1995; Marchionini, 1995; Vakkari & Hakala, 2000). Some specific roles in the profession could include administration, educating, research and leadership. Huvila (2006) defines 'work role' as a distinct set of activities within a 'work' that involves processing of information; hence, a work role is broad and needs to be broken down into smaller

manageable tasks. Each of the smaller tasks requires information as an input. Ingwersen and Jarvelin (2005) define a task as ‘abstract, objective sequences of actions.’ A work task is an activity performed by an individual to accomplish a goal (Vakkari, 2003). The roles and related tasks prompt particular information needs, which in turn give rise to information seeking process. Scrutinising work roles and its related tasks is one way of explicating the contexts of information activity (Huvila, 2008).

Bystrom and Jarvelin (1995) analysed work task and identified task complexity as a determinant of information need. These authors define task complexity as the degree of uncertainty about task input, outputs, process and outcome, and identified various categories of task complexity based on task characteristics, such as repetition, analysability and priori determinability. First, automatic information processing tasks are determinable and automated. Secondly, normal information processing tasks are close to determinable, but require some case-based arbitration relating to some elements. Third, there are normal decision tasks that are structured and require case-based arbitration; decisions tasks are those where the process is indeterminable and so are the information requirements. Finally, there are genuine decision tasks that are new, unexpected and unstructured. For these tasks the process, information requirements and expected results are undeterminable making information need more complex.

Teachers perform many related roles in the school. As developers and implementers of education programmes, policies and practices, and have leadership roles associated with formal positions such as head teacher, class teacher and department head. In addition, teachers play the role of colleague to their workmates. Bitso and Fourie (2012) broadly summarised teachers’ work roles as teaching and administration. The teaching role involves daily interaction with pupils and includes tasks such as lesson planning,

deriving appropriate teaching methods to deliver the content, finding and developing teaching aids to help enhance understanding of the content, assessing students, and managing class discipline (Bitso, 2012). The administrative roles – especially for teachers in Kenya’s primary schools include head teacher or deputy teacher, class teacher and ordinary teacher. The head teacher supervises both teachers and other non-teaching staff, manages all the school resources and is responsible for implementation of school policies and regulations. Head teachers also serve as the link between the school and the outside world, which includes government officials and parents or guardians. An ordinary teacher is responsible for the subject they teach with functions that include testing, marking tests/examinations, and reporting pupil performance on respective subjects. The class teacher, in addition to carrying out ordinary teachers’ tasks, is responsible for classroom facilities and class welfare and discipline, and as well prepares overall report on the class performance.

In addition to teaching, teachers serve many other roles in and outside the classroom. Citing Simon Veenman, Mardis (2009) summarises teachers’ work into eight important areas, namely “classroom discipline, motivating students, dealing with individual differences, assessing students' work, relationship with parents, organization of class work, insufficient and/or inadequate teaching materials and supplies, and dealing with problems of individual students”. Teachers are responsible for classroom management and discipline. In addition, teachers create individual lesson plan and activities, evaluate the work and progress of pupils on a regular basis and, based on these evaluations, make appropriate decisions about each pupil. Teachers also motivate pupils and act as caregivers; ensure constant communication with pupils, parents, school administrators and other support staff; and are continuously improving their teaching skills and keep up with changes in the teaching profession (Mundt et al., 2006 & Mardis, 2009).

Kamba (2010) looks at teaching as a complex activity that involves many variables. Success of these variables depends on constant use of information. Citing Holmes (1987), Kamba (2010) states that school teachers are involved in a number of activities that include dissemination of information, diagnosing pupils with learning difficulties, selecting appropriate learning resources, supervising and assessing students, and stimulating classroom interactions. Citing Mundt et al. (2006), Kamba (2017) sees teachers as performing a variety of time-sensitive roles that require to find, evaluate and use a great deal of information. Teachers create curricula and lesson plans, are responsible for classroom management, evaluate students' work and provide feedback relating to each pupil. In a nutshell, teachers serve as a communication link between pupils, parents, school administration and other teachers.

Satish and Priya (2012) describe teaching as a demanding job with the teacher being responsible for many roles. According to these authors, teachers are managers, psychologists, counsellors, custodians, communicators, social ambassadors and entertainers. Zlatkovic et al. (2012) observe that a teacher has numerous roles spanning beyond the school to cooperation with parents, local community and social organisations among other entities. These authors grouped the roles into six categories, namely the teaching role (teacher as lecturer, lesson planner/organiser, teacher as partner in educational communication, teacher as expert in their subject area); motivational role (where a teacher motivates pupils and maintains interest); evaluator role (where the teacher assesses the pupils' knowledge, behaviour and personality); cognitive-diagnostic role, regulator role (of social interactions among pupils); and partner role (of the partner in affective interactions).

2.4 Information Needs of Teachers

Human beings are information dependent. Over the years, human beings have developed discernible ways of getting information to satisfy own information needs. Many authors have defined information need as a gap or lack of information that creates deficiency in knowledge (Bitso, 2012; Ingwersen & Järvelin, 2005; Kuhlthau, 2004; Wilson, 2000). It portends a state of incompleteness when one recognises a gap between the information available to resolve a problem and the actual solution to the problem. Information need is either expressed, unexpressed or dormant depending on the urgency of the problem at hand. While some information needs require immediate action others may remain unexpressed, but such a need triggers information seeking process (Case, 2007). Reddy et al. (2018) see information needs as unclear and messy with part remaining unexpressed and unfulfilled. The needs are dynamic, can be satisfied, clarified and generated at any stage during information seeking.

Citing Taylor, Reddy et al. (2018) explored information needs from a psychology point of view and listed four levels, namely visceral need, conscious need, formal need and comprised need. Visceral need is unexpressed need that becomes conscious need when a person creates a description of it in the mind. The mental description then formalises into rational statements used to seek answers by querying an information system, transforming it into a comprised need. Information need may be viewed as a gap between a worker's knowledge about a task and the perceived information requirements to accomplish a task. Bystrom and Jarvelin (1995) categorise information needs into three. One is the problem information, which describes the structures, properties and requirements of the problem at hand. The second is the domain information, which refers to the known facts, theories, models and laws in the domain of the problem. Third, there is the problem-solving information, which describes and formulates the

problem, and identifies the needed information as well as how to use it to solve a problem. A worker performing a task will identify information needs, consciously analyse the needs, recognise possible actions, and make a choice to obtain the required information to accomplish a task.

Defining and identifying information needs forms an important part of any information related activity. It helps establish the information need given that different needs may require different types of information. It also determines what one knows, a useful starting point that helps identify the gaps in available information. According to Leckie, et al. (1996) information needs arise from specific tasks that are associated with one or more professional work roles. This was echoed by Jonathan and Udo (2015) who studied the information needs of people in developing regions and observed that their needs were for work related activities, leisure, consumption and daily survival. This study looks into the information need of primary school teachers in relation to their work related activities.

Teachers require constant access to and use of a broad spectrum of information to accomplish the many roles and tasks; hence, the teaching profession involves intense use of information as observed by Bitso (2013). In particular, it is at an early stage of schooling that teachers lay the foundations associated with information such as information literacy, information seeking and information use among the pupils taught. Teachers need content for the lesson plans and information on preparing lesson plans, and they need to keep up with new trends in teaching and information on how to use new classroom resources. Additionally, teachers need information on how to evaluate pupils and compare with those from other schools. Apart from school related information, teachers also need information related to everyday life activities, such as

current affairs, politics, economy, transport, health and sports. According to Gunasekera, et al. (2019) teachers' information needs are diverse and they require various types of information to fulfil the professional needs. Narrowing their study to lesson planning, these authors described it as a fundamental task through which teachers transform a curriculum, institutional expectations and educational conceptions into practical guidelines for the classroom. In lesson planning, teachers interpret and transform a wide range of information to specify learning exercises, teaching and learning resources, mean to control the class and set learning objectives.

While studying the information seeking behaviour of prospective geography teachers, Bitso and Fourie (2014) observed that the information needed related to content, teaching methods, classroom management and learners' assessment. It included government regulations and policies concerned with education. Kundu (2015) states that college teachers need various types of information pertaining to different tasks needed to be performed. This author also confirmed that despite advances in information technology, most teachers still depend on printed documents as the main source of information. Lan and Chang (2002) explored biology teachers in junior high school in Taiwan and found that their information needs included information pertaining to students, the subject and pedagogical content. The teachers needed information about the pupils they were teaching, their demographic characteristics, personality, cultural background and learning capabilities. This diagnostic assessment provided information that helped the teacher make decisions on the kind of attention to give to each pupil. Perrault (2007) analysed teachers' information needs based on online searches and concluded that their needs related to curriculum content, presentation materials, personal development and individualised learning materials for learners. These findings compares well with an earlier study by Mundt et al. (2006) where information needs

were found to relate to lesson planning and content, teaching methods and student assessment. Snyman and Heyns (2002), cited by Bitso (2011), identified classroom activities, and curricular and supportive study materials as areas of teachers' information needs.

Wilson (1997) observes that information needs vary depending on context, which can be individual's work environment, the roles and/or task performed. This finding supported the conclusion by Leckie et al. (1996) who stated that particular roles and their related tasks result in information needs. These needs are affected by available information sources, intended use, individual characteristics and operating environment. Chowdhury (2004) placed more emphasis on individual characteristics such as professional and educational level, skill to get to information sources, and the time available to the user to query the system. Many variables therefore affect information needs, and they include social, economic, political, technological and personal characteristics. In a related study on information needs and seeking behaviour of educational administrators and other stakeholders in education, Shafique and Mahmood (2013) found many variables that affect the information needs of administrators. Included are the work context, administrative responsibilities, work experiences, source preferences and use of information, while the attributes and circumstances that could influence teachers' information needs are age (where older and experienced teachers could rely on personal knowledge and personal notes than younger teachers who may turn to Internet), the subjects taught (as different subjects require different types of information) and information resources available in the schools for teachers and personal preferences (this may affect selection and information sources used).

Citing Pattuelli, Bitso (2011) identifies three factors that triggers information needs among the teachers, namely the pedagogical, institutional and personal characteristics of teachers. Pedagogical factors relate to, among others, teaching and learning approaches, institutional factors are associated with national curriculum standards and examinations and personal factors relate to teacher's experience, knowledge of subject taught and information literacy skills. Wilson (1997) observes that not every information need leads to information seeking. Sometimes there are barriers to pursuing an information need. There are barriers attributed to personal characteristics, social/interpersonal variables and environmental variables. Shafique and Mahmood (2013) identify barriers to include the source itself (contain outdated information, inappropriate format, language), individual's educational level and non-availability of the needed information, while Diekema and Olsen (2013) noted barriers to information seeking online to include the abundance of resources that made searching overwhelming and time consuming.

The literature indicates that teachers have very specific information needs. Teachers are in constant need of information for teaching and school administration as observed by Bitso and Fourie (2012) and Olugbenga et al. (2017). Accordingly, teachers need various kinds of information for teaching various subject contents, and research for the purposes of imparting knowledge to the young pupils and personal development. Normore (2007) summarised teachers' information needs into three categories. First, is information related to specific instruction-related skills, tools and techniques such as content to teach, lesson plans and information on preparing lesson plans, enrichment activities, information on pupil assessment, how to use new classroom resources, books and website recommendations, among others. Secondly is information that enhances teachers' ability to communicate effectively among peers, policy makers, parents and pupils. Thirdly, is information relating to own professional development; that is,

teachers need information about new research in the profession to inform own practice. Apart from school-related information, teachers need information related to everyday life activities such as current affairs, politics, economy, transport, health and sports.

2.5 Information Seeking Among Teachers

Wilson (1999) describes information seeking as a broad term that encompasses information searching and information retrieval behaviour, and further observes that, information seeking can be active or passive. In active mode, the user (in the case of a teacher) actively seeks information that helps update their knowledge, ideas and beliefs. In passive mode, a teacher acquires useful information without intentionally seeking it, such as through exposure to information from radio or television (TV). Information seeking is a purposive acquisition that includes identifying and interpreting an information problem, establishing a plan of action on how to obtain the information and then searching for it. The purpose of information seeking is to solve a problem, seek answers, reduce uncertainty or make sense (Wilson, 2000 & Case, 2007). Founded on cognitive approach, information seeking focuses on “mapping texts onto the user’s anomalous state of knowledge” as observed by Bilal (2005). The assumption is that a gap (anomaly) in a user’s knowledge exists and the purpose of information seeking is to resolve the anomaly by acquiring information that changes the user’s state of knowledge, according to this author.

Information seeking describes how individuals seek, evaluate, select and use information. While much has been written on other professional groups, such as nurses, lawyers, doctors and engineers, literature on teachers (more so primary school teachers) is scarce (Diekema & Olsen, 2011; Bitso & Fourie, 2014). Normore (2007) actually states that little is known about the information seeking behaviour of practising teachers

or about the use of the information they seek. However, from available literature it is clear that teachers are always seeking and using information as noted by Kahlert (2001). Bitso (2012), while analysing information behaviour of geography teachers, found that information-seeking processes differ among the teachers. Some of the teachers begin with the syllabus to establish details needed to cover in case of a new topic, and then move to books. Others start with books and then consult colleagues. Others, especially the young ones, first turn to the Internet. The geography teachers also apply different information-seeking styles where purposeful information seeking is common and is used for lesson planning, to solve a specific problem or accomplish a task. Serendipitous information seeking, done through interactions with the media (radio, television, newspapers), is also common to keep up-to-date with current developments. Sometimes teachers work collaboratively, in teams, along the lines of the subjects they teach.

Investigating information seeking pattern of school teachers in Sri Lanka, Gunasekera, et al. (2019) found that mostly teachers seek information with a perceived idea in mind. Teachers purposely sought for information resources whose content adequately covered the syllabi. According to these authors several factors come into play during the information seeking process, which include the information seekers (in this case the teachers) perception of the information source or provider and the confidence or trust the seeker has on the resource or provider. The path taken may vary and could entail turning to personal sources or formal information systems like libraries. In this study (Gunasekera, et al., 2019), the teachers mostly preferred both print and electronic resources accessed from their personal collection and school libraries. According to Tanni et al. (2008) subject knowledge does influence information seeking. These authors found that subject knowledge determines specifically what to search for; where

to search and what to deliver during the lesson; and that the teachers often start with textbooks to acquaint with the topic and compare different views and approaches. Other factors that influence information seeking include currency of information, need to keep up-to-date and availability of time. Bitso and Fourie (2014) noted that geography teachers in Lesotho showed preference to print resources and face-to-face channels. Books, personal knowledge and experience, and consultation with other teachers are mostly used.

2.6 Teachers' Information Use

According to Wilson (1999), information use has received little attention in research literature despite being one of the core elements of information behaviour along with information needs and information seeking, which are well studied. It is defined as the “physical and mental acts incorporating the information found from the various sources into the person’s existing knowledge base” (Wilson, 2000). It refers to what happens once information is retrieved (Bartlett & Toms, 2005). Placing it on the map of information behaviour, information use is the final step of information seeking process, which starts with a recognition of an information need, locating the information needed to close the gap, and finally putting the sort for information into use to solve a problem or make a decision (Choo, 2002).

Teaching is an information rich profession as observed by Oladapo (2016) who describe teachers as active, experienced and critical users of information. Teachers are always exposed to information resources, some of which they are familiar with, and others are discovered due to interact with the resources. A teacher may not use a resource as accessed, but may modify to address pupils questions, difficulties or understanding. Teachers’ use of resources includes selecting, modifying and creating new resources as

noted by Gueudet et al. (2013). Tanni et al. (2008) study on history teachers found that teachers used retrieved information in lesson plans to complement textbooks, help illustrate a point, maintain interest and raise discussion. A teacher would use only parts of the document they perceive their pupils would comprehend and simplify the vocabulary used in the original synthesising it for easy understanding.

Rutter et al., (2018) describe several ways in which information is used in teaching, namely orienting to a new topic, extending by finding more about a topic, bridging a gap in understanding, illustrating, verifying, navigating, finding out and defining. While studying information use pattern of school teachers in rural Nigeria, Kamba (2017), found that teachers use textbook more to design curriculum, prepare lesson plans, teach and in learning activities. This author also observed that the teachers used the information found for reference purposes, sometimes photocopying or printing areas of interest, reading articles directly and jotting down the main points. In addition, the school teachers integrated the information found by evaluating it first before using for teaching, learning and storing for future use.

The present digital era marks an increase in electronic resources mainly accessed using the Internet. This affects the information use pattern of different group of people who now have access to a wide variety of digital-based information resources. Teachers need to change the way they search and use of information sources to take advantage of this new platform using a mix of words, pictures, illustrations, voices and images. Research, however still shows that teachers prefer using printed resources and consult their colleagues because they are available, easy to get, trustful and reliable (Kamba, 2017).

2.7 Information Sources

Information sources are carriers of information and are categorised into personal (colleagues, supervisors, internal and external experts) and impersonal (textbooks, journals, curriculum materials). According to Bystrom and Jarvelin (1995) an information source contains or is expected to contain relevant information for the worker to use. Thus, an information source is anything, ranging from the neighbour next door to an article in a scientific journal, which is of four types, namely 1) self, 2) other people, 3) organisations and 4) documents. This study considers an information source as an item that has information relevant to primary school teachers. Early studies (such as Durzo, 1973 & Summers et al., 1983) looked into information sources used by teachers and asked several questions: Why do teachers use or not use certain information sources? What sources do they use? Summers et al. (1983) found that teachers need access to a variety of information to undertake their professional role and concluded that they relied on books, textbooks, materials in their offices and conversations with fellow teachers.

Leckie et al. (1996) identify the information sources used by professionals as consisting of colleagues, librarians, handbooks, journals and their own personal knowledge gained while training for the profession. Specifically, teachers' information sources include curriculum materials, colleagues and personal files. Bitso (2012) also found that geography teachers mostly used colleagues, personal knowledge and experience, books, media and resource persons, sources that were useful in lesson planning. Workshops, seminars and meetings were for improving teaching methods, while newspapers, magazines, television, educational journals and the Internet was to help the teachers keep up-to-date. Sanchez and Valcarcel (1999), cited by Bitso (2012) found that teachers mainly used textbooks as the primary source of reference occasionally

supplementing them with their subject knowledge and experiences. Tanni et al. (2008) reveal that trainee teachers use both print and electronic information sources such as textbooks, magazines newspapers, compact discs (CDs), websites and videos.

Analysing the information behaviour among geography teachers in Lesotho, Bitso (2012) found that traditional sources of information, such as books, magazines and colleagues are mostly used. Merchant and Hepworth (2002) found that teachers used a variety of channels and sources to satisfy different needs. Textbooks were the principal source of reference, while others included television, radio, Internet, newspapers, subject journals and magazines that provide current and supplementary information to fill gaps in the textbook. Kamba (2017) also found textbooks as the most important information sources used by school teachers in rural Nigeria because they were available and easy to use. Teachers also depend on their teaching experience, other teachers, curriculum materials and media. Bitso (2011) observed that information sources available differed from one school to another with some schools having more resources than others. Some information sources identified includes Internet, books, libraries and human information.

Bale (2014) points numerous factors that influence the choice of an information source. Such factors include age, gender, time, access, familiarity and personality traits. Of specific interest to this research are factors affecting school teachers, particularly time, accessibility, familiarity and personality traits. Time is a major factor of consideration when accessing and using information resources among variety of user groups including teachers. Teachers, especially those in public primary schools, always cite limited time for searching for information due to heavy workload and large class sizes. Accessibility is an important factor to consider, as users tend to seek and use the easily accessible

sources. Here, accessibility involves several features that act as enablers or inhibitors of access, such as ease of access (physical and digital), speed of access and cost-benefit involved including time. Familiarity with a resource is also important, as users tend to follow the familiar pattern when seeking information rather than potential usefulness as noted by Savolainen (1999).

Lastly, there are personality traits, which include thoughts, feelings and attitudes. The traits distinguish one individual from another. Several studies have explored the role of personality traits on information behaviour. Montgomery (1991) investigated teacher librarians and found that those who exhibited positive social interactions engaged more in collaborative efforts with teachers regardless of time and resources limitations. Another study by Kwon and Song (2011), noted an increase in self-confidence in searching for and evaluating information among college students with conscientiousness as a personality trait.

2.7.1 Access to and Use of School Library Resources by Teachers

School library has been recognised as valued repositories that offer teachers and pupils' reliable information, study skills and reading space. According to Collins dictionary, it is a library within a school where teachers and pupils have access to variety of information resources and services. It serves as the learning laboratory in a school equipped with books, magazines, newspapers, audio-visual materials and digital resources all aimed at enhancing effective teaching and learning. A school library is as important to the school pupils and teachers as the education itself (Usono & Usanga, 2007). IFLA School Library Guidelines (2015) states that, a school library exists to provide space (physical and digital), access to resources in all formats, activities and services that support teacher, pupil and community learning. It provides for its users

(teachers and school pupils) services and facilities for executing curricular and co-curricular activities (Ojoade, 1992), and serves as a repository of information and information sources, a resource centre for teachers, pupils and other communities represented by the school. It collects, organises, stores and disseminates information. The school library ensures the right information is available for all on time and in appropriate formats.

Afolabi (2017) describes a school library as the 'heart' around which all school programmes revolve. Its significance is in enhancing teaching and learning as well as promoting social activities of the school community. It is a place where pupils interact with information, discover and develop their abilities and talents. It is also a place for teachers to sharpen their skills and locate a wide range of teaching and learning resources. Access to these resources enables the teacher to introduce students or pupils to a world of knowledge and instil in them the love of reading. Idoko (2015) notes that, the main responsibility of a school library is to provide information resources and assist its users (teachers and pupils) in the acquisition of skills for effective utilisation of these resources. The library management should regularly assess the needs of its users to help design programmes that allow for maximum utilisation of the resources. Afolabi (2017) notes that a standard school library offer a wide variety of information resources to help answer the quest of the developing mind of a pupil. Thus, information resources should go beyond printed material to include graphics, photographs, maps, audio visual and computers to make teaching and learning an all-inclusive experience.

School libraries play a significant role in selecting, acquiring, synthesising and disseminating useful information to teachers and pupils (Usoro & Usanga, 2007). A library should always be part of any educational institution to compliment other

teaching and learning activities. Majority of public schools in developing countries including Kenya do not have functional libraries. Where the libraries exist, information sources are merely a story of the past, not properly organised, are scanty and old as noted by school teachers in Nigeria (Kamba, 2017). A school library undertakes a number of services aimed at facilitating the utilisation of information resources. It is involved in the selection and acquisition of information resources, their organisation to facilitate access, circulation services, current awareness, reference services and production of instructional materials. IFLA school library manifesto identify development of literacy, information provision, teaching, learning and culture as core services to any school library. Afolabi (2017) states the objectives of a school library in Nigeria as:

- Supporting the school curriculum
- Providing opportunity for creating and using information for knowledge, understanding, imagination and enjoyment
- Providing access to local, state national and global resources exposing teachers and learners to diverse ideas, experiences and opinions
- Promoting reading and library resources and
- Serving as coordinating agency of all information resources used in the school.

According to Bhatt (2013) successful library services depend on the satisfaction level of its user needs, availability of relevant information resources, provision of user-centric services and positive attitude among library staff. School libraries, especially those in developing countries, face a number of challenges that hinder access and utilisation of library resources. Idoko (2015) has identified the challenges as conceptual, linguistic, bibliographic and physical barriers. Where libraries do exist, the information sources are

outdated, difficult to locate due to poor bibliographic description and organisation and at times services are too bureaucratic. Many of the libraries are not adequately equipped, lack or do not engage the services of a qualified librarian, and are not seen as a priority in many of the public schools. Meyers et al. (2007) noted the factors that limit the realisation of a school library as an ideal environment for information access and use. Such factors include the governance model that establishes power relationship between administrators, classroom teachers and teacher librarians.

The situation of school libraries in most public primary schools in Kenya is wanting. Citing earlier studies by Rosenberg (1993) and Otike (1988), Mutungi et al. (2014) observe that the state of school libraries is still gloomy over twenty years later. Kenya still lack specific government policy guidelines on school libraries leaving the initiative to the management of the respective schools. Most public schools do not have libraries and where such exist, it is no more than a few shelves with outdated and worn out materials manned by clerical staff with assistance from pupils.

2.7.2 Internet as Source of Information

Internet is a vast network of computers that communicate and exchange information worldwide. Having the largest repository of scholarly resources, the number of people depending on it to access and share information on all kinds has continued to rise in recent years. Access to the Internet has become a fundamental tool useful in achieving the United Nation's fourth Sustainable Development Goal (SDG), which aims to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all". It provides the school community with great opportunity to access information and communicate. The Internet opens to a "wealth of information, knowledge and educational resources, increasing opportunities for learning in and

beyond the classroom” (Internet society, 2017). In the developed world, its use has expanded in many sectors including business, education, entertainment and government. In schools, it supports interactive teaching methods and teachers may use online material to prepare lessons. It also serves as a platform for information retrieval among teachers and pupils, and responds to queries in real time, making teaching and learning more effective. Teachers’ uses of the Internet are many including accessing instructional resources, planning lessons, material development and communicating with colleagues. Progress in information technology gives the teacher, as an information seeker, different opportunities to access information resources in an increasing array and format.

One of the key goals of “Kenya Vision 2030” is to make the country a middle level economy using information and communications technology (ICT). In effect, the government has committed to providing computers to children in primary schools (Kenya, 2007). Other initiatives include schools connectivity initiative (SCI) launched by KENET (Kenya Education Network Trust) in 2014 to coordinate various commercial, educational and government organisations that are willing to provide Internet access and promote use of ICT in Kenyan schools. However, a study by Wambiri and Ndani (2016) found that provision of computers and infrastructure in schools does not guarantee teachers’ use of ICT in teaching. Their beliefs and attitudes towards technology may hinder integration and use; hence, it is important that teachers be trained in ICT to tap the learning potential created by technology. The US National Centre for Education commissioned a survey to investigate use of computers and Internet in public schools (NCES, 2000). The findings were that public teachers used Internet for a number of teaching tasks, which include creating instructional materials, administrative record keeping and accessing model lesson plans. With Internet, teachers

could use a range of learning styles, support student-centred teaching approach and promote real life experiences among pupils.

Sezer (2010) sees the Internet helping “teachers and students to share information, discuss the opinions of other users and communicate with people from different locales in common interest areas”. Internet use allows pupils to acquire the skills needed for searching and researching themselves, indirectly improving their information searching skills. Glava and Glava (2012) investigated teachers’ views on using the Internet as a learning tool. The authors found that, although teachers sometimes look at Internet as a socialisation space, it does include information sources that are easily accessible, diverse in form, and authoritative. Teachers also regard the Internet as a source of current information. Looking at information-seeking patterns of geography teachers in Lesotho, Bitso (2012) found that younger teachers in the urban schools were using the Internet more compared to older teachers; the latter indicated that they never used the Internet due to lack of experience in using electronic databases. Others said that Internet was time consuming, and sometimes overwhelming in terms of the number of search results.

According to Satish and Priya (2012) integration and use of ICT in teaching and learning will lessen the burden of teachers as it re-establishes the role and value of individual classroom teacher. Implementation of technology makes classroom more creative and allows exploration, invention and testing. It facilitates teamwork among teachers and provides ample time for all-round development as use of varied technology, including media, models, projected and non-projected visuals as well as audio visuals. These authors highlight a number of uses of technology that teachers could adopt, including as a communication tool with other teachers, pupils, parents and

community; management tool to increase efficiency for teachers; evaluation tool to help teachers modify instruction and give feedback about pupils; motivational tool to encourage pupils in learning; and cognitive tool that helps pupils understand concepts through development of conceptual models. Integration of ICT in education is slowly taking shape in developing countries and has been accelerated by convergence of the computer and telecommunication technologies. Countries are setting up policies that will guide adoption of ICT in schools. However, despite effort by government, integration and use of ICT within the public learning institutions in Kenya is still at its infancy (Ndiku & Mwai, 2015). Access to Internet and ICT services in rural areas is still very limited or non-existent. Some of the challenges facing public schools in rural areas are lack of stable and reliable Internet supply, poor infrastructure network, lack of qualified ICT teachers, general lack of information literacy skills among teachers, and security and safety related issues.

Advancement in ICT has also brought about unique challenges. The number of information resources has grown exponentially leading to information overload. Studying information seeking preferences among secondary school teachers, Bale (2014) found that, although the Internet is convenient, rapid and up-to-date with information sources, many teachers still had some reservations; they said that most Internet sources always need validation before use, some felt it was too frustrating and time consuming, while others felt it was sometimes difficult to find what one was looking for. However, with increased popularity of the Internet in recent past as well as emphasis on integration of ICT in teaching, the use of Internet resources is increasing. According to Kadli and Kumbar (2013), retrieval of information in response to users' needs has become more complex and assessing the validity and reliability of retrieved information is a problem. There is therefore need for teachers to acquire additional

information skills to help cope with the constantly changing information environment. Teacher beliefs and attitudes towards ICT influence and its use in teaching is essential (Wambiri & Ndani, 2016). When perceived to offer opportunities for obtaining educational resources, improve teaching and learning there is more willingness to use ICT in teaching. Other factors that impacted use of ICT by teachers were lack of access to appropriate technology, lack of resources, inadequate support from the management, and lack of necessary pedagogical training.

2.8 Information Sources Preferred by Teachers

Leckie et al. (1996) compared literature on information seeking of engineers, health care professionals and lawyers. These authors found that information seeking choices tended to be determined by ease of access (convenience, availability, applicability, usefulness), past successes with sources (familiarity with sources), trustworthiness (reliable and helpful), time constraints and cost-effectiveness (timeliness, obtaining information when needed), and the format and quality of the information. Case (2007) found a preference for easily accessible sources of information; that is, how accessible the information is, ease to use and cost-effectiveness in terms of time and money. Teachers tended to use readily available information sources as Williams and Cole (2007) found out, further revealing that teachers mostly used colleagues, in-service events, newspapers and reports available in schools. Landrum et al. (2002), while looking at information sources from a teacher's perception of trustworthiness, usability and accessibility, found that teachers generally rated colleagues, workshops and in-service presentations as accessible, trustworthy and usable sources. Professional journals were found to be less trustworthy, less usable and less accessible compared to information from colleagues. Nwokedi and Adah (2009) state that, teachers prefer textbook to any other source.

Bale (2014) investigated information seeking preferences of secondary school teachers and concluded that teachers' preferences were diverse. Included were interpersonal resources, traditional information resources, such as books, and recent technological resources such as the Internet. Regarding specific information sources, she found more reliance on own expertise, especially among older teachers (51+ years), followed by books written by experts in the field, websites and expertise of professionals like school librarian being the fourth most popular. Among the least preferred sources were colleagues from outside the school as this was perceived as 'too difficult to find people who have no time to commit to another school'. Bale (2014) further investigated information formats preferred by secondary teachers. The results indicated that books were most preferred followed by Internet. Some teachers described books as 'hands on, easier to make notes', most familiar and good starting point before turning to the Internet. Bitso and Fourie (2014) also studied prospective geography teachers in Lesotho to ascertain the information format preferences. These authors found that participants mostly preferred print format because it was convenient and did not require any equipment to use. In addition, the authors indicated lack of adequate skills to allow for effective access and use of electronic resources.

Summers et al. (1983) found that the level of education influenced teachers' use of information sources, as did teachers' attitude towards information. A more positive attitude led to greater frequency of use and teachers with least educational training made most use of information resources like school libraries and curriculum materials. The study concluded that factors such as authoritativeness, accuracy and objectivity were important in determining which information source to use. Another factor was relevance. Teachers make use of sources they perceive as relevant and reliable. Recker et al. (2004), studying how middle and high school science and mathematics teachers

used and found online resources, established the main factors used to evaluate an information resource as age of the materials, currency and accuracy. Citing Barry (1994), Diekema and Olsen (2013), identified some criteria that come into play in deciding what resource to choose. These relates to information content of the resource, user's beliefs and background, previous experience, and situation. Bale (2014) identified factors such as authoritativeness, relevance, scope of content and reliability.

2.9 Challenges Teachers Face in Accessing and Using Information

Gathering and acquiring information does not guarantee the use of information. Various factors inhibit access and use of information. Wilson (2000) groups these into human barriers (beliefs, perceptions, knowledge) and technical barriers (terminology, lack of technical support, poor infrastructure). Ugah (2007) identifies a number of obstacles to information access and use in developing countries. These include lack of awareness, inaccessibility, information explosion, bibliographic obstacles, environment, poor infrastructure, crime (theft and mutilation) and costs. Teachers face several challenges when seeking and using information. Williams and Cole (2007) and Shanmugam (1999), identify some of barriers to include inadequate time, lack of information sources, inability to locate up-to-date information and inadequate library facilities. This is true especially in rural public primary schools in Kenya where teachers face the challenge of heavy teaching loads and too many pupils in class. Tahir et al., (2008) list seventeen possible challenges that teachers may face while seeking information. Using a five point Likert scale to rank the problems, the respondents ranked "required material is not available" as the number one problem, followed by "information is scattered in too many sources" and "too many sources are very expensive". Others in their list are information sources located far away, lack of time, poor information skills and knowledge in using library, incompetent library staff, and language barrier.

Bitso and Fourier (2012) looked into the challenges faced by geography teachers in Lesotho as they sought information. These authors identified bureaucracy in schools, inadequate finances and teaching materials, lack of library facilities and overcrowding in classrooms. Nwokedi and Adah (2009) investigating information needs of post-school teachers in Jos, Plateau, Nigeria, identify gross inadequate library resources as a major problem. Libraries lacked current books, Internet connectivity and adequate funding. Kamba (2017) cites lack of time as one of the main challenges facing school teachers in rural Nigeria hindering seeking and using information. The heavy workload means teachers either look for information after school hours or during the weekends or not at all. Other challenges are lack of library and information resources, lack of information search skills, lack of ability to proactively seek information, and lack of support from school administration and government. In Kenya, the main challenge facing public school teachers is strained teaching and learning resources. The high enrolment in public primary schools has an impact on the available resources like classrooms, instructional materials and teaching personnel as observed by Imbovah et al. (2018).

2.10 Summary

The literature reviewed addressed all the objectives of the study. Although a number of studies exist on information needs and information seeking behaviour in general, it emerged that not much literature exist specifically relating to primary school teachers' information behaviour. Most of the literature reviewed related to secondary school teachers and beyond. The gap in the literature meant that little is known about primary school teachers' information behaviour and especially those in public schools in developing countries like Kenya. Generally, teachers are described as active information users as confirmed by the literature review. Teachers constantly need

information to perform their teaching and administrative roles. These roles result into a number of tasks that leads to several information needs. Information needs relates to pedagogy, curriculum, subjects taught, and pupils assessments. To satisfy the information needs primary school teachers consult a number of information sources such as colleagues, curriculum materials and textbooks. The literature revealed the need for information sources to be easily accessible, such as being within easy reach, for teachers to use. Some of the barriers affecting access to and use of information by primary school teachers highlighted in the review include lack of time, inability to locate up-to-date information, inadequate library facilities and increased workload.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter describes the methodology and design used by the researcher to find answers to the research questions and is organised into the following broad themes: research methodology (or approach), research design, population of the study, sampling technique, method of data collection as well as data analysis and presentation. It has also highlighted reliability and validity of research instruments and ethical consideration.

3.2 Research Approach

Research methodologies falls into three basic categories, namely quantitative, qualitative and mixed approach (Creswell, 2014). In an attempt to distinguish the approaches, Creswell (2014) observes that the difference lies in the basic philosophical assumptions that the researcher brings to the study, types of research strategies adopted in the research, and specific methods used. This is in line with Bazeley (2002) who stated that the distinction between qualitative and quantitative approaches depend on the underlying paradigm (positivist or interpretive), the logic employed (inductive or deductive), investigation type (exploratory or confirmatory), the type of data used (textual or numeric; structured or unstructured) and the analysis method (interpretive or statistical).

According to Best and Khan (2006) two fundamentally different worldviews underlie quantitative and qualitative research. Quantitative approach is about quantifying variables and is generally used to answer questions about the relationships among

measured variables with the goal of explaining, predicting, confirming and controlling phenomena (Leedy & Ormrod, 2005). Methods used in this approach produce results that are easy to summarise, compare and generalise. The quantitative approach, described as 'positivist' or 'realist', calls for researchers to 'eliminate their biases, remain emotionally detached and uninvolved with the objects of study (Johnson & Onwuegbuzie, 2004). Creswell (1994) provides a concise definition of quantitative research as a type of inquiry that explains a phenomenon or situation by collecting numerical data and analysing that data using mathematically-based methods. This is in agreement with an earlier definition by Cohen and Manion (1980) who defined quantitative approach as a method of research that employs empirical statements and methods expressed in numerical terms to explain a phenomenon. The focus is on the current state of phenomenon, "what is" rather than "what ought to be". The guiding principle of quantitative research is objectivity and researchers take care to avoid own biases.

Qualitative approach falls within constructivist or interpretivist paradigm and is subjective in nature. Qualitative purists are of the view that "research is value bound, that it is impossible to fully differentiate causes and effects, that logic flows from specific to general, and that the knower and known cannot be separated because of the subjective knower is the only source of reality" (Johnson & Onwuegbuzie, 2004). The context in which an event or phenomenon occurs is the underlying principle of qualitative approach. Generally, qualitative research uses a small sample to discover, explore and describe experiences in an attempt to understand and interpret the underlying reasons, opinions and motivations. Common qualitative methods used include focus groups, individual interviews and participation/observation, which generally require a substantial amount of time and resources to undertake. It may also

not be possible to replicate contexts, situations, conditions and events making it difficult to generalise findings to a wider context.

Mixed methods research has emerged as the third research paradigm (Johnson & Onwuegbuzie, 2004) described as pragmatic approach. The approach grants the researcher the freedom to choose and use any methods, techniques and procedures (from either quantitative or qualitative) that suits the research problem. This agrees with the definition proffered by Plano et al., (2015) who view the mixed methods approach as, “A set of procedures for collecting, analysing and mixing both quantitative and qualitative methods in a study to understand a research problem.” Mixed method aims not to replace either of the other approaches, but to maximise on their strengths and minimise the weaknesses (Johnson & Onwuegbuzie, 2004).

This study adopted mixed methods approach where both qualitative and quantitative data was collected to answer the research questions. Use of multiple methods helped overcome the limitations of one method. For example, the details obtained from qualitative data provided more insights and explanations that helped validate quantitative data collected through the questionnaire survey. Use of multiple techniques (observation, self-administered questionnaire and interview) compensates for any limitations of individual techniques as noted by Creswell and Clark (2007) who observed combining qualitative and quantitative methods in a single research study provide better understanding of the research problem than either approach alone.

Greifeneder (2014), on the trends of information behaviour research, found that more studies were adopting a mixed methods approach combining qualitative and quantitative methods. Mixed methods' epistemology ensures that data collected through one method is validated using the other method. Moreover, collecting qualitative and quantitative

data concurrently provides a comprehensive analysis of the research problem by integrating both forms of data in the interpretation of the overall results. Mixed methods research have been applied in a wide range of research including nursing, psychology, education, sociology, library and information science and political science as observed by Terrell (2012).

3.3 Research Design

According to Kothari (2004), research design refers to the conceptual structure or model with which a research is carried out. It is a plan for a study used as a guide in collecting, analysing, interpreting and reporting data keeping in view the objectives of the research and available resources. A research design provides a logical sequence between the research questions, approach adopted to address the research questions, assumptions underlying the approach, collection and analysis of data as well as findings and conclusions (Kuada, 2012).

Kothari (2004) summarised the use of research design as specifying the sources and type of information relevant to research problem, specifying the approach used for gathering, and analysing data and the cost estimates in terms of time and resources. Overall, a research design must contain a clear statement of the research problem, the procedures and techniques for gathering data, the study population, and the method for processing and analysing collected data. Research designs, therefore, provides a road map on how to carry out a research to meet certain objectives.

Research design adopted in a study depends on research approach. Mixed methods research provides the researcher with many design choices involving a range of sequential and concurrent strategies. Literature identifies six major designs identified using four criteria including implementation, priority, integration and theoretical 83-

perspective (Tashakkori & Teddlie, 2003 & Creswell & Plano, 2007). The designs are sequential explanatory, sequential exploratory, sequential transformative, concurrent triangulation, concurrent nested and concurrent transformative. The choice of a particular design depends on the main focus of the study. Sequential explanatory design involves collection and analysis of quantitative data followed by the collection and analysis of qualitative data. Priority is usually given to quantitative data and data integration occurs during interpretation phase. The purpose of this design is to use qualitative data to assist in explaining and interpreting the findings of quantitative data. The design is straightforward and easier to describe but can be very time consuming.

Sequential exploratory design refers to a strategy that starts with collection and analysis of qualitative data followed by collection and analysis of quantitative data with the priority generally given to the qualitative phase. Data is integrated at interpretation phase and its main focus is to explore a phenomenon. It is also straight forward and easy to describe due to clear distinct stages, but very time consuming especially if the two phases are given equal priority. The third design in mixed method is sequential transformative strategy. It also has two data collection phases and either type can be collected first and priority given to either or both data types. Data resulting from the two phase is integrated during interpretation. According to Creswell (2003) the purpose of the design is to “employ the methods that will best serve the theoretical perspective of the researcher.” It is also straight forward to implement but time consuming.

Concurrent triangulation design is another mixed methods design. The design involves two concurrent data collection phases generally with equal priority. Data integration can occur during interpretation or analysis phase. Its primary purpose is confirmation, corroboration or cross validation within a single study. It is familiar to many

researchers, takes shorter time to collect data when compared to sequential designs and offsets the limitations to one design by using both. However, it requires more expertise and sometimes may be difficult to resolve data discrepancies when they arise.

Concurrent nested design involves two data collection methods but one method is embedded or nested within the other. In this design, priority is given to the primary data collection approach and less emphasis placed on the nested method. The design allows the researcher to gain broader perspective of a phenomenon. Its weakness is that data need to be transformed to allow analysis. The sixth design is concurrent transformative design. Like sequential transformative design, this design is guided by a specific theoretical perspective. It also collects two types of data at the same time which may have equal or unequal priority. Generally data integration occurs during analysis phase. Use of both methods offsets weaknesses inherent in one method but require a great deal of expertise.

The current study adopted a concurrent triangulation design where both quantitative data and qualitative data was collected concurrently to save time and resources. The design was selected to help confirm and corroborate the finding. Use of mixed methods helped offset the weaknesses inherent within one method with the strengths of the other. The design was familiar and resulted in well validated findings.

3.4 Study Population and Sample

Study population refers to a set of people, services, elements, events, group of things or households that are being investigated (Ngechu, 2004). The target population of this study consisted of all public primary school teachers in Kihara Educational Zone, Kiambu County. According to the statistics from the Zone Office, there are 11 public

primary schools with a target population of 179 teachers and 11 head teachers totalling 190 (Kihara Zone Education Office, 2014).

Israel (1992) cites several strategies for determining a sample size. These include using a sample size of a similar study, using published tables, using formulas to calculate a sample size and using a census for a small population (like 200 or less). The number of teachers from eleven (11) public primary schools in Kihara Educational Zone is shown in Table 1.1. It consisted of 179 teachers and 11 head teachers (totalling 190). A census was adopted for teachers and head teachers because the target population was small (less than 200). This ensured equal opportunity to all and eliminated all sampling errors.

3.5 Data Collection

The research study collected both quantitative and qualitative data. Quantitative data was collected using a questionnaire administered to primary school teachers in Kihara zone and for qualitative data a semi structured interview was conducted among the head teachers. Direct observation was also used by the researcher.

3.5.1 Data Collection Instruments

3.5.1.1 Questionnaires

The study used a self-administered questionnaires to collect quantitative data from primary school teachers in Kihara Education Zone. The questionnaire used in this study is attached as Appendix III. It consisted of a brief introduction for the respondents and questions that were divided into various sections representing the main objectives of the study. The questions were both closed and open ended. Open ended questions helped provoke more thinking from respondents while closed questions were to save time and standardize the responses.

The advantages of using questionnaires in this study was that teachers were familiar with them, could read and write independently. The teachers could complete them at their convenience time and maybe when out of class. Moreover, the questionnaires required less time and energy to administer. According to Bell (1993), a self-administered questionnaire is one way to elicit self-report on people's opinion, attitudes, beliefs and values. Munn and Drever (1990) observe that a questionnaire allows an efficient use of time, ensures anonymity (for the respondent) and allows the researcher to give standardised questions to all respondents.

Despite these advantages, questionnaires have some limitations. In most cases they describe rather than explain why things are the way they are, and require time to prepare and pilot.

3.5.1.2 Semi-Structured Interviews

Qualitative data was collected from head teachers using a semi-structured interview schedule shown in Appendix II. A semi-structured interview could be described as a guided conversation between the researcher and respondent. The interview schedule was prepared in advance to help the researcher stay focused on gathering information needed to answer the research questions. The schedule also allowed for repetition or use of similar questions to all respondents, leading to standardisation, a fundamental component in survey research as noted by Bitso (2011). The interviews complemented the census survey and gave the researcher the chance to probe for specific answers, confirm, clarify and validate issues that arose during data collection stage.

3.5.1.3 Observation

Direct observation by the researcher was used in the study and helped note the situation on the ground regarding school libraries and information related technologies.

Observation schedule used is provided in Appendix IV. The researcher personally visited all the eleven schools during the interviews and observed the actual situation on the ground. This allowed for current information independent of respondent's bias and a more complete picture of the situation in the respective schools.

3.5.1.4 Validity and Reliability of the Research Instruments

Validity is the extent to which the instrument represents what it is supposed to measure, while reliability refers to the accuracy and precision of a measurement procedure (Leedy & Ormrod, 1985). Validity and reliability are concerned with how concrete measurement is connected to constructs in establishing the truthfulness, credibility or believability of findings. The validity and reliability of research instruments were achieved through the following methods: piloting, adopting questions from related studies, seeking expert opinion and triangulation.

The term 'pilot study' refers to a mini-version of a full-scale study, as well as the specific pretesting of a particular research instrument such as questionnaire or interview schedule. Piloting in the current study was used to pre-test the research instruments. This provided advance warning about where the instruments were inappropriate or complicated and needed to be improved.

Pre-testing of the data collection instruments was carried out at Karuri and Thimbigua Primary Schools both within the Karuri Educational Zone at the beginning of term two which runs from May to early August. Both schools had similar characteristics as those targeted by the study. The sample included in the pre-test was head teachers and ordinary teachers. In all, 20 respondents were piloted comprising two (2) head teachers and eighteen (18) ordinary teachers.

The study also adapted questions from survey tools used in previous related studies. Since these tools had been validated and used in actual studies, it was assumed that their validity had already been pre-tested and therefore could be used. The questions were from Bitso (2011), Servais (2012), Bale (2014) and Gwayi (2016). Some aspects of the studies were also replicated in the current study, such as comparing the study's findings to these studies, which allowed reliability to be assessed.

The researcher also sought the opinions of the experts in the School of Information Sciences, Moi University, who critiqued the instruments. The experts reviewed the objectives of the study and the questions to ensure appropriateness of the test items and that the instrument measured what it was supposed to measure. The experts helped in rewording the unclear and obscure questions and made suggestion for additional questions to help expound on data collected.

Triangulation helped strengthen the validity and reliability of the study. This was achieved through collecting data using the three methods – questionnaires, structured interviews and unstructured observation. Through triangulation both quantitative and qualitative data was gained, which helped corroborate the findings.

3.6 Data Collection Procedure

The actual data collection took place during the first three weeks of third term in 2018, which ran from September to November with a bias on 8-4-4 curriculum. The researcher started by getting the official research permit and then booked appointments for interviews with the head teachers of various schools. On the interview day, the researcher distributed the questionnaires to other teachers through the help of the head teacher or deputy head teachers where the head teacher was not available to assist. The

completed questionnaire were picked at later time as agreed with the head teacher or deputy head teacher.

The semi-structured interview was conducted among the head teachers of the schools. In total eight of the head teachers were available and willing to grant an interview. The interview was guided by an interview schedule that had been prepared in advance. During each interview session, the researcher took notes and made observation on what existed on the ground regarding information resources such as school library, computers and related technologies.

3.7 Data Analysis

The study generated both quantitative and qualitative data which were analysed separately with mixing or integration occurring at interpretation stage. All data collected was checked for completeness and comprehensibility.

Quantitative data was analyzed using descriptive statistics and inferential statistics. Descriptive statistics helped describe the basic features of the data that were summarized into tables, graphs, charts and frequencies for ease of understanding and analysis. Inferential statistics was used to draw conclusions of the population based on data collected.

The qualitative data, obtained from semi-structured interviews and direct observation, was analysed using content analysis to identify trends and themes. Vaismoradi et al., (2013) describes content analysis as a strategy for coding and categorizing qualitative data to determine trends, frequencies and relationships. The researcher took time to familiarize and understand collected data identifying broad ideas, concepts, words, phrases and assigned codes to them that helped structure, label and quantitize the data. The coded data was further analysed to establish common trends and themes, which

were further constructed into narrative statements to represent the responses. The analysis was guided and interpreted against the objectives and research questions of the study. Occasionally verbatim quotations were used to help reveal the informants' emotions and experiences.

3.8 Ethical Consideration

Using a recommendation letter obtained from Moi University, the researcher sought a research permit from the National Commission for Science and Technology and Innovation (NACOSTI) before embarking on the research. Under the direction of NACOSTI, the researcher sought and secured more approvals from Kiambu County Commissioner and the Kiambu County Director of Education. The approvals were obtained before undertaking the research in their areas of jurisdiction. The researcher also sought head teachers' consent before administering questionnaires to teachers in their schools. They were briefed on the significance of the study. Participants were assured of anonymity that their personal names would not be disclosed due to absolute confidentiality. Data collected were exclusively for the purposes of this research. All quotes and theories from other works of research were duly acknowledged and references provided, thus avoiding plagiarism.

3.9 Summary

This chapter has described the methodology and design used by the researcher to find answers to the research questions. The themes covered are research methodology, research design, population of the study, sampling technique, method of data collection, data analysis and presentation, reliability and validity and ethical consideration.

The study followed mixed methods research approach using questionnaires, semi structured interviews and direct observation to collect both quantitative and qualitative

data. Quantitative data was analysed using descriptive and inferential statistics. Descriptive statistics helped describe the basic features of the data that was summarized into tables, graphs and charts. Inferential statistics was used to draw conclusions of the population based on data collected. Qualitative data, obtained from structured interviews and the unstructured observation, was analyzed using content analysis and categorized into themes. Occasionally verbatim quotations were used to help reveal the informants' emotions and experiences.

Validity and reliability of the study were ensured by adopting questions from earlier studies, incorporating expert opinion and triangulation.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents the data collected, analysis of the data and the summary of key findings of the research conducted to investigate access to and use of work-related information by primary school teachers in Kihara Educational Zone in Kiambu County, Kenya. The findings are outlined according to the research questions and data gathered as per research objectives.

4.2 Response Rate

Response rate in this study referred to the number of responses divided by the number of individuals to whom the survey was administered. Saldivar (2012) in a white paper on response rates noted that

“... neither the literature on survey research nor major research associations nor scholarly journals have produced a universally agreed-upon figure to describe an ideal or even a minimally acceptable survey response rate.”

Response rates also tend to differ depending on survey mode, with in person surveys giving the highest response rate of up to 80% while Web-based (‘online’) surveys average a response rate in the range of 30%. The current study sought responses from 190 respondents. Out of these, a total of 145 responses, consisting of 137 teachers and eight (8) head teachers who served as key informants were received and analysed. Therefore, the research yielded 145 out of 190 responses, which translated to 76.3% response rate as summarised in Table 4.1.

Table 4.1: Response Rate of Respondents

Data Collection Tool	Expected Respondents	Actual Respondents	Response Rate (%)
Self-administered Questionnaires	179	137	76.5
Structured Interviews for Head Teachers	11	8	72.7
TOTAL	190	145	76.3

A 100% response rate was not possible due to a number of factors. Some teachers were absent at the time of distributing the questionnaires, some head teachers limited the number of questionnaires to be distributed to the teachers, while some teachers were not willing to participate. Eight of the head teachers from the eleven schools got interviewed, two were absent and one was unwilling to participate.

4.3 Characteristics of the Respondents

The study sought background general information on the characteristics of the respondents based on gender, age, education level and work experience. These are important variables in generating the need for information. Several studies have shown that in addition to environment and tasks performed, information needs vary depending on these characteristics (Wilson, 1994 & Steinerová & Šušol, 2007). The data contained in Table 4.2, shows the distribution of various demographic variables among both the teachers and the head teachers.

Table 4.2: Characteristics of the Respondents

Demographic Information	Teachers (n = 137)		Head Teachers (n = 8)	
	F	%	F	%
Gender				
Male	53	38.7	4	50
Female	84	61.3	4	50
TOTAL	137	100	8	100
Ages (Years)				
Below 25	6	4.4	0	0
25-30	11	8.0	0	0
31-35	14	10.2	0	0
36-40	30	21.9	0	0
41-45	32	23.4	1	12.5
Over 45 years	44	32.1	7	87.5
TOTAL	137	100	8	100
Education Qualification				
Certificate	38	27.7	0	0
Diploma	47	34.3	2	25
Bachelor's degree	44	32.1	4	50
Master's degree	8	5.8	2	25
TOTAL	137	100	8	100
Teaching Experience				
Less than a year	3	2.2	0	0
1-10 years	38	27.7	0	0
11-20 years	43	31.4	4	50
21-30 years	39	28.5	2	25
Over 30 years	13	9.5	2	25
No response	1	0.7	0	0
TOTAL	137	100	8	100

Out of the 137 teachers who participated in the study, 84 (61%) were female and 53 (39%) male. An equal number of male (4) and female (4) head teachers participated in this study. Regarding age of respondents, all the head teachers were above 40 years of age. This could indicate the fact that promotion comes with experience. The same trend was observed among other teachers where majority 106 (77.4%) were 36 and above years of age, with only 31 (22.6%) falling in the youth category of age 18 to 35 years as defined in the Kenya Constitution. The data suggests the schools have fewer younger teachers and more elderly teachers. Another notable observation is that the number of male teachers tends to decrease as they advance in age compared to female teachers as shown in Figure 4.1. Figure 4.2 and Figure 4.3 represent educational qualification for head teachers and other teachers respectively.

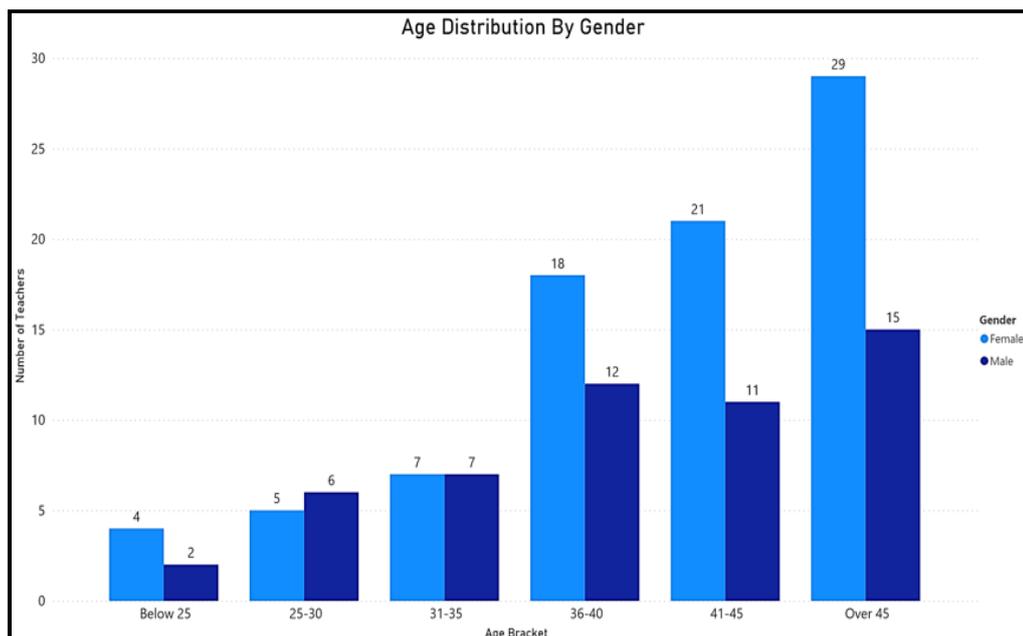


Figure 4.1: Age Distribution by Gender

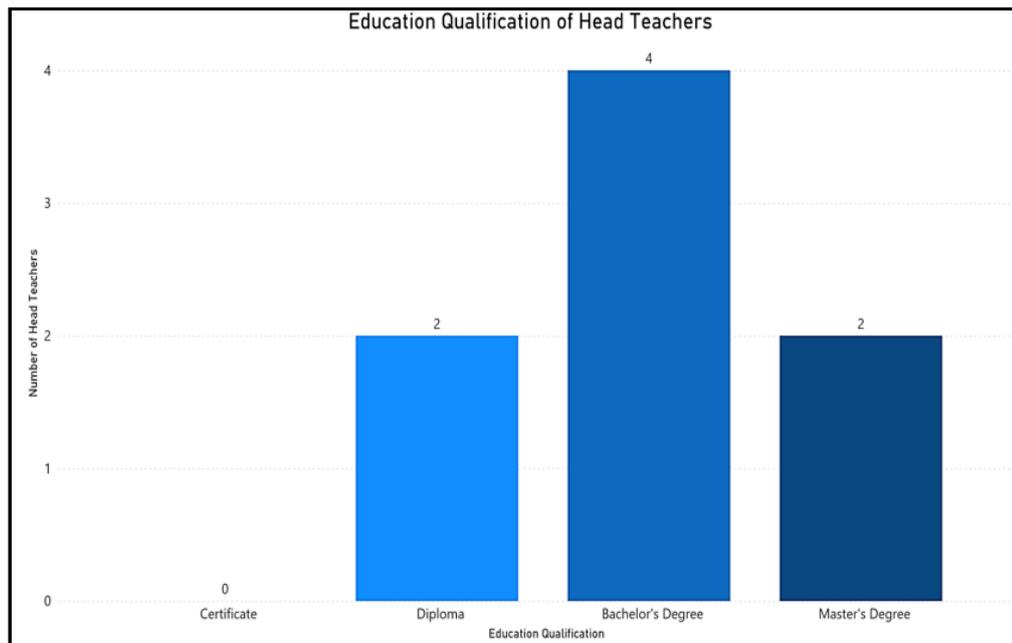


Figure 4.2: Education Qualifications of Head Teachers

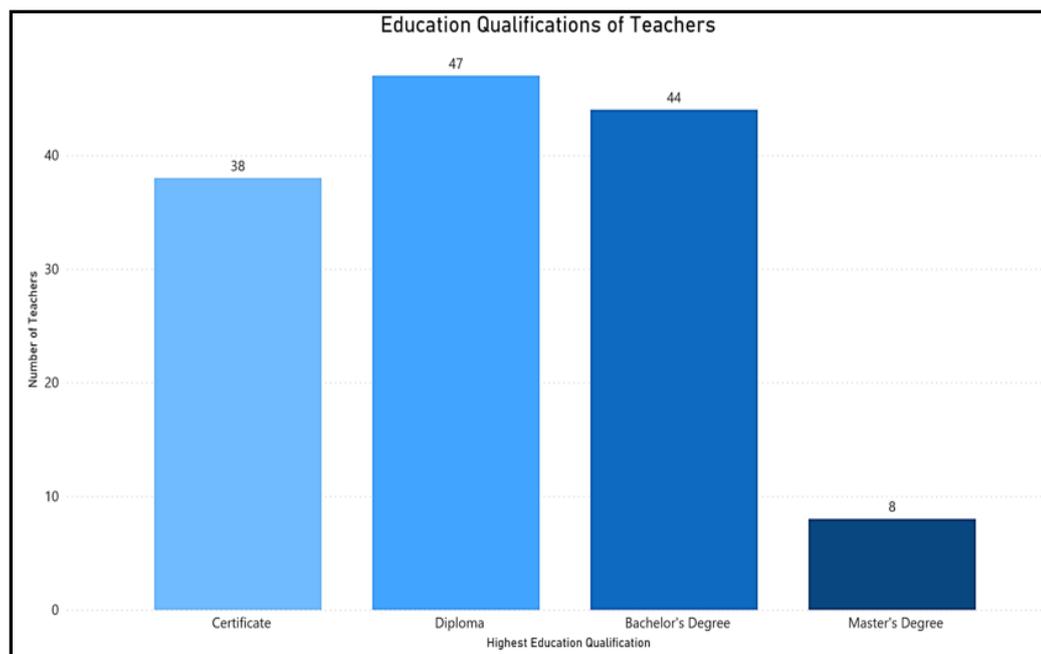


Figure 4.3: Education Qualifications of other Teachers

Majority, 6 (75%) of the head teachers and 52 (38%) of teachers had exposure to university education, 47 (34.3%) of the teachers and 2 (25%) of head teachers had diploma and 38 (27.7%) of the teachers held a certificate. This supports the KNBS economic survey (2019) which shows that the number of graduates in primary schools

in Kenya has continued to rise in recent years. With regard to work experience, most of the respondents had long teaching experience. All the head teachers who participated had over 10 years of experience with 4 (50%) having served between 11-20 years, 2 (25%) between 21-30 years and 2 (25%) for 30 years and above as shown in Figure 4.4.

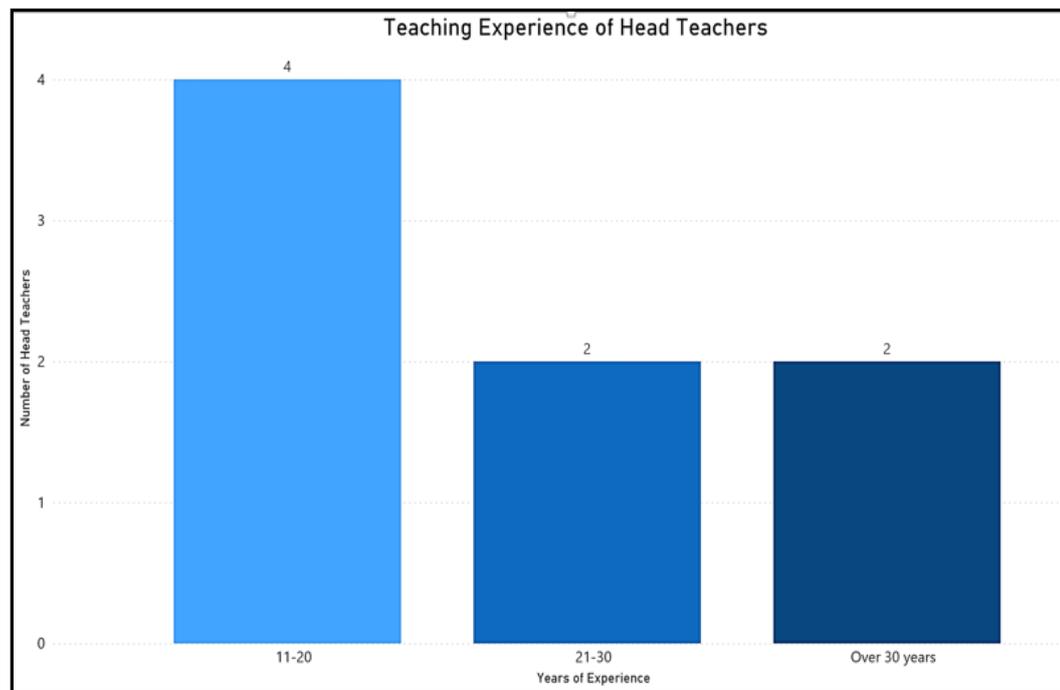


Figure 4.4: Teaching Experience of Head Teachers

Figure 4.5 represent the responses of the teachers who responded to the questionnaire. Majority, 95 (69.4%) of the teachers had a teaching experience of over 10 years, 38 (27.7) between 1 and 10 years, while 3 (2.2%) had served for less than a year. One (0.7%) respondent did not indicate the years of experience.

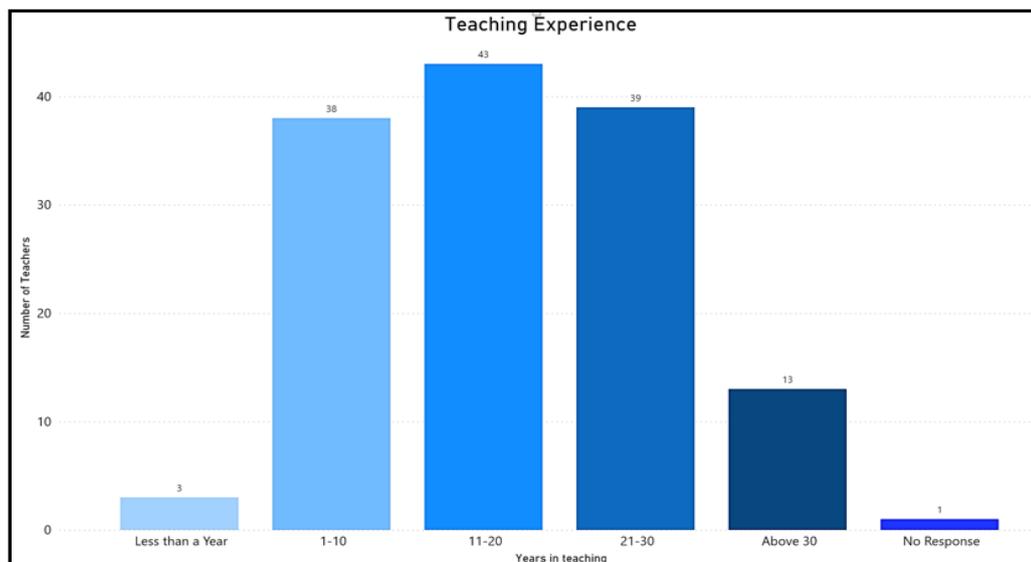


Figure 4.5: Teaching Experience of other Teachers

4.4 Class and Subjects Taught

The study sought to find out the distribution of the teachers by classes and the subjects they taught. Such information is useful in understanding the information needs and use among the teachers. A teacher in lower classes would expectedly use different information sources from one who teaches upper level whereas different subjects may require different types of information resources. In particular, a teacher teaching Social Studies may require an actual map in addition to a textbook in their class to demonstrate a point. All the 8 head teachers who participated in the study taught in the upper primary level, mainly classes seven and eight. Among the subjects they taught are Mathematics, Science, English, Social Studies, Kiswahili and Religious Education. As for the other teachers, majority 90 (65.7%) taught the upper level (Class 5-8), 25 (18.3%) taught the lower level (Class 1-4), 17 (12.4) taught both levels, while about 5 (3.6%) also taught special education class and/or ECDE class. The finding represented in Figure 4.6 supports the researcher observation where one school had set aside a class for children with special needs.

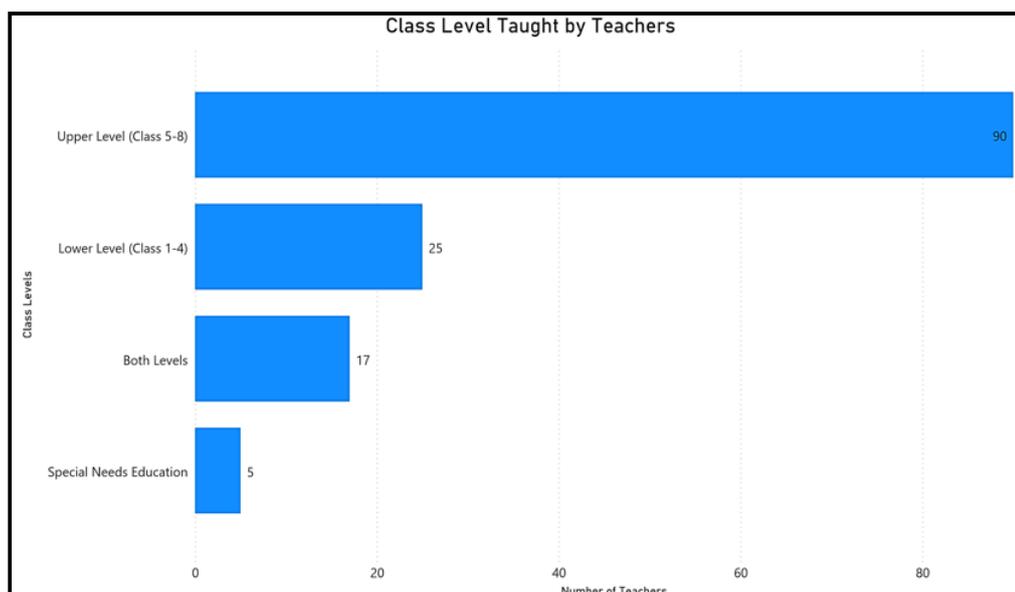


Figure 4.6: Class Level Taught

A few schools in the zone had also started an Early Childhood Development Education (ECDE) class for young children, though such children were joining the schools and had never experienced any schooling before. This was especially in response to the government's directive requiring all school aged children to be in a school as observed by Otike and Kariuki (2011).

Figure 4.7 represent data on the subjects teachers taught as analysed from the questionnaires. Out of the 137 respondents, 81 (59.1%) taught Mathematics, 78 (56.9%) English, 74 (54.0%) Science, 72 (52.6%) Social Studies, 68 (49.6%) Religious Education, 68 (49.6%) Kiswahili, 3 (2.2%) Creative Arts, Music, Environment, and 4 (2.9%) Physical Education, 6 (4.4%) taught pupils with special needs, while only 2 (1.5%) taught life skills. Overall, the data indicate that each of the examinable subjects (Mathematics, English, Science, Social studies, Religious education and Kiswahili) was taught by at least 50% of the teachers compared to non-examinable subjects.

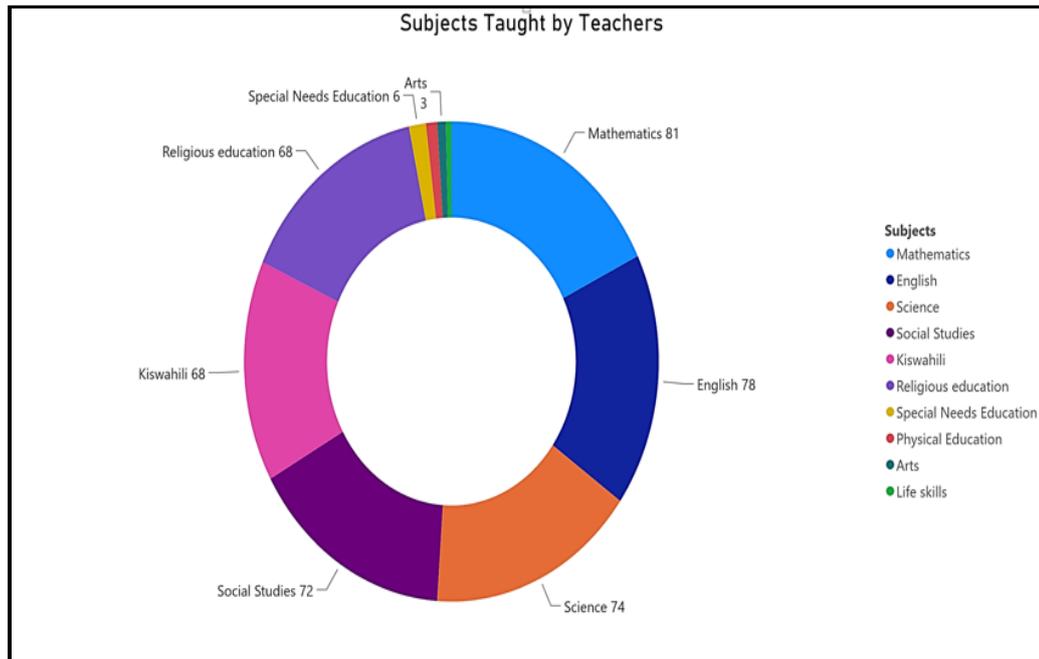


Figure 4.7: Subjects Taught

The data on subject taught was further analysed to establish gender inclination towards the specific subjects. The findings represented in Figure 4.8 indicate that more male teachers tend to teach science subjects while more female teachers are on arts subjects.

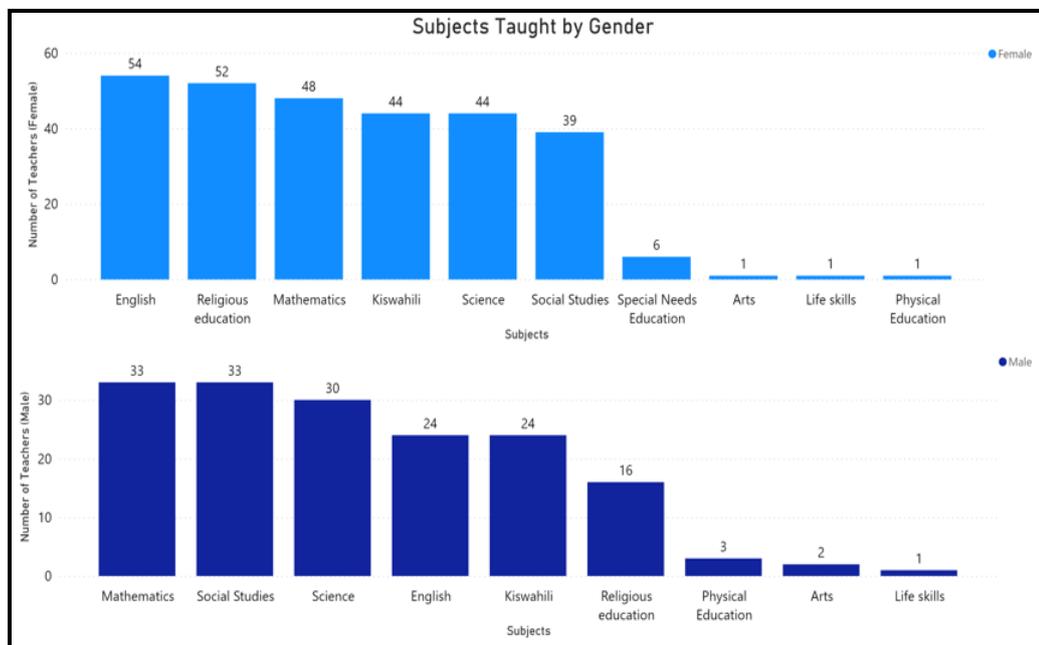


Figure 4.8: Subject Taught by Gender

4.5 Other Roles Performed Apart from Teaching

The study also sought to establish additional roles that teachers played in the school. This was in view of the fact that a teacher's professional duties extend beyond formal teaching. Identifying the various work roles was important in establishing the information needs of primary school teachers. Each work role was found to be accomplished through a number of specific tasks and each task required specific type of information as an input. The responses from 137 teachers are represented in Figure 4.9.

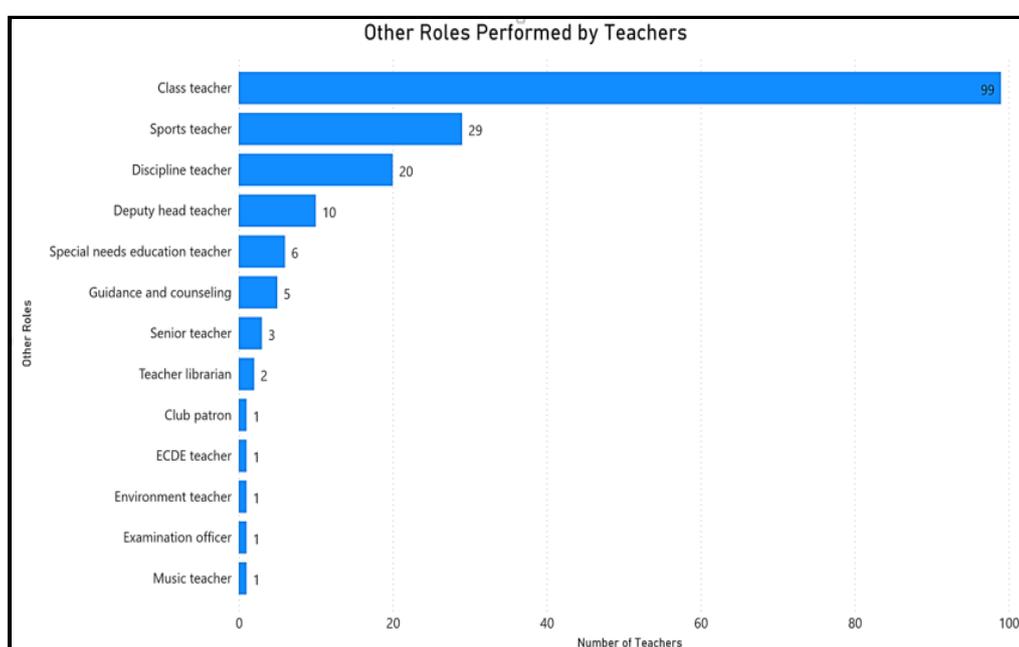


Figure 4.9: Other Roles Performed by Teachers

The responses from Figure 4.9 indicate that majority 99 were class teachers, 13 undertaking some administrative roles either as Deputy Head Teacher or Senior Teacher, 29 sports teacher, 20 discipline teacher, 6 Special needs education, 5 guidance and counselling teacher, 2 teacher librarian and club patron, ECDE Teacher, Environment teacher, examination officer and Music teacher roles having one teacher each.

4.6 Specific Tasks Performed by Teachers

The study broke the various work roles down further into specific tasks. These were the tasks that necessitated the use of information. Among the head teachers' concepts like being a leader, thinker, decision-maker and good team player were used to describe their responsibilities. Head teachers saw themselves as key to providing overall leadership in respective schools which they are in charge. They are responsible for coordinating learning programmes and activities as well as maintaining an enabling environment that ensures effective teaching programmes and activities. In addition, they lead, motivate and manage staff by delegating responsibility, setting expectations and targets, and evaluating staff performance against them. Head teachers ensure prudent management and use of school resources and are answerable to the Teachers Service Commission on teachers' performance and to the Ministry of Education on the implementation of educational policies.

Data on specific tasks was also collected using a questionnaire and the responses on the specific tasks are summarised in Table 4.3. The specific tasks performed by the teachers are important indicators of the types of information teachers' need to accomplish the teaching and administrative roles.

Table 4.3: Specific Tasks Performed by the Teachers

Specific Tasks Performed	Teachers Responses (n=137)	
	F	%
Preparing lesson plans	132	96.4
Giving lessons for one or more subjects	137	100
Assessing and evaluating pupils	134	97.8
Preparing and conducting tests/examinations	120	87.6
Supervising and managing classes	135	98.5
Guidance and counselling	96	70.1
Attending meetings (staff/parent)	133	97.1
Attending seminars/workshops/conferences	100	73.0
Organising school activities (excursions, festivals, sporting events, camps)	78	56.9
Providing regular updates on pupil's progress to parents/guardian, school administrators	126	91.8

Of the 137 teachers who responded to the questionnaire 137 (100%) concurred teaching one or more subjects, while between 132 and 135 (96%-99%) were involved in supervision and class management, assessing and evaluating pupils, attending staff meetings, preparing lesson plans, and providing regular updates on pupil's progress to parents/guardians and school administration. About 120 (88%) of the respondents were involved in preparing and conducting tests and examination, 96 (70%) undertook guidance and counselling, 100 (73%) attending conferences and workshops and 78 (57%) were involved in organising school activities (excursions, camps, sporting events).

4.7 Type of Information Needed in Performing the Tasks

When asked the type of information needed to perform the specific tasks, the teachers gave varying responses as recorded in Table 4.4. Majority 120 (88%) of the respondents stated they always sought information relating to curriculum and new education policies, 118 (86%) relating to subjects taught, 117 (85%) on various teaching methods and resources, 114 (83%) on assessment of pupils, 115 (84%) on professional development, and 109 (80%) on lesson planning. Other types of information important to the respondents included classroom management, pupils' motivation, how to use new classroom resources, and current awareness information each of which was selected by over 90 (70%) of the respondents. Information about talent discovery and development was the least sought by the respondents 2 (2%).

Table 4.4: Types of Information Teachers Required to Perform the Specific Tasks

Types of Information	Teachers' Responses (n=137)	
	F	%
Information related to the 'Subject taught'	118	86.1
Information related to the 'Curriculum and education policies'	120	87.6
Information related to 'Lesson planning'	109	79.6
Information related to 'Teaching methods/resources'	117	85.4
Information related to 'Assessment and evaluation'	114	83.2
Information on 'Classroom management'	101	73.7
Information related to 'Technology use in classroom (like computers)'	94	68.6
Information on 'Pupils motivation'	104	75.9
Information on 'How to use new classroom resources'	96	70.1
Information related to 'Professional development and teacher performance'	115	83.9
Current awareness information	99	72.3
Information about 'Talent discovery and development'	2	1.5

All the eight head teachers concurred that, just as other teachers, there is need to be empowered with the right information at the right time. One head teacher noted:

“Information is an important resource teachers cannot do without. It should always be accurate, timely and reliable.”

Head teachers need information on teaching methods and resources, lesson planning, curriculum, pupils' assessment and professional development, as well as information

specific to education policies, teachers' performance, how to improve school performance, information on managing and motivating staff, school resources, information on pupils performance by class, and overall school discipline. They also sought information on how other schools in the zone were performing.

4.8 Sources of the Information Needed

Teachers were asked to state where they accessed the information needed to carry out the tasks. This was intended to establish if they looked beyond the school for information. Majority 123 (90%) of the respondents said they always got the information they needed from both within and outside the school, while only 14 (10%) of the 137 teachers said they accessed it within the school. None indicated that the used information from outside the school only. The response is shown in Figure 4.10.

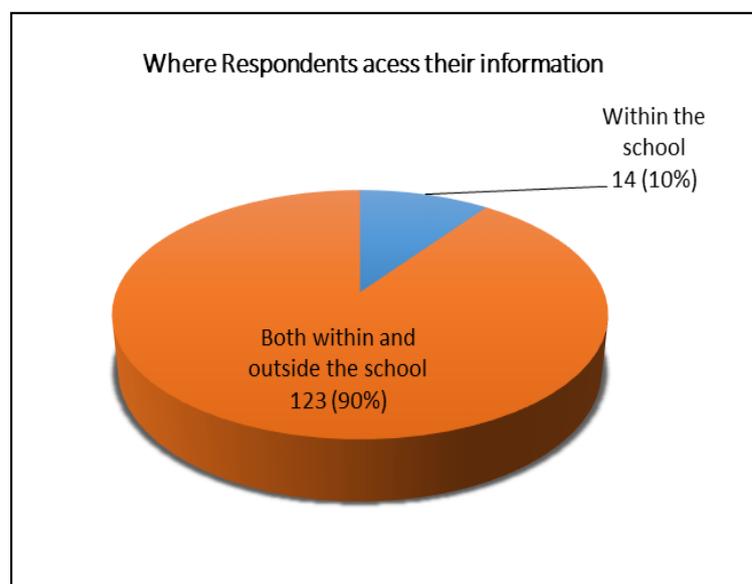


Figure 4.10: Where Respondents Access the Information

The head teachers corroborated other teachers' responses by agreeing that schools never have enough information resources to meet the teachers' needs. According to one of the head teachers:

“...public schools are far from providing enough teaching resources. It is not uncommon for teachers to seek information sources beyond the school and even paying for them with their own money. The problem is worse now that the Ministry [of Education] has taken over the responsibility of buying books for the schools. Sometimes they have delivered the wrong textbook, fewer than needed and in most cases deliver late.”

4.9 Information Source Teachers Access and Use

The study sought to find out what information sources respondents accessed and used.

Table 4.5 summarises the responses.

Table 4.5: Information Sources Accessed and used by Teachers

Sources Accessed and Used by Teachers	Teachers' Responses (n=137)	
	F	%
Textbooks and reference books (encyclopaedia, dictionaries)	131	95.6
Curriculum materials	115	83.9
Personal notes, files	103	75.2
Colleagues	89	65.0
Library/Librarian	19	13.9
Tests/Past examination papers	112	81.8
Internet (blogs, online discussion groups)	54	39.4
Mass media (TV, radio, newspapers)	82	59.9

Textbooks as a source of information was selected by 131 (96%) of the respondents, curriculum materials by 115 (84%) and tests/past examination papers by 112 (82%). These are the most accessed and used information sources. Other information sources include personal notes and files cited by 103 (75%) of the respondents, colleagues by 89 (65%), mass media such as TV, radio and newspapers by 82 (60%), Internet sources such as blogs and online discussion groups by 54 (39%) and library by only 19 (14%).

The head teachers, who agreed that information sources in the schools were scarce, supported the above findings. Textbooks, curriculum materials and past test papers were the most important information sources because they are “available, easy to get, access and understand”. The sources were also considered useful in preparing pupils for the final examination. The head teachers rated colleagues highly because they are reliable. They felt not much was relevant in respect of Internet and electronic resources to their needs; most of the head teachers do not have adequate knowledge and skills to use the Internet. Most of them felt that lack of school libraries in the zone worsened the situation. What most considered as library was a room with old books received as a donation and distributed to all the schools in the zone. One school, however, with initiative of the head teacher, had some current reading materials and even designated one teacher as ‘teacher librarian’.

4.10 Internet as a Source of Teaching Information

Internet has become a powerful feature in the information arena in recent years. Its use has expanded in all sectors to include education, industry, business, government and entertainment. The researcher sought to find out if teachers had access the Internet. Out of 137 teachers responding to the questionnaire, 115 (84%) stated they accessed the Internet as opposed to 22 (16%) who did not have access as shown in Figure 4.11.

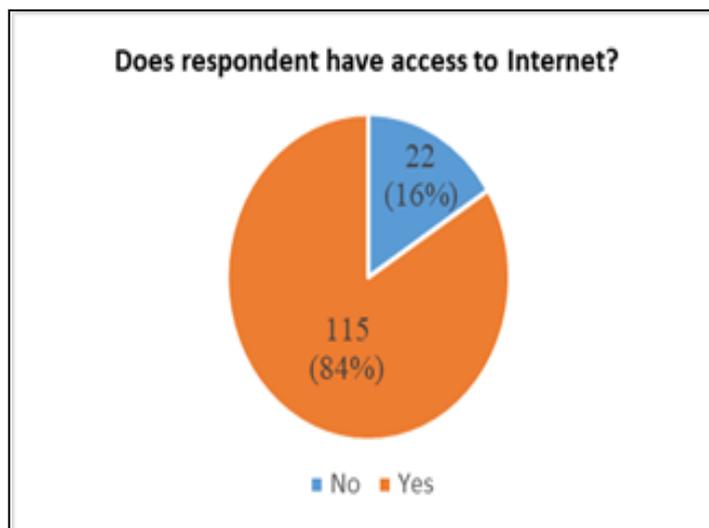


Figure 4.11: Access to Internet by Teachers

Table 4.6 shows from where the respondents accessed the Internet. 97 (71%) accessed it through their smartphones, 38 (28%) through internet cafés, 25 (18%) through staffroom WiFi and about 18 (13%) from school computer lab. The findings confirm researcher's observation that primary schools in the zone are yet to integrate ICT in their teachings. Only one school had set a room with some computers and were offering some computer classes.

Table 4.6: Sources of Internet

Sources of Internet Used by Teachers	Teachers Responses (n=137)	
	F	%
School computer lab	18	13.1
Staff room WiFi	25	18.2
Smart phones	97	70.8
Personal computer/laptop	5	3.6
Internet café	38	27.7

All the head teachers who participated in the study, mainly accessed Internet through own smartphones (a must-have for every head teacher). Smartphones serves as a means of communication among the head teachers and other education officers in county education office. They were also used to create hotspot in order to access Internet through a laptop or desktop computer in their offices. Two schools had invested in limited WiFi for official use only. Sometimes the head teachers are forced to use Internet cafés for official business. The researcher set out to establish how teachers used the Internet. Their responses are shown Table 4.7.

Table 4.7: Uses of the Internet by Teachers

Uses of the Internet	Responses (n=137)	
	F	%
Finding information and other resources for lesson preparation	45	32.8
Receiving and sharing updates from the Ministry of Education and the TSC	16	11.7
National examination registration	8	5.8
Submitting Teacher Performance Appraisal Development to the TSC	16	11.7
Chatting with teachers within and outside the school	115	83.9
Posting information, suggestions and opinions	67	40.9

All the teachers who had access to the Internet reported that it was mainly for chatting with other teachers, both within and outside the schools and only 45 about (33%) used it to find teaching related information. 67 of the teachers about (41%) used it to post information, suggestions and opinions. Among the head teachers, Internet was an important tool for facilitating communication between the schools and both the Ministry of Education and the TSC. Every head teacher is required to own a smartphone to

receive communication from various education departments and communicate the same to the other teachers. All the head teachers concurred that this form of communication is fast and more effective compared to the many trips they used to make to County Education Offices. Apart from receiving and sharing information from the Ministry of Education and other related departments, Internet allowed schools to key in pupils' data and register them for national examinations as well as send teachers performance appraisal to the TSC. Use of Internet was therefore limited to communication through chats and WhatsApp messages using mobile technology, hence, full potential of Internet is yet to be exploited for teaching and learning in public primary schools in Kihara Educational Zone.

4.11 School Library or Resource Centre

Today a school library is not just a storehouse of information source, but a vigorous and dynamic space capable of supporting a wide range of learning activities in a school by providing access to variety of information sources and services. It is a place where teachers and pupils gather to learn, design, create and collaborate with the support of a school librarian. It is a multimedia digital information centre where information is repackaged and disseminated to teachers and pupils mainly by a click of a button.

This type of a school library is still a dream to all public primary schools in Kihara Educational Zone where even the traditional school library does not exist as indicated by responses in Figure 4.12.

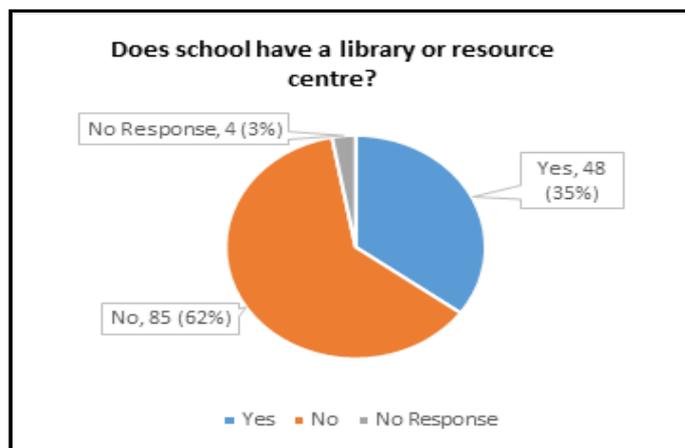


Figure 4.12: Schools with Library or Resource Centre

Out of 137 questionnaire responses on the existence of a school library or resource centre in the school 85 (62%) stated they did not have, 48 (35%) had some form of library and 4 (3%) did not respond to the question.

These findings agree with the head teachers' responses and researcher's observation. Majority of the head teachers, 6 (75%) who responded felt the absence of clear government policy on school library had affected information provision negatively. None of the schools in the zone had a functional library. What most of the respondents considered a library was just a few shelves in a store or deputy head teacher's room with outdated, worn out and irrelevant materials that were received as donation and distributed to all the schools in the zone. Even for this collection, only one among the eleven schools had organized its collection and assigned one teacher to oversee the borrowing/lending to the pupils or teachers. A modern school library remain a dream to schools in the Zone.

4.12 Information Sources Found Most Useful for Work

The study sought to find out which among the accessed sources are most useful and how often they are used. The responses are shown in Table 4.8.

Table 4.8: Most Useful Information Sources to the Teachers

Information source	Daily		Weekly		Fortnightly		Monthly		Every Term		As Needed		No Responses	
	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Conferring with your colleagues	96	70	8	6	2	1	4	3	0	0	2	1	25	18
Curriculum material	88	64	12	9	6	4	6	4	0	0	0	0	25	18
Textbooks	117	85	1	1	0	0	2	1	0	0	0	0	17	12
Personal notes, files	99	72	5	4	3	2	2	1	0	0	0	0	28	20
Workshops, seminars	2	1	3	2	0	0	3	2	26	19	45	33	58	42
School library/Public library	7	5	18	13	8	6	14	10	8	6	0	0	82	60
Audio-visual sources (CDs, DVDs)	10	7	3	2	4	3	15	11	10	7	2	1	93	68
Internet (blogs, chat room, online)	48	35	10	7	6	4	4	3	2	1	2	1	65	47
Educational Research Journals/articles	12	9	2	1	4	3	23	17	2	1	0	0	94	69
Media (TV, radio, newspapers)	72	53	11	8	3	2	10	7	0	0	0	0	41	30

The findings revealed that textbooks were the most used information sources among the respondents with 117 (85%) using them daily, followed by personal notes 99 (72%), colleagues 96 (70%) and curriculum materials 88 (64%). Mass media (newspapers, television and radio) and social media have increasingly become important sources for current information; they were on daily usage by 72 (53%) and 48 (35%) of the respondents respectively. Libraries were among the least used information sources with just 7 (5%) of the respondents using them daily. This could be due to lack of any form of library in Kihara Educational Zone.

4.13 Other Preferred Information Sources Not Available in School

The respondents were also asked to list any other information resource they would prefer to use but were not available in the school. Of the total 137 respondents 61 (45%) responded to the question. The responses from the 61 are as shown in Table 4.9.

Table 4.9: Other Useful Information Resources Not Available in School

Other Useful Information Resources	Teachers Responses (n=61)	
	F	%
Laptops, projectors and smartboards	18	30
School library	17	28
Television and radio	15	25
Resource persons	13	21
Educational magazines and journals	7	11

Among the items listed by respondents were laptops, smartboards, projectors, television and radio, resource persons, school library and educational journals and magazines. The importance for an information resource persons and a school library was apparent from

the responses as a total of 30 (49%) among the 61 who responded placed emphasis on the need for a well-stocked school library and need for trained teacher librarian or resource persons. Teachers' laptops, smartboards and projectors were other important resources that respondents felt they needed in the schools. This was echoed by one of the head teachers who noted:

Information sources are not only printed books but are available in many different formats such as DVDs and CD-ROMS, but cannot make use of them because the school lacks the means or technologies of projecting or reading them.

4.14 Factors Considered When Choosing an Information Source

The researcher also sought to find out factors that were considered important when selecting an information resource among the respondents. The responses are rated on a scale where 'Very important' was at the top of the scale and 'Not at all important' was at the lowest point. The multiple responses are shown in Table 4.10.

Table 4.10: Factors Considered When Selecting an Information Source

FACTORS	Very Important		Fairly Important		Neutral		Not so Important		Not at all Important		No Response	
	F	%	F	%	F	%	F	%	F	%	F	%
Authoritativeness, accuracy, relevance	79	58	15	11	9	7	1	1	1	1	32	23
Contains the information needed	88	64	13	9	5	4	4	3	4	3	23	17
Complete and comprehensive	71	52	16	12	12	9	4	3	0	0	34	25
Easy to use	69	50	25	18	15	11	5	4	2	1	21	15
Easy to find	79	58	18	13	6	4	2	1	10	7	22	16
Free or inexpensive	61	45	17	12	13	9	12	9	13	9	21	15
Used it before	43	31	19	14	14	10	8	6	16	12	37	27

Out of the 137 respondents, 88 (64%) rated an information source that contains the information needed to carry out a specific task as ‘Very important’, 79 (58%) said they want a resource that is easy to find, authoritative, accurate and relevance. Other important factors considered in selecting an information source are its completeness as stated by 71 (52%) of the respondents, should be easy to use by 69 (50%), affordable by 61 (45%) and familiar by 43 (31%). One head teacher’s statement could summarise the findings that:

“Teachers will always go for information sources that are available, easy to get, reliable and truthful”.

4.15 Challenges Encountered in Accessing and Using Information Sources

The study sought to find out the challenges primary school teachers encountered in accessing and using information sources. The responses are shown in Table 4.11.

Table 4.11: Challenges Encountered in Accessing and Using Information Sources

Challenges Faced by Teachers	Responses (n=137)	
	F	%
Outdated sources (latest information sources are not available)	71	51.82
Required material is not available	89	64.96
Too many classes or administrative work	83	60.58
Information sources are too expensive	64	46.72
Information explosion or too much information	34	24.82
Lack of time for searching	75	54.74
Poor connectivity for Internet resources	63	45.99
Lack of equipment and technical support (electronic resources)	79	57.7
Lack of information about available sources	45	32.8
Language barrier	16	11.7

All the head teachers cited lack of teaching and learning resources as a major challenge, which concurs with 89 (65%) of questionnaire respondents who stated that resources needed for teaching and learning are not always available. Another challenge that came out strongly among all the 8 participating head teachers and cited by 83 (61%) of other respondents is workload. Most teachers have a minimum of 35 teaching hours in a week and on average a teacher pupil ratio of 1:50 as confirmed by the head teachers. This means little time is available to search for information. As one head teacher observed that

teachers' are aware of existence of possible information sources they could consult but they do not have enough time.

They therefore use textbooks more because they are available and easy to get. Lack of equipment and technical support from the school administration when using electronic resources was cited by 79 (58%) of the respondents, while 75 (55%) said they do not have time for searching information and about 71 (52%) noted that most information sources available in school were outdated. Other challenges highlighted are: information sources being too expensive as cited by 64 (47%), poor connectivity for Internet resources by 63 (46%), lack of information about available sources by 45 (33%), information explosion or too much information 34 (25%), and language barrier by 16 (12%).

4.16 Discussion of the Findings

The findings of the study showed that the teacher population in Kihara Educational Zone is composed mainly of the female gender who have long teaching experience and are qualified for their career. Although the number of male and female teachers was almost equal among the young teachers below 35 years of age a notable reduction was noted among the male teachers as age advanced. Another notable finding was that all

the head teachers were above 40 years of age, an indication that promotion comes with experience. The findings corroborate KNBS economic survey (2019) which not only noted a rise in the number of graduates but also a decline in the number of male teachers in public primary schools in Kenya in recent years.

Further analysis by subject taught indicated that each examinable subject was taught by at least fifty per cent (50%) of the teachers compared to non-examinable subjects all of which were taught by less than five percent (5%) of teachers. There is more emphasis placed on examinable subjects which have overall impact on information sources accessed and used by teachers. Teachers in Kihara Educational Zone rely more on text books, past examination papers and curriculum materials all aimed at helping pupils pass examinations. Another observation was that male teachers in the zone taught science subjects compared to female teachers who were concentrated on art subjects which would impact on type of information sources sought.

Teachers in Kihara Educational Zone performed a number of roles and tasks all related to teaching and administration of the school. The findings identified several roles that a teacher plays in a school that can be summarized into managers or administrators, facilitators, assessors, role models, planners, resource developers and information providers. The head teachers served as the chief administration officers in the schools. They were responsible for delegating responsibilities, managing staff, setting targets and coordinating school programmes and activities. Teaching performed by all teachers in the schools involved interacting with pupils and included tasks such as lesson planning, preparing teaching aids, delivering curriculum content, assessing pupils, setting examinations, classroom management, and preparing overall report on class performance. Teachers served as the role models by displaying good behaviour and

work ethics. They were also counsellors and mentors to the pupils. These findings confirm those of earlier studies that concluded teachers performed many roles and tasks in school (Mardis, 2009; Mundt et al., 2006; Bitso, 2012; Bitso & Fourie, 2012).

According to Leckie et al. (1996) work role and associated tasks triggers information needs. The findings showed that the roles performed determined the type of information accessed and used by primary school teachers. In particular, head teachers were interested in information relating to education policies, managing and motivating staff, school discipline and current events in other schools in the zone. For teaching, the findings indicated information sought as relating to curriculum, subject taught, lesson planning, pupils assessment and personal development. These findings confirmed earlier studies that teachers mainly sought information relating to students, subject and pedagogical content (Bitso & Fourie, 2014 & Lan & Chan, 2002).

Regarding the information sources used, it emerged that no school in Kihara Educational Zone had enough resources to meet the information needs of teachers and it was not uncommon for teachers to acquire teaching resources through their own initiatives. Majority of the head teachers and ordinary teachers, cited textbooks as the main source followed by colleagues and curriculum or syllabus materials. The findings were consistent with those by Bitso (2012) investigating Geography teachers in Lesotho. This author found that teachers mostly used textbooks as the primary source of reference occasionally turning to personal notes, knowledge and experience. Teachers in this study preferred information sources that contained information needed to carry out a task, easy to find, affordable and familiar. The findings collaborate with Kamba (2017) who noted textbooks were most used in rural schools in Nigeria because they were available and easy to use. Internet and electronic resources were not common with

teachers citing poor or lack of broadband Internet connectivity, inadequate ICT skills and general lack of needed technologies as their greatest barriers. Teachers were however found to embrace mobile technologies used mainly for communication purposes. School libraries were not a preferred source because they were non-existent.

Teachers in the Kihara Educational Zone experienced a number of challenges as indicated by the findings. Among the cited challenges are inadequate teaching and learning information sources, heavy workload, and lack of time to search for information. There were no school libraries in the zone and use of the Internet as a teaching tool was yet to take roots. The problems were not unique to teachers in the zone, but other researchers have identified the same challenges facing teachers in their studies (Tahir et al., 2008; Bitso & Fourie, 2012; Kamba, 2017).

4.17 Suggestions on Improving Access to Information

Both the head teachers and other teachers were tasked to come up with suggestions on how to improve information provision in their schools. Their responses are summarized in Figure 4.13.

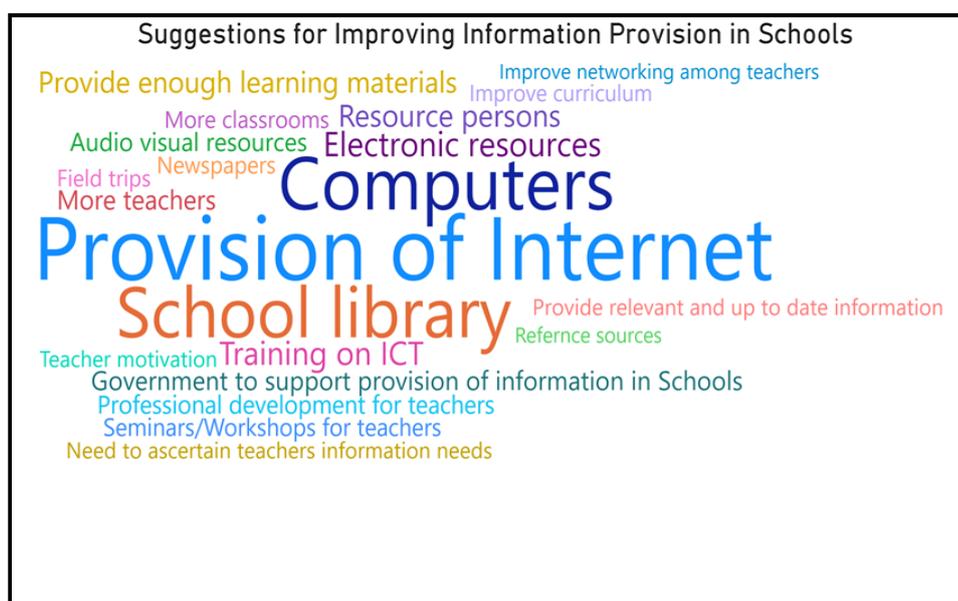


Figure 4.13: Suggestions for Improving Access to Information

A number of suggestions were highlighted with Internet, computers and school library getting the highest scores. The need to have a fully equipped school library run by experienced personnel was common across the board but some head teachers were quick to note it may not be within the schools ability due to limited resources. All were in agreement that the government through the Ministry of Education should support provision of information in the schools. Citing one of the head teachers that:

“...establishing a school library require participation both the government and individual school. The government should start by a policy that will make a library mandatory requirement for every school. Such a policy would legislate on personnel needed to run the library and source of funding to run the library. The individual schools should also develop an in-house policy that define the library services, guide its operations and management.”

A school library is an integral part of education process, supporting school curricula by ensuring latest and easily accessible information is made available to teachers and pupils.

Majority of respondents also placed emphasis on ICT in the schools. Computers, smartboards and WiFi connections were identified as essential technologies for any modern school. Discussing the integration of ICT in teaching, most head teachers felt it is long overdue. A number cited inadequate funds; classrooms needing renovation in readiness for the ICT adoption, no computer labs, Kenya Institute of Education has not come up with manual for ICT adoption and inadequate ICT skills among teachers. Another issue that came out strongly was the need to provide resources for the special needs children. Some schools in Kihara Educational Zone have special needs children. One of the schools had a special class and a teacher, but no resources to cater for the needs of such pupils.

4.18 Summary

This chapter has presented data analysis and interpretation of key findings. The aim of the study was to investigate access to and use of information by primary school teachers in Kihara Educational Zone, Kiambu County, Kenya. The main findings are outlined according to the research questions and data gathered as per research objectives. Although described as critical information users, many primary school teachers still experience limitations on the information sources they are supposed to access and use. Unavailability of information resources in the school, lack of awareness of existing information, inadequate information skills, poor Internet connectivity, time constraints, workload and sometimes costs involved in obtaining the information were some of the limitations. Moreover, the environment under which the teachers worked was unique and this affected their information behaviour. Majority of the pupils were from poor background receiving little or no learning support from home. For some, even getting enough food was a challenge. As a result, teachers concentrated more on feeding programmes in addition to assuming other roles such as caregivers, counsellors and guardians. This was compounded by large class sizes posing a challenge on teaching resources, facilities and the provision of information.

CHAPTER FIVE

SUMMARY OF THE FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarises the research findings together with the limitations, conclusions and recommendations. The chapter is therefore divided into summary of findings, limitations of the study, conclusion, recommendations and areas for further research.

5.2 Summary of the Findings

The purpose of this study was to investigate access to and use of work-related information by primary school teachers in Kihara Educational Zone. The findings informed the recommendations for improving information services in primary schools. The thematic presentation is based on the research objectives. This study aimed to answer the following research questions:

1. What tasks do primary school teachers undertake in the school?
2. What information do primary school teachers need to do their job?
3. Which information sources do primary schools teachers access and what prefer to use?
4. What challenges do primary school teachers in the Zone face when accessing and using information sources?
5. How could information access for primary school teachers in Kihara Zone be improved?

5.2.1 Roles and Tasks Undertaken by Teacher

The first research question was on: What tasks do primary school teachers undertake in the school? In addressing the question, it emerged that teachers perform many roles relating to teaching and school administration. Teachers' professional role extends

beyond formal teaching to those of managers, counsellors, custodians, assessors, planners, facilitators, role models, communicators and entertainers. The roles are accomplished through specific tasks that need information as an input. Head teachers provide overall leadership of their respective schools and are responsible for coordinating learning programmes and activities as well as maintaining enabling environment to ensure effective teaching programmes and activities. They lead, motivate and manage teachers and other staff by delegating responsibility, setting expectations and targets and evaluating staff performance against them. Head teachers ensure prudent management and use of school resources, are responsible for safety, security and overall school discipline. They also serve as the link between the school and the stakeholders including policy makers, other government officials and parents or guardians.

The teaching role involves daily interaction with pupils and includes specific tasks such as tutoring, lesson planning, deriving appropriate teaching methods to deliver the content, finding teaching aids to help enhance understanding of the content, assessing pupils, evaluations and grading. A class teacher is responsible for supervision and overall class discipline. They prepare reports on class performance and communicate the same to parents and guardians in addition to attending staff and parents meetings, conferences and workshops. These specific tasks by teachers are important indicators of the type of information teachers need to accomplish the teaching and administrative roles. Teachers in Kihara Educational Zone performed several roles and tasks as confirmed by quantitative and qualitative data analysed in Chapter Four. The head teachers were responsible for overall leadership of the school. Head teachers coordinated learning programmes, were responsible for all staff and ensured sound management of school resources. To support the head teacher were other teachers who

provided administrative support as class teachers, deputy school teachers, discipline teachers, sports teachers, mentors and counsellors among other functions. Teachers also served as assessors, curriculum evaluators, facilitators and role models to pupils.

5.2.2 Teacher Information Needs

The second research question sought to determine the information needs of primary school teachers. It emerged that teaching is an information rich profession with teachers requiring relevant and timely information in order to perform their roles effectively. However, teachers in most public primary schools in Kihara Educational Zone in Kiambu County were found to have limited access to information sources partly because the information needs were not adequately identified. The information sources accessed and used were based on the assumptions of the head teachers and were mostly geared towards preparing pupils pass examinations.

The findings confirmed that teachers' information needs arise from the specific tasks performed while accomplishing many work related roles. Teachers always sought information relating to content, new education policies, lesson plans, teaching methods and resources, assessment of pupils and professional development. They were also interested in information that relates to classroom management, pupils' motivation, how to use new classroom resources and current awareness information. Information about talent discovery and development among the pupils was the least sought. In addition to teaching information, head teachers needed information specific to education policies, teachers' performance, how to improve school performance, information on managing and motivating staff, school resources, information on pupils performance by class, and overall school discipline. They were always on the lookout for information on general performance of other schools within the zone.

5.2.3 Information Sources Used

The third research question aimed to identify which information sources primary schools teachers accessed and preferred to use. It emerged that no school had adequate information resources to serve all the information needs of teachers. Majority of the teachers obtained information needed from both within and outside the school. Textbooks were the main information resource followed by curriculum materials, tests/past examination papers and colleagues. These sources were mostly used because they were available and easy to access. In the recent past, the Ministry of Education is responsible for supplying the textbooks. According to the head teachers, this has brought up new challenges, mostly delays in delivery, inadequate copies where pupils have to share and sometimes a different textbook from the one recommended is supplied causing confusion among subject teachers who have to modify their lessons to accommodate the new textbook or purchase the right one using their own resources. Other information sources cited included personal notes and files, colleagues and mass media (TV, radio, newspapers).

Teachers rarely used the Internet as a teaching resource. Majority, who accessed Internet through own mobile phones, mainly used it as a communication tool, through short messages and chats with other teachers both within and outside the schools. Only occasionally was it used to find information and other resources for teaching purposes. Among the head teachers' Internet use was mainly for administrative purposes sending circulars and other communications from the education departments and TSC to teachers. They also used it to register pupils for national examinations and file teachers' performance reports to TSC. None of the school was equipped with computers and Internet connectivity to facilitate the use of electronic resources. School library was among the least cited source of information. None of the eleven schools in the Kihara

Educational Zone had a functional library. What existed as library was a room with old books received as donations and distributed to the schools in the zone. Only one school, through the head teacher's initiative, had some form of organisation for its books and designated one teacher to oversee the borrowing and lending books.

5.2.4 Information Sources Found Most Useful

The findings revealed that teachers still preferred traditional information sources such as textbooks, personal notes, colleagues and curriculum materials. Text books, past examination papers and curriculum materials helped prepare pupils pass examinations. Mass media (newspapers, TV, radio) and social media were seen as important sources for current information. Exploitation of Internet as a powerful information tool was yet to take root in the primary schools in Kihara Educational Zone. Current uses were limited to communication mainly through WhatsApp and chats using mobile phones. Limited Internet use was attributed to its unavailability and limited ICT skills and knowledge among the teachers. Libraries were also among the least used information sources. Lack of any form of library in the zone contributed to the low use statistics.

5.2.5 Factors Considered in Choosing Information Sources

The findings identified several factors that influenced the choice of an information source among teachers in Kihara educational Zone. The results indicated that a source was selected if it contained the information needed to carry out a specific task, easy to find, authoritative, accurate and relevant. Other important factors considered in selecting an information source were completeness, ease of use, affordability and familiarity. Teachers in Kihara Educational Zone always turned to textbooks, past papers, curriculum materials and colleagues because these were easy to find and understand.

5.2.6 Challenges Encountered in Accessing and Using Information Sources

The fourth research question was to identify the challenges primary school teachers faced when accessing and using information sources. Primary school teachers in Kihara Educational Zone faced a number of challenges relating to access and use of information. Poor information infrastructure and services, both within the school and the Kiambaa Sub-County where the schools are located, hamper access to information. Teachers do not always have the information needed to carry out their professional tasks and when it is available the material are outdated and irrelevant. There was gross inadequacy of library resources, finances, teaching materials and information skills among the teachers. In terms of physical facilities, classes were poorly maintained with broken furniture, dusty and no reading rooms where pupils could do private study. The workload was also overwhelming with most teachers having 35 or more teaching hours in a week with an average teacher-pupil ratio of 1:50, leaving teachers with no time to search for information. This meant teachers tended to re-use the old notes and ideas. Lack of equipment and technical support from school administration for new forms of information sources was another challenge.

5.2.7 Improving Access to and Use of Information

Teachers suggested a number of ways to improve access to and use of information in Kihara Educational Zone. On top of the list were school libraries and Internet connectivity. A school library was seen as a place where both teachers and pupils could interact with information sources, a quiet place for reading where the teacher librarian assist pupils and collaborates with teachers in support of the curriculum. Teachers also identified access to the Internet as another way of improving information access and functioning of a modern school library. A school library should serve as a teaching and

learning resource centre, equipped with WiFi, IT technologies, books and rooms to work in groups and watch videos under the leadership of qualified school librarian.

5.3 Conclusion

The study concludes that teachers in primary schools perform many roles that require constant access to timely and relevant information. Access to such information would help develop a teaching force that moves beyond the confines of textbooks and course books, supplement work done by pupils and encourage independent inquiry in the schools. Despite the information being crucial for effective teaching and learning process, teachers in Kihara Education Zone relied on limited information sources including textbooks, colleagues and personal notes.

Several factors hampered access to and use of information among these teachers. Their information needs have not been adequately identified and what is provided in the schools is based on the assumptions of the head teachers who focus more on pupils' performance on national examinations. Constrained instructional resources, heavy workload, lack of time by teachers to search for information, none existence of functional school libraries in the zone and inadequate information literacy skills among the teachers are other challenges.

School libraries are fundamental and mandatory in teaching and learning environment including primary schools. With adequate information resources, these libraries support both the teachers and pupils. According to the Ministry of Education and related agencies, primary schools are supposed to have well equipped and managed learning resource centres. From the research results, the primary schools at Kihara Education Zone have no functional school libraries. This indeed limits access to and use of information sources by teachers and the pupils.

5.4 Recommendations

Based on the findings of the study, the following recommendations are made:

5.4.1 Periodic Information Needs Analysis for School Teachers

The unstable and constantly changing information environment calls for continued research on users to ensure that information needs are satisfactorily met. Analysing and assessing the information needs of teachers is the key to provision of effective information service and appropriate collection of information sources. Information needs identification and analysis however is a complex process that requires great input from information professionals. Library and information science professionals should come out and play active roles in studying primary school teachers in their specific work environment if effective information services are to be rendered to this group of information users.

5.4.2 Establishment of Well Stocked Modern School Libraries

A well-stocked school library based on teachers information needs has long been recognized as an integral part of education process as confirmed by the findings of this study. Teachers identified a school library as one way to improve access to and use of information in public primary schools. A modern school library is not just a building with books, but includes virtual spaces that encourage independent exploration of vast array of digital resources. It provides a flexible environment where both teachers and pupils may develop required competences needed in modern information landscape. It is also a place where teachers get unlimited access to recent and up-to-date information materials, in all formats anytime anywhere as long as there is adequate technologies and access rights.

School libraries require formulation of policies both at national and individual schools level. At national level the Government of Kenya, through the Ministry of Education,

should come up with policies that entrench school libraries in the education system. A well-structured policy framework would aid in planning, development and evaluation mechanism of school libraries. Absence of clear policies has affected negatively information services in the public primary schools in Kenya. At individual school level, there is need for a policy that defines the goals, priorities and services in relation to the school curriculum. The development and implementation of school library policy is the responsibility of school librarians in consultation with other stakeholders.

5.4.3 Improve and Renew Information Literacy Skills for School Teachers

School management should organise for periodic information literacy programs for teachers. Information literacy involves the ability to access, evaluate and use multiple information resources. Information literacy competency among teachers would lead to the development of information culture within the schools. At a personal level, information literacy competency help teachers access and use information more efficiently, critically evaluate a variety of information sources, incorporate new information gained into their knowledge base and know how to access and use it ethically and legally. Periodic user education on information skills would help keep teachers up to date on latest technological developments in the information field, improve information search skills and broaden information base while learning about vast information resources available on the Internet as open sources. A successful information literacy program would require a concerted effort among various players. Teacher educators need to incorporate information literacy in the teachers' curriculum. Kenya Library Association should play an active role on improving information skills by organising seminars, workshops and short courses for primary school teachers.

5.4.4 Implementation of Integration of ICT in Teaching and Learning

The Government of Kenya, through the Ministry of Education should implement policies that integrate ICT into primary education. To achieve this there is need to reform school curricula, update teachers training to improve computer competence, and computer self-efficacy and strengthen partnerships with other stakeholders in the education sector. The use of ICT in school teaching has many benefits to the teacher. These include easy and timely access to digital information resources and it could help teachers to prepare pupils' skills, competencies and attitudes essential for competing in the emerging global knowledge economy. Regarding curriculum, ICT could assist the teacher in preparing schemes of work, lesson plans, lesson notes and examinations with great ease. Computers can assist in recording, storing and retrieving pupils' data, including profiles of progress. ICT offers new tools such as PowerPoint that could be used to improve the traditional way of teaching. It also offers teachers with an easy way to communicate with other stakeholders (parents and other teachers).

5.4.5 Expand on ICT Infrastructure and Internet Connectivity

Schools should invest on ICT in the schools if teachers are to tap into the great potential of online resources. However, developing ICT infrastructure would be very expensive venture especially for rural public schools. It would call for participation of all stakeholders in the education sector to facilitate allocation of more resources towards ICT infrastructure development. The infrastructure extends beyond computers and laptops to cover networks, internet bandwidth, reliable electric power supply, security and human capital. First, the policy makers need to establish legal and regulatory ICT frameworks that stimulate investment, innovation, competition and also lower prices which could encourage schools to start investing and adopting ICT in teaching and learning. Internet service providers such as Kenya Education Network (KENET) could

lower the cost of internet bandwidth and perhaps have special access rates for schools. Individual schools should look into wireless technologies that would allow teachers to access the internet using mobile phones which are more accessible to teachers.

5.4.6 Proactive Role by Information Professionals

Information professionals should play an active role in helping school management to come up with strategies that support information provision in schools. In addition, the professionals should actively promote programs that match the information needs and preferences for teachers. This can be achieved by conducting user surveys on information needs of users and provide feedback to the schools' management from time to time. Information professionals must also be involved in information based initiatives and programs to develop and support primary schools libraries.

5.4.7 Information Resources for Special Education Teachers

Special education teachers need to access instructional materials that are specialized to effectively perform professional teaching roles. Braille, audio, large print and digital text are some of the types of resources that may be needed but were non-existent in the schools that had a special education class. The schools' administration should work with government and parents to provide assistive devices and instructional resources.

5.5 Recommendations for Further Research

The following recommendations for further research were developed as a result of this research:

- The current study focused on access to and use of work related information among primary school teachers. There is need for further study to investigate access to and use of information by primary school teachers beyond school related work roles.

- The study established that majority of teachers who had access to mobile technology mainly used it for chatting and messaging other teachers both within and outside their schools. A further study to investigate how mobile technology could be exploited to support primary school teachers' access and use of digital information sources is needed.
- Lastly the study recommend a further research on information literacy skills pertinent to primary school teachers. Such a study will inform the development of a training course to improve their information literacy skills.

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APPENDIX I: LETTER OF INTRODUCTION

The Head Teacher
Primary School
P.O. Box
Karuri

Dear Sir/Madam,

RE: REQUEST TO CARRY OUT RESEARCH

My name is Catherine Wanjiru Thuku post-graduate student at Moi University, School of Information Science and currently undertaking a study title: “Access and Use of Information by Primary School Teachers in Kihara Educational Zone, Kiambu County, Kenya.”

The purpose of this study is to gather information that can be used to better understand primary school teachers information needs, preferences for information sources, and challenges teachers face as they access and use information sources.

I seek your permission to interview you and administer questionnaire to teachers under your authority. Your permission, participation and input is very much valued.

Please be guaranteed that the information collected will remain confidential and used solely for purposes of this study.

Yours faithfully,

Catherine Wanjiru Thuku

APPENDIX II: INTERVIEW SCHEDULE FOR HEAD TEACHERS

Background information

- 1) Name of the school
- 2) Gender: Male () Female ()
- 3) How long have you been teaching?
- 4) What is your highest educational qualification?

Information needs and Information seeking behaviour

- 5) What specific tasks do you perform in the school?
- 6) Do you require information when carrying out these tasks?
- 7) What type of information do you use to accomplish the tasks you have mentioned?
- 8) How do you get the information you need to perform these tasks?

Information Sources

- 9) Which information sources are you able to access when in school?
- 10) Are the information sources you access adequate for the tasks you undertake?
- 11) Among the available information sources are there some you would prefer to use and why?
- 12) What other information sources would you prefer to use but are not available in the school?
- 13) Does your school have adequate teaching resources (textbooks, dictionaries, encyclopaedias, curriculum materials)? If no, why?
- 14) Do you ever seek information assistance from your colleagues?
- 15) Does your school have library? If yes to question 15 above,
 - a) What services does the library offer?
 - b) Does the school have a trained teacher librarian?
- 16) What other services would you like the school library to offer?
- 17) Does the school have access to the internet services? If yes, how do teachers use the internet?

Challenges Experienced Seeking Information

- 18) What are the challenges you experience when accessing and using information sources?
- 19) What recommendations would you give that would help improve access and use of information in the school?
- 20) Any other comment?

Thank You

APPENDIX III: QUESTIONNAIRE FOR TEACHER RESPONDENTS

INSTRUCTIONS

Mark with an X where appropriate and explain where required.

Section A: Demographic Profile

1) Gender:

Male () Female ()

2) What age bracket do you fall-in?

Age in years

Below 25 years

25-30

31-35

36-40

41-45

Over 45 years

3) What is your highest educational qualification?

Educational qualification

Certificate

Diploma

Bachelor's degree

Master's degree

Other (Specify)

4) How many years have you been teaching?

Number of years

Less than a year

1-10

11-20

21-30

31 and above

5) Which grade level (s) do you teach?

Grade level

Lower level (class 1-4)

Upper level (class 5-8)

Not Applicable

6) Which subject(s) do you teach?

Subjects

English

Mathematics

Social Studies

Science

Kiswahili

Religious Education

Other (Specify)

7) What other roles do you perform apart from teaching? (Please tick all that applies).

Roles

Deputy Head teacher

Class teacher

Sports teacher

Discipline teacher

Special Education teacher

Teacher librarian

Other (Specify)

Section B: Information Needs

8) What are the specific tasks do you perform at the school? Tick all that apply

Tasks performed	Tick
Preparing lesson plans	
Teaching one or more subjects	
Assessing and evaluating students	
Preparing and conducting tests and examination	
Supervision and classroom control	
Counselling and guidance	
Attending staff meeting	
Attending conferences/Workshops	
Organising school activities (excursions, camps, sporting events)	
Providing regular updates on pupil's progress to parents/guardians, school administrators	
Other (Specify)	

(9) What type of information do you need in performing these specific tasks? (Tick all that apply and list any other type of information that you need not listed below)

Information need	Tick
Information related to the subject taught	
Information related to the Curriculum	
Information related to Lesson planning	
Information related to Teaching methods/resources	
Information related to Assessment and evaluation	
Information on Classroom management	
Information related to Technology use in classroom(e.g. computers)	
Information on Pupils motivation	
Information on How to use new classroom resources	
Information related to Professional development	
Current awareness information	
Other (specify)	

10) Where do you get the information you need? (Tick only one)

Within the school

Outside the school

Both within and outside the school

Section C: Information Sources

11) What information sources are you able to access and use when in the school? Please check all sources that apply.

Information Sources	Tick
Textbooks and reference books (encyclopaedias, dictionaries)	
Curriculum materials	
Personal notes, files	
Colleagues	
Librarian	
Tests/Past examination papers	
Internet (blogs, online discussion groups)	
Mass media (TV, Radio, newspapers)	
Others (specify)	

12) What other information sources would you prefer to use but are not available in school?

13) Does your school have a library or resource centre? Yes () No ()

14) What type of information services do you obtain from the library/resource centre?

Lending/Borrowing

Supports literacy instruction

Internet Services/Reference services for teachers

Reading space where pupils/teachers interact with books

Others (specify)

15) Do you have access to Internet? Yes () No ()

16) If yes, to Question 15, from where do you access Internet? Check all that apply.

School computer lab

Staff room

Smart phones

Personal computer/laptop

Internet café

Other (Specify)

17) How do you use the Internet? Check all that apply.

Internet Use

Finding information and other resources for lesson preparation

e-mailing with teachers within and outside the school

Posting information, suggestions, opinions, etc.

Other (specify)

18) Please tick the information sources you have found most useful for your work. For each item, please indicate how often you use the information source. Please list any other sources that you prefer that is not listed below.

Please check the option that accurately reflect your response	Daily	Weekly	Fortnightly	Monthly	Other (specify)
--	-------	--------	-------------	---------	-----------------

Conferring with your colleagues

Curriculum material

Text books

Personal notes, files

Workshops, seminars

School library/Public library

Audio Visual sources (CDs, DVDs)

Internet (blogs, chat room, online discussion groups)

Research Journal/Journal article

Media (TV, Radio, Newspapers, magazines)

Other (Specify)

- 19) What are the most important factors you consider when choosing an information source to use? Scale: 1-5 (where 5 is very important, 1 not very important)

Factors	5	4	3	2	1
Authoritativeness, accuracy, relevance					
It will contain the information I need					
Complete and comprehensive					
Easy to use					
Easy to find					
Free or inexpensive					
Used it before					
Other specify					

Section D: Challenges

- 20) Which challenges do you encounter in accessing and using information sources?

Outdated sources (latest information sources are not available)
Required material is not available
Too many classes or administrative work
Information sources are too expensive
Information explosion or too much information
Lack of time for searching
Poor connectivity for internet resources
Lack of equipment and technical support (electronic resources)
Lack of information about available sources
Language barrier
Other (Specify)

- 21) What suggestions do you have on how to improve information provision in the school?

- 22) Please provide any other details about your information needs, information sources and preferences that we have not addressed.

Thank you for completing this questionnaire.

APPENDIX IV: OBSERVATION CHECKLIST

STATEMENT	COMMENT
Teaching resources (Both print and Electronic)	Textbooks, journals, newspapers, projectors
Information related technologies	Computers, networking hardware, WiFi router
School library/Resource centre	Building or Room with information resources (all formats), reading spaces

APPENDIX V: RESEARCH PERMITS

THIS IS TO CERTIFY THAT:
MS. CATHERINE WANJIRU THUKU
of MOI UNIVERSITY, 1534-621
Nairobi, has been permitted to conduct
research in *Kiambu County*

on the topic: **ACCESS AND USE OF
INFORMATION BY PRIMARY SCHOOL
TEACHERS IN KIHARA EDUCATIONAL
ZONE, KIAMBU COUNTY, KENYA.**

for the period ending:
20th March, 2019


.....
**Applicant's
Signature**

Permit No : NACOSTI/P/18/78839/21761
Date Of Issue : 20th March, 2018
Fee Received : Ksh 1000




.....
**Director General
National Commission for Science,
Technology & Innovation**

APPENDIX VI: RESEARCH AUTHORIZATION FROM NACOSTI



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,
2241349, 3310571, 2219420
Fax: +254-20-318245, 318249
Email: dg@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No. **NACOSTI/P/18/78839/21761**

Date: **20th March, 2018**

Catherine Wanjiru Thuku
Moi University
P.O. Box 3900-30100
ELDORET.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *“Access and use of information by primary school teachers in Kihara Educational Zone, 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 March, 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.

DR. STEPHEN K. KIBIRU, PhD.
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Kiambu County.

The County Director of Education
Kiambu County.

**APPENDIX VII: RESEARCH AUTHORIZATION FROM OFFICE OF THE
PRESIDENT**



**OFFICE OF THE PRESIDENT
MINISTRY OF INTERIOR AND CO-ORDINATION OF NATIONAL GOVERNMENT
COUNTY COMMISSIONER, KIAMBU**

Telephone: 066-2022709
Fax: 066-2022644
E-mail: countycommkiambu@yahoo.com
When replying please quote

County Commissioner
Kiambu County
P.O. Box 32-00900
KIAMBU

Ref.No: **ED.12 (A) /1/VOL.I/125**

22nd May, 2018

Catherine Wanjiru Thuku
Moi University
P. O. Box 3900 - 30100
ELDORET

RE: RESEARCH AUTHORIZATION

Reference is made to National Commission for Science, Technology and Innovation letter Ref No. NACOSTI/P/18/78839/21761 dated **20th March, 2018**.

You have been authorized to conduct research on "*Access and use of information by primary school teachers in Kihara Educational Zone in Kiambaa Sub-County in Kiambu County*". The data collection will be carried out in *Kiambu County* for a period ending **20th March, 2019**.

You are requested to share your findings with the County Education Office upon completion of your research.

**FESTUS KIMEU
FOR: COUNTY COMMISSIONER
KIAMBU COUNTY**

Cc County Director of Education
KIAMBU COUNTY

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

Deputy County Commissioner *(For information and record purposes)*
KIAMBAA SUB-COUNTY