

**FACTORS INFLUENCING USE OF RADIO IN TEACHING AND LEARNING
IN SECONDARY SCHOOLS: THE CASE OF STAREHE DISTRICT IN
NAIROBI COUNTY**

BY

MWARA CATHERINE KARIMI

**A RESEARCH PROJECT REPORT SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENT FOR THE AWARD OF MASTERS DEGREE IN
DISTANCE EDUCATION OF THE UNIVERSITY OF NAIROBI**



2011

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DECLARATION

This is my original work and has not been presented to any other university for a degree or any other award


Signature..........

Date: 8/8/2011.....

Mwara Catherine Karimi

L45/8080/06

This Project has been submitted for examination with my approval as University supervisor.

Signature..........

Date 8/8/11.....

Prof. David Macharia, EBS

Chairman,

Department of Distance Studies

University of Nairobi

DEDICATION

I wish to dedicate this work to my family, especially my husband Micheni, our sons Murithi, Mutembei and Mugambi for the financial, material and moral support during this study. Without their cooperation and understanding this work would not have been accomplished.

ACKNOWLEDGEMENT

My sincere thanks go, first, to the Department of Distance Studies of the University of Nairobi for introducing this unique course. Second, I wish to register my appreciation to Professor David Macharia for his helpful guidance and encouragement in this study. Further, I thank the English, Kiswahili and Mathematics teachers, the Head teachers in the schools that participated in this study for giving me implicit cooperation and contributing to the success of this study in many ways.

Last, but not least, are my classmates. Your synergy in discussions was very useful, and I thank you all.

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ABBREVIATIONS AND ACRONYMS

ASALS	Arid and Semi Arid Lands
EFA	Education for All
EMS	Educational Media Service
GOK	Government of Kenya
ICT	Information, Communication and Technology
IRI	Interactive Radio Instructions
KBC	Kenya Broadcasting Corporation
KIE	Kenya Institute of Education
KESSP	Kenya Education Sector Support Programme
MOEST	Ministry of Education Science and Technology
RSN	Radio studies Network
SP	School Principal
UNSECO	United Nations, Scientific and Cultural Organization
VOK	Voice of Kenya

ABSTRACT

Radio is an important instrument for educational instructions which has received considerable research in developed countries compared to the developing ones. In Kenya, for example, distance learning, through radio, has been used for a long time in the primary schools. This study examines the factors that influence the radio, as an instructional medium, in Starehe District Secondary Schools in Nairobi County, Kenya. The study questions revolve around use of radio in teaching and learning, school administration support, availability of relevant teaching and learning materials. A questionnaire was used to collect data. Random, simple and purposeful random sampling methods and primary and secondary data were utilized in the study. Primary data was sourced from KIE documents and periodicals from the Ministry of Education. Secondary data is used as a review of literature and was sourced from written records in libraries. The Kenya Institute of Education (KIE) formed the major sources of secondary data. The head teacher and subject heads formed the group where the primary data focused. Qualitative and quantitative methods form the basis of data analysis. The study has shown that radios are lacking in secondary schools. Most Principals (88.9 %) give no administrative support to the radio teaching programme leading to lack of awareness by teachers (64 %) of the programme and non-incorporation of the programmes in the regular school time table by 100 % of all the schools. Furthermore, supplementary radio programme teaching materials were only available in 18.1 % of the schools. Similarly, 90 % and 73 % of teachers in Mathematics and Kiswahili, respectively, do not make any preparations for teaching the radio programme. It is recommended that Principals of schools should set aside a budget to ensure that radios are not only purchased for the purpose of teaching the KIE radio broadcast lessons but are also in good working condition. Principals should also make every effort and take responsibility to mainstream radio broadcast as an instruction medium in their schools by liaising with KIE to ensure that the relevant materials are delivered to their schools, ensure that apart from availing the radio that radio listening laboratories are available, teachers are sensitized, trained and motivated to embrace the radio broadcast programme. They must ensure that the radio

broadcast programme is incorporated in the school regular timetable amongst others.. Also, KIE to develop a strong linkage with the schools for efficient implementation of the radio broadcast programme which should include putting in place a monitoring and evaluation programme.

CHAPTER ONE

INTRODUCTION

1.1. Background of the study

The importance of radio in educational instructions has received considerable research in developed countries. According to Terry and Nation (1996. 38), the use of radio for teaching and learning started in the 20th Century for both children and adults. Canadian universities, such as Alberta University were utilizing radio in 1927, and by late 1930s, radio was used to support education in British schools outside the formal education system. Later, the use of radio in schools spread to developing countries (Nwaerodu, et al., 1987).

Research shows that the radio has been used for multiple purposes in the world but much is not said about the factors which influence the choice of radio broadcast. For example, according to Ndubuisi, et al., (1987) radio has been used to teach mathematics in Thailand, (Glade, 1984), for rural development in India (Long, 1984), for public health in Swaziland (Byram & Kidd, 1983), for management of agricultural sector in Nigeria (Sheers, 1984), for civic education in Botswana (Bryam et al., 1980) and to support correspondence courses in Kenya (Kinyanjui, 1973). The advantages and disadvantages of radio as an instructional instrument are largely under-researched.

In most Sub-Saharan Africa, the radio utilization for school teaching and learning has not been strong enough, however, in Ghana and Tanzania, good success has been recorded (UNESCO 2002). Some of the advantages identified of radio are such as easy access, relatively low cost for production and capacity to reach wide geographic audience at a low production cost (Couch, 1997 as cited by Vyas, 2002). Yet, the viability of such factors has not been tested in any empirical research in Kenya. Studies by UK Open University have demonstrated that radio has a greater value for weak students who benefit from radio as supplementary learning tool (Tripp et al., 1996 as cited by Vyas, 2002). The question that begs understanding is: Can such advantage apply in schools in Kenya?

Kenya broadcast to schools dates to pre-independence in 1928 through the British colonial administration. This was almost the same time when many developed countries, like Canada began using radio for school education. Comparatively, Kenya radio broadcast has shown slow and unsystematic process. The historical sequences of Kenya educational broadcast show that in 1961, the school broadcasting unit was established (Wambaria, 2003) by Ministry of Education with specialized programme managed by KIE. In 1989, VoK which was broadcasting changed to Kenya Broadcasting Corporation (KBC), increased school broadcasting cost, hence school broadcast collapsed in 1995. According to KIE (2001) and Odera (2002), KIE signed an agreement with World Space that allowed the use of a 24 hour dedicated channel through the World Space satellite. In 2003, the government took over the bill for these broadcasts as part of the free primary

education leading to revival of school broadcast in English service, on January 2007 through the government budgets.

While distant learning through radio is an old idea in Kenya, most of the focus has been on the primary sector with minimal attention to secondary schools. KIE has developed the radio programme for secondary schools in almost all subjects, but many schools have not taken advantages of these programmes. Despite the proven advantages in school broadcasting and the opportunity for government support, very few schools in Starehe are using the school broadcast facility, making this a priority research to establish the factors which influence the utilization of radio for teaching and learning in Starehe District.

1.2. Statement of the problem

The radio was used in distance education since 1920s in western countries and has grown as a fundamental tool for learning globally (Keegan, 1996, Buck 2006). According to Department of International Development 2001 radio is “the most cost effective ICT for enhancing the quality of education in the classroom” in Africa, where countries like Botswana, Tanzania and Nigeria have registered near universal accessibility. In Kenya 63.7% of secondary schools have radio but incidences of poor signals, lack of coverage in some areas and lack of electricity constrains effective use (Kinyanjui 2003). Although radio programmes are an integral part of teaching and learning. Little research exists to explain why many secondary schools in Kenya have not taken advantage of this resource consistently. The evaluation of modes of transmitting education programmes by KIE

(1999) showed that only two secondary schools in Nairobi were studied and none of the 11 secondary schools covered the Starehe District schools. In addition, the extent to which the school administration supports the use of radio in secondary schools is not clear. The question which begs answers is; what role does the administration play to enhance radio broadcasting? How does the administration affect the teaching and learning choices among teachers? Due to limited research, it is not clear whether essential teaching and learning supplementary materials to support use of radio as a teaching medium are available. Moreover, questions remain as to whether teachers use the selected and prepared materials. In light of these issues, this study is priority topic and will examine the extent to which the radio is used in teaching and learning in secondary schools, in Starehe District, Nairobi County.

1.3. Purpose of the study

This study sought to examine the factors that influence use of radio for teaching and learning in secondary schools in Starehe District Nairobi County.

1.4. Objectives

The objectives of this study are to:

- (i) Investigate the availability of radio for use in teaching and learning in secondary schools in Starehe District, Nairobi County.

- (ii) Examine how the school administrative support influences the use of radio in teaching and learning in secondary schools in Starehe District, Nairobi county.
- (iii) Determine the availability of appropriate supplementary radio materials for teaching and learning in secondary schools in Starehe District, Nairobi County.

1.5. Research questions

This study attempts to answer the following questions:

- (i) How does the availability of radio influence teaching and learning in secondary schools in Starehe District, Nairobi County?
- (ii) How does the school administrative support influence the use of radio in teaching and learning in secondary schools in Starehe District, Nairobi County?
- (iii) How does the availability of appropriate supplementary materials influence use of radio in teaching and learning in Starehe District, Nairobi County?

1.6. Significance of the study

The results of this study informs the government and especially the specialized units like KIE, on the way the school broadcasting education investment is being implemented in a specific case. This highlights the challenges and opportunities the programme faces and be useful in reviews and reform of the initiative. The findings give insight into the availability of materials, selection and preparation, and how these influence use of radio in teaching and learning. Moreover, the knowledge gained contributes to better understanding of the role secondary school administration plays in making teaching and learning through radio operational. Furthermore, the results can extend to inform national

efforts towards quality and accessible education as elaborated in the Vision 2030. Ultimately, therefore, this study also gives empirical insights into the broader international initiatives like the UNESCO. “Education For All” by 2015 agenda, which anchors partly on local education efforts.

1.7. Limitations of the study

Preliminary research indicated that there is great potential to complete the study as the respondents are accessible. Teachers had busy workloads but they were able to fill in the questionnaires within the researchers’ time frame.

1.8. Delimitations of the study

This study targeted the secondary school sector, zeroing in on selected secondary schools in Starehe District, concentrating on radio for teaching and learning. The respondents cover head teachers and three subject heads in English, Kiswahili and Mathematics which are core subjects in the secondary school curriculum.

1.9. Assumption of the study

The study had two main assumptions. One is that the school administration targeted would cooperate, to have the questionnaires administered in their respective institutions. Second, it is also assumed that the respondents will provide authentic answers. Both assumptions were positively met.

1.10. Definition of significant terms

Distance education: It is a type of learning where there is separation of teacher and the learner from the learning group with the personal mode mediated by technology.

School administration Support: It is the school management and leadership which includes the school principal, departmental heads and subject heads

Use of Radio: Making available and ensuring utilization of radio, CDs and cassettes as an instructional medium

Availability of appropriate supplementary radio materials: Specially prepared materials for subject teacher e.g. Teachers' guide on subject matter

Government Policy: Guiding principles used to influence decisions e.g. ICTs in education and training

1.11. Organization of the study

This study is organized in five chapters, each feeding into each other starting with the introduction, Literature Review, Methodology, Data analysis, Discussions, Conclusion, Recommendation, and References.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This chapter reviews the literature which is pertinent to the study. This chapter focuses on various relevant themes which includes the following: first, the global use of radio; second, the development of distance education in Africa; third; educational broadcasting in Kenya; fourth, the explanation of variables and equivalency theory, and lastly, the conceptual framework.

2.2. Global use of radio for distance learning

According to *The World Book, Encyclopaedia* (2001), the radio waves were discovered in the second half of the 19th century, in the fields of physics, military, communication and medicines. *World Book, Encyclopaedia* (2001) shows that, the development of radio in the 1800s revolutionized communication. However, radio was not used for educational instruction in the 19th century and even in the first two decades of the 20th century. Earliest radio use as a medium of learning took place in the 1920s. Keegan (1996) and Buck (2006) indicate that the late 1920s and early 1930s were the booming years for radio business. Many countries including Holland, Australia, Canada, United States of America, and even Kenya had started using radio in this period for educational broadcasting.

Early radio technology was rudimentary and in constant need of adjustment by user and was yielding poor quality sound. (*Journal of Distance Education*. Vol. 21:75-88). Furthermore, the radio was expensive and a problematic equipment to operate, just as the early macro computers were. According to UNESCO (2002), the early and general public radio users were mostly interested in entertainment and information. Therefore, the radio did not grow as an important education instrument equivalent to business levels.

Teachers, inadequate knowledge of the curriculum and how to present materials appropriately for various ages was conspicuous in the period between 1920 and 1930. (Collins, 1956) as cited by UNESCO (2002). Schools were also poorly equipped with text books and other instructional resources and the effects of the world economic depression had its toll to many sectors of societies and the education field was not exceptional (*World Book Encyclopaedia*, 2001). Lack of enough funding was a major constraining factor also. It made the choice of radio as an additional mode of teaching and learning difficult, even as many donor agencies simply did not quickly recognize the opportunities of radio technology.

Over time, however, the use of radio in distance learning made more sense than portable teachers and classrooms. Countries like Canada have extended broadcasting services to adult learners. The importance of radio also grew with due logical recognition of its ability to overcome distance and cost. Being the capacity to access vast areas within a minimum infrastructure and a cheap technology that is available and applicable for educational purposes worldwide (Buck, 2006); Collins, (1956), have also brought in the

practical and pedagogical capabilities of using radio as a means of distance learning including instruction for students with disabilities.

Today, many countries have expanded the use of radio in distance education. India, for example, has well-developed distance educational programmes in place (UNESCO, 2002) while many European countries have widely integrated distance education as part of learning modes, especially in Western Europe, where there is a strong private sector serving the adult population through general educational programmes at the secondary school level. Internet access and broadcasting can open up classrooms to educational radio programming. For many developing countries, radio is an integral part of culture and it can be used to integrate other forms of technology into society. However, in Africa, where this project is based, set educational standards, especially for high quality instructional materials, and method of delivery still face challenges which are important to articulate.

2.3. Distance education development in Africa

According to UNESCO (2002), Africa represents a dramatic characteristic in Distance Education knowledge gap between North and South in the world. Development of Distance Education in Africa has had a relatively low impact in the region. The main reasons for this state of affairs include not only lack of infrastructure, but also under funding and a general lack of training for those involved.

Distance Education has been mainly used to widen access to basic education, and to maintain as well as improve the quality in the conventional education system particularly through in-service training of teachers. Very little has been done at the secondary level as more attention tends to focus on the primary sector. The choice of interactive technologies like computers for learning is limited because of low incomes, making the radio still a focal point and cheaper alternative that supplements traditional teaching methods even though it is not fully utilized. In developed countries, radio is used interchangeably with other digital technologies but most African countries cannot afford such opportunity.

There have been some benefits from the developed countries whose radio experiences have influenced some African education contexts. For example, one of the most widespread and dominant use of educational radio is known as radio forum, started in Canada in 1914 as a discussion programme and served as a model which was adopted subsequently in a number of developing countries (UNESCO, 2002). Studies in Ghana (Ndubuisi & Thompson, 1987) indicate that the forum members learned more than the non-forum members but also that the group listening, followed by group discussion, was more influential in changing beliefs and attitudes towards innovation than the group listening without discussion. Although such initiatives have had exceptional impacts in the radio development in the continent, the choices of distant education using the radio are determined by different factors. Varying education policies, poverty levels and political commitments are some critical influencing factors.

2.4. School broadcasting in Kenya

The notion of Information Communication Technology (ICT) is as old as mankind. The need to communicate and inform has assured the survival of mankind and hence the reality of the evolution of the tools that humankind needs for self-assertion and survival in society. Society evolution and the need to communicate provide us with urge to categorize ICT into the old (drums, horns, marathon runners, etc) and the modern one that to majority of people in the developing world conjures images of computer equipment and the internet (Were et.al. 2007). According to UNESCO (2005) and Future lab (2003) ICT should be viewed in a comprehensive way as “the tools and processes to access, retrieve, store, organize, manipulate, present and exchange information by electronic and other automated means. These include hardware, software, and telecommunications in the form of personal computers, scanners, digital cameras, handhelds/PDAs, phones, faxes, modems, compact disc (CD) and DVD players and recorders, digitized video, radio and TV and programmes like database systems and multimedia application”. Future lab (2003) further states that this range of technologies may or may not be networked or have internet in relation with information and communication. In this sense, therefore, ICT is a broad comprises digital as well analogous techniques that impacts and influences the lives of an increasing number of people in the way they access and use new knowledge.

Kenya, through the Ministry of Education, Science and Technology prioritized ICT as one of its priority areas for development during a conference discussion on the ways in which information and communications technologies (ICTs) can be leveraged to support and improve the delivery of quality education for all Kenyans (MOEST, 2005). In an endeavour to respond to the educational priorities outlined in Ministry's policy as outlined in Sessional Paper No. 1 of 2005, and the Kenya Education Sector Support Programme (KESSP) document (MOEST, 2005). Increasing Educational Access in Urban Slums and Arid and Semi-Arid Lands (ASALs) was identified as one of the seven priority option area in which it was proposed that there should be developed an Interactive Radio Instruction (IRI) in ASALs and Urban Slums. It was thus proposed that Kenya can begin testing IRI strategies in pilots that will provide high quality, minimal-cost learning opportunities for learners in ASALs and urban slums. The pilot would serve several purposes. First, to familiarize Educational Media Services with the skills and systems it will need to take on such a task. Second, to demonstrate the IRI methodology to a wider audience of policy makers, planners, communities and potential financiers. Third, to demonstrate the learning outcomes that IRI can achieve among the populations of urban slums and ASALs. Finally, provide a body of radio programs that can be used in long-term implementation when taken to an expanded scale. Similarly, it was agreed for a need to develop IRI programmers for Non-Formal Education as the ones described for school-based learners in ASAL regions and urban slums of Kenya. Further, it was proposed that the most powerful use of radio as an in-service training device is to build training into IRI lessons.

The Ministry of Education National ICT Strategy (MOEST, 2006) was developed to guide the Education sector in adoption of ICTs across all levels of Education and training. The strategy was developed taking into consideration of the National ICT Policy (GOK, 2006), the Education Sector Policy in Sessional Paper No.1 of 2005 (MOEST, 2004) and is in line with the E-Government Strategy (GOK, 2004) as well as Kenya's Vision 2030.

One of the greatest criticisms of the viability of ICT in the developing world is that in education it has been understood to mean computers and computer laboratories. This is believed to have contributed to the phenomenon referred to as "Computer Tragedy" in most schools today. Leach et. Al (2006) advance that rather than approaching ICT in education and training this way it will be very useful to emphasize the integration of information technology, information/content and telecommunications with a view to enable new forms of knowledge production and interactivity. Thus, therefore, where there is conspicuous lack of infrastructure, electric power and human capacities to support a deliberately planned ICT policy a combination of complimentary technologies and processes (e.g. Radio and internet) where reliance on internet alone would exclude many people would be advisable. Similarly, there may need for a paradigm shift from the conceptualization of a school system from the traditional perception of a classroom, a teacher and teaching aids. A school should not merely be regarded as a building but as a knowledge infrastructure consisting of laboratories, radio, television, internet, computer,

museums etc. In this sense a classroom facilitates individual learning, which can be fused into a collaborative learning with others at a distance with the teacher being not the sole provider of knowledge, but playing an important role of a tutor and a facilitator of knowledge acquisition by learners.

According to Wambaria (2003), the British introduced the use of educational broadcasting in Kenya way back in 1928. It is more than a century since then, yet radio broadcasting as a means of learning is still very low. Kinyajui, L.W.(2003) shows that, although 63.7% secondary school have radio, some have poor signals or no coverage in certain parts and 1/3rd of the schools have no electricity.

Distance education development in the colonial period remained highly underdeveloped. Soon after independence, Kenya realized that much more than the conventional approach to education was needed in order to attain her set goals and targets in education for all. Thus, the idea of using the radio for education purposes was accepted. Broadcasting was embraced in the education sector as a critical aspect and one of the benefits was the democratization of education in the country. (Wambaria, 2003).

The use of radio broadcast to schools began in 1961 when the school broadcasting unit was established under the then Kenya Broadcasting service. This was under the then Voice of Kenya (VoK). The Ministry of Education took over school radio broadcast programme in 1965 and expanded it to an Education Media Service (EMS) 1976. The

mandate of the EMS was to produce educational materials as part of multi-media curriculum packages and as an element of projects mounted by other agencies through the VoK. For this reason, it was absorbed into the KIE and structured into three sections, namely Radio, TV Design and Print, Resources and Engineering. Much of the focus was towards the primary education sector and very little on the secondary education.

In 1989, VoK was renamed Kenya Broadcasting Corporation (KBC) and granted a corporate status. This development led to its air time charges being revised upwards. These actions by the KBC were not accompanied by concomitant revision of the government budgetary allocations to the KIE school broadcast programme. As such, KIE was unable to adequately meet the costs of both production and transmission for the programme from then on. Therefore, the programme was discontinued in 1995, and this shows lack of consistent development in use of educational radio for teaching and learning.

With these developments KIE resulted to seeking alternative modes of transmission. In 2001, KIE signed an agreement with World Space (KIE, 2001) that allowed the use of a 24 hour dedicated channel through the World Space satellite. Through these efforts and arrangements, the KIE broadcast to schools commenced, through the KBC English service, in January 2007.

Radio broadcasting for school learning has been haphazardly developed. While Kenya saw in broadcasting, both the prospects of improving the quality of instruction in schools, and reaching sections of the society which otherwise remained outside the purview of the formal system of education, extension work commitment to it has been weak. Today, access to higher, more affordable, computer technology has increased and new methods of broadcasting are being applied. It is now possible to broadcast, audio and video information over the internet using a home computer. Used efficiently, computer technology could lower the cost of technical assistance many countries receive from international donors. However, wealth disparities continue to feature the use of computer with greater concentration among the rich populations

Many times the traditional school system alone cannot meet the country's demand for education. KIE (1999) evaluation of modes of transmission found and recommend that, the use of "live broadcast should be reintroduced" and argues that it is most suitable for the primary education sector. This shows that the secondary school sector is less emphasized as a place for radio related education. However, other reports have shown that there is high demand for education especially the higher education (KIE, 2003). This demands the diversification of teaching modes, where radio is pertinent.

Since independence, education policies in Kenya have tended to allow a liberal approach in which the schools can choose the mode of education transmission. The need for integrated manner where various forms of media could be used for learning including

radio because of its cost- effectiveness has so far not been fully explored. Distance learning through the use of radio could be viable, cost-effective and an alternative to conventional schooling (Jones, 1997). Research in Kenya showing what influences the choice of instructional medium is lacking.

School broadcasts studies in Nairobi are few. According to KIE(1999) evaluation only two secondary schools within Nairobi (Langata High and Buru Buru Girls), were covered in national assessment of the modes of transmission in secondary schools in Kenya and none of which included the secondary schools in Starehe District. According to Jamison (1978), cited by Wambaria (2003), existing research shows that the use of radio for teaching and learning, supplemented with appropriate printed material, is about as effective as conventional instruction and can be used to teach most subjects as effectively as a live classroom instructor or instructional television. Yet, very little attention on this has been paid in Nairobi County KIE (2008,p.33) draft, "Report of Broadcast to Schools through the Kenya Broadcasting Corporation (KBC), notes that, " many schools are not aware that they can access KIE school broadcast through KBC because they have not been informed about the shift from the World space to KBC." While the partnership between world space and KBC made the cost of broadcasting high due to the cost-sharing today, the government budget allocation to the sector has eased the financial burden to schools as it provides for free broadcast to schools.

The urban schools in Nairobi especially in highly populated areas, characteristically, suffer shortages of instructional materials. It becomes difficult, for students to work

productively in groups due to lack of enough space. This kind of environment became more aggravated by the fact that the 2003 government implementation of free primary education led to increase in enrolment of students in both primary and secondary schools and overstretching the facilities. This is a kind of a spill over effect felt mainly in the public secondary schools (GOK, 2008). As this was happening, there was lack of concomitant expansion on the available facilities. KIE (1990) found that school broadcasts are important but affected by occasional poor reception, and lack of teachers, adequate training and preparation in broadcast. Equally in their recent analysis (KIE 2008 *ibid*), they indicate that that KBC broadcast can reach all parts of the country, and the only major problem to good reception is occasional poor weather, though this is not an outstanding problem in Nairobi.

2.5. Availability of radio

Radio has been used for communication since 1800 (*The World Book, Encyclopaedia*, 2001), between two distances because it is quick and inexpensive. It has been used as an education tool in broadcasting (Keegan, 1996; Buck, 2006). In both developed and developing countries Radio is used in this study to mean the availability and ensuring that it is used in the classroom as an instructional medium.

2.6. School administration support of radio usage

School administration has the responsibility of making sure that the school curriculum is implemented (GOK, 2008). The radio has evolved as an instructional medium over the years in both developed and developing countries (Keegan, 1996; Buck, 2006). The administrative radio support involves purchasing of the radio/s, availing the finances for maintenance, providing a room for radio lessons, buying of the batteries where there is no electricity and finally making sure that there is proper monitoring of the radio lessons

2.7. Availability of appropriate supplementary materials

These are the supportive materials which supplement the radio lesson. In developed countries these are available in forms of text books, guides, charts and online services. In most African countries, teaching online is still poorly developed. The concept of radio has remained abstract and not well supported with supplementary materials. Lack of internet services also tends to hamper progress. In the GOK (2008) Education Sector Report Government planned to support materials development to enhance quality learning achievement in all schools. Under this arrangement the target was to develop, produce and broadcast 3,780 programmes.

2.8. Theoretical framework: Equivalency Theory

According to Simonson et al., (1999), “theory is important to the study of distance education because it directly affects the practice in the field.” Keegan (1986), reviewed the development of distance education theories and characterized them into three broad groups as follows. First are *theories of autonomy and independence*, which emphasizes fundamental, independence of learners. Second, are theories *of industrialization* which see distance education as an industrialized medium in teaching and learning. Third, are *theories of interaction and communication*, which view teaching and learning as an integrated matter. The general pattern obtained in these theories is the tendency to focus narrowly on specific aspects of distance education, which limits understanding of the interconnectedness. Therefore they fail to appropriately address various facets of distance education and lack flexibility for adoption in different situation and times. Shannon Weaver Theory, one of the first models of communication process developed in 1945 by Claude, E. Shannon (Heinich, 1990) as cited by Wambaria (2003), was mainly interested in the technical aspects of communication, and is mostly suitable to analyze instructional situations. The development of such theories reflects important steps on distance education, though lacking in ability to address variations in different countries and education contexts.

This study proposes to adopt the equivalency theory. According to Simonson (1995), equivalency theory has components that cover, learning experiences, appropriate application, students, and outcomes. The theory's capacity to provide a virtual learning instructional environment where the learners have visual interaction with instructors in addition to listening enhances understanding, as opposed to the singular traditional models where the learners and the instructors do not have a way to interact in the visual forms. In countries like the United States where the modern telecommunication technologies have been highly developed, learners and instructors have many possibilities to "be seen and heard" hence bringing a dualism, a sense of "realistic school and classroom status."

Currently, the mode of radio as instructional tool in Kenya is focused only to be heard and even then, there are many unexplained gaps that pertain to radio utilization in teaching and learning that the literature reveals. Equivalency theory potential to give guidance for future possible reforms from the current status of radio "can be heard" towards "can be heard and seen," in education instructions, gives value. The hope to improve radio as mutually enriching teaching and learning media is itself in tandem with modern technologies. It is furthermore, in line with the policy consideration of Kenya Vision 2030, where access to quality education is also reflected within the perspectives of science and technology.

2.9. Conceptual Framework

The factors that influence use of radio for teaching and learning in secondary schools in Starehe District, Nairobi County, Kenya are theoretically related in a conceptual framework (Figure 2.1). For this particular study these factors are thought to be availability of radio for teaching and learning, School Administration and Support for using radio in teaching and learning, and availability appropriate supplementary radio materials for teaching and learning (independent variables) and the use of radio in teaching and learning (dependent variable). In this framework the Government policy remains as the moderating variable.

The diagrammatic representation of how these factors influence each other (the conceptual framework) is shown in Figure 2.1.

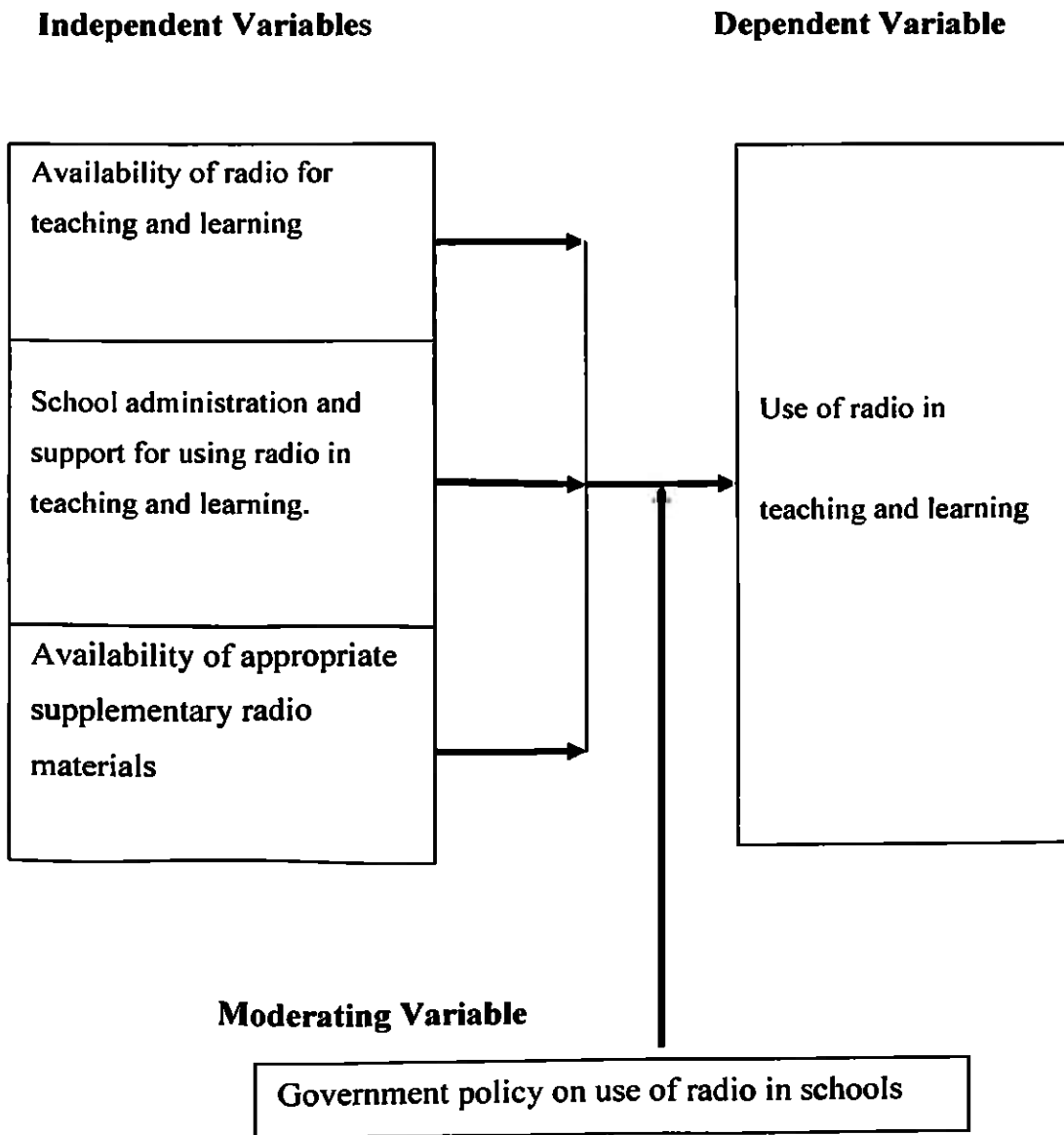


Figure .2.1. Conceptual framework

2.10. Summary

This chapter reviews the use of radio for education broadcasting globally. Secondly it has examined the development of distance education in Africa. Thirdly the chapter has focused the situation of educational broadcasting in Kenya, the explanation of the variables, the equivalency theory is also used to support the study and finally the conceptual framework which is the diagrammatic representation of the independent and dependent variables used in the study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

This chapter describes research design and methodology. The aspects covered include the research design, target population, sampling procedure, research instruments, data collection and proposed analysis procedures.

3.2 Research design

A descriptive research survey is used in this study. This involves gathering data from respondents thought to be representative of some population using an instrument composed of closed structure or open-ended questions (<http://faculty.chass.ncsu.edu/garson/PA765/survey.htm>). The study specifically uses the descriptive survey research, which is the practice of gathering specific data by way of asking a series of questions that require answers from which data is analyzed. Description survey uses a tool “to organize data into patterns that emerge during analysis. Those patterns aid the mind in comprehending a qualitative study and its implication” This design helps to investigate the factors that determine the utilization of radio programmes in secondary schools in Starehe District. It has also looked at administrative factors that may affect radio teaching programmes in Secondary schools in Starehe District.

3.3. Target population

In General, a target population refers to a particular group of items that is identified as the intended subjects of study and analysis. While it can also be referred to as a target audience, Ngechu (2006) defines it as a set of people, group of things, households, services, elements or events which are being investigated. Usually this definition consists of descriptions to fit a certain specialization which a researcher is studying.

The population studied includes all the eleven (11) Secondary Schools in Starehe District, Nairobi County, Kenya where two groups of respondents were targeted. These include the school head teachers and teachers who are the subject heads. The teachers were drawn from the secondary schools, in Starehe District. The teachers include core subject teachers namely English, Kiswahili and Mathematics. All the headteachers were involved as respondents.

There are 11 secondary schools in Starehe District and all the 11 schools were used in the study. Two secondary schools in the neighboring Kasarani District were selected for the pre-testing. The target population therefore included 11 secondary schools giving a total number of 33 teachers and 11 headteachers.

The choice of the headteachers proposed is based on the fact that they are in charge of the implementation of the school curriculum. They also hold a strategic leadership position,

to support the relevant quality instructional methods and oversee the overall implementation of the radio programmes in their respective schools.

Teachers are important to the study because they directly help with the actual operation of the teaching, selection and preparation of students, materials and ensure the appropriate learning environment in respective classes for the radio broadcast. The subject heads are responsible for monitoring the implementation of the syllabus for the subjects they are in charge. They also moderate exams. Hence, they are the link between the subject teachers and the heads of departments. They are, therefore, conversant with all matters of learning instruction that are most relevant to this study.

3.4. Sample Size and Sampling Procedure

The study utilized purposeful random sampling of the respondents in the population, which are mutually informative. Ideally a sample of the entire population is recommended (Ngechu, 2006) so the sample is a true representation of all the characteristics of the population. However, a sample size, that is the number that represents the entire population, suffices in statistical sense. According to Ngechu (2006) for a national survey a sample size of 1000 is satisfactory, while a sample size of 50-1000 is satisfactory for a District survey such as the present one

In the present study there are only eleven (11) schools in Starehe District from which purposeful random sampling was undertaken by administering questionnaires to three (3)

core subject teachers. Thus, from the foregoing definition of sample size for 11 Schools is small and it has been decided to sample the entire population. Mugenda and Mugenda (2003). state that it is advisable to take the whole population where the sample is small to make the study meaningful, such as is the case in the present study.

The purposive random sampling in the current study has been used to identify the core subject teachers as heads for the core subjects (Mathematics, English, and Kiswahili) and head teachers as administrators for the programme. As such 3 teachers (for each core subject) made a total of 33 teachers in all the 11 secondary schools. Further, each school normally has one head teacher. Hence, all the 11 headteachers of all the 11 schools formed part of the respondents. Overall, therefore, a total of 44 teachers were the respondents in this study. Total number of schools is eleven and two schools were used for pre-testing from the neighboring District, Kasarani.

3.5 Methods of data collection

The study used of both primary and secondary data. The primary data was sourced from KIE documents and periodicals from the Ministry of Education. Secondary data is used as a review of literature and was sourced from written records in libraries. The main sources of these are the general discussions on the radio as an instructional medium in periodic as well as thematic contexts. The Kenya Institute of Education (KIE), which has the mandate from the Ministry of Education, to produce radio programmes for schools,

formed the major sources of secondary data. The primary data focused on the instructional learning practice in secondary schools. The head teacher and subject heads formed the group where the primary data focused. Data was collected among these using a questionnaire.

The field research was conducted within necessary ethical standards and compliance to laws related to academic quality. The researcher sought permission from the Ministry of Education to collect data from public schools in the Starehe District, and also reported to the Provincial Education office Nairobi and, similarly, to the respective heads of secondary schools in Starehe District. The instruments for the research consisted of a questionnaire (Appendix. A), which was administered to the head teachers and the heads of the three compulsory subjects in the secondary schools. The questionnaires were administered personally by the researcher in the respective schools in coordination with the headteachers. The questionnaires comprised both an open-ended and a semi-structured format.

3.5.1. Validity

Validity constitutes quality, rigor and trustworthiness. This means that the research results can be generalized to wider groups and circumstances. (Stenbacka, 2001). However, validity is also just viewed as a singled idea as in other circumstances, knowledge is viewed as socially constructed and may change, depending on

circumstances. (Golafshani, 2003). This is a constructivist notion (Higgs, 1993), which reflect that, “reality can change weather the observer wishes it or not.” and therefore brings the need for multiple or possible diverse construction of reality. This also reflects the need for multiple method of searching or gathering of data in a situation where it is necessary. In this research validation involved consulting with experts in radio as an instructional media and my supervisor. It was also validated by involving the respondents who have authority in their subject areas including the teachers of core subjects that is Kiswahili, Mathematics, English as well as the head teachers who are conversant with the administration of the curriculum.

3.5.2. Reliability

Reliability, according to Golafshani (2003), is the extent to which the result of a given study is consistent over time. This measures the extent to which a research is replicable. It also refers to the situation where the results of a study can be reproduced under similar methodology (Joppe, 2000). In this study, the questionnaire to be administered in the secondary schools comprises the primary instrument of measurements. To ensure that this instrument is reliable, the researcher pre-tested it upon two schools in the neighboring Kasarani District. This helped to provide the feedback about the instrument reliability and ensure the empirical validity of the results.

3.6. Methods of data analysis

The data was analyzed using a combination of data analysis methods which are descriptive in nature. The descriptive statistics helped analyze the data in terms of quantities, while the qualitative data is analyzed in terms of quality of the phenomenon in a complementary manner.

Before the data are coded, questionnaires were verified for completeness, accuracy and uniformity. The questionnaires were used in the field and the data systematically organized, coded using statistical procedures. Standard statistical methods were used for data analysis (Kingoria, 2004; More, 1998) and summaries done using, mode, median, percentiles, and tables. The analyzed data is reported on three main classifications including summary of main findings, conclusions and recommendations.

3.7. Operational definition of variables

The operation definition of terms covers both the independent (Table.3.1) and dependent (Table.3.2) variables. In both are also shown the variable indicators, measurement, scale, data collection tools and analysis procedures.

Table. 3.1. Operational definition of Independent variables

Objective	Variables	Indicator	Measurement	scale	Data collection tool	Data analyses
To investigate the availability of radio for use in teaching and learning in secondary schools in Starehe District, Nairobi County	Independent Variable Availability of radio	Radio	Presence of a Radio for teaching and learning purposes	Ordinal Ordinal (median. Percentile)	questionnaire	Descriptive statistics(quantitative) and qualitative analysis(descriptions)
To examine how the school administrative support influences the use of radio in teaching and learning in secondary schools in Starehe District, Nairobi County	Independent Variable School Administrative support	i) KIE Broadcast time tables availed on time ii)incorporation of radio lessons in the the school timetable. iii)Radio given equal treatment compared to other teaching mediums	Date/ months the time tables are received* Displayed in the school timetable Incorporation as a teaching method in the schemes of work. Amount of money set aside for radio repairs.	Ordinal Nominal Ordinal (percentile) Ordinal	questionnaire	Descriptive statistics(quantitative) and qualitative descriptive

		iv) Budget for purchase of radio and repairs.				
To determine the availability of appropriate supplementary radio materials for teaching and learning in secondary schools in Starehe District, Nairobi County	Independent Availability of appropriate supplementary Material availability	1. Supplementary materials to support the radio lesson	Relevant text books per subject. Radio guide per teacher. Teachers notes to guide the broadcast.	Ordinal Ordinal	questionnaire	Descriptive statistics(quantitative) and qualitative descriptive

*May is the month that the KIE radio timetables are expected in schools.

Table 3.2. Operational definition of dependent variable

Objective	Dependent Variable	Indicator	Measurement	Scale	Data collection tool	Data analyses
Use of Radio in teaching and learning	Use of radio	i) Audibility/ poor signal	Clarity	Nominal	questionnaire	Descriptive statistics (quantitative) and qualitative analysis
		ii) Disruption- noises, other school functions.	Sports, half-term, prize giving day,	Nominal		
		iii) Updates on current syllabus changes	update guides from the KIE	Ordinal		
		iv) Frequency of training sessions attended.	No of seminars and workshops attended to update teachers on radio use.	Ordinal		
		v) A standard room for 40 students (listening room away from interruptions)	A room availed for all radio lessons. eg radio room/hall	Ordinal		
		vi) Monitoring to ensure usage	Record of work.	Ordinal		
		vii) Budgets for radio maintenance.	Amount of finances availed for radio maintenance			

3.8. Summary

The chapter highlights the research methodology followed in this study. This includes the research design, target population, sampling procedure, methods of data collection, validity and reliability, operational definition of variables and finally methods of data analysis.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1. Introduction

This chapter analyses, interprets and presents data as collected through two questionnaires, one for principals and the other for core subject teachers. The data was based on the following independent variables: availability of radio for use in teaching and learning, school administrative support and availability of appropriate supplementary radio materials.

4.2. Questionnaire return rate

The respondents were positive and questionnaire return rate was 100 % by both Principals of schools and core subject teachers.

4.3. Availability of radio for use in teaching and learning

The results on the availability of radio for use in teaching and learning in schools are analyzed in two aspects, including the availability of the radio as a tool and the reception of airwaves by the radio as would be audible and clear.

4.3.1. Radio availability

The analysis of the availability of radio for teaching and learning in Starehe District Secondary Schools is shown in Table 4.1.

Table.4.1. Availability of radio for teaching and learning in Starehe District Secondary Schools

SCHOOL n = 11	NUMBEROF RADIOS AVAILABLE			
	Maths	English	Kiswahili	Total
SCH 1	0	0	0	0 (0)
SCH 2	0	0	1	1 (0)
SCH 3	0	0	0	0 (0)
SCH4	0	1	1	2 (0)
SCH 5	0	0	0	0 (0)
SCH 6	0	0	1	1 (1)
SCH 7	0	1	0	1 (0)
SCH8	1	1	1	3 (1)
SCH 9	0	1	0	0 (0)
SCH 10	1	0	0	2 (1)
SCH 11	1	0	1	2 (0)
Total	3	4	5	12 (4)

NB: Number in brackets indicates numbers of radios in working condition

The results show in Starehe District Secondary Schools there were 12 radios all of which are in 7 (63.6 %) out of the 11 schools that were studied. Out of the 7 schools with radios, the results also indicate that radios were in working condition in only 4 (36.4 %) schools leaving 8 (72.7 %) practically without radios. The results further indicate that mathematics respondents in 8 (72.7 %) schools have no radio for teaching. The results are opposite for English respondents where radios for teaching and learning in 7 (63.6 %) schools while teachers in 4 (36.3 %) schools do not have the radio for teaching. Kiswahili teachers in 5 (45.5 %) schools have the radio while it is missing in 6 (54.5 %) of the schools. Since the radio, as a tool for receiving and delivering the radio programme seems to be available to most teachers in English and to some extent in

Kiswahili, the high percentage (72.7 %) of lack of radio for mathematics teachers is a pointer to the fact that subject teachers have to be interested and committed for the radio teaching programme to be mainstreamed as a teaching method in Starehe District Secondary schools. However, on the whole, the radio is unavailable to more than a half (54.5 %) of the core subject teachers in the schools studied. Although School Principals were not directly asked about the availability of radio in the school, this was inferred from the statement on whether the radios in the school were in good working condition. They indicated that in 36.4 % of schools radios were in good working condition while in 45.4 % of the schools the radio was not in working condition all the time. Two (18.8 %) principals did not respond to this statement.

4.3.2. Radio Reception

Related to availability of radio is also the need to know that where they are available, the reception is clear. In all the 11 schools studied only in 2 schools (Table 4.2) did Subject teacher indicate that radio reception was clear.

Table 4.2. Radio reception level in the school timetable in Starehe District Secondary Schools

SUBJECT	Number of Schools	No. of Schools where reception was clear	No. of Schools where reception was not clear	No. of Schools where was no Response
MATHS	11	0 %	-	100 %
ENGLISH	11	9.0%	-	91.0 %
KISWAHILI	11	9.0 %	-	91.0 %

These results indicate that, on average, only 6 % of the teachers responded to this question while 94 % did not possibly due to lack of interest in and awareness of the programme.

4.4. School administrative support

The Principal of each of the school studied is responsible for overall school administration and the implementation of school teaching curriculum. As such it is prudent that there is strong administrative support in terms of materials, teacher support, and allocation of time in the school time table as well as providing linkage to KIE for the programme to be implemented.

4.4.1. Role of the School Principals

The results of the analysis of the administrative support School Principals render to the school broadcasting programme is, in general, shown in table 4.3 by the nature of how they responded to the questionnaires presented to them. The results indicate in all the areas needing support the number of Principals that give such support ranged from as 9.1 % i.e. one Principal to 36.4 %. It is amazing that in about 13 areas needing support most (54.5 % to 81.8 %) Principals of schools did not offer that support.

Only 2 (18.2 %) of the Principals support teachers directly in areas such as training, availing teacher radio guides and charts, as well as availing time tables. Similarly, more than 50 % of the Principals do not provide funds for simple repairs and maintenance of radios in all the 11 schools studied. Over all, therefore, one can confidently state that there is very little administrative support to the KIE radio broadcasting programme in secondary schools in Starehe District Nairobi. This is strongly supported by the other fact shown in this study that only 18.2 % of the Principals have Radio Programme time tables from KIE.

Table 4.3. Response to statements by Principals of schools in Starehe District

No.	STATEMENT	RESPONSE (%) n = 11		
		YES	NO	No Reply
1a	Principal has the Radio Programme time table from KIE	18.2	81.8	0
b	KIE Radio programme come to School on time	9.1	18.2	72.7
2a	School been using KIE Radio Programmes	9.1	18.2	72.7
3	Radio lessons are incorporated in the schemes of work as a teaching method in the school	9.1	90.9	0
4	There is a schedule to follow up on Radio Programme in the school calendar	18.2	81.8	0
5a	There is a schedule to follow up on Radio Programme in the school calendar	27.3	63.6	0
b	Amount of money allocated is enough	18.2	36.4	45.4
6a	School Radio is in good working condition all the time	36.4	45.4	18.2
7	Subject Teachers scheme for Radio lessons	27.3	72.7	0
8	School has regular/updated information on changes in syllabus of the KIE Radio programme.	27.3	72.7	0
9a	Administration supports Teacher in the following ways to handle radio lessons in the school. Facilitates Training	18.2	72.7	9.1
b	Avails Teacher Radio Guides and Charts	18.2	72.7	9.1
c	Avails time tables	18.2	72.7	9.1
d	Provides funds for repairs and maintenance	36.4	54.2	9.1
e	Any other support	0	90.9	9.1
10	School has specific room/hall for radio listening set aside for students	27.3	54.4	18.2

4.4.2. Direct support to subject Teachers

Table 4.4 indicates the level and nature of support Principals provide to the Subject Teachers in teaching the radio broadcasting programme in the schools studied.

Table 4.4. Level and nature of support Principals accord the subject teachers of the radio broadcasting programme

ADMINISTRATOR n = 11	ATTRIBUTES	
	Support to Teachers (%)	Nature of support offered
SP 1	0	None
SP 2	20	Radio guides and Charts
SP 3	0	None
SP 4	20	Teacher training
SP 5	0	None
SP 6	20	Funds for repair and maintenance
SP 7	80	Teacher training, Teacher Radio Guides and Charts, Timetables, Funds for repair and maintenance
SP 8	20	Funds for repair and maintenance
SP 9	0	None
SP 10	40	Timetables, Funds for repair and maintenance
SP 11	0	None

NB: SP = School Principal; % support to teachers based on 5 attributes in Q9 (Annex 1 Section B and C)

It is clear that only 1 (9.1 %) school in the entire District gives almost full (80 %) support to the radio broadcast teaching programme with the remaining 10 (90.9 %) principals offering minimal support. These results indicate that there is very little commitment by almost all the Principals to using the radio broadcast as a teaching method in the schools that they head.

4.4.3. Subject teacher awareness of radio broadcasting programme

Another aspect of administrative support to the school broadcasting programme is for the Principals to create awareness of programmes in the curriculum amongst the teachers in their respective schools. The degree of awareness of the radio broadcasting programme amongst teachers in the 11 schools of Starehe District is shown in table 4.5

Table. 4.5. Awareness of Radio broadcasting programme by teachers in Starehe District

SUBJECT	Number of Schools	No of schools where teachers were aware of the programme	No of schools where teachers were not aware of the programme
MATHS	11	18.1 %	81.8
ENGLISH	11	54.5	45.4
KISWAHILI	11	36.6	63.6

These results indicate that it is only in 2 (18.1 %) schools that Mathematics teachers are aware that there exists a radio programme for teaching mathematics. In the remaining 9 (81.8 %) schools had no knowledge on the programme. In 54.5 % of the schools English teachers were aware of the programme. For the other language subject, Kiswahili, teachers in 63.6 % of the schools (9) were unaware of the radio broadcast programme. On the average, for the entire number of schools sampled, 36.6 % across the three core subjects, teachers are aware of the radio broadcasting programme while majority (73.4 %) are unaware that the programme exists.

4.4.4. Incorporation of the radio time table in the school timetable

The data on whether subject teachers have radio teaching programme incorporated in the school timetable were analyzed and the results are shown in table.4.6.

Table.4.6. Incorporation of the radio broadcasting in the school timetable in Starehe District Secondary Schools

SUBJECT	Number of Schools	No. of Schools where incorporated in timetable	No. of Schools where not incorporated in timetable
MATHS	11	0 %	100 %
ENGLISH	11	0 %	100 %
KISWAHILI	11	0 %	100 %

It is clear that none (0 %) of the 11 schools studied incorporate the radio timetable in the schools regular timetable.

4.4.5. Disruption of Radio programmes

Table 4.7 shows the results of the analysis on incidences of disruption of the radio teaching programme in the school timetable amongst the 11 schools studied.

Table.4.7. Incidences of disruption of the radio teaching programme in Starehe District Secondary Schools

SUBJECT	Total Number of Schools	No. of Schools where programme is disrupted	No. of Schools where programme is not disrupted	No. of Schools where No response
MATHS	11	9.0 %	0 %	90.9 %
ENGLISH	11	27.2 %	18.8 %	54.4 %
KISWAHILI	11	0 %	27.2 %	72.7 %

As can be seen subject teachers in 10 (90.9 %), 6 (54.4 %) and 8 (72.7 %) of the schools studied did not respond in Mathematics, English and Kiswahili, respectively. Radio teaching programme was only disrupted in mathematics in only 1 (9.0%) school and also in 3 (27.2 %) schools for English. The programme is not disrupted in 2 (18.8 %) and 3 (27.2 %) schools, respectively, in both English and Kiswahili. These results also show that on the average the subject teacher did not respond in about 72.6 % of the school studied. This is so probably due to non commitment and lack of interest of this

programme in school but also due to lack of support by the school administration. KIE may also want to find out why this is the case in secondary schools in this district.

4.5. Availability of appropriate supplementary radio materials

The radio broadcast as aired from the studios forms the primary material for this programme. However, this alone would be insufficient to effectively implement the programme. Thus, therefore, availability of supplementary radio materials such radio teacher guide and actual notes prepared by the teachers would be very appropriate towards implementation of the programme.

4.5.1. Teachers Radio guide

The results of the analysis of availability of radio guide to teachers in the schools and ownership of personal copies by teachers are shown in table. 4.8. It is clear that teacher radio guides were only available for English subject teachers in only 2 (18.1 %) of the 11 schools studied and maybe these were the copies owned by the teachers.

Table.4.8. Availability of teacher radio broadcasting lesson guides in the school timetable in Starehe District Secondary Schools

SUBJECT	Number of Schools	No. of Schools where radio guides are available	No. of Schools where teachers own personal copy of radio guides	No. of Schools where radio guides are not available
MATHS	11	0 %	0 %	100 %
ENGLISH	11	18.1 %	18.1 %	81.8 %
K ISWAHILI	11	0 %	0 %	100 %

These guides were 100 % lacking for both Mathematics and Kiswahili teachers in all the schools. These results are significant as an administrative issue since Principals too (Table 4.3) neither had the KIE radio guides and times tables nor did they know whether the KIE guides got to their respective schools on time. These results also probably indicate there is either little or no contact/communication between KIE and the Schools as far as the teaching and learning of the radio programme is concerned.

4.5.2. Current notes on the radio programme

In all the schools studied 9 (81.1 %) do not have the current notes on the radio programme. while 2 (18.1 %) did not responding all the three subject categories. This indicates unawareness and probably disinterest in the KIE school radio teaching programme amongst the secondary schools in the District.

4.3.3. Teachers preparation

The data on the teacher's preparedness before the lesson broadcast was analyzed and the results presented in table 4.9.

Table.4.9. Incidences of teacher preparedness for the radio teaching programme in the school timetable in Starehe District Secondary Schools

SUBJECT	Number of Schools	No. of Schools where teachers undertake preparations	No. of Schools where teachers do not undertake preparations	No. of Schools where teachers gave no response
MATHS	11	0 %	90.9 %	9.1 %
ENGLISH	11	9.0 %	72.7 %	18.1 %
K ISWAHILI	11	9.0 %	72.7 %	18.1 %

These results indicate that 10 (90.9%) of the mathematics teachers do not make any preparation before a radio broadcast lesson. Similarly, 8 (72.7 %) of teachers in both English and Kiswahili, respectively, do not make any preparation. Only 1 (9.0 %) of teachers in both English and Kiswahili make preparation. This low percentage of teachers who make preparations before a broadcast lesson begins coupled with close to 3 % of teachers, who on average failed to respond to this question, indicates that lack of interest to participate by teachers can be a major bottle neck in the implementation of the radio broadcast programme in secondary schools.

4.5.4. Possession of relevant Supplementary Materials

The result for an inquiry on the availability of supplementary teaching materials for the radio broadcast programme is shown in Table 4.10.

Table 4.10. Possession of supplementary teaching materials

SUBJECT	Number of Schools	% number of schools where teachers possessed supplementary teaching materials	% number of schools where teachers possessed supplementary teaching materials	% number of schools where teachers gave no response.
MATHS	11	9.1	45.4	45.4
ENGLISH	11	45.5	36.3	18.2
KISWAHILI	11	9.1	63.6	27.3

It is obvious from these results subject teachers (9 %) in both mathematics and Kiswahili seldom hold supplementary materials on the radio broadcast programme. 45.5 % of the English teachers hold supplementary teaching materials.

CHAPTER FIVE
SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND
RECOMMENDATIONS

5.1. Introduction

The chapter deals with the summary of the findings of this study, discussions, conclusions, recommendations and suggested areas for further research.

5.2. Summary of findings

This study was conducted in secondary schools in Starehe District, Nairobi County and had three objectives. First, to investigate the availability of radio for use in teaching and learning in these schools; second, to examine how the school administrative support influences the use of radio in teaching and learning and, last, to determine the availability of appropriate supplementary radio materials for teaching and learning in these secondary schools. Through the experience and insight gained during the study it could not possible to avoid investigating into some of the problem teachers and principals of Secondary schools face when teaching the radio broadcasting programme.

5.2.1. Availability of Radio for teaching and learning

The results of the study indicate clearly that the radio as a teaching medium is lacking in many schools and where present it is probable that they are in few numbers which in

almost half of the schools they are not in good working condition all the time. Thus, both the Principals of schools and the subject teachers experience a serious lack radios for teaching and learning the radio broadcast programme in the schools studied. Out of the 11 secondary schools under study 9 i.e. 81.1 % have no radios and according to Principals radios are generally not in schools. Teachers of core subjects, on the other hand, show on the contrary to what the principals said that radios are available for teaching in some core subjects. It is noted, for example, that 63.7 % of the English teachers indicated that radios are available. The opposite of this was the case with Mathematics teachers where 72.7 % had no radios. A half (50 %) of the Kiswahili teachers in secondary schools had no radios. It is not clear why both teachers and principals are not in harmony since they are giving conflicting responses regarding the issue of availability of radio.

5.2.2. Administrative Support

In terms of the administrative support to well over 88.9 % Principals of schools show no commitment to the use of radio broadcast programme in secondary schools. This is repeated in all areas requiring administrative support. Furthermore, in areas that teachers would require direct support such training, providing teacher radio guides and charts, timetables as well as funds for repair and maintenance etc, only one school did indicate that subject teachers get support of up to a level of 80 % in all attributes tested. The other schools in the study give support below 50 % with only one giving support to the level of 40 % and another 4 to the level of 20 %. Another 5 of the schools offer no support at all

to the programme. In some of the schools the teacher indicated that the programme has never been initiated and one may understand why no support is given. Without support by the Principals to this programme, it remains in doubt whether its intended purpose will ever make any impact in secondary schools. The lack of administrative support is the reason why on the average 64 % of teachers in all the 11 schools studied, indicated that they are unaware of KIE Radio Programme. It can thus be confidently argued that there appears to be a whole disconnect between KIE and Secondary schools as far as the aims of preparing and teaching of the Radio broadcasting programme is concerned.

The result that 100 % of the schools, according to subject teachers, have not incorporated radio programme timetables in the school timetable should be very worrying for KIE who prepare the radio broadcasting programme for schools. These results are significant as an administrative issue since Principals too (Table 4.3) neither had the KIE radio guides and times tables nor did they know whether the KIE guides got to their respective schools on time. These results also probably indicate there is either little or no contact/communication between KIE and the Schools as far as the teaching and learning of the radio programme is concerned. This is another area that requires strong administrative support if the broadcasting programme is to be mainstreamed in secondary schools.

The low percentage (6 %) of teachers who make preparations before a broadcast lesson begins coupled with close to 15 % of teachers, who on average, failed to respond to this

question, indicates that lack of interest to participate by teachers can be a major bottle neck in the implementation of the radio broadcast programme in secondary schools.

It is evident that, on average, 72 % of the teachers did not respond to the attribute of disruption of radio in the schools. This could be so probably because either teachers do not listen to the radio or do not bother to conduct the radio lessons since the principals will not ask for any accountability at all.

5.2.3. Availability of appropriate supplementary materials

Apart from radio guides being available to teachers in only 2 (18.1%) of 11 schools and even in this case to English teachers alone, such guides were totally lacking amongst Mathematics and Kiswahili teachers in all the 11 schools studied. Without such guides, the radio programme would be difficult to run and, therefore, the need for KIE radio programme guides to be availed to teachers to run the programme.

Other useful materials are notes. None of the subject teachers had notes on the radio broadcast lessons in all schools. This casts a lot of doubt in any interest the radio broadcasting programme to schools and clearly highlights a serious lack of commitment amongst teachers to the programme. No wonder that 90% of Mathematics teachers do

not make any preparations at all while 73 % of teachers in both Kiswahili and English do not make any preparations.

5.3. Discussions of the findings

For the school radio programme to succeed radios dedicated for teaching in each subject must be provided and effort be made to ensure that they are good working condition all the time. Buck (2006) and UNESCO (2002) argued that apart from the radio being cheap it also has the capacity to access vast areas with minimum infrastructure and human resources for educational purposes. This is true in the Kenyan context where radio is cheap and available everywhere. Administrators of Secondary schools in Starehe should therefore be able to provide radios to run the school broadcast programme. Besides, it is common knowledge that classes are usually large, teachers overloaded and the number of teachers per subject in schools is limited. In such a situation the school radio broadcast programme can be very useful in solving the problem of over crowding and shortage of teachers in secondary schools not only in Starehe District but in Kenya at large. In Ghana the radio has been successfully used to significantly solve similar problems in while it is used to teach mathematics in Thailand and has ably supported the correspondence course Kenya (Ndubuisi, et al., 1987). As such, therefore, where radios are not in good working condition, as seen in some of the schools studied, they should either be serviced or a new one be purchased.

The school administration and, in particular the Principals of schools, need to support the programme by providing the necessary materials, for example, timetables, guides ensuring that the timetable slots(s) and demand accountability from subject teachers. This is in line with the Government Policy on Education (2005) and Sessional Paper No.1 of 2005 which supports the development of Interactive Radio Instruction (IRI) to provide high quality and minimal costs learning opportunities for learners in schools especially those in ASALS, slums and over crowded schools in both rural and urban areas of Kenya. Furthermore, Government (MOEST, 2006) developed an ICT strategy to guide the education sector in the adoption of ICTs across all levels of education and training. While there are all these efforts by Government of Kenya it would seem, from the results of this study, that the administrators of the radio broadcast programme seem to have fallen into what is referred to as the greatest criticism of the viability of ICT in the developing world, such in Kenya, which is that in the education sector “ICT has been understood to mean computers and computer laboratories” (Leach et.al. 2006).

Rather than approaching ICT in education and training this way it will be very useful to emphasize the integration of information technology, information/content and telecommunications with a view to enable new forms of knowledge production and interactivity (Leach et.al. 2006). Similarly, there may need for a paradigm shift from the conceptualization of a school system from the traditional perception of a classroom, a teacher and teaching aids. A school should not merely be regarded as a building but as a knowledge infrastructure consisting of laboratories, radio, television, internet, computer,

and museums. In this sense a classroom facilitates individual learning, which can be fused into a collaborative learning with others at a distance with the teacher being not the sole provider of knowledge, but playing an important role of a tutor and a facilitator of knowledge acquisition by learners. For all this to happen there is needed administrative support by school Principals to teachers and commitment to implementing the existing Government policy on the radio broadcast programme as one of the important ICTs for teaching and learning in schools.

The Kenya Institute of Education is the principal source of the radio teaching broadcast programme in Kenya (KIE, 2005). These include the radio programme to be aired, the radio programme time tables and the detailed teacher radio guide to the programme. KIE has also the responsibility to distribute such material through the District Education Officer. KIE needs to monitor and evaluate that these material get to the end users otherwise the programme implementation will not be successful. Principals of schools also have supervisory, monitoring and evaluation roles to assure that teachers have these materials as well as the necessary supplementary materials such as their own notes in implementing the programme. The lack of KIE guides and current teachers' notes in the schools studied leaves doubt on whether this programme can be run successfully. There is thus a need for a new beginning to revive and revitalize this programme with a view to taking advantage of its benefits in teaching and learning in secondary schools.

5.4. Conclusions

The following conclusions are made from this study:

One of the most important conclusions of this study is the radios are generally not available in most secondary school studied. Where available they are mostly used to deliver broadcast lesson in English subject and sometimes, and very rarely, in Kiswahili.

Another important conclusion is that almost all the Principals of schools are not committed to supporting the teaching of the radio broadcast programme in the secondary schools studied. It therefore not surprising that the radio broadcast lessons are not incorporated in the regular teaching timetable in all the schools studied. Furthermore, more than 50 % of the teachers in the secondary schools studied are not at aware of the radio broadcast programme.

Another conclusion made from this study is that subject teachers in all the schools studied lacked supplementary teaching materials and never keep notes on the radio broadcast programme.

The study also concludes that the Kenya Institute of Education (KIE) seems not to monitor and evaluate the implementation of the programme in the schools studied. KIE as the curriculum developer will have to emphasize monitoring and evaluation of the

implementation process of radio broadcast teaching and learning programme if schools have to deliver it effectively.

Last, but not least, it is also concluded from the study that since both the Principals of schools and the subject teachers have an understanding of the problems that face the radio broadcast programme in secondary schools and they also proposed some of the solutions to these problems their involvement in reviving the radio broadcast programme in secondary schools is very important as would improve the efficient delivery of the programme.

5.5. Recommendations

This study allows the following recommendations to be made.

- i. That Principals of schools should set aside a budget to ensure a set of radios are purchased for the purpose of teaching the KIE radio broadcast lessons. Furthermore, since radios are also low cost maintenance instruments they should be repaired promptly.
- ii. That since Principals of schools, as the ones in charge of curriculum implementation in their specific schools, should make every effort and take responsibility to mainstream radio broadcast as an instruction medium in their schools. As part of this responsibility they should liaise with KIE to ensure that the relevant materials and time tables are delivered to their schools, ensure that apart from availing the radio that radio listening laboratories are available,

teachers are sensitized, trained and motivated to embrace the radio broadcast programme. Most importantly, the Principals must ensure that the radio broadcast programme is incorporated in the school regular timetable.

- iii. That there is need for KIE to develop a strong linkage with the schools for efficient implementation of the radio broadcast programme which should include putting in place a monitoring and evaluation programme.

5.6. Recommended areas for further research

- i. The results of this study can be strengthened by conducting a similar but expanded study of schools in rural Counties including one of which should be in the ASALS.
- ii. Secondly, a study on institutional structure and mechanism that would strengthen the role of KIE in the efficient coordination and implementation of the radio broadcasting programme would be recommended.
- iii. Finally, it would be beneficial to undertake a study, on pilot basis, towards understanding the role of the radio broadcasting and teaching programme in lowering the over all cost of secondary school education in urban and rural secondary schools in Kenya using Interactive Radio Instruction (IRI).

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APPENDIX A: QUESTIONARE

SECTION A: Teacher's background information

Name of the school _____

Name of teacher (Optional) _____ Position

in school (e.g., Head teacher) HoD, HoS, subject teacher)

Class taught _____

Subject taught: Tick the suitable one(s) Yes

Mathematics

English

Kiswahili

No of streams _____

SECTION B: Radio use in teaching and learning

Target respondents for this section and section are core subject teachers)

Availability of radio

1. To what extent is the school aware of the radio broadcasting programmes?

2a) Does the school have a Radio/Radios for teaching and learning?

Yes

No

b) Are the radio programmes incorporated in the school time timetable?

Yes

No

Radio Guide

3a) Do you have the teacher's radio guide?

Yes

No

b) If yes answer the following question:

Do you have a copy in your own subject?

Yes

No

Transmission and Reception

4. Is the radio reception clear/ audible on a regular basis?

Yes

No

5. Are the radio programmes disrupted by any school functions? Please give details

SECTION C: Availability of appropriate supplementary radio materials

Appropriate selection of material related to class level

6. Do you have current notes on the radio programmes?

Yes

No

7. Do you prepare the students before the broadcast?

Yes

No

8. If yes what kind of preparation?

9. What support do you get from the school administration in preparation for radio use in teaching and learning?

Training

Provision of teachers guides, charts etc

Availing of the timetable on time

Any other

10. How do you rate the quality of production of KIE radio teaching materials?

Very good

Good

11. Do you have supplementary and relevant materials to support the radio lesson?

Yes

No

School administration support for use of radio in teaching and learning
(Target respondents: Head teachers)

KIE Time table

1. Do you have radio programme timetable from KIE?

Yes

No

If yes, do they come on time?

2a) Have you been using KIE radio programmes in your School?

Yes

No

b) If no please state why

Commitment

3 Are the radio lessons incorporated as a teaching method in the schemes of work?

Yes No

4 Is there a schedule to follow up on the radio programme in the school calendar?

Yes

No

5 a) Are funds allocated by the school for radio maintenance? Yes No .

b) If yes do you consider the amount enough?

Yes

No

6. a) Is the school radio in good working condition all the time?

Yes

No

b). How long does it take to repair the radio when it is not working?

Immediately

More than a week

Several months

Never repaired

Give any other comment on repairing _____

7. Do the subject teachers scheme for the radio lessons?

Yes

No

8. Does the school have regular/updated information on any changes in the syllabus related to KIE radio programme?

Yes

No

9. How do you support teachers to handle radio lessons in your school?

Avail timetables

Avail radio guides

Facilitate training

Provide finances for radio repairs

Any other support

10. Does your school have specific *radio* listening room/ hall, set for students

Yes

No