

**INSTRUCTIONAL MATERIALS AND ACADEMIC PERFORMANCE OF SCIENCE
STUDENTS IN SECONDARY SCHOOLS, WEST DISTRICT
ZANZIBAR, TANZANIA**

BY

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**A RESEARCH REPORT SUBMITTED TO THE COLLEGE OF EDUCATION, OPEN AND
DISTANCE LEARNING IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE AWARD OF THE MASTER'S
DEGREE IN EDUCATIONAL MANAGEMENT AND
ADMINISTRATION OF KAMPALA
INTERNATIONAL
UNIVERSITY**

NOVEMBER, 2017

DECLARATION

This thesis report is my original work and it has not been presented for a degree or any other academic award in any university or institution of learning

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Names and signature of the candidate

Date

APPROVAL

I confirm that the work reported in this research dissertation was carried out by the candidate under my/ our supervision

.....

Dr. Tindi Seje

Names and signature of the supervisor

Date

DEDICATION

I dedicate this work to my parents and family members for their moral support and the encouragement that they gave me during the study. My husband, Salmin Amour Abdallah, My father Suleiman Abdallah Suleiman, lovely sister Salma Suleiman Abdallah and my beloved son Muhammad Salmin Amour.

ACKNOWLEDGEMENTS

I wish to acknowledge and be grateful to Allah for enabling me to reach this point in my academic life and I am so thankful for His unconditional protection. Secondly many thanks to my supervisor and advisor, Dr Tindi who supervised me.

I am also grateful to Kampala International University doctoral committee for providing me with the conceptual means to complete this project.

I equally express my utmost gratitude to the respondents at the schools I conducted the study who offered to spare their time to complete the questionnaire and also to attend the interviews.

I have to acknowledge my research assistants who devoted their time and energy towards the accomplishment of this research project. The moral support they gave me too was overwhelming and came in handy at times when I was being challenged by various issues in the field. Finally, thank my family, tutors and numerous friends who provided me with consolidated support vital for the success of this project.

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ABSTRACT

The purpose of the study is to establish the effect of instructional materials on the academic performance of science students in west district Zanzibar, Tanzania. The study objectives included to establish the instructional materials being used for teaching in school the second objective was to assess the academic performance of students in science subjects and finally to establish the relationship between the use of instructional materials and academic performance of science subjects. The data was collected using the interview guide and questionnaire from 324 respondents based on closed ended and the main research instrument of the study. The researcher will Survey research design in this study. Primary data on certain characters among the randomly selected sampling from the target population who are located at various points in the study area will be selected. The study findings reveal that instruction materials used was generally rated as low and this was indicated by the overall mean of 2.441 and this critically implies that the instruction materials usage in the schools of west district in Zanzibar are low. On the second objective the academic performance of students in science subjects in the secondary schools is generally low (overall mean=2.398). On the third objective results in indicated a positive relationship between Instruction materials and academic performance of students in science subjects. The study conclude that there is inadequate usage of instruction materials laboratory equipment while audio visual aids of textbooks, reference books, maps and globes in schools under investigation. On the second objective the findings conclude that the performance of the students in sciences is poor especially in the national examinations. On the third objective, never the less there was a relationship between instruction materials and academic performance of the students in the schools. The study objective one recommend that government of Tanzania to ensure that, the increase of students in the schools should commensurate with the number of instructional materials allocated in each school. On the second objective, the teaching of science in secondary school should be conducted in a manner that students will effectively understand and learn the concept taught. On the third objective, School principals should provide science teachers with enabling environment for the use of available instructional material to gives room for participatory studentship and make learning more meaningful.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter consisted of the background to the study, statement of the problem, objectives of the study, scope of the study, hypothesis, significance of the study and definition of the concepts.

1.1 Background to the Study

The background is based on four perspectives historical perspective, theoretical, conceptual and contextual perspectives.

1.1.1 Historical Perspective

Science is the bedrock on which modern day technological breakthrough is hinged. Different authors according to their own understanding have defined Science. Igwe (2003) defined science as a systematic study of the nature of behavior of the material and physical universe through observation, experimentation, measurement and recording. In addition, Esu (2004) defined science as a systematic, precise, objective way to study the natural world. Science is often an exciting and satisfying enterprise that requires creativity, skills and insight based science as rationally structured knowledge about nature, which embraces systematic methods of positive attitudes for its acquisition, teaching, learning and application.

The major goal of science education is to develop scientifically literate individuals that are concerned with high competence for rational thoughts and actions. The objectives of science education. According to Maduekwe (2006) include the need to prepare students to observe and explore the environment, explain simple natural phenomena, develop scientific attitudes including curiosity, critical reflection and objectivity, apply the skills and knowledge gained through science to solve everyday problems in the environment, develop self-confidence and self-reliance through problem solving activities in science. In recent times, countries all over the world, especially the developing ones like Nigeria, are striving hard to develop technologically and scientifically, since the world is turning Scientific and all proper functioning of lives depend greatly on Science. According to Ogunleye (2006), Science is a dynamic human activity concerned with understanding the workings of our world. This understanding helps man to know more about the universe. Without the application of science, it would have been difficult for man to explore the other planets of the

universe. Science comprises the basic disciplines such as Physics, Chemistry, Mathematics and Biology.

Hoop (2010) notes that education in most Sub-Saharan countries faces chronic shortages in physical and human resources. According to him rather than distributing the limited resources available for secondary education uniformly across schools, many governments allocate a relatively large share of available resources to a select number of secondary schools. Similarly, findings by World Bank (2008) in a study on provision of textbooks and physical resources in secondary schools in sub-Saharan African countries: Botswana, Cameroon, Coted’vore, Ghana, Kenya, Malawi, Rwanda, Tanzania and Togo revealed that urban secondary schools have better textbook supplies and physical facilities than those in the rural areas. Similarly, an earlier study by Fabunmi (1997) on differential allocation of educational resources and secondary school academic performance in Edo state in Nigeria noted that there was a common feature of difference in allocation of facilities to schools.

Education for sustainable development has come to be seen as a process of learning how to make decisions that consider the long-term future of the economy, ecology and equity of all communities. It is a universal truth that education empowers individuals’ cognitive, affective and psychomotor domains to deal with the multi-faced local, regional and global challenges to pursue a truly invigorating livelihood (Merrill, 2001). Regional comparisons of participation rate in secondary education show that Tanzania lags far behind her neighboring countries in gross enrolment rate. This means that the country lacks a capacity to enroll a great many of the children from both the relevant age cohort and those outside it For example, according to secondary gross enrolment rates (GER) (%) for Zimbabwe was 44, Zambia 28, Kenya 26, Uganda 12, and Tanzania 5. In 2005, Tanzania Government initiated the building of community secondary schools among other measures to increase the GER from 5 to 12 percent. However, according to Knezevich (2010) the head count enrolment in community schools has increased in the context of scarce resources and a dire need for school infrastructure (classrooms, desks, laboratories, and library). According to these authors enrolments appear to be influenced by two kinds of factors: demand by parents for secondary schooling for their children; and the existence of a SEDP secondary school that children can attend even if they have to travel long distances.

Performance by Secondary School leavers in Tanzania has been in a declining mode for the past few years. Despite the Tanzanian government initiatives, since 2001 the status of Secondary School Education has not been stable as indicated by low academic achievement in National Form Four Examinations results. For example, the proportion of students passing with Divisions 1, 2 and 3 has been declining since 2008 and it reached its critical point in 2012 (BEST, 2013). While there are many factors which can contribute to good performance of learners, Instructional materials and Physical Facilities are important factors which cannot be ignored. This is confirmed by Mbwambo (1990) in Makewa, Role and Ngussa (2012), who established that English teachers in Tanzanian Secondary Schools, for example, faced problems in teaching tenses, spelling, pronunciation, use of articles, summary writing, irregular verbs, punctuation, word order, and conditionals. He also argues that these problems are caused by the non-availability of instructional materials for teaching and learning.

Instruction materials usage in Zanzibar is quite in Usage especially in the mechanisms of charcoal boards, laboratory equipments, among other materials the instruction materials availability in the schools is limited in usage and operations with the usage so much common in the private secondary schools in Zanzibar. The state of the education performance in science subjects is therefore restricted in the means or matters provided in the assessment mix and provide the values for the realization of the sufficient academic performance apparatus in the organization (Ministry of education, 2014).

1.1.2 Theoretical perspective

This study was based on the theory of learning of Bandura (1962) the theory argues that cognitive development, mental ability is closely related to language ability. As child grows older, vocabulary and word usage becomes the best single indication of his intelligence. Sensory motor ability is the basis of intelligence and other ingredients are ability to perceive situations accurately, to see relations, to remember, to use good judgment and to persist in solving problems. The psychologist posited that in attempt to learn anything a child must pay attention to it. It also involves exploration of the visual field, fixing the eyes successively on different parts rating these parts and anticipating phenomenon that are not yet clearly perceived.

This study is of the opinion that science teachers should use the materials that would enable students to easily perceive learning situations in a positive way, especially in the teaching of science. According to Akanbi, (1989) distinguished four stages in the development of cognition or intelligence. This concept of stage implies that development takes place in unvarying steps like sequence, regardless of the child's culture or education. According to Akanbi, the child begins rudimentary concept formation at the pre-conceptual thinking stage. Here the child begins to classify things in certain classes because of their similarity. Here he explains that the child's rather than his logic being either deductive or inductive, it is transductive. This study here is of the opinion that the teacher should be able to present instructional materials that would enable the students to overcome the problems of transductive. The theory explain that instruction materials usage enhance the academic performance since learning is deemed to take place.

1.1.3 Conceptual perspective

According to Merrill (2001), current instructional material is defined as the most effective learning environments which are problem-based and involve the student in the above-stated phases. The prescription for this statement is derived from multiple sources. For example, it is reported that current work in cognitive psychology indicates that students learn better when they are engaged in solving real-world problems.

Oladejo (2011) referred instructional materials as objects or devices, which help the teacher to make a lesson much clearer to the learner. Instructional materials are also described as concrete or physical objects which provide sound, visual or both to the sense organs during teaching.

Academic achievement or (academic) performance is the extent to which a student, teacher or institution has achieved their short or long-term educational goals. Cumulative GPA and completion of educational degrees such as high school and bachelor's degrees represent academic achievement.

Academic achievement is commonly measured through examinations or continuous assessments but there is no general agreement on how it is best evaluated or which aspects are most important — procedural knowledge such as skills or declarative knowledge such as facts. Furthermore, there are inconclusive results over which individual factors successfully predict academic performance,

elements such as test anxiety, environment, motivation, and emotions require consideration when developing models of school achievement.

1.1.4 Contextual Perspective

In Tanzania, teachers normally dodge the use of instructional materials in most of their teaching topics, while they try to do all they could during their practical teaching in their course of study; even though some of these materials are not usually available in the schools for teachers' use. Also, in the "O" Level certificate of secondary education, science practical use a lot of specimens. Such includes soil samples, insect pests, seed samples, bone meal, fish meal, survey equipments, simple farm tools, farm machinery and implements, termitarium, fruits, sprayer, fertilizer, herbicides, cage, tilapia fish, watering can, feeding trough, hides and skin, weed specimens, hook and line etc., but most of these materials are only made available for students' use for the purpose of examination. These specimens are those that have not been seen or used before by the students. "In most of the secondary schools, instructional materials are not judiciously used as it ought to be. Many teachers teach in abstract without using the required materials" (Ibrahim, 2000). In making use of any instructional materials, such materials must be previewed that is, having full knowledge of the material; prepare the environment where it will be used; prepare audience by means of making sure that the materials to be used will attract attention, arouse, motivate and provide the rationale that could be used in the beginning, middle or end. The effectiveness of utilizing appropriate instructional materials in teaching and learning of science is not void of quality instructor. In order to give quality education to the younger generation, there is need for employment of more competent, experienced and qualified science teachers.

The teaching of Sciences in Zanzibar secondary schools needs to be properly handled. Science contributes to the Nation's economic development, hence, the need to be taught thoroughly if it is to meet the educational and economic development. Science is one of the subjects in primary and Secondary Schools; and as a vocational subject, it cannot be taught effectively without the use of appropriate instructional materials (Ajayi, 1988). The curriculum content of the secondary "O" Level School consists of three major concepts of production, protection and economics. A series of activities were suggested in the curriculum to ensure the development of psychomotor skills in science by the students. The programme recommended that: each student is guaranteed adequate

equipment, farm space, farm structures and regular supply of fertilizers and animal feeds. In addition to having a farm, each school should keep at least two farm animals. Student's achievement should be continuously assessed through various forms of tests and during field and laboratory practicals and individual assessment should be carried out for activities in crop production while group assessment is restricted to performance in animal production activities. Hence for effective and positive production in any establishment, there must be enough working tools to be used by the personnel (Oyedun, 2000).

The teacher alone cannot provide all the needed condition for an effective teaching and learning process, other supporting materials should be provided. The students learn better when most of the senses are appealed to the instruction and use of instructional materials in science education has added a new dimension in the positive promotion of the teaching and learning process. It provides the much need sensory experiences needed by the learners for an effective and meaningful behavioral change. Instructional materials are meant to improve the quality of education for effective academic performance of science students in schools. The performance of the students on the intended learning outcome provides the validation loop on the success of the interaction and instruction (Bakare, 1986).

1.2 Statement of the Problem

Many of the school authorities have very lukewarm attitudes over the provision of needed tools, equipments, and farm inputs required for effective science, especially practical in secondary schools. This non-challant attitude tends to retard genuine efforts of some teachers of science in the secondary schools. Inspire of the emphasis being placed on science as one of the subjects in secondary schools, there is usually not enough time provided in the time-table for a meaningful science work (Adeyemi, 2000). Science teachers are always interested to finish the syllabus before the external examination certificated of secondary education examination (CSEE) conducted by national examinations council of Tanzania (NECTA). The central problems which are attributed to the students' poor academic performance in science in secondary schools' in West District Zanzibar may be due to poor usage or not using appropriate instructional materials to teach science, issue of class size, inability to improve on the needed facilities, equipment, technical expertise, lack of science laboratories, workshops, seminars, poor organization of the few available instructional materials, science teachers attitudes towards the use of instructional materials, non improvisation of instructional materials by science

teachers and the weakness of the school administrators in finding solutions to the problems for the influence of misuse of instructional materials, all need serious attention. The poor academic performance of students in science subjects is the route cause of this research intended to provide remedy to the situation.

1.3 Purpose of the study.

The purpose of the study was to establish the relationship between instructional materials and the academic performance of science students in west district Zanzibar, Tanzania.

1.4 Objectives of the Study

- 1) To establish the level of instructional materials for teaching science in schools in Zanzibar, Tanzania.
- 2) To assess the academic performance of students in science subjects in the secondary schools in Zanzibar, Tanzania.
- 3) To find out whether there is relationship between the use of instructional materials and academic performance of science students in schools in Zanzibar.

1.5 Research Questions

The following research questions answered in the course of the study.

- 1) What are the instructional materials used for teaching in schools in Zanzibar, Tanzania?
- 2) What is the level of academic performance of students in science subjects in the secondary schools in Zanzibar, Tanzania?
- 3) Is there a relationship between the usage of instructional materials and academic performance of science students in schools in Zanzibar

1.6 Research Hypotheses

The following null hypotheses (Ho) would state to guide the study.

1. There is no significant relationship between the use of instructional materials and academic performance of students in science.

1.7 Scope of the study

1.7.1 Content scope

This study was conducted on the types of instructional materials, level of performance of learners and assesses the relationship between the uses of instructional materials on the academic performance of science students in secondary school.

1.7.2 Geographical Scope

The study was conducted in Zanzibar city, Zanzibar the capital and most populous city Zanzibar located in coastal Unguja Island on the Indian Ocean. The total population of Zanzibar was 984,625 with annual growth rate of 3.1 percent. The population of Zanzibar city which was the largest city was 205,870. The areas are chosen because of having the schools with poorly academic performance.

1.7.3 Time Scope

The study was conducted for the period of six month that is from February to July 2017. The study period is deemed to be sufficient enough to enable in the data collection and presentation of finding to attain the information for both academics and decision making.

1.8 Significance of the Study

The research work was significant and useful in the teaching and learning of science. Findings from this study will help to assess the effectiveness of the stated objectives of secondary school –science curriculum.

Subsequently, the findings from the study will help science teachers in choosing an appropriate instructional material(s) capable of releasing students' tension towards the subject thus improving students' academic performance in science. It will motivate science teachers to develop interest towards utilizing suitable teaching materials that will be a possible means towards reducing failure in the teaching and learning of science. Findings of this study will help clarify among the teachers the need for continuous and regular improvisation of suitable instructional materials for teaching and learning of science.

Moreover, the results of this study will be of great significance to the science curriculum planners. The curriculum developers will find the work useful in reviewing the science curriculum by seriously laying emphasis on utilization of instructional materials so as to meet up with emerging needs of the society. This study will be of immense benefit to researchers in the field of science by forming a basis for further studies on the usage of instructional materials and teachers' quality in order learning aspects of science as a subject.

The study will also equip educational administrators in the Ministry of Education, sports and vocational training (MOESVT), educational test and measurement experts on the need to provide

instructional materials for teaching science in our secondary schools setting particularly in selected secondary schools and the West District Zanzibar as a whole.

The study will also be useful in educational policy making. The research will arouse instructional educational funding agencies such as Federal Ministry of Education.

CHAPTER TWO

REVIEW OF LITERATURE

2.0 Introduction

The aim of this chapter is to present already existing views of people in related topic on “Influence of Instructional Materials on the Academic Performance of students in Science in Secondary Schools in West District in Zanzibar.”

2.1 Theoretical review

A theory is a set of statements or principal devised to explain group of facts or phenomena especially one that has been repeatedly tested or is widely accepted and can be used to make predictions about natural phenomena the theories

Cognitive development theory

The study is based on the learning theory of Bandura (1962). The theoretical framework of this research hinges on the theory of learning as described by cognitive psychologists. In theory of cognitive development, mental ability is closely related to language ability. As child grows older, vocabulary and word usage becomes the best single indication of his intelligence. Sensory motor ability is the basis of intelligence and other ingredients are ability to perceive situations accurately, to see relations, to remember, to use good judgment and to persist in solving problems. The psychologist posited that in attempt to learn anything a child must pay attention to it. It also involves exploration of the visual field, fixing the eyes successively on different parts rating these parts and anticipating phenomenon that are not yet clearly perceived(Akanbi, 1989).

This study is of the opinion that science teachers should use the materials that would enable students to easily perceive learning situations in a positive way, especially in the teaching of science. According to Akanbi (1989), distinguished four stages in the development of cognition or intelligence. This concept of stage implies that development takes place in unvarying steps like sequence, regardless of the child’s culture or education. According to Akanbi, the child begins rudimentary concept formation at the pre-conceptual thinking stage. Here the child begins to classify things in certain classes because of their similarity. Here he explains that the child’s rather than his logic being either deductive or inductive, it is transductive. This study here is of the opinion that the teacher should be able to present instructional materials that would enable the students to overcome the problems of transductive. The study here is of the fact that inability of the teachers to utilize the

appropriate methods and materials to teach certain concepts in science has contributed to poor student's academic performance in the subject (Farrant, 1980).

2.2 Conceptual frame work

Independent variable

Instructional Materials

- Visual Aids
- Audio Aids
- Laboratory Equipment

Dependent Variable

Students' Academic performances

- National examinations
- Class assignment
- Home work

Intervening variables

- Attitudes
- Personality characteristics
- Finance

Source : Adebimpe (1997) and Agina-obu (2005) and modified by the researcher

The framework shows the linkage between the independent variable and the dependent variable. The Independent variable is instructional materials that are measured through visual Aids, audio Aids and laboratory Equipment while the dependent variable is student's academic performance that is measured through performance in the national exams. The intervening variables are attitudes, personality traits and income that have a bearing on the instruction materials and in turn affect academic performance. The presence of proper instruction materials usage support or improve the academic performance of the students.

2.3 Review of Literature

2.3.1 Instructional Materials used in secondary schools

Instructional materials have been defined by various authors Adebimpe (1997) viewed them as didactic materials or things which are supposed to make learning and teaching possible. According to Agina-obu (2005), instructional materials are also described as concrete or physical objects which provide sound, visual or both to the sense organs during teaching. While instructional materials are referred to as objects or devices which help the teachers to make a lesson much clearer to the learner (Lasola, 2010). Therefore, the selection of instructional materials in teaching and learning Geography are determined by the particular aspect of Geography teacher intends to teach at a particular point in time. For example, the teacher may want to teach part of Africa countries in the world; this has to do with the use of Global and Atlas as instructional materials, but if he wants to teach type of rocks, he has to bring in type of rocks, that is real object, to the class for illustration and all other aspects of the subject in teaching and learning process of Geography.

According to Blankenship (1989) Science teaching aids can be classified into two classes, these are visual aids and audio-visual aids. The visual aids are those teaching aids that can be clearly seen with our eyes vividly. Examples of visual aids are: chalkboard, science textbooks, charts, model, specimen, a practical farm or school gardens, survey equipment, simple farm tools, farm machinery and implement, cages for small animals (rabbit and poultry), feeding trough, samples of different soils etc. While audio-visual aids are those that we can hear and see, by producing sound that the sound are expressed in thought. They appeal to our senses of hear and eyes. Audio visual aids include: tapes, video, television, projectors and motion pictures.

Yusuf (1998) said that one can classify learning materials in several ways. For instance, one can distinguish between auditory, visual and reading materials. However, for the purpose of classification, learning materials for teaching science can be classified as follows. Printed and reference materials: Textbooks, newspapers, magazines, government documents, teachers' guide, duplicated materials, journals, hand book, bulletins, pictures, work books, pamphlets, leaflets. Graphic materials: Graphs, charts, diagrams, maps, globes, display materials: Chalkboard, bulletin boards, flat pictures, magnet boards and flannel board. Projected materials television, video tape, overhead projector, slides and

slide projector and transparencies. Audio and other visual materials: Radio, model, computer, tape recording etc.

2.1.2 Models and Specimens

According to Balogun (1986) it is part of the duty of any science teacher to make models, charts and diagrams. Among the most continuously useful visual aids for the teaching purposes are those the science teachers made for him. Moreover, the students should be encouraged to help, and to make such aids as a hobby especially in science club, handicraft group's basket making, local cage making and so on. Specimens are real things. As general rules, living specimens are better than dead ones. Obtaining specimens takes time, if then, the science teachers make poor use of them, and his /her time will have been largely wasted. If rightly used, specimens should not only add interest to the lesson, they should also help the science students to understand and to remember the subject (Imogie, 1989). For instance in studying implements (simple farm tools) there are variations in the type of shape of tools used in the farm in different communities. These variations are brought about by variations in the rate of development of science, the soil type and the planting operation for which the tool is used. The following are the most common farm tools used in West District Zanzibar; the hoe, the machet or cutlass, an axe, the sickle, the file and the mattock.

Specimens for Class Use science teacher should see handle and observe for themselves as much as possible. Nearly all lessons require illustrative materials of some kind. The Science teachers must first know where to find the material and then, by right use, get the greatest value from it. When studying plants, that is, parts of a maize plant, it is often possible to give a specimen to each student. Quite often, if the teacher cannot give a specimen to every student, so he or she hands round one between every two or three students (Blankenship, 1989).

Frequently, especially when studying parts of a sprayer (Knapsack sprayer), science teacher can bring one example. Also for instance, a rabbit in a cage or chicken (poultry) in a cage, or a butterfly or bees in a jar (glass jar).Perhaps, the most valuable use of the single specimen is for out-of-lesson observation (Blakenship, 1989).

2.1.2 The Chalkboard

The chalkboard is the commonest of all visual aids, and is, in fact, such a common place of classroom teaching that, it is rarely used as effectively as it might be. The science teacher should never be

without a supply of coloured chalks. With their aid parts of a diagram needing emphasis can be brought into prominence. According to Omoruyi, Orhue, Akerebo & Aghimien, (1999) a diagram of the parts of the chicken (fowl) and so on becomes clearer and more memorable if the intestines, pancreases, liver, crop, gall bladder, gizzard, preventer and colons are shown in different colours with correspondingly coloured labels. It takes no more time to draw a plant and its roots using green and brown chalks for leaves and roots, but the result is more impressive than a drawing in white chalk. A diagram of a ranging pole is made much plainer if they are of different colour.

2.1.3 Charts and Graphs

According to Omoruyi, et al (1999) charts and graphs are useful for the immediate illustration of science lessons and should be hung by the side of the chalkboard rather than over it for examples when studying various stages of seed germination (maize) and the life cycle of a grasshopper.

According to Akande, et al (2006) graphs are in such common use and so readily display variations in values, that students should be encouraged to employ graphical methods whenever possible. Regular variations are shown particularly clearly by means of graphs. Bar graphs, circle graphs and line graphs are used to summarize detailed information. They provide a quick simple way to compare quantitative information. A circle graph is used to best advantage to show the relationship both of the parts to a whole and of the parts of each other. It is an excellent way of showing the distribution of values.

2.1.4 Maps, Atlases and Textbooks

Maps and atlases are important instructional materials for the teaching and learning of science. They are good companions when teaching such topics as the various farm and animal products, forest resources management and natural Vegetation and so on. According to Anyawu & Anyanwu (1987) textbooks are the most common instructional materials that teachers used to disseminate knowledge. Textbooks add variety values, but are too costly for an average zarzibar student to afford. Some ways by which to ameliorate this problem is for a group of teacher to write jointly and for the school authority to ensure that copies of relevant textbooks are put into the school library to enable science students who cannot afford these textbooks to get access to read them. In studying fishing equipment, fishing methods vary with the various types of equipment in use in fishing. In fishing, special types of nets, hooks and lines are used. The fishing equipment includes:

The nets include the following types: set net, drag nets, cast nets, trawl net and hand net. The traps used in fishing vary. They include the baskets, the hook and line, the spears and the fish poison

(Anyanwu, et al, 1987).

2.1.5 Practical Farm or School Gardens

At the secondary school level, some or all, of the classes, the students do not cultivate their own small plots and for them to learn about good methods of gardening and practical farming (Aliyu, 1982). According to William (2004), education is the type of education that is employed in training learner in the improved production processes, as well as in the techniques for the teaching of science. In schools, education referred to the teaching of skills, values, attitudes and related knowledge in production, processing, and marketing of and related products. In such schools, students are expected to carry on short and long-term practical activities and projects such as cultivation of crops, vegetables and fruits.

2.1.6 Secondary School Science Materials

The Need for the Tools any practical subject like Science required tools and materials, and recognizing this, school authorities are to make some provision for these necessities. In Science, then, tools and materials are necessary. It is common to find in most secondary schools well equipped for teaching wood work, but without any equipment for practical science – teaching. The equipment needed for work suggested in this research work is very simple: much of it can either be collected at home or made by science teachers and students as well. There are, however a few items which must be bought, and there ought to be a small grant or allowance for this.

According to Agun (1982) let no science teacher supposed that it is impossible to teach science without most of the apparatus and equipments (instructional materials). Stringent economies may have to be made, the delivery of apparatus and chemicals may be long delayed, or apparatus may be temporarily unobtainable. The poor science teacher complains, blames lack of equipment for the dullness of his/her lessons, and allows his/her students to revert to the dull monotony of note-taking and passive learning of the textbook.

The good science teacher, however, finds in the same circumstances a challenge to his ingenuity. With an alert mind he/she adapts his/her lessons to the materials available. With patience, simplified versions of more complicated apparatus can be made. In fact, “the simpler the apparatus, the better is the students able to appreciate the method used and the facts to be illustrated” (Odukwe, 1983).

Flowers and Plants: A collection of dried specimens is called a herbarium. Its main purpose is to provide a supply of identified plants for general reference and to facilitate the naming of freshly collected specimens.

Cages: The cages for small domestic animals like chicken, rabbit etc., can be made from wooden boxes, and can be of various types and sizes – simple box type, improved type.

A cage which has no glass side, is not much use for observation; every school ought to have one, so much the better. An improved cage type is easy to clean; the shallow drawer at the bottom can be removed for cleaning without opening the cage. If possible, line the drawer with metal.

Feeding Trough: A small tin can be used as a feeding trough, if the cut sides are rolled inwards to avoid sharp edges. If this hangs by wire hooks, it can be removed without reaching right down into the cage. Some domestic animals like rabbit for example, will drink water from a drinking tube.

2.2 Academic Performance of science students in secondary schools

Academic performance as the outcome of education the extent to which a student, teacher or institution has achieved their educational goals. Academic achievement is commonly measured by examinations or continuous assessment but there is no general agreement on how it is best tested or which aspects is most important procedural knowledge such as skills or declarative knowledge such as facts. Godswill (2006) the tracking of academic performance fulfills a number of purposes. Areas of achievement and failure in a student's academic career need to be evaluated in order to foster improvement and make full use of the learning process. Results provide a framework for talking about how students fare in school, and a constant standard to which all students are held.

Academic performance generally refers to how well a student is accomplishing his/her tasks and studies. In educational institutions, success is measured by academic performances or how well a student meets standards set out by curriculum planners or policy makers and the institution itself. Although, education is not the only road to the success in the working world, much effort is made to identify, evaluate, track and encourage the progress of the students in schools. Parents care about their children's academic performances because they believe good academic result will provide more choice and job security. Schools though invested with fostering good academic habits but for the same

reason, they are also often influenced by concerns about the school's reputation and the possibility of monetary aid from government institutions which can hinge on the overall academic performances of the school. State and federal departments are charged with improving schools and so, devise methods of measuring success in order to create plans for improvement (Etukudo, 2000).

Academic performance is the grade being given to students either falling below the grade or expected standard after a test or exam conducted. Poor academic performance according to Adewole (2004) is a performance that is adjudged by the examinee/test and some other significant variables as falling below an expected standard. The interpretation of this expected or desired standard is better appreciated from the perspective of cognitive ability of the evaluator of the performance. The evaluator or assessor can therefore give different interpretations depending on some factors. The search for the causation of poor academic achievement is unending and some of the factors they put forward are: Motivational orientation, self-esteem/self efficacy, emotional problems, study habits, teacher consultation and poor interpersonal relationships, especially in Geography as a subject.

Students have an interest in their own performance, when they weigh this objective against others such as the amount of leisure time or increasing social networks through studying less or more. Students' productivity in the EPF clearly depends on aspects such as initial endowments, the existence of 'complementary inputs' that foster their performance and the effort done in learning processes. The role of student's motivation and effort has not received the same attention in the economic literature as other aspects, due to the information availability of variables that reflect that conditions. Folorunso (2004) argued that self-motivation and effort can be induced by parents and teachers. Parents affect children's performance through many channels. First, they provide a set of resources available to them (books, computers, educative software, and complimentary classes, among others). Second, parent's educative background help to assist their homework's and it could foster their learning. Third, they have a clear interest in schooling resources being used efficiently when they assume that education is an investment and not a consumption activity.

The increase and efficiency of the amount of educational resources will be useful when the student is open to learning and has incentives to study. As Chiu and Xihua (2008) point out, students with more educational resources available at home could have more opportunities to learn and to have more intrinsic motivations for a discussion about it). Learning is an activity that requires, among other things, time and active engagement of students. It is also worth mentioning that a student has an additional incentive to study as a consequence of the existence of penalties in case of failure and it determines the intensity of a student's investment in learning. Emeke and Odetoyinbo, 2003) analyzes the effects and determinants of student effort and cooperativeness, and how to use student motivation and behavior as an instrument for improving learning. From his approach, students face questions such as: How many years to spend in school? How much effort must be devoted to learning per year and whether to disrupt or assist the learning of classmates. As it can be seen, there are many intrinsic and extrinsic rewards for learning (increases in monitoring imply increase student effort, discipline and learning as well).

Datar and Mason (2008) find that an increase in class size is associated with a decrease in parent-child interaction. In their work, parental and schooling inputs are substitutes which generate a crowd out effect. As it was mentioned before, much of the absence of this type of information comes from the design of surveys and databases. In order to account for the differences between countries, both in the effect of self-motivation and academic assets on the educational achievement, it is necessary to have comparability in the academic tests across countries. External standardized test also provides better information because of the signaling the student wants to give to others such as universities, employers and teachers.

Woessman (2003) says that grading relative to class performance gives students an incentive to lower average class performance because this allows the students to receive the same grades at less effort. The cooperative solution of students to maximize their joint welfare is for everybody not to study very hard. Bishop (1999) also states that in many cases students have incentives to distract teachers from teaching a high standard and to apply peer pressure on their classmates for not being too studious with grades relative to the class level. Stinebricker and Stinebricker (2007) examine the causal effect of the time used studying on academic performance by using video games as an

instrument and they find that effort measured by time studying is positively related to the academic achievements.

Dzama and Osborne (1999) study the causes of poor performance among African students including the interaction between traditional cultures and science and find that poor performance in science among African students is caused by the absence of vocational incentives rather than by the conflict between science and African traditional values and beliefs. They argue that conflict between science and traditional beliefs and values is not peculiar to Africans. They demonstrate that in the growth of science in developed countries, improvement in the performance of students succeeded rather than preceded industrial and technological development.

Using results from PISA-2000, Fuchs and Wossmann (2008) find some interesting results. First, boys outperform girls in math and science but not in reading; second, there is a positive relationship between the country's educational expenditure per student and the final score in math and science. Third, having better equipment materials and better educated teachers increases student performance in science. Fourth, students in publicly operated schools perform worse than those in privately operated schools. The estimation procedure is done by ordinary least squares solving endogeneity with instrumental variables and using clustering robust linear regression to estimate standard errors that recognize this clustering of the student-level data within schools. Missing values are analyzed and reduced by using a specific methodology that increased the sample and it is controlled by dummies in the final estimation (Fuchs and Wossman, 2008).

2.3 Relationship between the use of instructional materials and academic performance of students.

The researcher compared the past related researches conducted by the experts in the field and the present researches. Barlo (1981) carried out a research study titled "The availability and utilization of instructional materials in the teaching of science in selected secondary schools in Lagos State". The target population was two hundred and fifty (250) secondary schools out of which, twenty-five (25) secondary schools were selected as the samples using systematic sampling. The instrument used in collecting the data was questionnaire. Five (5) null hypotheses were stated which were tested using the Average Weighted Response (AWR) test statistics at 1.00 level of significance. All the five (5)

null hypotheses were accepted. The results showed that the teaching of science in selected secondary schools depended on the availability and utilization of instructional materials which had negative relationship in the teaching of science in selected secondary schools in Lagos State.

Also (1998) carried out a research study Utilization of teaching aids in the teaching of vocational science in secondary schools in Osun State". The target population was two hundred and thirty one (231) secondary schools out of which fifteen (15) secondary schools were selected as the sample by simple randomization. Five (5) null hypotheses were stated which were tested using correlation coefficient test statistics at 0.68 level of significance and all the five (5) null hypotheses were rejected. The result showed that about 60% of the respondents made use of the teaching aids effectively which had positive relationship in the teaching of vocational science in secondary schools in Osun State.

Hallack (1990) emphasized that the availability of relevant educational resources contribute to academic achievement and that unattractive school buildings, crowded classrooms, non availability of playing grounds and surroundings that have no aesthetic beauty can contribute to poor academic achievement. Further, Jegede (2002) in a study of relationship between educational resources and students academic performance in Kenya noted a very strong positive significant relationship between instructional resources and academic performance. According to him, schools with more resources performed better than schools that are less endowed. This collaborated the findings of a study by Babalola (2003) that private schools because of availability and adequacy of teaching and learning resources performed better than public schools.

According to Romiszowski (1994) shortage of instructional resources hindered effective utilization. This is supported by Njoroge (2000) in a study on factors affecting availability, acquisition and utilization of resources in the teaching of English in selected secondary schools in Kenya found that unavailability of educational resources hinders effective utilization. However, Kitheka (2005) noted that schools with abundant resources may not always utilize them efficiently and consequently fail to raise student's level of performance. On the other hand schools with limited resources may utilize what they have efficiently and this may boost learning thus students should be able to maximize and utilize available resources so as to adequately achieve educational objectives. The utilization of available resources is more important than the quantity. This is supported by Cohen et al (2003)

who points out that it is not making resources available to schools that matters, but getting those resources utilized by teachers and students to get academic content learned

Onasanya and Omosewo (2010) carried out a study on the effect of using standard instructional materials and improvised instructional materials on Secondary School Students' Academic Performance in Physics in Ilorin, Nigeria. The sample consisted of selected Secondary Schools in Ilorin Metropolis of Kwara State. The research employed a quasi-experimental design of the pretestposttest non-randomized control group design. Two hypotheses were designed and tested at 0.05 level of significance. From the analysis, the following findings were made (1) there was significantly difference between the students taught with standard instructional materials and those thought with improvised instructional materials, i.e., mean scores on the posttest ($t = 4.09$, $df = 14$, $p = 0.05$), (2) there was no significant difference between the post test scores of the experimental group and control group. This shows that the improvised instructional materials in the comparison of the male mean scores of experimental and control groups were the same entry level with regard to academic ability ($t = 1.23$, $df = 7$, $p = 0.05$). The implications of improvised instructional materials were discussed. Recommendations for the improvement of standard instructional and improvised instructional Aids in teaching of physics and suggestions for further studies were made.

Adeyemi and Olaleye (2010) investigated the effect of students' involvement in the production of instructional materials on their academic performance in Biology. A pre-test posttest control Group Quasi- Experiment design was used. Intact class of one hundred and twenty (120) students of SS2 class was used. A sample of sixty (60) students' constituting the experimental Group were taught using produced models while the control group of sixty (60) students used already prepared pieces of bones. Data was collected using Biology Achievement Test for Instructional Materials (BATIM) and were analyzed using ANCOVA. A significant difference existed between students taught Biology using produced models and those taught Biology using already prepared bones. The Scheffe tests carried out to determine the direction of significance show that the difference in means of students' achievement between those taught Biology using produced models and those taught using already prepared bones were significant. The need for teachers to ensure practical experience in the teaching of Biology was the major recommendation of the study. Based on the finding that

student's involvements in the production of instructional materials impacted on their academic performance in Biology, therefore the present study assumed the usability of the improvised instructional materials. This study is related to this present student in terms of the independent variables but differs in the subject area used for study and location

Achor, (2011), investigated the relative efficacy of the use of improvised and manufactured analogue voltmeters in secondary school physics. A pre-test posttest control Group Quasi-Experimental design was used. This is because random selection of students was not done; rather, intact class was used. Senior Secondary (SS) two class was selected for use being the most stable class quite unlike the SS1 that is freshly being introduced to the subject or SS3 that is preparing for external examination. The (standardized) improvised and manufactured equipments were used to teach experimental group 1 and 2 students on how to take measurements of voltage respectively while the control group was taught using alternative to practical (i.e. conventional method). Data was collected using Physics Achievement Test on Voltage Measurements (PATVM) were analyzed using ANCOVA. A significant difference existed between students taught voltage measurements using manufactured voltmeter, improvised voltmeter, and conventional method. The Scheffe tests carried out to determine the direction of significance show that the difference in means of students' achievement between those taught using manufactured and conventional method as well as those taught using improvised analogue voltmeters and conventional method were significant. However, the difference in means between the two experimental groups was not significant. The need for teachers to ensure practical experience as well as use of improvised models in the absence of the manufactured ones to teach physics was the major recommendations of the study. The aspect of standardization of the improvised instructional resources was completed and reported elsewhere. Based on the finding that improvised resources compare favorably with the manufactured ones, the present study assumed the usability of the improvised instructional materials.

Madu (2004) carried out a study on the comparative effect of using improvised freefall apparatus and bomb calorimeter in teaching the concept of enthalpy in Nigeria Senior Secondary Schools Chemistry. The purpose of the study was to determine the effectiveness of using improvised freefall apparatus and bomb calorimeter in teaching the concept of enthalpy. The study was in response to

the call for the deployment of materials within the learners' immediate environment as a means of finding a solution to persistent shortage of learning resources for the teaching of Chemistry in Nigeria Secondary Schools. A total of 93 Senior Secondary two (SS2) chemistry students were involved in the study. This number was made up of 48 females and 45 males from four secondary schools in Calabar Educational Zone of Cross River State of Nigeria. A pretest posttest control group design was used for the study. Analysis of Covariance (ANCOVA) was used to analyze the data. From the finding, it was observed that improvised freefall apparatus as a resource for teaching the concept of enthalpy was more effective in enhancing students' academic performance in chemistry as compared to bomb calorimeter. The result also showed an insignificant difference existing between the performance of male and female students when taught the concept of enthalpy using freefall apparatus.

Lee & Luyku (2010) carried out a study on the effects of using improvised weighing balance in solving linear equation problems and attitude of student towards mathematics in junior secondary school in Niger State, Nigeria. The study sought to determine the effects of using improvised instructional material (weighing balance) in solving linear equation and attitude of students toward mathematics in Junior Secondary Schools in Niger State. The study adopted a pre-test, post-test control group quasi-experimental design. Six out of 224 junior secondary schools in the state were sampled from the three educational zones of the state. Two hundred and ten students were used for the study. Linear Equation Performance Test (LEPT) and Student Mathematics Attitude Scale Test (SMAST) are used as instrument for the research. T-test, group mean, and percentage mean scores were used for data analyses. The findings established positive effects of using weighing balance in solving linear equation and students' attitude towards mathematics. Finally, some recommendations such as Mathematics teachers especially those teaching in Junior Secondary Schools should link theories with practical, to enable the students get proper concepts of mathematics and be discourage rote learning and cramming of procedures of obtaining solutions without proper understanding and Government should sponsor teachers for workshop, seminars and further studies to make them be mathematics teachers who can think mathematically as well as develop improved skills and competencies for effective teaching of the subject and in-turn, be able to foster mathematics mindedness in the students.

Isola (2010) investigated the effects of improvised and conventional instructional materials on pupils' academic achievements and attitude to Basic Science. Experimental design using pretest and posttest was adapted. Random sampling was used to select the 3 schools out of 10 co-educational primary schools in Wase Supervisory Zone of Wase LGA Plateau State. The sample of 120 primary 5 pupils was selected through the use of table of random numbers. The selected schools were randomly assigned to experimental group I, experimental group II and control group. The experimental group I was exposed to improvised materials and experimental group II was taught with conventional instructional materials. The control group was taught with lecture method. The instruments used for data collection were Basic Science Achievement Test (BSAT) and Basic Science Attitude questionnaire (BSAQ) with reliability co-efficient of 0.73 and 0.83 respectively. Three hypotheses were tested at P-0.05 level of significance using Analysis of variance (ANOVA), t-test and Wilcoxon Signed Rank Test. The findings showed that pupils taught with improvised and conventional materials have no significant difference in their mean scores but showed significant difference with the control group. In addition, no significant difference in the pupils' attitude before and after exposure to improvise and those exposed to conventional instructional materials. Based on this finding, it was recommended that Basic Science teachers should be trained through workshops on how to effectively design and used improvised materials in teaching Basic Science.

In this study Instructional materials involve students' textbooks, teacher's guides and reference books, maps and globes. These are key ingredients in learning and teaching thus enhance students' academic achievement (Wiggins, 1998)cited in (Afework and Asfaw, 2014). Instructional materials are very important in the whole process of teaching and learning to any subject. They make learning more pleasant to the students because they offer a reality of experience, which stimulates self-activity and imagination on the part of the students. They also supply concrete basis for conceptual thinking and hence, reduce meaningless word responses from students (Nyamubi, 2003).

Likewise Campbell (1999) agreed that Instructional materials enhance the teaching/learning process by exhibiting information necessary to acquire knowledge and skills. Tanzania Institute of Education (TIE) (2007) outlined that, apart from teachers, instructional materials are the most important resources needed at classroom level. If the curriculum is to succeed, the preparation and production of instructional materials must be handled with utmost care. The Ministry of Education

and Vocational Training is responsible for putting in place criteria for evaluating and ensuring that only quality instructional materials are selected to support the teaching and learning in the classroom. It is expected that quality instructional materials shall correspond to the curricula and syllabi, be piloted or tried out in pilot schools, promote competences intended for the learners, be enough, adequate interesting and learner friendly especially for the learners with special needs. Textual Materials include printed materials such as textbooks; syllabi modules and manuals, reference books, charts and maps, newspapers, journals and encyclopaedias, texts in Braille, posters, fliers, photographs, booklets and brochures. On the other hand, non-textual materials include laboratory apparatus, prototypes, Braille machines, writing boards, weather stations, and samples of actual materials, ICT resources such as computers, internet connectivity, photocopying machines, printers and scanners (URT 2013). Likewise, Kapoli (2001) noted that authentic materials.

Likewise, Kapoli (2001) noted that authentic materials enable the students to explore the language used in day-to-day life and which is tailored to their needs and interests. UNESCO (2000) reported that the provision of teaching and learning materials especially books is an effective way of improving results. However, the World Education Report (1998) reveals out that in many countries, conditions are difficult, whether they relate to the physical states of schools and the availability of instructional materials, class sizes, or the changing characteristics of the student population.

2.4 Research Gaps

In this chapter the central role functions of the instruction materials on academic performance of students in schools. A number of writers have written on one or more of the resources and in all cases have pointed out how increasing usage of instruction materials enhance the academic performance in science subjects particular and indeed in all other disciplines. It has shown in their different writings the need to have adequate instruction materials have an effect on academic performance, these reviewed literature fall short of the very consideration in science subjects in secondary schools. The studies were not presented in the environment of Tanzania hence these studies will address the geographical and theoretical gaps in the study.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter describes the methods adopted in carrying out the research study under the following sub-headings. These are the research design, Population, Sample population, Sample Procedure, data sources, research instruments, research procedure, data validity and reliability, data analysis, ethical considerations and Limitations and delimitations of the study.

3.1 Research Design

The researcher used a survey research design in this study. Primary data on certain characters among the randomly selected sampling from the target population who are located at various points in the study was selected. The finding from descriptive survey design was used to generalize the researcher's results about the target population. The subjects or respondents were given questionnaire as the instruments to collect the data. According to Osuala (2005) Descriptive Survey Design gives the accurate assessment of the characteristics of the whole populations of people. It is also more realistic than the experiment in that it investigates phenomena in their natural setting. This survey research design according to Amin (2005) is important cause it will help the researcher attain systematic data on different sample respondents at different times.

3.2 Population for the Study

The total population is 8 government schools in Unguja district. The study was conducted from the 8 secondary schools located in the district. The target population is 8315 people, these include the science students' target population is eight thousand, one hundred and forty two (8,142). Also a total of one hundred and seventy-three (173) science teachers who are from the 8 secondary schools. The table 3.1 represents the population distribution of science students and science teachers in the schools. Therefore the total population will be 8315 respondents.

3.3 Sample Size

The study used the sample size of a total of 382 respondents through use of the Slovenes formula (1978). Slovene's formula was used to compute the sample size. This formula was employed so as to sample fairly a large number of people as representation of the total population such that the research findings obtained can be trusted and believed. The details on the determination of sample size using Slovene's formula are shown below;

$$n = \frac{N}{1 + N(e)^2}$$

Where

n= Sample size

N=Total population size

e²= 0.05 level of significance

$$n = \frac{8315}{1 + 8315(0.05^2)} = 382$$

Following this formula, the established sample size was 382 respondents from population.

Table 3.1 Showing Population and Sample size

Category	Population	Sample
Teachers	173	Whole Population (173) Universal
Students	8,142	209
Total	8315	382

Source: Field data, 2017

The study involved 8 schools were 22 teachers were selected from each school, 26 students were selected from each of the 8 schools in the study.

3.3.2 Sampling Procedure

The sampling techniques to be used in this study involved both simple random sampling and purposive sampling. Simple random sample is a subset of individuals chosen from a larger set. Each individual is chosen randomly and entirely by chance, such that each individual has the same probability of being chosen at any stage during the sampling process. The students were selected through simple random technique because they are many and any of them could be able to give the required information for this study. Thus, their names were obtained and written down on papers and the researcher selected only the students whose names landed on odd numbers and leave out those whose names land on even numbers while considering the number of respondents from each

category. For the teachers, purposive sampling was used. They were selected through this method because they are few and could give technical information regarding the instruction materials and academic performance of learners. The only criterion for their selection is their consent to participate in the study.

3.4 Sources of data

Data was collected using both primary data collection techniques.

3.4.1 Primary data

Primary data was gathered basically through structured questionnaires. Primary data was obtained through the use of research questionnaires after thorough interview the respondents answered the questionnaires.

3.5 Instrument for Data Collection

3.5.1 Questionnaire

The researcher used questionnaire as the instrument for the data collection which were made up of questions arranged systematically based on the research questions to collect data and information from both the students and teachers of science in selected Government and Private Secondary Schools in the area of study. The questionnaire for the teachers and students are divided into two (2) sections: Section 'A' is on bio-data and section 'B' is on questions on instruction materials. Here, self-administered questionnaires were employed containing close-ended question. This is intended to reduce costs of movement and also because the researcher is dealing with literate people who have the capacity of filling the forms. The questionnaire was used attaining the data was majorly analyzed quantitatively. The questionnaires were employed because it attains more information necessary and required by the researcher to attain data that can be easily quantifiable. The questionnaires were used because it can enable data collection at a close and wider range for the researcher. All questions in sections was closed-ended, based on four point Likert Scale, ranging between one to four, where 1=strongly disagree (meaning disagreeing with no doubt at all); 2=disagree (meaning disagreeing with some doubt); 3=agree (meaning agreeing with some doubt); and 4=strongly agree (meaning that agreeing with no doubt at all) and this was done by ticking (marking) one of the choices outlined above. The academic performance was determined using the national exams for the 8 schools that were studies for a period of 3 years (2014-2016) analyzing the passing in percentages for the three science subjects of physics, Biology and chemistry.

3.5.2 Interviews

Qualitative data of the study was gathered by use of interviews. The interviews were considered for a limited number of respondents. In fact, the only category that was considered for interviews was management. This was because these respondents were thought to have a busier work schedule relative to the others. This method allowed further probing and clarification of questions that tended to be difficult and not clear to the respondents. It also enhanced responses for questions which were regarded as sensitive.

3.6 Procedure for Data Collection

The researcher was administered the instruments (questionnaire) to the subjects or respondents with the help of three (3) research assistants. Before moving to the sampled secondary schools, permission was sought from Zanzibar urban west region through a letter of introduction from the Researcher's institution. The researcher met the science teachers and students in their various selected thirty (30) Government secondary schools in the three (3) in West District Zanzibar and administered questionnaire to them.

3.7 Validity and Reliability of the Instrument

3.7.1 Validity of the instruments

Validity can be described as the extent to which the instrument measures what it purports to measure. Cohen et al. (2000) defines validity as the degree to which a measuring instrument satisfies the purpose for which it was constructed. Validity is that quality of a data-gathering instrument or procedure that enables it to determine what it was designed to determine. Likewise, Healy and Perry (2000) pointed that, validity determines whether the research truly measures that which it was intended to measure. To establish validity, the instruments were given to experts like educational managers, lecturers in the education field for scrutiny who went through them against research questions and gave necessary recommendations for improvement before data was collected.

According to Amin (2005) validity of instrument is determined by the formula:

$$CVI = \frac{RQ}{TQ} = 0.7 \text{ above}$$

Legends: CVI = Content Validity Index

RQ = Relevant Questions

TQ = Total number of Questions

Table 1.2: Table showing Validity of the questionnaire

Rater	Relevant Questions	Not Relevant	Total questions
1	13	5	18
2	13	5	18
3	16	2	18
Total	42	12	54

$$CVI = \frac{42}{45} = 0.78$$

The CVI indicted a valid research instrument.

3.7.2 Reliability of the instruments

According to Fraenkel and Norman (2006) reliability is a statistical concept and relates to consistency and dependability ie consistency of obtaining similar answers when measuring phenomena that have not changed. A reliable measuring instrument is one that, if repeated under similar conditions, would present the same result or a near approximation of the initial result. To establish acceptable reliability of the questionnaire, a pilot study was conducted to schools which are not part of the sample and calculated using the Statistical Package for Social Sciences. Cronbach's Alpha (α) was used to measure internal consistency strength. Reliability test yielded 0.717 Cronbach's Alpha for instructional materials and academic performance of the students.

3.8 Procedure for Data Analysis

Data from the field was edited and coded according to themes which emanated from the research objectives and questions. The demographic characteristics were analyzed based on frequency and percentages in frequency tables. The first, second and third objectives analyzed using SPSS version 21 to generate descriptive statistics of means and standard deviations for objective one and two while the third objective was analyzed using Pearson linear correlation to attain the relationship between instructional materials usage and academic performance of students in science subjects. The interpretations for the data for both the independent and dependent variables were be interpreted using the following mean ranges:

Mean Range	Response Mode	Interpretation IV	DV
3.26 - 4.00	Strongly agree	Very High	Very Good
2.52 - 3.25	Agree	High	Good
1.76 - 2.51	Disagree	Low	Poor
1.00 - 1.75	Strongly disagree	Very Low	Very Poor

Qualitative data was analyzed using presentation of thematic findings, both textural and structural descriptions was used in the results section. Textural descriptions are significant statements used to write what the participants experienced. Structural descriptions are the interpretation of the context or setting that influenced participants' experiences. For textural descriptions, the quotes of participants were given in italics with the respondent to whom that quote belongs marked with type (i.e Head teachers). The structural descriptions as interpreted by the researcher provided in plain text.

3.9 Ethical Considerations

The researcher sought clearance from the University to be able to collect data in the targeted area. The researcher ensured and assured the respondents that all their responses were treated in strict confidentiality.

The researcher obtained informed consent from authorities to interview their citizens and also interviewed the care takers. The researcher explained to the people in the study area the objectives of the study, introduced him he explained why the particular respondents were chosen, the benefits, discomforts and harms of the study, and requested to also ask questions in relation to the study.

Before the administration of questionnaire, a letter requesting permission to conduct the research from the case study. Upon the approval the researcher attached a covering letter to the questionnaire and requests the respondents to participate in this study. The research process was guided by sound ethical principles which included the following:-

Voluntarism: the research team ensured that respondents were not coerced or manipulated while participating in the study. Respondents were told the purpose of the study and their consent to participate in the study.

Objectivity: The research team ensured objectivity when carrying out the research and any attempt to bias results were considered unethical and therefore avoided. **Confidentiality:** The respondents were assured of confidentiality and anonymity. Their names were written anywhere in the report and the information given was only be used for academic purposes.

Respect: The research team ensured respect for the respondents. Respect encompassed respecting the opinion of the respondents including the opinion to terminate the interview whenever they feel uncomfortable to continue, questioning style especially for very personal and sensitive questions.

3.10 Limitations of the Study

Intervening or confounding variables were been beyond the researchers control such as honesty of the respondents and personal biases. To minimize such conditions, the researcher requested respondents to be as honest as possible and to be impartial/ unbiased when answering the questionnaires.

The research environments classified as uncontrolled settings where extraneous variables might have influenced on the data gathered such as comments from other respondents, anxiety, stress, motivation on the part of the respondents while on the process of answering the questionnaires. The researcher created rapport with respondents such that these conditions could be minimized.

Instrumentation was another limitation of this study. The research tools used in this study were researcher-made. However, validity and reliability tests were done to arrive at a reasonable measuring tool.

The biasness from the respondents was dealt with by the researcher providing an introduction letter as confirmation that the data was also required for academic purposes. This improved their response and avoided biasness

CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

4.0 Introduction

This chapter presents the findings from the study with specific emphasis to establish the effect of instructional materials on the academic performance of science students in west district Zanzibar, Tanzania. The study solicited response for these research questions. The focus was on three objectives which included establishing the instructional materials usage in teaching in schools in Zanzibar, Tanzania. To assess the academic performance of students in science subjects in the secondary schools in Zanzibar, Tanzania and to establish the relationship between the use of instructional materials and academic performance of science students in schools in Zanzibar. This chapter is organized based on the demographic traits of respondents, following by the analysis as per the research objectives presented objective by objective. The data is presented, analyzed and interpreted as shown in the sub-chapters below.

4.1.1 Response Rate

The study targeted a sample population of 382 respondents who were teachers, students and administrators from the schools of west district in Zanzibar. The research achieved a response rate of 84.8 percent from the 324 respondents out of the 382 questionnaires that were administered and distributed to the selected respondents of the study. Therefore with this response rate, there is high confidence that the responses received on the study are reliable. Mugenda (1999) as well as Saunders (2007) suggests that a response rate of 50% is adequate when quantitative data is manually collected. Table 4.1 below presents a breakdown of the response rate of the respondents by their categorization.

Table 4.1.1: Response Rate

Respondents Category	Sample Size	Actual returned	Percentage
All respondents	382	324	84.8

Source: Primary Data, 2017

Table 4.1 above presents the response rate of the responses to which the research instruments were administered. The findings presented show that out of 382 respondents targeted 324 responded giving a response rate of 84.8%. This implies that the response rate was high.

4.1 Demographic traits of respondents

This was based on the gender of respondents, gender, age, education and marital status. This was intended to attain a detailed understanding of the respondent's key characteristics influences the result of the study. The general information has an implication on the study variables. The different demographic characteristics are analyzed and presented in table 1 below;

Table 4.1.2: Demographic Characteristics of the Respondents

Categories		Frequency	Percentages
Gender	Male	223	68.8
	Female	101	31.2
	Total	324	100.0
Education	Secondary	164	50.6
	Diploma	82	25.3
	Degree	68	21.0
	others	10	3.1
	Total	324	100.0
Age	Below 20 Years	166	51.2
	20 - 29	67	20.7
	30 –39	49	15.1
	40 – 49	23	7.1
	50+	19	5.9
	Total	324	100.0
Experience	Less than 1 year	53	16.4
	1-3 years	130	40.1
	Between 3-5 years	80	24.7
	6 years and above	61	18.8
	Total	324	100.0
Position	Administration	31	9.6
	Teacher	126	38.9
	Student	167	51.5
	Total	324	100.0

Source: Field Data, 2017

The study findings on the gender of the respondents reveal that majority of the respondents were male with 223 representing 68.8% of the respondents, the females were 101 representing 31.2 % of the respondents. The results reveal that though the male dominated the study both genders provided the data, it further imply that data was collected from respondents across the gender, the findings can't be doubted on gander grounds.

Results on the education level of respondents reveal that majority respondents were secondary level people with 164 representing 50.6% of the respondents while diploma had 82 representing 25.3% of the respondents, degree were 68 representing 21.0% of the respondents while other qualifications had 10 representing 3.1 % of the respondents. The findings reveal that many respondents are highly educated hence has a critical understanding on the instruction materials and academic performance of students.

The results on the age of respondents reveal that majority respondents were below 20 years 166 with 51.2% of the respondents, 20-29 age bracket with 67 re[resenting 20.7% of the respondents, 30-39 had 49 representing 15.1 % of the respondents, 40-49 had 23 representing 7.1% of the respondents and those above 50+ years were 19 representing 5.9% of the respondents. The results reveal that many respondents are youthful hence a proper understanding on the study.

The study findings concerning the aspect of time spent in the schools reveal that less than 1 year respondents were 53 representing 16.4% of the respondents, 1-3 years had 130 represented by 40.1% respondents, between the age of 3-5 years had 80 represented by 24.7% of the respondents while 6 years and above were 61 represented by 18.8% of the respondents.

In terms of the position of respondents majority were 167 (51.5%) of the respondents represented by the students, the teachers followed by who were 157 represented by 48.5% of the respondents. The respondents were both teachers and students of the schools so they understand the study context.

4.2 Level of instruction materials used by the teachers schools in west district instructional Zanzibar, Tanzania.

The first objective of the study based on the independent variable in this study was instruction materials usage services and was broken into three parts namely; Visual Materials (with 7

questions), Laboratory (Practical equipment) (with 6 questions) and audio aids (with 5 questions). Each of these questions was based on the four point Likert scale where by respondents were asked to rate the instruction materials usage by indicating the extent to which they agree or disagree with each question and their responses were analyzed using SPSS and summarized using means and rank as indicated in table 4.2;

Table 4.2: Instruction materials used by the teachers schools in west district instructional Zanzibar, Tanzania.

Items on Instruction materials	Mean	Std	Interpretation	Rank
Visual instruction materials				
The teachers are provided with teaching discussion guides that enable them in their discussions	2.892	1.009	High	1
The teachers use the chalk boards to illustrate and make clear their teaching	2.888	.998	High	2
The teachers use charts to illustrate what they are teaching to students	2.746	1.039	High	3
The teachers also employee text books that are given to students in class during teaching	2.743	1.118	High	4
Teachers use appropriate charts and diagrams for the immediate illustration of science lesson.	2.685	1.156	High	5
The teachers use drawings on paper and clip boards as when providing instructions in class	2.669	1.169	High	6
The teachers guide the students in their discussions using several visual materials	2.290	1.050	Low	7
Average mean	2.701	1.077	High	
Laboratory (Practical equipment				
The teachers use effective laboratory equipments in teaching for the science subjects	2.509	1.042	Low	1
Teachers use the required apparatus in carrying out the practical teaching to students	2.404	1.087	Low	2
The demonstrations on gardens, chemicals and their application are used in teaching by teachers	2.336	1.079	Low	3
The teachers use specimen and practical items to demonstrate practical subjects	2.299	.960	Low	4
The exact practical materials are used by the teachers in their teaching on day to day basis	2.213	1.085	Low	5
The teachers also employee practical teaching and demonstration classes were the	2.061	.980	Low	6

students are given the instruction materials for teaching				
Average mean	2.301	1.038	Low	
The teachers record audios that guide students discussions in the absence of teachers	2.509	1.054	Low	1
Audio recordings are used by the teachers in providing clarity to the students	2.500	1.077	Low	2
The teacher use audio recordings for teaching to students in classes	2.481	1.059	Low	3
The teachers past instructors recordings for teaching in classes	2.351	1.090	Low	4
The students are given audio recordings to facilitate them in time individual discussions	1.768	.900	Low	5
Average mean	2.321	1.036	Low	
Overall mean	2.441	1.050	Low	

Source: Primary data, 2017

Results in table 4.2 revealed that the instruction materials used was generally rated as low and this was indicated by the overall mean of 2.441, SD=1.050 and this critically implies that the instruction materials usage in the schools of west district in Zanzibar are low, this signal to the low level of usage of the instruction materials especially in teaching the science subjects.

Results on the state of visual instruction materials usage reveal that the visual instruction materials were used to a high level, these is accompanied by the mean responses of 2.701 interpreted as high. These study findings are supported by the various results as presented in the assessment provided here under.

The teachers are provided with teaching discussion guides that enable them in their discussions with the mean of 2.892, SD=1.009 interpreted as high ranked as 1st meaning that the results provided imply that the guides are used in teaching. Furthermore concerning the aspect of the teachers use the chalk boards to illustrate and make clear their teaching, the mean response was 2.888, SD=.998 interpreted as high ranked as 2nd meaning that the state and nature of interventions are low.

The teachers use charts to illustrate what they are teaching to students according to the mean of 2.746, SD=1.039 interpreted as high meaning that the charts are used in teaching, these was ranked

as 3rd. The teachers also employ text books that are given to students in class during teaching according to the mean of 2.742, SD=1.118 interpreted as high ranked as 4th meaning that the state of the teachers performance is limited.

It was further established that teachers use appropriate charts and diagrams for the immediate illustration of science lesson. The mean responses were 2.685, SD=1.156 interpreted as high ranked as 5th meaning that the state of the use of charts and diagrams is resonate.

It was also established that the teachers use drawings on paper and clip boards as when providing instructions in class according to 2.669 response rate and the SD=1.169 interpreted as high plus finally the teachers guide the students in their discussions using several visual materials, the mean is 2.701, SD=1.077 interpreted as high. The results imply that mechanisms for assessment established in the use of visual instruction materials are high.

Concerning the use of Laboratory (practical equipment) as instruction materials, the mean responses reveal that the usage of this instruction material is Low. This is supported by the teachers use effective laboratory equipments in teaching for the science subjects with the mean of 2.509, SD=1.042 ranked as 1st interpreted as Low. The teachers use the required apparatus in carrying out the practical teaching to students was low with the mean of 2.404, SD=1.087 ranked as 2nd. While the use demonstrations on gardens, chemicals and their application are used in teaching by teachers was ranked as 3rd with the mean of 2.336, SD=1.079 interpreted as low ranked as 3rd meaning that the state of the aspects are low

Furthermore the teachers use specimen and practical items to demonstrate practical subjects according to the mean of 2.299, SD=.960 interpreted as low ranked as 4th while the exact practical materials are used by the teachers in their teaching on day to day basis with 2.213, SD=1.085 ranked as 4th and interpreted as 4th while the teachers also employ practical teaching and demonstration classes where the students are given the instruction materials for teaching the mean was 2.061, SD=.980 interpreted as Low ranked as 6th.

The study results regarding the teachers record audios that guide students discussions in the absence of teachers presented the mean of 2.509, SD=1.054 interpreted as low ranked 1st meaning that the state of the audio record instruments are lowly used. It was also established that Audio recordings

are used by the teachers in providing clarity to the students with the mean of 2.500, SD=1.077 interpreted as low and ranked as 2nd while the teacher use audio recordings for teaching to students in classes was ranked as 3rd with the mean of 2.481, SD=1.059 interpreted as Low.

The teachers past instructors recordings for teaching in classes had the mean of 2.351, ranked as 4th interpreted as low. The students are given audio recordings to facilitate them in time individual discussions was finally low with the mean of 1.768, SD=.900 interpreted as Low ranked as 5th based on the prevalence and performance.

The data collection through the use of the interview is presented as interpreted below.

This indicates serious shortage of instructional materials in schools under investigation. This finding is in harmony with the information from the interview guide where it was reported that “teaching learning materials are not sufficient especially for arts subjects, we don’ t have things like reference books, text books and also teaching aids” (Interviewee 1).

Another school head revealed that “Teaching learning materials in my school are not sufficient. Teachers are struggling much to find ways to help students understand but no reference books, no teachers guide, no text books, and no teaching aids, hence we are doomed to serious students’ failure.

Another interviewee maintained that “instructional materials are not sufficient; we don’ t have things like reference books, text books and also teaching aids. Science subjects books are there but no teachers” (Interviewee 3).

Another head of school expressed similar response in the interview guide that: Inadequacy of instructional materials is another serious problem facing my school. I have so many students because of the free education policy but teaching-learning materials are not available and the problem is even worse to science subjects because students opting for arts subjects are also more as compared to those who are opting for science subjects.

Likewise, interview with head teacher when asked the question on the adequacy of instructional materials had this to say:

Teaching learning materials are not enough especially to science subjects, we don't have things like reference books for teachers and students, text books and also teaching aids. Fun enough for arts subjects we have at least good number of teachers although they are not enough but teaching learning materials are not there. Science subjects' books are there but no teachers.

The study findings attained from the interview also present a similar situation of inadequate instruction materials usage in the schools. These therefore account to the limited prevailing instruction materials in the schools.

4.3 Level of academic performance of students in science subjects in the secondary schools in West district.

The second objective was the dependent variable in this study was to assess the academic performance of students in science subjects in the secondary schools in West district in Zanzibar, Tanzania. This variable was measured using questions with response using the national exams for eight schools in Zanzibar.

Table 4.3: Academic performance of students in science subjects in the secondary schools

Academic performance (Schools)	Mean (%)	St.D	Interpretation
Chukwani Secondary School	57.00	4.28	Poor
Mazizini Secondary School	64.00	3.19	Good
Mwanakwerekwe Secondary School	55.00	3.17	Poor
Nyerere Secondary School	57.00	2.16	Poor
Mtopepo Secondary School	41.00	2.22	Poor
Kilimahewa Secondary School	55.00	3.21	Poor
Chumbuni Secondary School	58.00	4.35	Poor
Kiembesamaki Secondary School	59.00	3.23	Poor
Overall mean	55.75	3.22	Poor

Source: Primary data, 2017

Rating Scale

50-58	Poor
59-67	Fair
68-78	Good
79+	Very Good

Results in Table 4.3 revealed that the academic performance of students in science subjects in the secondary schools of West district in Zanzibar is generally low(Overall mean=55.75%) and standard deviation of 3.22, implying that that state of the performance of the students in science subjects is Poor. The data analyzed is based on the data collected for a period of 3 years in the national exams that were conducted in 2014, 2015 and 2016 in the assessment of the national exams of the eight schools in the three subjects.

The findings provided that the state of the students perform well in the national exams according to the respondents the study results from the eight schools that were studied using their national exams on the science subjects. The study focused on the assessment and analysis of the three core science subjects of physics, chemistry and biology and how the students passed, The passing is in the percentage and the overall passing of the students is 55.75% on average which reveal that the academic performance of the students in the secondary schools is poor. The performance of the students provided that the means of the passing for the schools on average is poor cause the highest performance for the data analyzed over the period of three years 64% passing that show or imply a low performance of the students in science subjects.

The study results through the interview guide reveal the following.

The study established that there were poor students' academic performance science subjects in secondary schools in examinations. The academic performance especially in the science subjects is poor meaning that the students have had less performance or failed in the science subjects.

Systematic inefficiencies at school level were also observed that seemed to result from lack of effective teacher management and supervision. These inefficiencies translate in wicked

teacher deployment, dropouts and repetitions among students. There is serious scarcity of standard input low textbooks to students' ratios across schools and subject areas, but mainly in mathematics, physics, chemistry, biology and English. The ward based community secondary schools are severely starved of operational financial resources when compared to the situation applying in private/non government schools in the same locality. The schools are operating with a quality-quantity financing strategy.

Both learners and teachers in these ward based secondary schools have serious deficiencies in their mastery of the language of teaching and learning which is English. This tended to result in adopting pedagogical approaches which were not learner-centered, participatory and optimally interactive.

The study results imply that the students have failed or pass at an average level in the examinations they conduct.

4.4 objective one; Relationship between Instruction materials and academic performance of students in science students.

The first objective in this study was to examine the relationship between instruction materials usage and academic performance of students in science students. To achieve this objective the researcher correlated the mean on instruction materials usage and that on academic performance using the Pearson's Linear Correlation Coefficient, as indicated in table 4.4;

Table 4.4: Pearson correlation between Instruction materials and academic performance of students in science subjects.

Variables Correlated	r-value	Sig	Interpretation	Decision on Ho
Instruction materials Vs Academic performance	-.128	.040	Significant correlation	Rejected

Source: Primary data, 2017

Results in Table 4.4 indicated a negative relationship between Instruction materials and academic performance of students in science subjects since the sig. value (.040) was far less than 0.05, which is the maximum level of significance, required declaring a significant relationship in social sciences. This finding can be seen in the r-values of -.128 and a small significant value of 0.040. This research finding means that any reduction in usage of instruction materials will lead to .128 reductions in academic performance of students. Regarding the relationship, the respondents revealed that the presence of the low level academic performance resulted from low usage of the instruction materials by the teachers. It is fundamental that the proper usage of instruction materials accounted for proper academic performance of the students.

CHAPTER FIVE

DISCUSSION OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

5.0 Introduction

This final section of the report deals with the discussion of the findings presented in the preceding chapter. The discussion is made with reference to other similar works done in previous studies. The section then draws conclusions from these discussions after which it offers its recommendations. New information generated by the study is also highlighted to reiterate the significance of the study. Finally, it suggests areas that are potential grounds for research that could not be completed in the body of this report.

5.1 Discussion of Findings

This section was further organized into three subsections with respect to the research objectives that guided the study.

5.1.1 Level of instruction materials usage by teachers in secondary schools in West district Zanzibar.

The study investigated the usage of instruction materials in secondary schools of west district. Its findings indicated that there was low usage of the instruction materials in the secondary schools of west district by the teachers. Even though the results are weak, its significance was undisputable. These findings are backed by previous research studies that undertook to establish a similar purpose as elaborated below.

According to Omoruyi, et al (1999) charts and graphs are useful for the immediate illustration of science lessons and should be hung by the side of the chalkboard rather than over it for examples when studying various stages of seed germination (maize) and the life cycle of a grasshopper.

Even Agun (1982) let no science teacher supposed that it is impossible to teach science without most of the apparatus and equipments (instructional materials). Stringent economies may have to be made, the delivery of apparatus and chemicals may be long delayed, or apparatus may be temporarily unobtainable. The poor science teacher complains, blames lack of equipment for the dullness of his/her lessons, and allows his/her students to revert to the dull monotony of note-taking and passive learning of the textbook.

According to Anyawu & Anyanwu (1987) textbooks are the most common instructional materials that teachers used to disseminate knowledge. Textbooks add variety values, but are too costly for an

average zanzibar student to afford. Some ways by which to ameliorate this problem is for a group of teacher to write jointly and for the school authority to ensure that copies of relevant textbooks are put into the school library to enable science students who cannot afford these textbooks to get access to read them.

5.1.2 Academic performance of students in science subjects in West district in Zanzibar

The study also examined the academic performance of students in science subjects in West district in Zanzibar, In this case, the study found out that the student's academic performance in science subjects was poor coupled with poor performance in tests, assignments and examinations. However, because the usage of the instruction materials was low hence the poor academic performance, never the less, most previous studies that dealt in this context collaborate these findings as outlined hereunder.

Folorunso (2004) argued that self-motivation and effort can be induced by parents and teachers. Parents affect children's performance through many channels. First, they provide a set of resources available to them (books, computers, educative software, and complimentary classes, among others). Second, parent's educative background help to assist their homework's and it could foster their learning.

As Chiu and Xihua (2008) point out, students with more educational resources available at home could have more opportunities to learn and to have more intrinsic motivations for a discussion about it). Learning is an activity that requires, among other things, time and active engagement of students. It is also worth mentioning that a student has an additional incentive to study as a consequence of the existence of penalties in case of failure and it determines the intensity of a student's investment in learning.

even Emeke and Odetoyinbo, 2003) analyzes the effects and determinants of student effort and cooperativeness, and how to use student motivation and behavior as an instrument for improving learning. From his approach, students face questions such as: How many years to spend in school?

5.1.3 Relationship between instruction materials usage and the academic performance of students in science subjects.

The study investigated the relationship between instruction materials usage and the academic performance of students in science subjects in west district. Its findings indicated that there a

relationship between instruction materials and academic performance of students in secondary schools of west district by the teachers. Even though the results are weak, its significance was undisputable. These findings are backed by previous research studies that undertook to establish a similar purpose as elaborated below.

Hallack (1990) emphasized that the availability of relevant educational resources contribute to academic achievement and that unattractive school buildings, crowded classrooms, non availability of playing grounds and surroundings that have no aesthetic beauty can contribute to poor academic achievement.

Further, Jegede (2002) in a study of relationship between educational resources and students academic performance in Kenya noted a very strong positive significant relationship between instructional resources and academic performance.

Onasanya and Omosewo (2010) carried out a study on the effect of using standard instructional materials and improvised instructional materials on Secondary School Students' Academic Performance in Physics in Ilorin, Nigeria. The sample consisted of selected Secondary Schools in Ilorin Metropolis of Kwara State. The research employed a quasi-experimental design of the pretestposttest non-randomized control group design. Two hypotheses were designed and tested at 0.05 level of significance. From the analysis, the following findings were made (1) there was significantly difference between the students taught with standard instructional materials and those thought with improvised instructional materials, i.e., mean scores on the posttest ($t = 4.09$, $df = 14$, $p = 0.05$), (2) there was no significant difference between the post test scores of the experimental group and control group.

Even Wiggins (1998) cited in (Afework and Asfaw, 2014). Instructional materials are very important in the whole process of teaching and learning to any subject. They make learning more pleasant to the students because they offer a reality of experience, which stimulates self-activity and imagination on the part of the students.

5.2 Conclusions

The study objective one regarding the instructional materials being used for teaching in schools west district in Zanzibar, Tanzania. Assess the level of academic performance of students in science subjects in the secondary schools in Zanzibar and the third objective was to establish the relationship between the use of instructional materials and academic performance of science students in schools in Zanzibar.

The study findings on the there is inadequate usage of instruction materials laboratory equipment while audio visual aids of textbooks, reference books, maps and globes in schools under investigation. This is because the increase of students in Community Schools is not commensurate with the number of learning materials allocated in the schools. On the second objective the findings conclude that the performance of the students in sciences is poor especially in the national examinations.

On the third objective, never the less there was a relationship between instruction materials and academic performance of the students in the schools. It was further established that high degree of limited instruction materials accounted for a low academic performance of the students in science subjects.

5.3 Recommendations

The government of Tanzania to ensure that, the increase of students in the schools should commensurate with the number of instructional materials allocated in each school. This will pave ways for students to reach their highest possible academic achievement. The government of Tanzania should come up with a policy on provision of instruction materials in secondary schools to allow teaching/learning process take place easily. Teachers should always try their best to make use of available instructional materials where necessary to make their lessons more interesting.

On the second objective, the teaching of science in secondary school should be conducted in a manner that students will effectively understand and learn the concept taught. It should be practical as the use of improvised instructional materials has play greater role in students' achievement. It is suggested that regular meaningful workshop on improvisation technique for science teachers should be conducted to improve and update their competence in teaching.

On the third objective, School principals should provide science teachers with enabling environment for the use of available instructional material to gives room for participatory studentship and make learning more meaningful. School heads should also encourage improvisation of instructional materials by students, teachers, the schools parents and the government to enhance teaching/learning in schools and promote academic standard. Government should supply teaching aids and finance schools to improvise unavailable and inadequate instructional materials to make teaching and learning easier, practical, appealing and enjoyable

5.4 Suggestions for Further Study

Based on the findings and limitations of this research, the following topics are suggested for further research.

- Similar studies should be conducted in sciences to find out the effects of improvised and conventional instructional material on students' achievement among varied ability levels and their retention.
- Similar study should be carried out using other science subjects.
- Factors for limited usage of instruction materials in teaching the science subjects.

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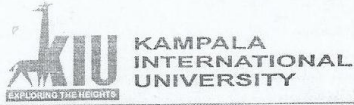
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Appendix i: Transmittal Letter (From the CEODL)

Appendix I : transmittal letter (from the CEODL



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College Of Education, Open and Distance e-Learning
Office of the Principal

30th May, 2017

To: SECOND VICE
PRESIDENT OFFICE

Dear Sir/Madam,

SUBJECT: PERMISSION TO CONDUCT A RESEARCH STUDY IN YOUR ORGANIZATION

With reference to the above subject, this is to certify that **Ms. RAYA SULEIMAN ABDALLA** Reg. No. **1161-07096-04421** is a bonafide student of Kampala International University pursuing a Masters in Educational Administration and Management.


She is currently conducting a field research entitled, **"Instructional Material and academic Performance for Science students in Secondary Schools, West District Zanzibar, Tanzania."**

This area has been identified as a valuable source of information pertaining to her research project. The purpose of this letter therefore is to request you to avail her with the pertinent information as regards to her study.

Any data shared with her will be used for academic purposes only and shall be kept with utmost confidentiality.

Any assistance rendered to her will be highly appreciated.

Yours truly,


Dr. Tindi Seje
Ag- Principal, CEODL
tundiseje@yahoo.com
+256752553123

"Exploring Heights"

Appendix ii: Letter to the respondents

Dear Sir/Madam,

Greetings!

I am a candidate for Masters of Education Management and Administration of Kampala International University. My study entitled “ Instructional materials and academic performance of science students in secondary schools, west district Zanzibar, Tanzania” Within this context, may I request you to participate in this study by answering the questionnaires Kindly do not leave any option unanswered any data you will provide shall be for academic purposes only. No information of such kind shall be disclosed to others.

Thank you very much in advance.

Yours faithfully,

Appendix iii: Informed Consent

I am giving my consent to be part of the research study of Raya Suleiman Abdalla on Instructional materials and academic performance of science students in secondary schools, west district Zanzibar, Tanzania.

I shall be assured of privacy, anonymity and confidentiality and that I will be given the option to refuse and right to withdraw my participation anytime. I have been informed that the research is voluntary and that the results will be given to me if I ask for it.

Initials : _____

Date : _____

Appendix iv: Research Questionnaire

Dear respondent,

I, am Raya Suleiman Abdalla a student of Kampala International University Uganda pursuing master's degree of educational management and administration. As part of my study at Kampala International University, I am conducting a study on "Instructional materials and academic performance of science students in secondary schools, west district Zanzibar, Tanzania.

Please spare some time and answer the questions that follow. Your response will be kept strictly confidential and will only be accessed by the research team. The information provided will only be used for academic purposes in this study.

Thank you very much for your time and cooperation.

Yours Cordially,

.....

Researcher

Section A: Demographics of respondents (Pick the appropriate response)

1. Gender
 - 1) Male
 - 2) Female
2. Highest level of qualification
 - 1) O and A Level
 - 2) Diploma
 - 3) Degree
 - 4) Others
3. Age
 - a) Below 20
 - b) 20 - 29
 - c) 30 – 39
 - d) 40 – 49
 - e) 50+

4. How long have you been in this school

1) Less than 1 year

2) 1-3 years

3) Between 3-5 years

4) 6 years and above

5. Position held in the organization

1) Administrator

2) Teacher

3) Student

SECTION B & C: Objectives

The use of Likert scale were 1= Strongly disagree, 2= Disagree, 3= Agree, 4= Strongly Agree.

Direction: please tick the column corresponding rating that best describes your response using the guide below

Score	Mode of response	Description
4	Strongly agree	You agree with no doubt
3	Agree	You agree with some doubt
2	Disagree	You disagree with some doubt
1	Strongly disagree	You disagree with no doubt

Section B: Instructional material in secondary schools

		Rankings			
	Response	1	2	3	4
	Visual Materials				
1	The teachers use charts to illustrate what they are teaching to students				
2.	The teachers use drawings on paper and clip boards as when providing instructions in class				

3.	The teachers use the chalk boards to illustrate and make clear their teaching				
4.	The teachers guide the students in their discussions using several visual materials				
5.	Teachers use appropriate charts and diagrams for the immediate illustration of science lesson.				
6.	The teachers also employee text books that are given to students in class during teaching				
7	The teachers are provided with teaching discussion guides that enable them in their discussions				
	Laboratory (Practical equipment)				
1	The teachers use specimen and practical items to demonstrate practical subjects				
2	The teachers use effective laboratory equipments in teaching for the science subjects				
3	The demonstrations on gardens, chemicals and their application are used in teaching by teachers				
4	Teachers use the required apparatus in carrying out the practical teaching to students				
5	The teachers also employee practical teaching and demonstration classes were the students are given the instruction materials for teaching				
6	The exact practical materials are used by the teachers in their teaching on day to day basis				
	Audio Aids				
1	The teacher use audio recordings for teaching to students in classes				
2	The teachers past instructors recordings for teaching in classes				
3	The teachers record audios that guide students discussions in the absence of teachers				
4	Audio recordings are used by the teachers in providing clarity to				

	the students				
5	The students are given audio recordings to facilitate them in time individual discussions				

Section C: Academic Performance of students in science subjects

(National Examinations Results in 3 years 2014, 2015 and 2016.

School	Biology				Chemistry				Physics				Average
	2014	2015	2016	Total	2014	2015	2016	Total	2014	2015	2015	Total	
A	57	55	60	57	60	54	52	55	59	57	60	59	57
B	60	52	72	61	70	69	65	68	56	68	69	64	64
C	62	54	54	57	60	50	63	57	60	45	50	52	55
D	64	54	60	59	62	60	54	59	52	51	54	52	57
E	45	44	42	43	35	42	45	40	42	47	32	39	40
F	52	52	62	55	62	63	50	58	52	51	53	52	55
G	64	59	52	58	50	55	54	53	71	65	61	64	58
H	60	50	50	53	60	52	73	62	59	62	61	61	59

Appendix v: Interview Guide

1. What is the level of usage of instruction materials in teaching sciences in schools?
2. What is the cause of limited usage of instruction materials in schools?
3. What is the level of academic performance of the secondary students in sciences?
4. How does instruction materials usage affect the academic performance of students in science subjects?