INFLUENCE OF EXPERIENTIAL LEARNING STYLE ON PRE-SCHOOL CHILDREN'S ACHIEVEMENT IN SCIENCE IN KISUMU CENTRAL SUB-COUNTY: KENYA

LINDA ANYANGO OMONDI

A research project submitted in Partial fulfilment of the requirement for the Award of the Degree of Master of Education in Early Childhood Education in the Department of Educational Communication and Technology, University of Nairobi.

DECLARATION

This research report is my original work and has not been presented to any other academic award or any other university for approval.

Signature: _____ Date:_____

Linda Anyango Omondi

E57/73865/2014

This research report has been submitted with our approval as the university supervisors.

Signature: _____ Date:_____

Dr. Raphael Nyonje

Senior Lecturer

Department of Extra Mural Studies

University of Nairobi.

Signature: _____ Date:_____

Prof. Paul A. Odundo

Associate Professor and Chairman

Department of Educational Communication and Technology

University of Nairobi.

DEDICATION

This research report is dedicated to my children (Rooney and Reagan), my husband Phil, my mummy, brother and sister (Brian and Cindy).

ACKNOWLEDGMENT

I am deeply indebted to the University of Nairobi for the opportunity they accorded me to undertake this course in the academic year 2014 -2015 in Early Childhood Education.

My special thanks and appreciation goes to my supervisors Dr. Raphael Nyonje and Professor Paul Odundo for their support, active criticism and encouragement through the course of the study. Worth of mentioning is their uncompromising stance of quality work .I am grateful for their humility, kindness and willingness to help in reviewing draft of each chapter of this project. My appreciation goes them for finding time to offer assistance to my research to further realign my study.

I would like to thank my classmates, with whom I brainstormed, my head teacher and other colleagues for their endless support, teachers and head teachers where this study will be carried out for without their cooperation this study cannot be possible.

Sincere thanks to my lovely family members for understanding and assisting me whenever necessary not to forget Mr.Albert Tambo and Jackie Okado who typed, formatted and printed this work. Accept my sincere appreciations.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATION

C.B.O Community Based organization

D.I.C.E.C.E District Centre for Early Childhood Education

E.C.D Early Childhood Development

E.C.E Early Childhood Education

K.I.E Kenya Institute of Education

P.B.L Project Based learning

TQSA

Thought Questions and Science Achievement

NPE National Policy on Education

ASA

Analogies and Science Achievement

TCSA Theory Construction and Science Achievement

ACSA

Abstract Conceptualization and Science Achievement

PSA Project and Science Achievements

AESA

Active experimentation and Science Achievement

JSA Journals and Science Achievements

ABSTRACT

The purpose of this study was to investigate the influence of experiential learning style on pre-school children achievement in Sciences class in Kisumu Central Sub County, Kisumu County, Kenya. Specifically the study sought: to establish the influence of concrete experience on pre-school children's achievement in science class; to examine how reflective observation influence preschool children's achievement in science class; to determine the influence of active experimentation on preschool children's achievement science class and lastly to establish the influence of abstract conceptualization on preschool children's achievement in Science class in Kisumu Central Sub County; Kenya. The study adopted descriptive research design. The target population for the study was 32 public schools in Kisumu Central sub-county. The schools had 32 head teachers and 122 pre-school teachers. 32 Head teachers from 32 schools and 52 pre-school teachers participated in the study. Data was collected by researcher using self-administered questionnaires for head teachers and pre-school teachers. The findings of the study revealed that concrete experience, reflective observation, active experimentation and abstract conceptualization all methods of experiential learning had influenced pre-school children's achievement in science class in several ways which have all been revealed by the study. Further analysis revealed that simulation had more influence on learners' achievement with a coefficient of 0.789 while personal journals had the least influence on learners' achievement with a coefficient of 0.458. The study therefore recommends that experiential learning styles be built in pre-school curriculum as it yields important dividends for any sector of education. The outcome of this study may be used by curriculum planners and implementers in coming up with curriculum that includes Experiential learning style component as a sub set of inquiring method in training of pre-school teachers.

CHAPTER ONE

INTRODUCTION

1.0 Background of the Study

Effective and efficient learning is based on the learners past experiences. After being instructed, the child should move from his/her present experience into curriculum by reconstructing (Carr, M. 2000). The significance in the child's experience is that it is leading and therefore the subject matter should be used to interpret the child's tendencies and abilities to see their potential to grow into richer understanding (Carlson, J.A 2010). When the learner is left completely to follow his interests, he will not be able to think because of evolving a universe out of his/her own mind. The teacher should therefore direct the learners indirectly so as to impose adult forms of knowledge directly upon children until they are exercised. This posts high achievement on the children as the teacher will understand the child's present development and his desirable future development (Carson, J.A. 2010).

Dewey (1976) noted that structured experience matters and disciplinary modes of inquiry could allow the development of the mind, thus creating dialectic between the child and the curriculum that the teacher must manage. He stated that when education is based upon experience and educative experience is seen to be social processes the situation changes radically as the teacher loses the position of external boss or dictator but takes on that of leader of group activities (Dewey, 1976).

Experiential learning therefore is used to describe the learning where a student acquires and applies knowledge skills and feelings in an immediate and relevant setting (Kolb A.Y. 2005). On the other hand, experiential learning can also be defined as education that occurs as a direct participation in the events of life (Jesen, 2002). Lewin's research discovered that learning is best facilitated when there is a conflict between a learner's immediate concrete experience and a detached analysis of it by the individual. In classes where learning styles are appropriately used, teachers are able to select learning materials that best fits the diversity of the classroom hence high achievement in learners (Sharma D.K. 2010). However, in classrooms where learning styles are inappropriately used, generalization may occur and learner will be able to say what action to take in a situation but may not be able to verbalize his actions in psychodynamic or sociological terms hence inadequate achievement in the classroom (Darling H.L.2000).

UK is advocating for the benefits of experiential learning as a way of engaging the young children as they move into primary school but for teachers this is seen as a new practice which can be in tension with other expectations (Davis J.M. 2000). Some of the teachers are however, keen to stress that their new practices had enhanced the cohesion of the class and that children knew they could seek help from each other (Beth, K. 2002). There is little evidence of activity being designed to require the cooperative learning to achieve a goal that is sometimes considered a feature of active learning (Ward, T. 2008).

In Canada, experiential learning is not a new curricular feature. Interest in the benefits of experiential learning programs has in fact been evident for quite some time and is inconclusive as it reported positive outcomes (Ontario Min. of Education, 2009). All forms of experiential learning are a valuable complement to pupils' academic experience and preparation for the future as it can maximize pupil's growth and development and is encouraged (Baker J.J. *et al.* 2008). In India, research indicates that most pre-school children go to school with inadequate school preparedness and tend to continue in school with low learning levels and higher probability of dropping out in the early primary grade The National Policy on ECCE (2013). Given this scenario, there has been an urgent need for professionally trained educators for this stage of education who can take responsibility for this transition from pre-primary to early primary grades using developmentally appropriate learning styles.

In South Africa, educational research has been criticized for its dearth of research that captures change specifically in learning processes and learning outcomes (Eloff I and Ebershon L. 2004). There is a belief that learners thrive on good instruction and teachers are therefore encouraged to invite, explain and encourage the learners to know the signs and symbols of their social-cultural environment as this is likely to promote higher achievement amongst the learners (Jones, J.L., 2002).

In Kenya, the ECD curriculum focuses on interactive methodologies that are child-centered and lays emphasis on holistic development. In many pre-unit classes, ECD teachers are using standard one textbook and materials brought to the centre by children.

Yet, even when appropriate pedagogical materials are available, most ECD centres' provide early primary education to prepare children for formal schooling.

1.1 Statement of the Problem

In Canada, experiential learning is not a new curricular feature. Interest in the benefits of experiential learning programs has in fact been evident for quite some time and is inclusive as it reported positive outcomes. All forms of experiential learning are a valuable complement to pupils, academic experience and preparation complement to pupils' academic experience and preparation for the future as it can maximize pupils' growth and development.

In India, research indicates that most pre-school children go to school with inadequate school preparedness and tend to continue in school with low learning levels. Given this Scenario, there has been an urgent need for professionally trained educators of this state of education who can take responsibility for this transition from pre-primary to early primary grades using developmentally appropriate learning styles.

In Kenya however, there is no clear policy governing instruction of ECE children since the National Policy of Education (2004), the Government committed herself extensively as to the measures she will take to ensure proper instruction procedures are put in the ECE but regrettably six years after the last revision (2004) have been made most of the measures and proposals are still paper formalities. It is in this light that this research will seek to establish the influence of experiential learning on pre-school children's achievements in science classrooms in Kisumu Central sub county Kenya.

The Kenyan government has also been unable to regulate and control the establishment and operations of pre-primary education in the country not to talk of enforcing the educational laws relation to them as provided in National policy on Education (NPE) and this has led to the indiscriminate establishment of pre-primary institutions with little or no concerns on standard in infrastructure, curricular and teaching methodologies hence leading to maladjustments on the child in terms of cognitive, psychological and psychomotor wise. The research will therefore seek to provide alternative teaching styles through experiential learning to ensure that learners learn by doing hence being able to construct their own knowledge leading to higher achievement in the learnt subjects.

1.2 Purpose of the Study

The purpose of this study was to investigate the influence of experiential learning style on pre-school children's achievement in Science in Kisumu Central Sub County: Kenya.

1.3 Research Objectives

In order to fulfil its purpose, the study was guided by the following research objectives:

i. To establish the influence of concrete experience on pre-school children's achievement in Science in Kisumu Central Sub-County: Kenya
ii. To examine how reflective observation influence preschool children's achievement in Science in Kisumu Central Sub- County: Kenya
iii. To determine the influence of active experimentation on preschool children's achievement in Science in Kisumu Central Sub -County Kenya.
iv. To establish the influence of abstract conceptualization on preschool children's achievement in Science in Kisumu Central Sub County: Kenya.

1.4 Research Questions

To meet the said objectives, the study was guided by the following research questions:

i. What is the influence of concrete experience on preschool children's achievement in Science in Kisumu Central Sub- County: Kenya?

ii. How does reflective observation influence pre-school children's achievement in Science in Kisumu Central Sub- County: Kenya?

iii. What is the influenceofactive experimentation on preschool children's achievement in Science in Kisumu Central Sub- County: Kenya?

iv. What is the influence of abstract conceptualization on preschool children's achievement in Science in Kisumu Central Sub- County: Kenya?

1.5 Significance of the Study

The finding of this study may be used by teachers at the ECE centres to apply experiential learning style to improve achievement in Science in preschools as well as at the higher levels of education.

The outcome of this study may also be used by the government to commence in-service courses to train ECE teachers on the value of using experiential learning style in teaching pre-school science activities. Finally the outcome of this study may be used by curriculum planners and implementers in coming up with curriculum that includes Experiential learning style component as a sub set of inquiring method in training of pre-school teachers.

1.6 Assumptions of the Study

This study assumed the following:

i. That all pre-school teachers who were trained had no background on experiential learning style.

ii. That all pre-school teachers who were trained on experiential learning style did not share with the ones not trained.

iii. That all pre-school teachers were professionally trained and that they used appropriate teaching styles for the pre-school children.

1.7 Limitations of the Study

Limitations are challenges anticipated or faced by the researcher (Kombo & Tromp, 2006). The research covered only one sub-county which may have unique settings hence the study could not be used to generalize results to the whole country. For more conclusive results, all the sub-counties in Kenya should be studied. However this is not possible due to research constraints imposed by time, cost or availability of materials.

1.8 Delimitations of the Study

The study only focused on the influence of experiential learning style on preschool children's achievement in Science in pre-schools in Kisumu Central Sub-County. The study only targeted the pre-school teachers and head teachers of public pre-schools and excluded the private ones who would have also had an impact on the research. Lastly, the study only sought to use questionnaires to collect data.

1.9 Definition of Key Terms

This study gave the following terms operational definitions:

Abstract conceptualization: Showing information units in a way that does not resembleTangible objects but rather focus on certain aspects of the information.

Active experimentation: Doing approach to learning that relies heavily on Experimentation.

Concrete Experience: It is a receptive, experience based approach that relies on a large part on judgment based on feelings.

Experiential Learning: It is the process whereby knowledge is created through the transformation of experience.

Influence: It is anything that brings about a change in our actions or Thoughts.

Learning Style: Are individual differences in learning based on the learners preference for employing different phrases of the learning Circle.

Pre School Children's Achievement: It is an improvement in learning that develops both on the children and their ability to contribute to the society.

Reflective Observation It is an observation which occurs when a person makes reflection on and in action.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the literature review of the study. It focuses on concrete experience, active experimentation, reflective observation and abstract conceptualization, theoretical framework of the study and summary of literature.

2.2 Concept of Experiential Learning

Experiential learning is the type of learning where the students manage their own learning rather than being told to do and when to do it (Kolb D.A,2005) The teacher therefore passes much responsibility on the student. In this type of learning, the learners are able to identify the knowledge they require and then acquire it themselves, reflecting on their know learning as they move along other levels of education (Moon, 2004).

Experiential learners are able to reason out their views and state their stand on the choices made (Gunstone R.F 2000)it therefore becomes necessary for their teachers to provide tasks that are learner centred and hands on to help them solve problems relevant to their lives (Wurdinger 2010). This should be done by letting the learners inquire a problem and then find the solution.

2.3. Concrete Experience and Achievement in Science

Improving Science learning is of great concern to educators and policy makers because pre-school experiences affect later education outcomes providing young children with research – based science learning opportunities likely to pay off with increased achievement and work skills in these critical areas (Kolb A.Y and Kolb D.A 2005).

Piaget (1976) emphasized that learning environment should include both concrete and symbolic models of the ideas learned. Similarly, a quality preschool environment supports children as they learn key content and practices of science by providing opportunities to observe, explore, experiment with and discuss a range of scientific phenomena. Children learn when questions and reasoning are encouraged as they explore the world around them. By providing these opportunities, teachers help children to have their thinking skills and clarify their informal ideas about science hence posting higher achievement amongst the learners(Kolb A.Y and Kolb D.A 2005).

Pre-school children can think abstractly about various scientific concepts and also passes dispositions and thinking skills that support later more sophisticated scientific reasoning(Carr A.M 2009) For example pre-schoolers are motivated to clarify ambiguous evidence children entering kindergarten already have a great deal of knowledge about the natural world including understandings of cause and effect. The knowledge domains include concepts related to science (Du Schl, 2006).

2.3.1. Simulation and Science Achievement

Simulation, according to Robert E. Shannon (1975) is the process of designing a model of a real system and conducting experiments with this model system for the purpose either of understanding the behaviour of the system or of evaluating various strategies for the operation of the system.

Simulation has been found to enhance a positive attitude towards learning and developing of memory skills and assisting learners to get connected and build self-constructed learning. With the use of new technologies in education, learners are able to engage with learning and hence become more motivated in the learning process. Teachers also become familiar with the computers and regard their use in education with a greater degree of anxiety hence posting higher achievement.

Use of games to teach may make learning permanent (Rendel*etal.* 1992) claim that the positive results obtained for retention over time favours the use of simulation. The major reason for using simulation as demonstrated by Morris (1974) is teaching to test the behaviour of simple theoretical models which would otherwise involve tedious calculation. This could also be applicable to science.

2.3.2. Small Group Discussions and Science Achievement

Small group teaching is rapidly gaining popularity as a means of encouraging children learning, Bligh (2000). A classroom discussion is an active instructional strategy as it enables learners to explore issues of interest, opinions and ideas. Luker (1989). In order to build on each other's ideas, learners must first listen to and understand the contribution

of fellow learners' hence deeper levels of understanding. Past studies have revealed that during discussions learners are attentive, engage, active and motivated (Ryan, 2001).

As learners brainstorm on a given topic by the teacher, their creative free-thinking is stimulated, and this is particularly useful when looking for a solution to a problem. The ideas thus generated can then be used as a basis for either a further problem - solving task or a tutor exposition hence higher achievement (Brown, 1997).

2.3.3. Drama and Science Achievement

J. Basom (2005) defines drama as the art form that explores human conflict and tension that it generally takes the form of a story presented to an audience through dialogue or action. Drama has an emotional and intellectual impact on both the participants and audience as it holds up a mirror for us to examine ourselves, deepening our understanding of human motivation and behaviour.

Evidence from many studies makes it clear that many students are not learning scientific process skills as they need or are exempted to learn it. Chuang (2002). Generally drama refers to the use of drama process as a way to teach variety of subjects or to supplement a school's curriculum. Bolton (1995). Drama is no longer considered simply as another branch of art education but as a unique teaching tool vital for language development and invaluable as a method in the exploring of other subject areas such as science (Balton 1995).

When pre-school children get involved in drama they get the chance to construct knowledge in their minds through meaningful activities children are able to simulate real life situations and experiences as they think that the learning atmosphere is familiar.

Cottrell (2003). Social constructivism sees knowledge as a product of social interaction mediated by activities and cultural tools, Vygotsky (1978). Drama also involves social interaction which is enhanced as the learners perform different scientific activities that provides active communication among them and between students and teachers thus higher achievement in science.

2.4 Reflective Observation and Science Achievement

According to Hillier Y. (2005), reflective observation is a meaning – making process that moves a learner from one experience into the next with deeper understanding of its relationships with and connections to other experiences and ideas. He further emphasize that it is the threat that makes continuity of learning possible and ensures the progress of the individual and ultimately, society, Kolb (1984) states that, reflective observation means watching others or developing observations about own experience.

Science education should begin during the early years of schooling. (Eschach and Fried 2005). This is because children have a natural tendency to enjoy observing and thinking about nature,Ramey – Gassert (1997). Young children are motivated to explore the world around them and early science experiences can capitalize on this inclination. (French, 2004).

When children are engaged in science learning experiences that are developmentally appropriate to them, they understand the world, collect and organize information and apply science education reform efforts call for science for al students' to bridge science achievement gaps. Oakes (1990) states in his research that; poor science instruction in early childhood contributes to negative student attitudes and performance and persists into the next levels of education. However, Mullis and Jenkin S. (1988); Eschach and

Fried (2005) suggest that positive early Science experiences help children develop scientific concepts and reasoning. Positive attitude toward science and better foundation for scientific concepts to be studied later in the education.

2.4.1 Journals and Science Achievement

A journal is a daily written record of experiences and observations. Journals assist science teachers to be more effective and efficient when delivering science activities at the pre-schools. Farrel (2008) states that keeping a teaching journal is an established method of reflective teaching. This leads to higher achievement in science as the teacher is able to keep track of the learner.

Teaching journals are important in reflective teaching as they aid the teacher to think about his/her beliefs, attitudes and assumptions thus promoting self-evaluation and change, Doyle (1997). Making journals therefore helps an individual to reflect on the activities that have taken place in the course of teaching, Reiner (2004). Journals also enable the teacher to tell whether the objectives of the lesson have been achieved or not hence posting higher achievement because remedial will be done in areas not well understood by the learners.

2.4.2 Reflective practice and Science Achievements

O'Connor and Phillips (2002) define reflective practice as thinking about what educators do in order to consider their actions and refine their practices according to these thoughts. Reflective practice is a cycle of ongoing learning that occurs when we take the time to stop, think and change.

Amulya (2004) suggests that reflection can arise from times of uncertainty and struggle as well as from breakthroughs and success. When both the learner and the teacher are involved in reflective practice, it is more likely to result in an exchange of ideas, shared

decisions making and positive partnership(Cottrel,S.2003). This in turn leads to better achievement for the learners. A teacher who engages the learners in reflective practice is likely to see evidence of an increase in knowledge and skill development (Hillier 2005). Amulya (2004) describes reflective practice as 'simply creating a habit, structure of routine around examining experience". There is therefore no doubt that reflective practice is one of the principles that supports and enhances teaching and learning.

2.4.2 Thought Questions and Science Achievement

We have all found ourselves thinking at a given moment in our lives. Teachers have long known that questioning is a useful way to aid in the transfer of knowledge from the teacher to pupil, Ross (1991). Majority of questions asked by teachers are low-level cognitive questions that require learner's to focus into the memorization and recall of factual information rather than questions which foster deeper learner understanding, Ross (1991).

Questioning will play a critical role depending on the way that; teacher structures the class environment, organize the content to be taught and the deep implications in the way that students assimilate the information presented and discussed in class. Most teachers are willing to engage learners in the process of asking questions while instructing hence helping them to recognize how to effectively use questioning as a pedagogical strategy, (Leven, 1981).

Thought questions help teachers to fulfil multiple objectives in the classroom as they enable the teacher to ascertain he level at which their students understand or misunderstand what is taught during the lesson Brualdi (1998) states that thought questions are used to engage and encourage learners active participation in a lesson as

they allow students to express their thoughts and hear explanations offered by their peers and also keep students alert or on task during class time. How questions are asked and answered has broader implications than mastering content. Effective instructions model the process of inquiry and organizing the search for solution for their students (Teach Talk 1995).

2.5. Active Experimentation and Science Achievement

Active experimentation improves students' Science achievement by enhancing their interest and understanding in science which will eventually result in higher motivation in Science (Flannery 2013) states that hands on Science foster the mind in more basic ways by extending the links between the brain and the hand making information gathered more powerful and easily retrievable.

Science content is abstract and teaching put unpleasant effects on learners. Most science curriculum are now laying emphasis on hands on practical activities as both an effective and enjoyable way of learning science content. Students involved in hands on activities are known to score significantly better than those taught through teacher centred experiments. Daily use of hands on activities also yields the greatest positive impact on students' achievement.

2.5.1 Projects and Science Achievement

It is in the interest of science educators to help students develop a greater understanding and appreciation for technology and engineering by Bee (2000). Project based learning was found to be a learning environment that may promote technological literacy as it enhances achievement (Frank 2002). Project learning increases motivation to study and helps students to develop long-term learning skills. Students know that they are full

partners in this learning environment and share the responsibility for the learning process, (McCrudden 2009).

A study reported by Shepherd (1998) found that grades for the critical thinking test (a 32 item, 40 minute test that measures skills in clarifying, analysing, evaluating and extending argument) received by learners who are taught in a project based learning environment (PBL) were significantly higher marks than those of students in a comparative group who studied in the traditional fashion. It is therefore worthy noting that project learning is ideal in learning of science as it enhances learners' achievement standards.

2.5.2 Field Work and Science Achievement

Field work is defined as any curriculum component and involving leaving the classroom and engaging in teaching and learning activities through first-hand experience of a given phenomenon. Going on a Science trip or excursion is perceived by learners to be the most enjoyable, useful and effective as it raises their motivation and anxiety to learn hence posting higher achievement. Fieldwork is not merely a signature pedagogy in Science but also brings conceptual, cognitive, procedural and social gains much of which would be lost without the particularly opportunities fieldwork provides. Well done fieldwork engages students in the iterative processes of drafting and redrafting data collection instruments as well as analysis and drawing conclusions.

2.5.3. Games and Science achievement

Salen& Zimmerman (2003) define a game as a system in which players engage in an artificial conflict, defined by rules that result in a quantifiable outcome. Games play a large part in the early development of children as it is considered an important learning experience. Games are seen as a means of working off aggressing, and a means of learning social behaviour as well as state that games and play activities have been shown to have the potential for organizing meaningful learning experiences hence posting higher achievement in learners.

With the emergence of use of technology in schools, children are involved in games such as video games which are integrated with pedagogy to enhance social participation among the learners and knowledge retention which enhances achievement Gee (2003).

According to Mayer R.E(2001), any type of game is the expression of the lucid nature of human being from learning and behaviour change to entertainment and recreation and therefore are necessary and useful in any learning process. Games are very important needs of learning as they provide the learner with enjoyment, ego gratifications, social interaction and emotion (Prensky, 2001).

2.6 Abstract Conceptualization and Science Achievement

Kolb (1984) defines abstract conceptualization as a logical analysis of idea and acting on intellectual understanding of a situation. Abstract conceptualization enables the leaner to build general theories using scientific as opposed to intuitive approaches because they emphasize thinking rather than feeling (Barsalou L.W 2003).

Research shows that a leaner with extensive knowledge gained form experience has better organized knowledge structures, with stronger linkages among domain related concepts as this allows them to conceptualize problems more efficiently and effectively in terms of relevant principles Elder-Vass D.(2007),hence, higher academic achievement.

Similarly learners are able to conceptualize a more organized and elaborated knowledge structure that facilitates their information processing. Kalyugaet al (2003) in their research state, that existing knowledge affects knowledge acquisition because of lack of pre organized schemes to aid in classification of knowledge causing notices to experience overload in processing new information.

2.6.1. Analogies and Science Achievement

Hyerle (2002) defines analogies as a way of stating a comparative relationship between two sets of terms. Analogies are useful in subject areas to enhance learning of key concepts for example, parts of the body.

Building analogies into the pre-school curriculum yields important dividends for any sector of education; it helps the learner to develop spatial thinking which is important for the success of Science, Albert Einstein (1980). Analogies are known to provide opportunities to learn important critical thinking skills and concepts such as similarities. Children can build knowledge and learn more about given things when they see the relationship between things through analogies(S. Kevin, 2000).

Using analogies in science classrooms can be a fun way to teach children to think ‘outside the box’ and discover new ways to use things. For example using a broomstick as a pretend horse. According to Goswami and Pauen (2005) analogical reasoning is a

form of inductive reasoning that involves making and understanding comparisons, develops in young children. Children are able to draw the correct conclusions from complex, even absurd. Premise as they use analogical reasoning(McCullough 2010). This motivates the children and hence post higher achievement in particular subjects such as science.

2.6.2. Theory Construction and Science Achievement

A theory is a model and an illustration describing how something works by showing its elements in relationship to one another (Ken Friedman 2003).Harcour and Conroy (2005) state that young children are sophisticated thinkers and communicators who are capable of reporting an interesting issues in this everyday encounters while learning. Children can learn the practicality of theories by examining real world teaching in light of the theories they illustrate. Robey and Markus (1998). Theories construction provides a sense of understanding crucial to scientific knowledge and practical, relevant application of the knowledge learnt. This promotes achievement among the learners (Russel, 1968).

2.7. Theoretical Framework

The study is based on Experiential Learning Theory proposed by David Kolb in 1984 and proposes that learning is the process where knowledge is created through transformation of experience .Kolb also experience is the source of learning and development. The experiential learning theory is a dynamic view of learning based on a learning cycle driven by the resolution of the dual dialectics of actual reflection and experience. It is holistic theory that defines learning as the major process of human adaption involving the whole person (Kayes and Kolb 2005).

According to Dewey (1897), learning is best conceived as a process not in terms of outcomes and to improve it in higher education. The primary focus should be an engaging students in a process that best enhances learning through a process that includes feedback on the effectiveness of their learning efforts. Dewey noted that the process sand goal of education are one and the same thing. Experiential learning theory fits in this study because it focused on the concept of learning emphasizes the concept of learning style using the learning style inventory to assess individual learning style (Joy and Kolb 2007) which encourages teachers to coming up with better learning styles for achievement in the pre-schools by promoting experiential learning. Experiential learning styles are based on this theory because the teacher is able to think in terms of activity based method of teaching, the kind of media to use and at the same time analyse how the lesson has had impact on the learners. This can be achieved if the teacher makes the teaching more learner centred rather than being in control over every step of the lesson especially in teaching of Science activities in pre-schools. Science is a practical subject and should therefore the learners should be given time to experiment and discover on their own.

2.8Conceptual Framework

Orodho (2009) defines a conceptual framework as a model of presentationwhere a researcher represents the relationship between variables in the study and shows the relationship diagrammatically.

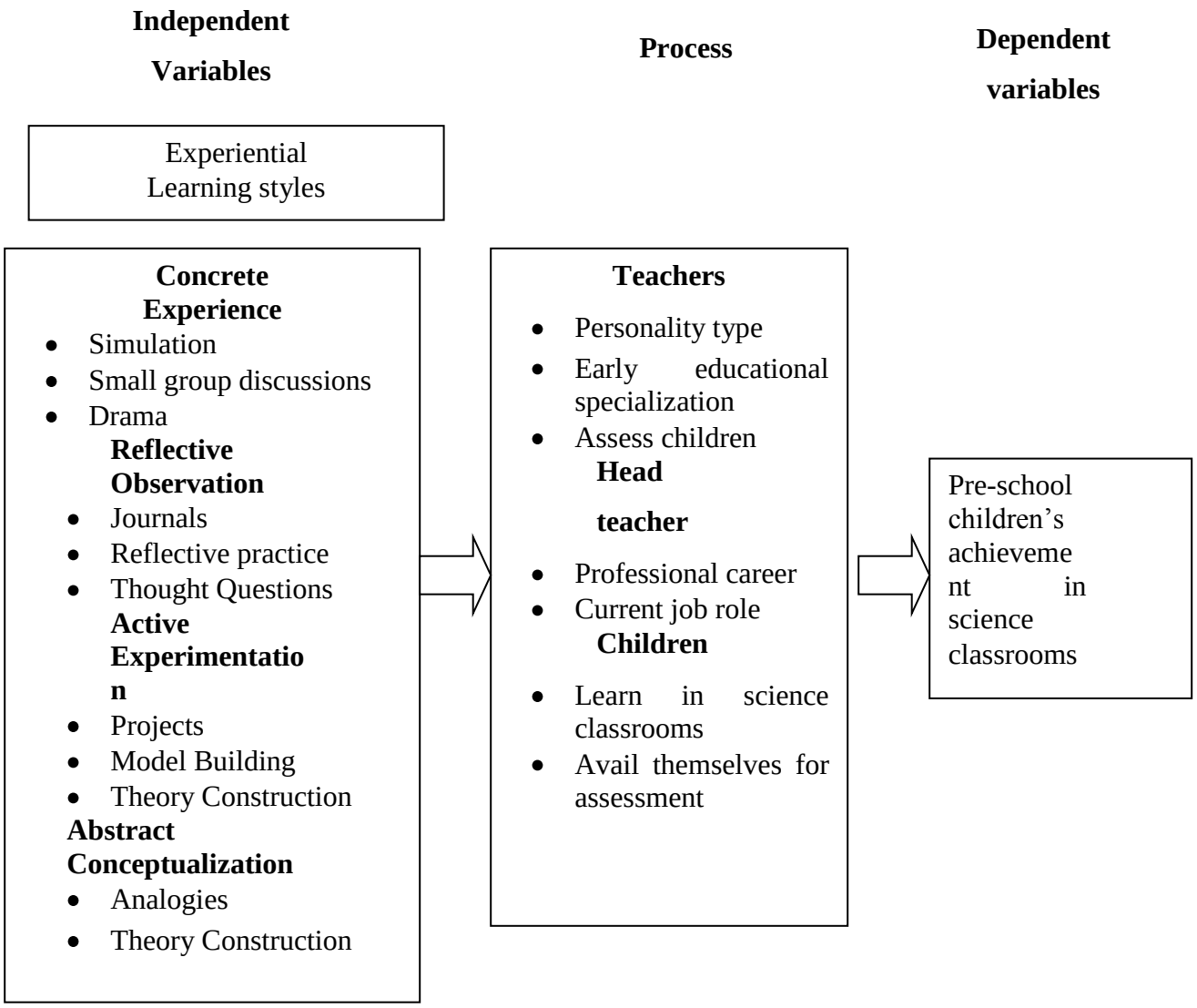

Figure 2.1 Perceived framework: Experiential learning style and learner achievement in Science.

The conceptual framework consists of the input which entails the independent variables making up experiential learning style, the process which are variables interacting in the presence of teachers, head teachers and children and in turn promote achievement in science classrooms.

2.9. Summary of Literature Review

	Author	Focus	Findings	Gaps
1.	C. Chidiebere (2013)	The impact of cooperative instructional strategy on the performance of grade of learners in science	The success of cooperative learning as an instructional strategy is base don the fact that it has a clear theoretical foundation	Cooperative instructional strategy enhances learners achievement science.
2.	R. Hellen (2000)	Using community Resources to enhance Mathematics and science	Local community is a source for science and mathematics learning	The local community as a source for science and mathematics learning demands quality resources that are often lacking and seems unattainable in some schools and districts.
3.	Pamela Y. Ngugi (2000)	Children's Literature research in Kenyan University	Children respond to literature through various types of responses.	Examination of various themes that are presented to the children.
4.	Ministry of Education	National Early Childhood Development policy framework	Ministry of education is be the overall lead Ministry.	Lack of adequate channels of communication for partnering and advocacy, especially for young children.
5.	K. Francis (2014)	Impact of reflective teaching on pre	Children taught using reflective teaching approach registered better performance than those	Study to be done on the effect of headteachers perception on the nature of early childhood

		schoolchildren' s achievement in science activities.	taught using non reflective teaching approach.	education and children performance in science activities.
6.	Connor (2010)	Experiential Learning Style	Experiential learning enhances children's performance learn by doing.	Students with action oriented and non emotional character are more easy than those with innovative thinking character.
7	K. Friedman (2003)	Theory construction in design research criteria; approaches and methods	It is not experience interpretation but our interpretation and understanding of experience that leads to knowledge.	Design will never achieve this goal until it rests on all three legs of science, observation, theories and experimenting.
8.	Researcher C. Trundle	Focus Teaching science during the early years.	Young children need quality science experience during their early years.	Need for teachers to work with children to develop their inquiry skills hence more toward more open inquiry.

	Researcher	Focus	Findings	Gaps
9	NCCA (2009).	Supporting learning and development through assessment	Children like adults are natural assessors of their own progress and achievement	Planned observations and especially targeted child observation require time.
10.	L. Haddad (2011).	An integrated Approach to Early Childhood Education and Care.	Integrated Approach Facilities, the development of coherent policy for regulation funding, training and service delivery across different phases of educational system.	Programs should be less costly and run by mothers or common leaders.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter focuses on research design, target population, sampling technique and sample size, research instruments, validity of the instruments, reliability of the instruments, data collection procedures and data analysis techniques.

3.2 Research Design

The research design used in this study was correlation research design which is a method of collecting information without manipulating the environment and also to demonstrate the association between the variables. The decision to adopt this design was guided by (Creswell, 2008) who stated that causality cannot be inferred. In this study the relationship between experiential learning style and pre-school children achievement in science was examined.

3.3 Target Population

Target population is the group of elements to which the researcher wants to make inference (Mugenda, 1999) defined target population as a complete set of individual cases or objects with common observable characteristics. According to the data from District Education Officer (2015), Kisumu Central Sub County has 32 registered public pre-schools having 32 head teachers and 122 pre-school teachers.

3.4 Sample size and sampling technique

The study respondents were 96 of which 32 were head teachers, and 64 pre-school teachers, the sampling of the pre-school teachers will be based on census given that it is

attractive for small populations necessary for precision, confidence level and variability. The sample for the head teachers and pre-school teachers will be based on Kombo and Tromp (2006) study that state that 30% is adequate representation of the entire population. This method will assist the researcher to apply inferential statistics to data and provide opportunities for the action of each pre-schools in the sub county.

The study will adopt simple random sampling technique of probability sampling. This will help in ensuring that each pre-school gets an equal and independent chance of being selected.

Table 3.1 Population and sample sizes

Respondents	Population	Sample size
Head Teachers	32	32
Pre School Teachers	122	64
Total	**154**	**96**

3.5 Research Instruments

According to Borg and Call (1983) study, instruments are tools for collecting data**.** The only research instrument used in this study was a questionnaire for the head teachers and the pre teachers. A questionnaire is suitable for collecting this data because according to Sekaran (2006) it is less expensive when administered to a group of respondents, establishes rapport and motivates the respondents. Anonymity in questionnaires helps to produce more frank responses than interviews since there is no fear of victimization (Sekaran, 2006). In this study only two categories of questionnaires were used, that is, head teachers' questionnaire and teachers' questionnaire.

3.5.1 Instrument Validity

Kothari (2003) defines validity as the degree to which an instrument measures what it is supposed to measure. To enhance content validity, appropriate and adequate items relevant to research objectives were included in the questionnaires. To improve on validity, a pilot study was carried out in two schools using two head teachers and 20 pre-school teachers to identify items that were inadequate in measuring the variables hence discarding or improving on them. The two schools did not form part of the schools selected for the study. The instruments were then reviewed with the help of the project supervisors who are experts in this area of study.

3.5.2 Instrument Reliability

Reliability is a measure of the degree to which a research instrument yields consistent results or data after repeated trials (Mugenda & Mugenda, 2003). Test retest technique was used to ascertain the reliability of the instrument. Two head teachers and twenty pre-school teachers' respondents were randomly selected to respond to the items. After two weeks, the same items were administered to same respondents and the results compared to determine the reliability of the instrument (Orodho, 2009). Pearson's product moment correlation formula was employed to compute the correlation co-efficient. The range of coefficient is normally -1 to +1. A correlation coefficient of 0.88 for the head teacher and 0.92 for the pre-school teachers indicated a high degree of reliability of the data. According to Frankel and Wallen (2000) if the correlation lies between 0.5 and 1.0 the instrument will be judged reliable.

3.6 Data Collection Procedures

Before embarking on data collection the researcher secured an authorization letter from school of post-graduate studies University of Nairobi, the National commission for science technology and information and other relevant authorities and institutions. The researcher visited the selected pre-schools to seek permission from the head teacher to use their schools for the study. The researcher was provided with the required data on the performance of the science activities in the pre-schools in the few years.

3.7 Data Analysis Techniques

Data analysis techniques are statistical methods which were used to analyse data so that it could be interpreted. The questionnaires were checked for completeness while data was coded by assigning a code to every response. In coding, the factor items were scored from a five point Likert scale. Descriptive statistics were used to summarize the data in form of frequencies and percentages and the data was organized and presented in form of frequency tables. Qualitative data was grouped into similar themes and words were used to explain the situation. All data analysis was done in line with the research objectives of the study and research questions.

3.8 Data Presentation

The study has been summarized inform of tables and figures. This will summarize the various pre-school teachers and headteacher's participation in ECD activities and Experiential Learning Style in relation to science Achievement.

3.9 Ethical Considerations

According to Neuman (2011), ethical issues are the concerns, dilemmas and conflicts that arise over the proper way to conduct research. In the context of research ethics focuses on

providing guidelines for researchers, reviewing and revaluating research and establishing enforcement mechanisms to ensure ethical research (Rogelberg, 2008).

Research ethics are focused on what is morally proper and improper when engaged with participants or when accessing archival data (Millan& Schumacher, 2010). During this study consideration was given to the view of Christian (2000) who stated1 that in a research, subjects must agree voluntarily to participate and that the agreement must be based on full and open information, primary safeguard against unwanted exposure and anonymity. In this study the researcher sought permission to embark on the research from the D.E.O the headquarters of selected schools, head teachers and pre-school teachers from selected schools to add on that the participants were fully notified about the purpose and procedure of the study. The pre-schools teachers will also be made aware that the study entails no harm to them and therefore participation is on voluntary basis.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSION

4.1 Introduction

This chapter presents findings from the study with data generated from the field. The findings have been presented with respect to each of the specific research objectives. The methods used in data analysis are both qualitative and quantitative. The main issues discussed include the following: the respondents' response rate, background information of the respondents and responses to the research questions.

4.2 The respondents' response rate

The study involved a sample of thirty two pre-schools drawn from a target population of 32 public schools. This information is shown in the Table 4.1.

Table 4.1 Questionnaire return rate

Respondents	**Target**	**Response**	**Response Rate**
Head Teachers	32	32	100
Pre School teachers	64	52	81.25
Total	**96**	**84**	**87.50**

The researcher had targeted 32 head teachers for the study all of whom participated forming a 100 % return rate. The study also targeted 64 pre-school teachers of whom 52

responded to the study questions making a response rate of 81.25 %. This was a very good degree of response (Mugenda, 2003). According to Edwards, Robert, Clarke Diguiseppi, Pratop, Wentz and Kwan (2000), a questionnaire return rate of 80 percent and above is absolutely satisfactory, while 60 percent to 80 percent return rate is barely acceptable. The high rate of questionnaire return is an indication that the teachers and students responded properly and hence were interested in the study. The questionnaire return rate was high because the researcher collected the questionnaires immediately they were filled.

4.3 Background information of the respondents

The target respondents in the study were head teachers and pre-school teachers from Kisumu Central sub-county. In order to gain understanding of the respondents involved in the study, each respondents were asked to indicate their gender, length of professional experience, highest level of education and main area of professionalism.

4.3.1 Distribution of respondents by gender

The head teachers and pre-school teachers were asked to indicate their gender. This information was useful in showing gender distribution in the schools under study. This will indicate whether there is gender balance or imbalance in the schools under study. The results are presented in the Table 4.2.

Table 4.2: Distribution of respondents by Gender.

Gender	**Head teachers**		**Pre- School Teachers**	
	F	**%**	**F**	**%**
Male	15	46.9	0	
male	17	53.1	52	100
Total	**32**	**100**	**52**	**100**

The study established that majority of the head teachers and pre-school teachers were female. From findings in table 4.3.1. 46.9 % of head teachers that responded were male while 53.1% were female. The table also shows that all 100% (N=52) of the pre-school teachers who participated in the study were female. This shows first that the researcher was not gender biased in choosing her respondents and this will be of importance to the study as it would enable collection of gender unbiased information. This also shows that there was gender balance in the schools under study. The findings on the pre-school teachers implies that the pre-school teaching in the sub-county was dominated by female teachers. This result is in line with the belief that ECE is a female affair and that women are more caring and passionate when dealing with pre-school children as compared to males (MOE, 2015)

4.3.2 Distribution of respondents by professional experience

To establish professional stability, head teachers and pre-school were asked to indicate the length of service in their current stations. The findings are presented in Table 4.3

Table 4.3: Distribution of respondents by their length of professional experience

	Head teachers		Pre- School Teachers	
Period (Years)	**F**	**%**	**F**	**%**
1- 4 Years	10	31.3	14	26.9
5 - 10 Years	18	56.3	27	51.9
11 - 20 Years				
Above 21 Years	4	12.5	11	21.2
Total	**32**	**100**	**52**	**100**

As show in Table 4.3 55.6 % of the head teachers responded that they have served in their current positions for 5 - 10 years, 31.3% responded they had served for 1 - 4 years whereas 12.5% indicated they had served for above 21 years. This implies that there is high staff stability as it seems the administration had confidence in their management of the schools. The study also established that 51.9% of preschool teachers that participated in the study had professional experience of 5 – 10 years, 26.9% had a professional experience of between 1 to 4 years and 21.2% had professional experience for a period of over 21 years. This implies that most of the teachers had adequate experience to make them efficient and effective in their profession (Ndirangu, 2006). They could also give factors that lead to poor performance in biology since they have taught for a long time. This implies that majority of the respondents had worked long enough and therefore were conversant with the impact of the leaner centred teaching strategies on students' performance in biology. This is in agreement with the study by Moini (2009) who established that work experience of teachers influences their attitude towards their teaching subject and more experienced teachers tend to perform better than novice teachers.

4.3.4 Distribution of respondents by their highest level of education.

The head teachers and pre-school were also required to indicate their highest education level and the results are presented in the Table 4.4.

Table 4.4: Distribution of respondents by their highest level of education

	Head teachers		Pre- School Teachers	
Level	**F**	**%**	**F**	**%**
Certificate			16	30.8
Diploma	8	25.0	31	59.6
University	16	50.0	5	9.6
Masters	8	25.0		
Total	**32**	**100**	**52**	**100**

The study established that 50% of the head teachers who participated in this study highest level of education was University education, whereas those who had master and diploma education were 22%. This indicates that the schools are under management of qualified individuals who are in a good position to carry out the implementation of the curriculum effectively. There is need however for the head teachers to upgrade themselves through joining higher level institutions like universities for degree courses to gain modern skills and improve their effectiveness.

The study also established that 59.6% of pre-school teachers who participated in the study their highest education level was diploma, 30.8% their highest educational level being certificate and 9.6% their highest education level being university. This indicates that the pre - schools are taught by qualified individuals who are in a good position to carry out the implementation of the curriculum. There is need however for the teachers to upgrade themselves through joining higher level institutions like universities for degree courses to gain modern skills and improve their effectiveness.

4.3.5 Distribution of respondents by their main area of professional training.

The respondents were also asked to indicate their main area of professional training and the results are presented in the table 4.5.

Table 4.5: Distribution of respondents by their main area of professional training

	Head teachers		Pre- School Teachers	
Level	**F**	**%**	**F**	**%**
P1	13	40.6	9	17.3
ECE– Certificate	9	28.1	34	65.4
ECE– Diploma	10	31.3	9	17.3
Total	**32**	**100.0**	**52**	**100.0**

The study revealed that 40.6% of the head teachers had P1 professional training, 31.3% had ECE – certificate professional training and 28.1% had ECE – diploma professional training. This indicates that the head teachers who participated in the study had a good understanding of the concept under study as they all had been trained on it.

The study also revealed that 65.4% of the pre-school teachers had ECE-certificate professional training which is the requirement for one to be a pre-school teacher. Those who had P1 and ECE-diploma professional training were 17.3%. This implies that pre-school teaching in the region is being handled by professional teachers who were qualified to teach at that particular level and that they are in the best position to give the required information. This also implies the researcher indeed collected information from qualified teachers.

4.4Head teachers responses on Experiential learning styles and Achievement in Science

To determine the relationship between experiential learning styles and learners' achievement in science class a cross tabulation of the head teachers' responses on the influence of experiential leaning styles on learners' achievement was done and the results presented in Table 4.6.

Table 4.6: Experiential learning style and Learners achievement

Experiential Learning Styles	Learners Achievement							
	YES		NO		YES		NO	
	F	%	F	%	F	%	F	%
Concrete Learning Experience								
Simulations	28	88	4	12	28	88	4	12
Small Group Discussion	29	91	3	9	29	91	3	9
Drama	30	94	2	6	30	94	2	6
Active experimentation								
Questions	27	84	5	16	27	84	5	16
Games	27	84	5	16	27	84	5	16
Projects	25	78	7	22	25	78	7	22
Reflective Observation								
Thought questions	26	81	6	19	25	78	7	22
Reflective Essays	31	97	1	3	28	88	4	12
Personal Journals	30	94	2	6	27	84	5	16
Abstract conceptualization								
Theory Construction	27	84	5	16	28	88	4	12
Analogies	28	88	4	12	28	88	4	12

The study findings revealed that 28 (88%) of the head teachers had used simulation while 4 (12%) had not used it. Further to that the findings indicated that 28 (88%) of the headteachers agreed that simulation influences learners achievement in science On small group discussion the study established that 29 (91%) of the head teacher who participated in the study had used small group discussions while 3(9%) had not used it. In addition the study also revealed that 29(91%) agreed that small group discussion influenced learners

achievement in science class. Asked if they had used drama while teaching, 30 (94%) indicated that they had used it and agreed that it influences learners achievement in science class.

The study revealed that 27 (84%) of the head teachers had used games while teaching learners and agreed that it had influence on their achievement in science class. Further findings of the study indicated that 27(84%) of the head teachers had used questions while teaching learners and agreed that it had influence on their achievement in science. Moreover the study revealed that 25(78%) of the head teachers had used projects while teaching learners and agreed that it had influence on their achievement in science class.

The study findings indicated that 26(86%)of the head teachers had used thought questions while teaching learners. However only 25 (78) agreed that it had influence on their achievement in science class. In addition the study revealed that 31 (97%) of the head teachers had used reflective essays when teaching pre learners. However only 28 (88%) agreed that it had influence on their achievement in science class. On personal journal it was indicated that 30 (94%) of the head teachers had used personal journal when teaching pre learners nonetheless only 27 (84) agreed that it had influence on the learners achievement in science class.

The study revealed that 27(84%) of head teachers had used theory construction while teaching learners. However the findings indicate that 28 (88%) agreed that it had influence on learners achievement in science class. The study further revealed that 28

(88%) had used analogies when teaching pre learners and agreed that it had influence on learners achievement in science class.

4.5Pre-school teachers responses on Experiential learning styles and Achievement in Science

To determine the relationship between experiential learning styles and learners' achievement in science class a cross tabulation of the t pre-school teachers' responses on the influence of experiential leaning styles on learners' achievement was done was done between experiential learning styles and achievement in science and the results is presented in Table 4.7.

Table 4.7: Experiential learning styles and Achievement in Science

Experiential Learning Styles	Learners Achievement							
	YES		NO		YES		NO	
	F	%	F	%	F	%	F	%
Concrete Learning Experience								
Simulations	35	68	17	32	35	68	17	32
Small Group Discussion	51	98	1	2	48	92	4	8
Drama	46	88	6	12	46	92	6	8
Active experimentation								
Questions	51	98	1	2	51	98	1	2
Games	50	96	2	4	50	96	2	4
Projects	49	94	3	6	44	85	8	15
Reflective Observation								
Thought questions	50	96	2	4	50	96	2	4
Reflective Essays	48	92	4	8	48	92	4	8
Personal Journals	46	88	6	12	46	92	6	8
Abstract conceptualization								
Theory Construction	51	98	1	2	47	90	5	10
Analogies	49	94	3	6	45	87	7	13

The study findings revealed that 35(68%) of the pre-school teachers had used simulation when teaching pre-school learners and agreed that it had influence on their achievement

in science. B*y* imitating what teachers have taught, the children learn to express themselves and gain confidence while tackling scientific activities and this enables them to record high achievement in the science class through knowledge retention. The study further revealed that 51 (98%) of the pre-school teachers had used small group discussions when teaching learners however 48(92%) agreed that it had influence on their achievement in science. Although small group discussions aren't used so much at the preschool level due to the short attention span of the learners, positive results have been achieved in class where the small group discussions are used since the pre-schoolers are able to learn a lot from one another. The study further indicated that 46 (88%) of the pre-school teachers admitted to have used drama when teaching pre-school learners and agreed that it had influence on pre-school leaners achievement in science class.

The study findings established that 51(98%) of the pre-school teachers had used questions while teaching learners and agreed that it had influence on learners achievement in science class. The study further revealed that 50(96%) of the pre-school teachers had used games while teaching pre learners and agreed that it had influence on their achievement in science class. When a teacher engages preschool children in games, the learners become well motivated and keenly pay attention to what is taught and this promotes high retention of knowledge hence improving their achievement in Science.The study also indicated that 49(94%) of the preschool teachers had used projects while teaching pre-school learners however 44(85%) agreed that it had influence on their achievement in science.

The study findings indicated that 50(96%) of the preschool teachers had used thought questions when teaching pre-school learners and agreed that it had influence on the learners achievement in science class. The study findings further revealed that 48(92%) of the pre-school teachers had used reflective essays when teaching pre learners and agreed that it had influence on the learners achievement in science.It gives the learners a chance to recall whatever they've been taught and put it into practice thus boosting their achievement in Science.The study findings established that 46(88%) of preschool teachers had used personal journals while teaching pre-school learners and agreed that it had influence on the learners achievement in science. Personal journals are very effective in keeping track of the pre-schoolers achievement as it enables the teacher to keep records of the learners and compare their achievement trend and this improves their achievement especially in Science.The study revealed that 51(98%) of the preschool teachers had used theory construction when teaching pre-school learners however only 47(90%)pre-school teacher agreed that it had influence on the learners' achievement in science.The study also indicated that 49(94%)of the preschool teachers had used analogies while teaching pre-school learners however only 45(87%)agreed that it had influence on the learners achievement in science class.

4.6 Regression analysis for influence of experiential learning styles on learners achievement

The researcher further conducted a multiple regression analysis so as to analyse influence of experiential learning style on learners' achievement. The main purpose of multiple regressions is to learn more about the relationship between several independent or predictor variables and a dependent or criterion variable.

The coefficient of determination was carried out to measure how well the statistical model was likely to predict future outcomes. The coefficient of determination, R^2 is the square of the sample correlation coefficient between outcomes and predicted values. As such it explains the contribution of the six independent variables that were studied (simulations, small group discussion, drama, questions, games, projects, thought questions, reflective essays personal journals, theory construction and analogies).

All the six independent variables that were studied, explain 96.4% of experiential learning styles as represented by the adjusted R^2. This therefore means that other factors not studied in this research contribute 3.6% of experiential learning styles. Therefore, further research should be conducted to investigate the other (3.6%) experiential learning styles.

Table 4.8:Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.913	0.834	0.751	0.4538

Multiple regression analysis was conducted to determine the relationship between experiential learning styles and leaners achievement. Results were as presented in Table 4.9.

Table 4.9:Influence of experiential learning style on learners' achievement

Model	Unstandardized Coefficients		Standardized Coefficients	Sig.
	B	Std. Error	Beta	
(Constant)	1.217	0.342		0.0342
Simulations	0.789	0.31	0.162	0.0207
Small group discussion	0.646	0.156	0.209	0.0278
Drama	0.528	0.322	0.059	0.0231
Questions	0.625	0.235	0.078	0.0243
Games	0.525	0.143	0.156	0.0295
Projects	0.465	0.268	0.126	0.0233
Thought questions	0.761	0.126	0.032	0.0285
Reflective essays	0.633	0.348	0.045	0.0299
Personal journals	0.458	0.323	0.178	0.0289
Theory constructions	0.596	0.213	0.143	0.0236
Analogies	0.678	0.174	0.237	0.0234

Dependent Variable: Learner Achievement

The regression equation has established that taking all factors into account (simulations, small group discussion, drama, questions, games, projects, thought questions, reflective essays, personal journals, theory construction and analogies) constant at zero, simulation will be 0.789. Findings showed that taking all other independent variables at zero, a unit increase in small group discussion will lead to 0.646 increases in learners' achievement in science; a unit increase in dramawill lead to 0.528 increases in learners achievement science; a unit increase in the use of questions will lead to 0.625 increases in learners' achievement in science class; a unit increase in the use of games will lead to 0.525 increases in learners achievement in science class; a unit increase in the use of project

while teaching learners will lead to 0.465 increases in the learners achievement in science class; a unit increase in the use of thought questions will lead to 0.761 increases in the learners achievement in science; a unit increase in the use of reflective essays will lead to 0.633 increases in the learners achievement in science classroom; a unit increase in the use of personal journals will lead to 0.458 increase in the learner achievement in science class; a unit increase in the use oftheory construction will lead to 0.596 increases in the learners achievement in science anda unit increase in the use of analogies will lead to 0.678 increases in the learners achievement in science.

This infers that simulation contribute most to learners achievement followed by thought questions, analogies, small group discussions, reflective essays, questions, theory construction, drama, games, projects and lastly personal journals. This notwithstanding, all the variables were significant as their P-values were less than 0.05.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter provides a summary of the study, summary research findings, conclusions and recommendations as well as suggestions for further research.

5.2 Summary of the Study

The purpose of this study was to investigate the influence of experiential learning style on pre-school children's achievement in science class in Kisumu Central Sub-County: Kenya. The study aimed to answer four research objectives that were: to establish the influence of concrete experience on pre-school children's achievement in science class in Kisumu Centre Sub County; to examine how reflective observation influence preschool children's achievement in science class in Kisumu Central Sub County; to determine the influence of active experimentation on preschool children's achievement science class in Kisumu Central Sub County Kenya, lastly to establish the influence of abstract conceptualization on preschool children's achievement in Science classes in Kisumu Central Sub County; Kenya. The study adopted descriptive research design. The target population for the study was 32 public schools in Kisumu Central sub-county. The schools had 32 head teachers and 122 pre-school teachers. 32 Head teachers from 32 schools and 52 pre-school teachers participated in the study. Three head teachers and 20 pre-school teachers were used for piloting. Data was collected by researcher using self-administered questionnaires for head teachers and pre-school teachers. A correlation coefficient of the research instrument was found to be 0.88 and 0.92 for head teachers

and teachers respectively. The questionnaires were therefore considered reliable, statistical package for social sciences was used to tabulate code and process data into a database because it is able to handle large amounts of data.

5.3 Summary of Research Findings

The study sought to establish the influence of concrete experience on pre-school children's achievement in science in Kisumu Centre Sub County. It was established that concrete experience influenced learners' achievement in science class positively. Findings articulated from the study showed that teachers agreed that simulation helped the learnerslearn to express themselves and gain confidence while tackling scientific activities and this enables them to record high achievement in the science class through knowledge retention.Further analysis revealed that even though small group discussion weren't used so much at the preschool level due to the short attention span of the learners, positive results have been achieved in class as the children are able to learn a lot from one another through discussion.These findings lend credence to arguments held by Rendel*et al.* (1992) who claimed that the positive results obtained for retention over time favours the use of simulation. The findings are in addition in line with past studies that revealed that during discussions learners are attentive, engage, active and motivated (Ryan, 2001) and hence increase in achievement in science.The findings also supports the statement of Brown (1997) who stated that "As learners brainstorm on a given topic by the teacher, their creative free-thinking is stimulated, and this is particularly useful when looking for a solution to a problem. The ideas thus generated can then be used as a basis for either a further problem - solving task or a tutor exposition hence higher achievement".

The second objective of the study was to examine how reflective observation influence preschool children's achievement in science class in Kisumu Central Sub County. The study revealed that reflective observation influenced the achievement of preschool children in science class. Reflective essay was found to be giving them a chance to recall whatever they've been taught and put it into practice thus boosting their achievement in Science.Moreoverpersonal journals had influence on pre-school children's achievement in science class as they were very effective in keeping track of the pre-schoolers achievement as it enables the teacher to keep records of the learners and compare their achievement trend and this improves their achievement especially in Science. The findings support the findings of a study done by Eschach and Fried (2005) who suggested after their study that positive early Science experiences help children develop scientific concepts and reasoning hence higher achievement.These findings are in addition in tandem with Amulya (2004) who suggested that reflection can arise from times of uncertainty and struggle as well as from breakthroughs and success. When both the learner and the teacher are involved in reflective practice, it is more likely to result in an exchange of ideas, shared decisions making and positive partnership. This in turn leads to better achievement for the learners. Further to that the findings supports the postulated statement by Peter (1991) who postulated that a teacher who engages the learners in reflective practice is likely to see evidence of an increase in knowledge and skill development.

The third objective was to determine the influence of active experimentation on preschool children's achievement science class in Kisumu Central Sub County Kenya. The study

revealed that active experimentation influenced the achievement of preschool children in science class.

It was revealed that when a teacher engages preschool children in games, the learners become well motivated and keenly pay attention to what is taught and this promotes high retention of knowledge hence improving their achievement in Science.These findings support the argument held byBrualdi (1998) who postulated that thought questions are used to engage and encourage learners active participation in a lesson as they allow students to express their thoughts and hear explanations offered by their peers and also keep students alert or on task during class time. The findings supports the findings by Shepherd (1998) in his study where he found out that grades for the critical thinking test (a 32 item, 40 minute test that measures skills in clarifying, analysing, evaluating and extending argument) received by learners who are taught in a project based learning environment (PBL) were significantly higher marks than those of students in a comparative group who studied in the traditional fashion.

The fourth objective was to establish the influence of abstract conceptualization on preschool children's achievement in Science class in Kisumu Central Sub County; Kenya. The study revealed that abstract conceptualization influenced the achievement of preschool children in science class.

The study findings lend credence to an argument held by Albert Einstein (1980) who stated that building analogies into the pre-school curriculum yields important dividends for any sector of education; it helps the learner to develop spatial thinking which is

important for the success of Science class. Moreover the findings are in tandem with Russel (1968) statement that theories construction provides a sense of understanding crucial to scientific knowledge and practical, relevant application of the knowledge learnt and that this promotes achievement among the learners.

5.4 Conclusions

Concrete experience have influence on leaners achievement in science class. Simulation helped the learnerslearn to express themselves and gain confidence while tackling scientific activities and this enables them to record high achievement in the science class through knowledge retention.Small group discussion enabled the children to learn a lot from one another. Simulation was established to have more influence followed by small group discussion then drama.

Active experimentation have influence on learners' achievement in science class.Reflective essay gave the learners a chance to recall whatever they've been taught and put it into practice thus boosting their achievement in Science.Moreoverpersonal journals helped in keeping records of the learners and compare their achievement trend and this improves their achievement especially in Science. The use of questions was found to have more influence followed by the use of games then lastly the use of project

Reflective observation have influence on learners' achievement in science class as it promotes high retention of knowledge hence improving their achievement in science class. The use of thought questions was found to have more influence followed by reflective essay and lastly personal journals.

Abstract conceptualization have influence on learners' achievement in science class. Theory construction was found to have the most influence then analogies.

5.5 Recommendations

Based on the findings and conclusions of the study the following recommendations were made:

For Policy

i. Experiential learning styles should be built in pre-school curriculum as it yields important dividends for any sector of education; it helps the learner to develop spartial thinking which is important for the success of Science.

ii. The study also recommends that the pre-school teachers be trained on the use of experiential learning styles as some of them didn't use in effectively.

iii. The study also recommends that the head teachers should ensure application of these learning styles as some of them were not even aware of it in the first place.

For research

i. The findings indicated that indeed experiential learning styles influence achievement of pre-school learners in science class. Although this is the case it was not fully being utilised by most teachers as they were just but using it occasionally. The study therefore recommends that pre-school teachers use this more often in teaching their students.

5.6 Further Research

i. A study to be conducted to find out what can be done to improve the level of influence of experiential learning style on achievement of pre-school learning in science class in Kisumu County.

ii. An in-depth study to assess the influence of experiential learning style on preschool learner's achievement in science class in the entire Kisumu County. This is vital because there are historical, geographical, institutional and other differences between sub-counties.

iii. A study to be conducted assessing the influence of experiential learning style on other subjects like Kiswahili in Kisumu Central sub-county.

iv. The study did not focus on influence of experiential learning styles in private schools; this would be a rich area for research.

v. There is need to carryout studies, which would address the issues, pertaining to teaching preschool children like learner centred strategies that could also be effective in improving their performance.

Contribution to the Bodyof knowledge

Objective	Contribution
Concrete Experience	The study established that concrete experience influenced learner's achievementinscience class positively.Simulationhelped learners learn toexpressthemselves andgain confidence while tackling scientific activities and this posts higher achievement inscience through knowledge retention.
Reflective Observation	Reflective essay enables children to recall whatever they have been taught and put it into practice thus boosting children's achievement in science.
Active Experimentation	Learners who are engaged in active experimentation are well motivated and keenly pay attention to what is taught and this promotes high retention of knowledge hence improving their achievement in science.
Abstract Conceptualization	Building analogies into the preschool curriculum yields important dividends for any sector of education as it helps the learner to develop spatial thinking which important for high achievement in science.

REFERENCES

Adenipekua O. (2009). Government Falters in Early Childhood Education in aAdefaye (Ed) Vanguard Newspapers, Apapa December, 23, 20 (2): 20 – 22. Vanguard.

Afuwape M.O. and Olatoye R.A. (2004). Students Integrated Science Achievement as aPredicator of Later Achievement in Science. Journal of Science TeachersAssociation of Nigeria 39 (12):11 – 16.

Amulya J. (2004) What is reflective Practice? The Centre for Reflective Community *Practice.*Massachusetts Institute of Technology .Retrieved on 9th July, 2010, Fromhttp:www.itslifejimbutnotasweknowit.org.uk/files/whatisrelectivepractice.pdf.

Aronson, J. Fried C.B. Good C. (2002) Reducing the Effects ofStereotype Threat onAfrican American College Students by Shaping Theories of Intelligence Journalof Experimental **Social** Psychology. 38 (2) 118-125)

Anderson, R.H. Share H.G. (2002). *Implication of Early Children Education for Life Long Learning.*Chicago: National Society for the Study of Education Year Book 11.

Barsalou L.W. (2003). Abstraction is Perceptual Symbol symptoms. Philosophical Transactions of the Royl Society of London.Series B. Biological Sciences.

Brualdi, Amy C. (1998). Class questions.ERIC Clearinghouse on Assessment and Evaluation, Washington DC.

Campbell, J. R., Hombo, C. M., &Mazzeo, J. (2000).*NAEP 1999 trends in academic progress: Three decades of student performance* (NCES 2000–469). Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Carr, M. (2001).Assessment in Early Childhood Settings.Learnign Stories London: PaulChapman Publishing.

Chomsky P. (2003). *Why Gizmas Work. Emperical Evidence for The instructional Effectiveness of Explore learning.Interactive Content. Charlotte: Ville, V.A.* www.explorelearning.com *. Retrieved Ma, 2008 from* http://www.explorelearning.com/view/downloads/whygizmoswork.pdf.

Ciardiello, Angelo, V. (1998). Did you ask a good question today? Alternative cognitive and metacognitive strategies. Journal of Adolescent & Adult Literacy, 42(3), 210-219.

Cottrell, S. (2003).*The Study Skills Hanbook.*2nd Ed. Basingstoke: PalgraveMacmillan.

Darling Hammond, L. (2000).*How Tedcher Education Matters.* Journal of Teacher.

Education,51, 166 – 183

Dewey, J. (1938) *Experience and education* (New York : MacMillan).

Dewey (1976} 1909).*The in¯uence of Darwin on Philosophy.TheMiddle Works of John Dewey* Vol. 4 Edited Jo Ann Boydston. (Carbondale & Edwardsville: Southern Illinois University Press).

Dewey, J. (1985} 1916) *Democracy and education.The Middle Works of John Dewey* Vol. 9 Edited by Jo Ann Boydston (Carbondale & Edwardsville: Southern Illinois University Press).

Dewey, J. (1988a} 1925) *Experience and nature.The LaterWorks of JohnDewey*Vol. 1 Edited by Jo Ann Boydston (Carbondale & Edwardsville: Southern Illinois University Press).George Mason University. Center for Teaching Excellence (2011).About teaching: Experiential learning.

Gilbert, J. K. Osborne, R. J., &Fensham, P. J. (1982).Children's science and its consequences for teaching.*Science Education,* 66(4), 623-633.

Gagne, R.M. (1992). Conditions Of Learning and Theory Interactions. New York: Hold

Rinehart and Winston.

Gunstone, R. F. (2000). *Constructivism and learning research in science education.* In Philips, D. C. (Eds.), Constructivism in education: Opinions and second opinions on controversial issues. (pp. 254-281). Chicago, IL: The University of Chicago Press.

Eschach, H.And Fried M. (2005).*Should Science Be Taught in Early Childhood.* Journal of ScienceEducatioin and Technology, 14 (3). 315 – 336

French, L. (2004). Science as the Centre of a Coherent Integraed Early Childhood

Curriculum.Early Childhood Research Quarterly 19 (1) 138.

Farrel B.J. and Walberg, H.J. (1995).*Improving Science Education. Chicago, Illionois.*Nairobi Societal For theStudy of Education.

Haynes, C. (2007). *Experiential learning: Learning by doing.*

Hendrick, J. (2001). *The whole Child.*Upper Saddle River, N.J. Prentice Hall.

Johnson, R.B. and Onwuegbuzie, A.J. (2004).*Mixed Methods Research.*A Research Paradigm whose time has come Educatinal Researcher.33 (7), 14 -26.

Hiller, Y. (2005). Reflective Teaching in Further and Adult Education. New York.

Kemp, J. E. (1968). Planning andProducting Audio Visual Material. London; New York.

Kenya Institute of Education (2008) *Primary Science Guide.* Nairobi Kenya Literature Bureau.

Kenya Institute of Education (2008). Handbook for early Childhood Development Syllabus.Ministry of Education Nairobi.KLB.

Kolb, D. (1976a) Management and the learning process.*California Management Journal*.

Kolb, D. (1976b) *The learning style inventory: Technical manual* (Boston: McBer and Company).

Kolb, D. (1984) *Experiential learning.Experience as the source of learning and Development* (Englewood CliÚ s, NJ: Prentice Hall).

Kolb, D., Rubin, I. and McInture, J. (1971) *Organizational psychology ± an experiential approach* (Englewood CliÚ s, NJ. : Prentice-Hall).

Kothari, C.R. (2004). *Research Methodology Methods and Techniques.*Revised New Age International Publishers.

Jensen, M. Moore, R. &Haztch J. (2002).*Cooperative Learning. Part 1 Cooperative QUIZZES. the American Science Teacher 4 (1) 29 – 34.*

Leven, T. and Long, R. (1981).Effective instruction. Washington DC: Association for Supervision and Curriculum Development.

McCrudden, M., Schraw, G., & Lehman, S. (2009). The use of adjunct displays to facilitate comprehension of causal relationships in expository text. *Instructional Science*, 37(1), 65-86.

Mayer, R.E. (2001). *Multimedia Learning.*Cambridge, UK. Cambridge University Press.

Meyers D. (2005). *Guest Editorial Video Games.* Issues in Research and Learning.

Simulation and Gaming. 36 (4), 442 – 446

Meyer, L. A., Wardrop, J. L., & Hastings, J. N. (1992).*The Development of Science Knowledge in Kindergarten through Second Grade*.(ERIC Document Reproduction Service No.ED ED354146).

Mugenda O., and Mugenda A. (1999). Research Methods.Quantitative and *qualitative Approaches* . Nairobi: Kenya Acts. Press.

Mullis, I. V. S., & Jenkins, L. B. (1988).*The science report card*. Report No. 17-

5-01. Princeton, N.J.: Educational Testing Service.

Norris, S. P., Phillips, L. M., Smith, M. L., Guilbert, S. M., Stange, D. M., Baker, J. J. et al. (2008). Learning to read scientific text: Do elementary school commercial reading programs help? *Science Education*, 92(5), 765-798.

Ontario Eco – Schools (2006), About Us Success Indicators Retrieved from

http://www.ontarioechoschools.org/html.

Oakes, J. (1990). *Multiplying inequalities.*The effects of race, Social Class and Teaching

an Opportunities to learn Mathematics and Science Santa Monica, C.A. Rand.

O'Connor, E.And Phillips, K. (2007).Developing a public Health.Web Game

Complement traditional Edn. Methods in the classroom. MERLOT Journalof

Online Teaching and Learning 3(3) , 259 – 264, Retrieved May, 16, 2009, from

http:11joltmariot.org/vol.3no.3/oconnor.htm.

Sharma D.K. (2010). *Teacher Education* .Retrieved from http//booksgoogle.com/books.

Piaget, J. (1972). *Child's conceptions of the world* (J. and A. Tomlinson, Trans.). Lanham, Maryland: Littlefield Adams. (Original work published 1928).

Piaget, J. &Inhelder, B. (2000).*The psychology of childhood* (H. Weaver, Trans.). (Original work published 1928). New York, NY: Basic Books. (Original work published 1966).

Prensky, M (2001). Digital Game Based Learning. New York. McGraw Hill.

Prensky M. (2006). Dont bother me mom, Im Learning St. Paul. Mn. Paragon House.

Ramey-Gassert, L. (1997). Learning science beyond the class.*The Elementary School Journal,* 97(4), 433-450.

Republic of Kenya (2011).*Report , of the Task Force on Policy Framework for Education and Training Nairobi.*Government Printers.

Ross, W. (1860).Methods of instruction. Barnard's American Journal of Education 9, 367-79.

Trundle, K. C., Atwood, R. K., Christopher, J. E., &Sackes, M. (in press). The effect of guided inquiry based instruction on middle school students' understanding of lunar concepts. *Research in Science Education.*

Trundle, K. C. &Sackes, M. (2008). Sky observations by the book: Lessons for teaching young children astronomy concepts with picture books. *Science and Children,* 46 (1), 36-39.

University of California Davis (UC Davis).(2011). *5-step experiential learning cycle definitions.*

Vygotsky, L. S. (1978) *Mind in society: the development of higher psychological processes*(Cambridge, Mass.: Harvard University Press).

Ward, T. (2008). Oklahama State University . Okmulgee Quiz Game .Retrieved.

December, 29 (2008). From htt://as4quiz Source Forge. Netl.

Watson, L. W. Woods C.S. (2011) Go where you belong: Male Teachers as Cultural *Workers in the Lives of Children.* Families and Communities. Retrieved from http://books.google.com/books.

Watters, J. J., Diezmann, C. M., Grieshaber, S. J., & Davis, J. M. (2000).Enhancing science education for young children: A contemporary initiative.*Australian Journal of Early Childhood*, 26(2), 1-7.

Wood, David, Linnet McMahan, and Yvonne Cranstoun (1988).*Working with Under Fives.*Ypsilanti: High/Scope Press.

Woods, R.G. and Barrow R. St. C. (2006).*An Introduction to the Philosophy of Edn.*5th Ed.London Methuen.

Wilen, William W. (1991). Questioning Skills for Teachers, third edition. National Education Association, Washington DC.

Wurdinger, S. D., & Carlson, J. A. (2010).*Teaching for experiential learning: Five approaches that work.* Lanham, MD: Rowman& Littlefield Education

APPENDICES

APPENDIX I: TRANSMITTAL LETTER

Linda Anyango Omondi
Cell phone: 0715 458 288

Date.....

Dear Respondent,

RE: INFLUENCE OF EXPERIENTIAL LEARNING STYLE ON PRE SCHOOL CHILDREN 'S ACHIEVEMENT IN SCIENCE IN KISUMU CENTRAL SUB COUNTY : KENYA.

I am a post-graduate student in the University of Nairobi pursuing a master's degree in Early Childhood Education. I am carrying out a study on the above subject. You have been selected to take part in the study as a respondent.

Attached is a questionnaire aimed at gathering information, which will be vital for the above research. I am kindly requesting you to respond to the questionnaire items as honestly as you can and to the best of your knowledge. The questionnaire is for the purpose of research only and therefore the responses shall be absolutely confidential and anonymously given.

In case the study will be of interest to your organization it can be availed once the study is complete.
Your participation in this survey is highly appreciated.
Yours faithfully

LINDA ANYANGO OMONDI
ADM. NO: E57/73865/2014

APPENDIX II: QUESTIONAIRE

QUESTIONNAIRE FOR THE SCHOOL HEAD TEACHERS

Introduction

This questionnaire is meant to help in collecting data for the determination of **influence of experiential learning style on pre- school children's achievement in science in Kisumu central sub-county: Kenya**. Consequently, you have been identified as a potential respondent for which you are kindly requested to complete the questionnaire and give any additional information you feel is crucial to the study. The information given is absolutely for academic purposes only, and shall be treated with the utmost confidentiality it deserves. Kindly respond to the best of your knowledge. Remember, there is no wrong or right answer.

SECTION A: DEMOGRAPHIC PROFILE

	QUESTION	**RESPONSE**	**INSTRUCTION**
1.1	Gender	Male Female	☐ (Tick one)
1.2	How long is your professional experience?	1 – 4 Years 5 – 10 Years 11 – 20 Years Above 21 Years	☐ ☐ (Tick one) ☐ ☐
1.3	What is the highest education level that you completed?	Certificate Diploma University Masters	☐ ☐ (Tick One) ☐ ☐
1.4	What is your main area of professional training?	P_1 ECD –Certificate ECD – Diploma Others	☐ ☐ (Tick One) ☐ ☐

Instruction: Please read the questions carefully before giving the responses required. It is important that you give true and accurate answer. Tick and write where appropriate.

SECTION B: CONCRETE EXPERIENCE

	QUESTION	RESPONSE	INSTRUCTION
	Are You aware of concrete Experience	Yes No	☐ **(Tick One)** ☐
	Simulation (Imitation) Have you used simulation when teaching science?	Yes No	☐ (Tick One) ☐
	Do you believe that simulation influence preschool children's achievement in science?	Yes No	☐ ☐ (Tick One)
	If Yes how?		Indicate Answer
	Small group Discussions		
	Have you used small group discussion when teaching science	Yes No	☐ (Tick One) ☐
	Do you believe that small group discussion influence preschool children's achievement in science?	Yes No	☐ ☐ (Tick One)
	If Yes how?		Indicate Answer
	Drama		
	Have you used drama when teaching science	Yes No	☐ (Tick one) ☐
	Do you believe that drama influence preschool children's achievement in science?	Yes No	☐ (Tick One) ☐
	If Yes how?		Indicate Answer

SECTION C: REFLECTIVE OBSERVATIONS

	Thought Questions		
2.5	Have you used though questions when teaching science	Yes No	☐ (Tick One) ☐
2.6	Do you believe that thought questions influence preschool children's achievement in science?	Yes No	☐ (Tick One) ☐
2.7	If Yes how?		Indicate Answer
	Reflective essays		
2.8	Have you used reflective essays when teaching science	Yes No	☐ (Tick One) ☐
2.9	Do you believe that reflective essays influence preschool children's achievement in science?	Yes No	☐ (Tick One) ☐
3.0	If Yes how?		Indicate Answer
	Personal Journal		
3.1	Have you used personal journal when teaching science	Yes No	☐ (Tick One) ☐
3.2	Do you believe that personal journal influence preschool children's achievement in science?	Yes No	☐ (Tick One) ☐
3.3	If Yes how?		Indicate Answer

SECTION D: ACTIVE EXPERIMENTATION

	Games		
3.4	Have you used games when teaching science	Yes No	☐ (Tick One) ☐
3.5	Do you believe that games influence preschool children's achievement in science?	Yes No	☐ (Tick One) ☐
3.6	If Yes how?		Indicate answer
	Questions		
3.7	Have you used questions when teaching science	Yes No	☐ (Tick One) ☐
3.8	Do you believe that questions influence preschool children's achievement in science?	Yes No	☐ (Tick One) ☐
3.9	If Yes how?		Indicate answer
	Projects		
4.0	Have you used projects when teaching science	Yes No	☐ (Tick One) ☐
4.1	Do you believe that projects influence preschool children's achievement in science?	Yes No	☐ (Tick One) ☐
4.2	If Yes how?		Indicate Answer

SECTION E: ABSTRACT CONCEPTUALIZATION

	Theory Construction		
4.3	Have you used theory construction when teaching science	Yes No	☐ (Tick one) ☐
4.4	Do you believe that theory construction influence preschool children's achievement in science?	Yes No	☐ (Tick One) ☐
4.5	If Yes how?		
	Analogies		
4.6	Have you used analogies when teaching science	Yes No	☐ (Tick One) ☐
4.7	Do you believe that analogies influence preschool children's achievement in science?	Yes No	☐ (Tick One) ☐
4.8	If Yes how?		

QUESTIONNAIRE FOR THE PRE SCHOOL TEACHERS

Introduction

This questionnaire is meant to help in collecting data for the determination of **influence of experiential learning style on pre- school children's achievement in science in Kisumu central sub-county: Kenya**. Consequently, you have been identified as a potential respondent for which you are kindly requested to complete the questionnaire and give any additional information you feel is crucial to the study. The information given is absolutely for academic purposes only, and shall be treated with the utmost confidentiality it deserves. Kindly respond to the best of your knowledge. Remember, there is no wrong or right answer.

Instruction: Please read the questions carefully before giving the responses required. It is important that you give true and accurate answer. Tick and write where appropriate.

	QUESTIONS	**RESPONSE**	**INSTRUCTION**
1.1	Gender	Male Female	☐ (Tick One) ☐
1.2	How long is your professional experience?	1 – 4 Years 5 – 10 Years 11 – 20 Years Above 21 Years	☐ (Tick one) ☐ ☐ ☐
1.3	What is the highest education level that you completed?	Certificate Diploma University Masters	☐ ☐ (Tick One) ☐ ☐
1.4	What is your main area of professional training?	P_1 ECD –Certificate ECD – Diploma Others	☐ ☐ (Tick One) ☐ ☐

SECTION B: CONCRETE EXPERIENCE

	QUESTIONS	**RESPONSES**	
1.5	re You aware of concrete Experience	Yes No	☐ **(Tick One)**
1.6	**Simulation (Imitation)** Have you used simulation when teaching science?	Yes No	☐ ☐ (Tick One) ☐
1.7	Do you believe that simulation influence preschool children's achievement in science?	Yes No	☐ (Tick One) ☐
1.8	If Yes how?		Indicate answer
	Small group Discussions		
1.9	Have you used small group discussion when teaching science	Yes No	☐ (Tick One) ☐
2.0	Do you believe that small group discussion influence preschool children's achievement in science?	Yes No	☐ (Tick One) ☐
2.1	If Yes how?		Indicate Answer
	Drama		
2.2	Have you used drama when teaching science	Yes No	☐(Tick One) ☐
2.3	Do you believe that drama influence preschool children's achievement in science?	Yes No	☐ (Tick One) ☐
2.4	If Yes how?		

SECTION C: REFLECTIVE OBSERVATIONS

	Thought Questions		
	Have you used though questions when teaching science	Yes No	☐ ☐ (Tick One)
	Do you believe that thought questions influence preschool children's achievement in science?	Yes No	☐ (Tick One) ☐
	If Yes how?		
	Reflective essays		
	Have you used reflective essays when teaching science	Yes No	☐ (Tick One) ☐
	Do you believe that reflective essays influence preschool children's achievement in science?	Yes No	☐ (Tick One) ☐
	If Yes how?		Indicate Answer
	Personal Journal		
	Have you used personal journal when teaching science	Yes No	☐ (Tick One) ☐
	Do you believe that personal journal influence preschool children's achievement in science?	Yes No	☐ (Tick One) ☐
	If Yes how?		Indicate Answer

SECTION D: ACTIVE EXPERIMENTATION

	Games		
	Have you used games when teaching science	Yes No	☐ ☐ (Tick One)
	Do you believe that games influence preschool children's achievement in science?	Yes No	☐ ☐ (Tick One)
	If Yes how?		Indicate Answer
	Questions		
	Have you used questions when teaching science	Yes No	☐ (Tick One) ☐

	Do you believe that questions influence preschool children's achievement in science?	Yes No	☐ (Tick One) ☐
	If Yes how?		Indicate Answer
	Projects		
	Have you used projects when teaching science	Yes No	☐ (Tick One) ☐
	Do you believe that projects influence preschool children's achievement in science?	Yes No	☐ ☐ (Tick One)
	If Yes how?		Indicate Answer

SECTION E: ABSTRACT CONCEPTUALIZATION

	Theory Construction		
	Have you used theory construction when teaching science	Yes No	☐ ☐ (Tick One)
	Do you believe that theory construction influence preschool children's achievement in science?	Yes No	☐ ☐ (Tick One)
	If Yes how?		Indicate Answer
	Analogies		
	Have you used analogies when teaching science	Yes No	☐ (Tick One) ☐
	Do you believe that analogies influence preschool children's achievement in science?	Yes No	☐ (Tick One) ☐
	If Yes how?		Indicate Answer

APPENDIX III: RESEARCH PERMIT FROM THE UNIVERSITY

UNIVERSITY OF NAIROBI
COLLEGE OF EDUCATION AND EXTERNAL STUDIES
SCHOOL OF EDUCATION
KISUMU CAMPUS

The Secretary
National Council for Science and Technology
P.O Box 30623-00100
NAIROBI, KENYA

19th July, 2015

Dear Sir/Madam,

RE: OMONDI LINDA ANYANGO - REG NO. E57/73865/2014

This is to inform you that **Linda Anyango Omondi** named above is a student in the University of Nairobi, College of Education and External Studies, School of Education, Kisumu Campus.

The purpose of this letter is to inform you that **Linda** has successfully completed her course work and Examinations in the programme, has developed Project Proposal and submitted before the School Board of Examiners which she successfully defended and made corrections as required by the School Board of Examiners.

The research title approved by the School Board of Examiners is: ***"Influence of Experiential Learning Style on Preschool Children's Achievement in Science Classrooms in Kisumu Central Sub-County: Kenya".*** The project is part of the pre-requisite of the course and therefore, we would appreciate if the student is issued with a research permit to enable him collect data and write a report. Thesis reflects integration of practice and demonstrates writing skills and publishing ability. It also demonstrates the learners' readiness to advance knowledge and practice in the world of business.

We hope to receive positive response so that the student can move to the field to collect data as soon as she gets the permit.

Yours Faithfully

UNIVERSITY OF NAIROBI
19 JUL 2015
KISUMU CAMPUS

DR. RAPHAEL NYONJE, Ph.D
RESIDENT LECTURER
KISUMU CAMPUS

APPENDIX IV:RESEARCH PERMIT FROM NACOSTI

THIS IS TO CERTIFY THAT:
MISS. LINDA ANYANGO OMONDI
of UNIVERSITY OF NAIROBI, 0-40100
KISUMU,has been permitted to conduct
research in *Kisumu County*

on the topic: *INFLUENCE OF EXPERIENTIAL LEARNING STYLE ON PRE-SCHOOL CHILDREN'S ACHIEVEMENT IN SCIENCE CLASSROOMS IN KISUMU CENTRAL SUB-COUNTY: KENYA*

for the period ending:
11th December,2015

Permit No : NACOSTI/P/15/8468/7175
Date Of Issue : 21st August,2015
Fee Recieved :Ksh 1,000

.....
Applicant's Signature

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

CONDITIONS

1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit
2. Government Officers will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) hard copies and one(1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

REPUBLIC OF KENYA

National Commission for Science, Technology and Innovation

RESEARCH CLEARANCE PERMIT

Serial No. A 6284

CONDITIONS: see back page

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,
2241349, 310571, 2219420
Fax: +254-20-318245, 318249
Email: secretary@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No.

Date:

21st August, 2015

NACOSTI/P/15/8468/7175

Linda Anyango Omondi
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Influence of experiential learning style on preschool children's achievement in science classrooms in Kisumu Central Sub-County: Kenya,"*** I am pleased to inform you that you have been authorized to undertake research in **Kisumu County** for a period ending **11th December, 2015.**

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

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

SAID HUSSEIN
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Kisumu County.

The County Director of Education
Kisumu County.

APPENDIX V: THE MAP OF KISUMU COUNTY SHOWING KISUMU EAST SUB COUNTY