

**EXAMINING THE STATE OF SCIENCE TEACHING IN PRE-
PRIMARY SCHOOLS IN DODOMA MUNICIPALITY;
TANZANIA**

By

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**Dissertation Submitted In Partial Fulfilment of the Requirements For The
Degree of Master of Arts In Education of the University of Dodoma.**

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the University of Dodoma a dissertation entitled: “**Examining the State of Science Teaching in Pre-primary Schools in Dodoma Municipality; Tanzania**” in fulfilment of the requirements for the degree of Master of Arts in Education of the University of Dodoma.

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DATE.....

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I, **Paulina Lugenzi** declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

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DEDICATION

This dissertation is dedicated to my mother, **Sarah Francis Lumeya**, and my late father, **Paul Machibya Lugenzi**, who supported me wholeheartedly in my studies from pre-primary school up to Master's level.

ABSTRACT

This study examined the state of science teaching in pre-primary schools in Dodoma Municipality, Tanzania. The study employed mainly a qualitative approach, with some quantification of specific phenomena. It utilized a case study design focusing on ten pre-primary schools in Dodoma Municipality and guided by the Context, Input, Processes and Products model. There were 50 informants sampled purposively (school heads =10; teachers=10; parents=10; and pupils=20). Data were collected through observation, interviews and documentary review. All the data collected were subjected to thematic analysis and interpretation techniques.

The findings from the study revealed that pre-primary schools suffered from acute shortage of teaching and learning resources such as classrooms, toilets, playgrounds, furniture, science text books and teacher guides. The insufficiency of teaching and learning resources deprived pupils of the opportunity to engage in meaningful hands-on-activities, thereby rendering science teaching and learning less successful. Further, the findings indicated that teacher centred approach was most used instead of the child-centred approach in both public and private pre-primary schools.

Based on these findings, it was concluded that teacher qualifications and resource availability for children's hands-on-activities were critical in the teaching and learning science in early childhood. To improve science teaching in early childhood, the study recommends that the early childhood policy needs to be revised with special attention to teacher training and resource availability.

TABLE OF CONTENT

CERTIFICATION.....	i
DECLARATION AND COPYRIGHT	ii
ACKNOWLEDGEMENTS	iii
DEDICATION	iv
ABSTRACT	v
TABLE OF CONTENT	vi
LIST OF TABLES	ix
LIST OF FIGURES.....	x
LIST OF ABBREVIATIONS	xi
CHAPTER ONE : INTRODUCTION AND OVERVIEW OF THE STUDY	1
1.0 Introduction.....	1
1.1 Background to the problem.....	1
1.2 Statement of the Problem.....	6
1.3 Purpose of the Study	7
1.4 Objectives of the Study.....	8
1.5 Research Questions	8
1.6 Significance of the Study	9
1.7 Delimitations of the study	9
1.8 Limitations of the Study.....	10
1.9 Operational Definitional of Terms	10
CHAPTER TWO: REVIEW OF RELATED LITERATURE	12
2.0 Introduction.....	12
2.1 Theoretical Framework	12
2.2 Conceptualization of science	14
2.3 Lesson Plans for Effective Science Teaching in Pre-primary Schools	15
2.4 Teaching Strategies Recommended for use in Pre-primary Schools in Tanzania	16
2.5 Appropriate Science Teaching Strategies	17
2.6 Indoor and Outdoor Play and Learning Contexts	19
2.7 Parents Roles in Fostering Science Learning Among Young Children	20
2.8 Challenges of Teaching Science Activities.....	20
2.9 Conceptual Framework	22

2.10 Summary of literature review and knowledge gap	23
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CHAPTER THREE: RESEARCH METHODOLOGY.....25

3.0 Introduction.....	25
3.1 Design of the study	25
3.2 Research Approach	26
3.3 Location of the study	27
3.4 Target Population.....	29
3.5 Sample and Sampling Procedures.....	29
3.6 Data collection methods.....	30
3.6.1 Interviews.....	30
3.6.2 Direct observations	31
3.6.3 Documentary review	31
3.7 Validity of the Instruments	32
3.8 Reliability of the Instruments.....	33
3.9 Ethical issues.....	34
3.10 Data Analysis	34

CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND DISCUSSION

.....38

4.1 Introduction.....	38
4. 2 Background information	38
4.3 Preparing to Teach	41
4.3.1 Knowledge about Pre-primary School Syllabus	43
4.3.2 Lesson Plan Preparation.....	44
4.4 Actual Classroom Teaching.....	46
4.4.1 Teaching Strategies Used by Pre-primary School Teachers	47
4. 5 Quality of Indoor and Outdoor Learning Contexts	54
4.5.2 Nature/Types of Materials	57
4. 6 Challenges of Teaching Science in Pre-primary Schools	60
4.6.1 Insufficient Teaching and Learning Materials	60
4.6.2 Limited Parents' Awareness about Science Teaching	63
4.6.3 Poor Motivation	67
4.6.4 Insufficient Funds from the Government	68
4.6 Chapter Summary	76

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

.....78

5.1 Introduction..... 78

5.2 Summary of the study 78

5.3 Summary of the Findings..... 79

5.4 Conclusions..... 81

5.5 Recommendations..... 82

5.6 Chapter Summary 83

REFERENCES.....84

APPENDICES.....93

LIST OF TABLES

Table 3.1 Summary of Data collection process and Analysis.....	36
Table 4.1 Background of the informants.....	39
Table 4.2 Main Themes and Sub-themes of the Study	41
Table 4. 3: The availability of lesson Plans with Pupils involvement	42
Table 4. 4: Teaching Strategies Identified for Each School.....	47
Table: 4. 5: Categorisation of the Surveyed Pre-primary Schools.....	55
Table 4.7 Science Books	61
Table 4. 8: Various Ways in Which the Child is assisted in Learning Science	63
Table 4. 9: Numbers of Pupils and Teachers in Actual Situation in the Field.....	73

LIST OF FIGURES

Figure 2:1 Conceptual Framework.....	23
Figure 3.1: Location of the Study	28
Figure 4.1: Head of School G demonstrating in playground	57
Figure 4.3: Pupils Following a Lesson inside Classroom	70
Figure 4.4: Adult-sized Desks for Young Children	71

LIST OF ABBREVIATIONS

ECE	Early childhood Education
MOEC	Ministry of Education and Culture
MOEVT	Ministry of Education and Vocational Training
NAEYC	National Association for the Education of Young Children
NAECS/SDE	National Education of Early Childhood Specialists in State Departments of Education
TET	Taasisi ya Elimu Tanzania
URT	United Republic of Tanzania
3Rs	Writing Arithmetic Reading
ZPD	Zone of Proximal Development
UNESCO	United National Educations Scientific and Cultural Organisation
CIPP	Context Input Process Product
DMC	Dodoma Municipal Council

CHAPTER ONE

INTRODUCTION AND OVERVIEW OF THE STUDY

1.0 Introduction

This study examined the state of science teaching in pre-primary schools in Dodoma Municipality, Tanzania. It specifically examined the issues centring on lesson planning, actual teaching, and the state of indoor and outdoor environments as well as the challenges facing science teachers. In this chapter, background of the research problem, statement of the problem, research objectives, research questions, significance of the study, delimitations and limitations of the study and the definition of the key terms are presented.

1.1 Background to the problem

Teaching children to become effective thinkers is increasing by being recognised as an immediate goal of Education. If pupils are to function successfully in a highly technical society, then they must be equipped with lifelong and thinking skills necessary to equip them with information in an ever-changing world (Mrimi, 2005). Science Education is thought to contribute to the development of scientific reasoning by engaging students in inquiry situations. In formulating questions, assessing and interpreting evidence and coordinating it without theories, students are believed to develop the intellectual skills that enable them to construct new knowledge (Chan et al., 1997).

In recent years, researchers and educators have been paying attention to science education in the early ages of children. According to Eshach and Fried (2005), six justifications for exposing young children to science are as follows: (1) Children

naturally enjoy observing and thinking about nature. (2) Exposing students to science develops positive attitudes towards science. (3) Early exposure to scientific phenomena leads to better understanding of the scientific concepts studied later in a formal way. (4) The use of scientifically informed language at an early age influences the eventual development of scientific concepts. (5) Children can understand scientific concepts and reason scientifically and (6) Science is an efficient means for developing scientific thinking.

Overall, scientific inquiry and disposition develop early in children's lives and results into several benefits. These include curiosity which acts as drive to experiment and as a desire to challenge theories and to share new ideas (Conezio & French, 2002). Therefore, teachers should value these dispositions and be aware of how they are manifested in young children and find ways to acknowledge and nurture their presence. More importantly, research in Early Childhood Education (ECE) attests to the fact that dispositions developed early in children's lives last for a lifetime (Conezio & French, 2002). Haury and Rillero (1994) argue that students involved in inquiry-based programmes increase their creativity, have better attitudes towards science, and have improved logic development, communication skills and reading readiness. In guided inquiry approach, children are expected to be active in the learning activities which strengthen ownership in their work and enhance their motivation. With this approach, usually children work in small groups to promote their collaboration skills and hence provide opportunities of scaffolding their peers' understanding (Trundle & Sackes, 2008).

The development of scientific dispositions in early childhood depends on various conditions. These are such as possession of enduring habits of mind and actions,

tendencies to respond in characteristic ways to situations, for example, maintaining an optimistic outlook, being willing to persevere, approaching new experiences with confidence (Carr, 2001). Conezio and French (2002) maintain that science for early childhood must be experiential, hands-on activities and materials that children can explore. Science is to be integrated into other content areas of other disciplines that are used in songs, finger plays, and other daily activities, and should be pointed out in everyday life. Current research in the area of science education supports the notion that a hands-on inquiry-based approach to teaching science at the elementary level is a preferred method to use for developing those skills that will be necessary to handle the world's future scientific needs (Trundle & Sackes, 2008).

The environment that fosters scientific thinking is the one that gives young children the time space and materials to exercise their curiosity. This is because it gives them the freedom to engage in child centred explorations, experimentations and explanations (Wilson, 2008). Also, the environment that supports learning is vibrant and is flexible offering spaces that are responsive to the interests and abilities of each child. Indoor and outdoor environments are supporting crucial in the aspects of children's learning as they invite conversations between children, teachers, parents and the broader community (Mac Naughton, 2003).

Young children make sense of the outside world by actively using their five senses. It is essential in that it give opportunities in which children can make observations, experience the natural world around them, use their creative thinking skills in their science explorations and develop understanding of nature (Alisinanoglu & Ozbey, 2007). Therefore, teachers should be able to provide children with opportunity in which they can engage in science activities. In addition, they should be cognizant of different

approaches in teaching science and they should be able to guide children in making explorations and discussing what they found in their explorations (Inan, 2010).

Furthermore, parents' involvement in science teaching to their children is important because learning of the children starts at home and parents have a great influence on children's growth (NAEYC & NAECS/SDE, 2002) with this realisation, parents are in a unique position to support the scientific learning of young children. When parents and children play scientifically together, the latter actively build scientific thinking and understanding (Fleer, 1996). Hence, parents that surround their children through free flow of conversations as well as conversations, which seek to understand the science in the activity, should support teaching science to children (Fleer, 1996).

Although various ECE educators have suggested proper strategies of teaching science activities, there are still factors, which make teachers' choose particular strategies. According to the research conducted by Inan (2011), early childhood teacher candidates have some difficulties in teaching science. The most notable difficulties are those related to content knowledge and pedagogical content knowledge in teaching science. In addition, Eshach and Fried (2005) points out that most teachers lack awareness of the effects of learning by doing and how to implement the approach. Bearing this in mind teachers' role should be recognised as crucial in promoting science literacy in schools and society. Moreover, research on teachers' knowledge suggests that both teachers' subject matter knowledge and teachers' pedagogical knowledge are crucial to good science teaching and student understanding (Shulman, 1987).

The role of the teacher in science teaching is not to give children wonderful ideas rather than children need to discover their own ideas. In a study conducted in Australia by Watters et al. (2001) about enhancing science education for young children which help

teachers to understand science concepts and support their teaching of science, it was revealed that teachers were in need for information on planning, implementing and assessing lessons. Another study was carried out in America by Garcia (2003) about the effect of teacher attitude, experience and background knowledge on the use of inquiry method teaching in the elementary classroom. Features that were assessed included roles teachers played and attitudes they expressed towards science itself, science instruction in particular, and plays used as an inquiry approach to teaching science. Garcia found that time is required for science instruction; hands-on learning, inquiry and experimentation were seen as essential to understanding science concepts and methods.

Alisinanoglu et al. (2012) also conducted a study in Turkey about the early childhood teacher candidates' qualifications in science teaching. The study showed that the qualification level of teacher candidates should be able to provide children with quality science education. For example, a teacher should be able to organise the environment to include science materials and then provide time for children to work with the materials.

Despite the importance of science to pre-primary pupils, however, in Tanzania, many pre-primary teachers do not always view science activities as important as outlined in the pre-primary syllabus (MOEVT, 2005). Moreover, even when it is taught in classroom, it is not taught in a way that enhances and encourages scientific learning to young children (Riggs & Enochs, 1990). This fact was also revealed in a study by Chonjo et al. (1996) who found that most science teachers lacked competence and experience of using learner-centred approach in science teaching because the quality of teaching is chalk talk.

In Tanzania, for many years, the role of early childhood Education has been focused on learning basic skills in language and arithmetic rather than science subjects. In recent years, however, the government has put emphasis on both public and private pre-primary schools requiring them to use a curriculum developed in 2005 that stresses on the active involvement of pupils in learning arguing that in the process of science teaching and learning the child is the main actor whereas the teacher is the facilitator to the whole process (MOEVT, 2005). However, the problem is that this call to implement learner-centred approach in Tanzania's primary schools is not implemented in classroom level as expected (Alexander, 2000).

Effective ECE programmes across the world; generally agree that students, who are exposed to an inquiry approach to science, express a more positive attitude to learning in all areas, show increased enjoyment of school and have increased skill proficiency in many areas, including independent thinking abilities than those taught in the traditional way (Lawton, 1997).

1.2 Statement of the Problem

In a study conducted by Kweka et al. (1997) about the situation of early education in Tanzania, it was revealed that the quality of most pre-primary schools was very low due to unqualified teachers, lack of teaching and learning materials, poor management and lack of supervision as well as evaluation. In another study conducted by Mtahabwa (2007) it was found that although Tanzania used the policy to guide practices of all pre-primary schools, teacher/pupil ratio, group size, resources, available space and syllabi availability were much less favourable in the rural schools. Overall, studies done in early childhood education particularly those on science teaching are scanty (Katunzi & Mhaiki, 2003).

Most studies on science teaching in schools have tended to focus on other levels of education rather than ECE. For example, Osaki (2007) conducted a study on science education in secondary schools and found that science teaching in Tanzania was poor due to the shortage of science teachers and the government could not afford to purchase expensive laboratory equipment hence inquiry lessons were taught in theoretical fashion. In addition, Chonjo et al. (1996) established that science teaching was in poor state with respect to books, laboratory supplies, good teachers, classroom presentation, teacher-pupil relationships and professional development of the teachers.

If science is not taught effectively during early childhood, several challenges are likely to face Tanzania in the future. These include, but not limited to, lack of interest and confidence in learning science and eventually mass student's failure in science subjects all of which are likely to Tanzania scientifically backward. Therefore, this study intended to fill this knowledge gap by examining the state of science teaching in pre-primary schools focusing on four issues namely; lesson planning, actual science teaching against the recommended teaching strategies, state of indoor and outdoor learning contexts and challenges facing science teaching in pre-primary schools.

1.3 Purpose of the Study

The purpose of this study was to examine the state of science teaching in pre-primary schools in Dodoma Municipality in order to generate knowledge that will facilitate development of a scientific disposition in young children.

1.4 Objectives of the Study

The specific objectives of the study were to:

- i. Assess teachers' lesson plans as preparations for teaching of science activities in early childhood classrooms.
- ii. Observe teachers' actual classroom teaching strategies in pre-primary schools.
- iii. Evaluate the quality of the indoor and outdoor learning contexts in the teaching of science.
- iv. Examine challenges of teaching science in pre-primary schools.

1.5 Research Questions

The following were the research questions:

- i. How do teachers prepare lesson plans for teaching science in pre-primary school classrooms?
- ii. How do teachers actually teach science in pre-primary schools?
- iii. To what extent do the indoor and outdoor learning contexts enable science teaching in pre-primary schools?
- iv. What challenges do face pre-primary schoolteachers in the teaching of science?

1.6 Significance of the Study

The study findings are expected to make greater insight to the policy makers, curriculum developers and teachers on the practical ways of science teaching in pre-primary schools. For instance, curriculum developers and policy makers would be in a better position to understand the real condition of pre-primary schools teaching strategies currently used by pre-primary teachers and find out proper ways to ensure effective teaching the pre-primary schools. In addition, the study findings would provide useful information to curriculum developers, which would be used to enrich teachers and tutors' guidebooks for teacher colleges. Furthermore, the study would also help the department of teacher education at MOEVT to take necessary measures to improve the ways used to prepare pre-primary school teachers who teach science activities. Lastly, the research findings would be of great use and a foundation for those researchers who expect to study the related topic.

1.7 Delimitations of the study

This study was confined to the low level of education particularly in pre-primary schools. At this level, the researcher established the actual classroom and outdoor learning contexts in early childhood classrooms within the contexts of this level of education, the study focused on the selected public and private pre-primary schools found in Dodoma Municipality whereby ten pre-primary schools were involved. In addition, the study involved only teachers, pupils and parents as participants.

1.8 Limitations of the Study

During the data collection process, the researcher encountered some limitations. First, the researcher faced time constraint in the data collection, as the majority of the pre-primary schools were scattered. As a result, the researcher attended in these schools at late hours. In solving this researcher asked pre-primary school teachers to be flexible their normal school schedule. This made the researcher to rearrange the time for data collection.

The researcher also experienced lack of cooperation from some of the head teachers especially from private pre-primary schools. These refused to provide information to the researcher due to the nature of the study. Hence, the researcher spent more time discussing with them and clarifying that the information to be given was only for the research purposes and had nothing to do with their work and employment. However, till the end, they did not allow the researcher to undertake the study in their schools. This situation affected the researcher because the selected pre-primary schools were earmarked for the study. Therefore, the researcher had to change by looking for other private pre-primary schools.

1.9 Operational Definitional of Terms

Pre-primary School: A formal educational institution or programme in which teachers and children interact in particular environment so as to foster development and learning of the child before primary school (Kweka et al.,1997).

Teaching: According to Brown (1994), teaching can be described as how to do something, giving instruction, guiding in the study of something and providing knowledge. In this study, teachers have the responsibility of involving pre-primary

pupils in the process of learning where the former design and facilitate the learning experiences and opportunities while the later become active participants, responsible for their own learning.

Science: Refers to body of knowledge that represents current understanding of natural systems and the process whereby that body of knowledge has been established and is continually extended, refined and revised (Duschil et al., 2007).

Early childhood: is a developmental period that extends from the end of infancy to about 5 to 6 years, sometimes this period is called preschool years. During this time young children learn to become more self-sufficient and to care themselves, they develop school readiness, skills and they spend many hours in play and with peers (Berk, 2005).

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Introduction

This chapter presents the literature related to examining the state of science teaching in early childhood. It starts with a theoretical framework, followed by specific themes related to the study topic are presented. The knowledge gap and conceptual framework are also presented. Finally, summary of the chapter is given.

2.1 Theoretical Framework

The social cultural theory by Vygotsky (1978) and cognitive development theory by Piaget in Gonzalezmena (2001) guided this study because they have close relationship with the teaching of science activities in early childhood in various communities. These theories are based on the belief that the learner is an active constructor of his/her own knowledge and social interaction is important for knowledge construction.

The social cultural theory believes in letting children explore and do experiments with adult help (Gonzalezmena, 2001). To understand cognitive development, one must look at the social processes from which the child's thinking is derived. Children learn through interaction, they acquire cognitive skills as a part of their induction into a way of life. Shared activities help the children to internalise their society's ways of thinking and behaving and make ways of their own (Vygotsky, 1978). According to Vygotsky (1978), adults or peers that are more skilled must help directly and organise the child's learning before he/she can master and internalise it. This guidance is most effective in helping children cross the Zone of Proximal Development (ZPD), the gap between what the child can do independently and what he/she can do with assistance of an adult or experienced peer. From the social cultural theory, theoretical stance, which guided this

study, is the importance of social components in learning science activities for children whereby the following issues were emphasised:

- i). Social interactions.
- ii). The need for use of local materials/nature.
- iii). Construction of knowledge through play-like activities by young children.

In the collaborative learning environment, students interact with learning tools and other members in-group activities; they express and conceptualize their viewpoints and listen to others in order to solve problems, to complete their tasks, or to generate new ideas. In addition, Vygotsky (1933/1978), points out that play is a very serious business and is a central focus for the development of relationships between objects, meanings, and imagination. Teachers and even older children eventually join parents in the responsibility for these critical interactions with the child, the central role these interactions play in the process of learning remains the same (Vygotsky, 1978).

In cognitive development theory, Piaget believed that children develop their reasoning abilities through interaction with people and the environment since they explore only on concrete level (Gonzalezmena, 2001). He believed in putting children in a rich environment and letting them interact in exploratory way. According to Piaget, young children are viewed as active learners who should be allowed to express their exploratory inquisitiveness. In this regards, personal constructivism places greater emphasis on the individual rather than other aspects. Hands-on learning is more important than sitting and listening to the teacher. The theoretical stance focused on the following issues:

i). Active learning is essential to the child in order to explore and interact with the environment.

ii). Play is important in promoting learning and fostering cognitive development of the child.

According to constructivist paradigm, teaching should emphasize the development of children's ability to build their own scientific knowledge and understanding in the context of what they already understand. Instead of putting fully formed knowledge into children's minds, in the constructivist approach, teachers help children to construct scientifically valid interpretations of the world and lead them in altering their scientific misconceptions (Linn & Eylon, 2006). In order to have effective learning in pre-schools, the learning activities should be child-centred using concrete objects, which will attract their interest in learning and hence sustain their attention (Marrison, 1988).

Play activities are essential to the environment in which children learn concepts, develop social and physical skills, master life situations and practice language processes. Play lies in embodiment where the whole body is used in play and in learning process. Embodiment refers to combining of various physical actions with higher cognitive activities like thinking, reasoning, perceiving and reflecting (Prince & Rogers, 2004). Therefore, play educates cognitively, emotionally, socially and physically (Bergen, 2009).

2.2 Conceptualization of science

Science activities are systematic activities, which are closely concerned with generation, advancement, dissemination and application of scientific and technical knowledge in all fields of science and technology (UNESCO, 1977). On the other hand, science activities can be said to be scientific when they are based on a network of

logical relationships which make them possible to obtain reproducible and measurable results. The methods used to obtain these results may be considered as techniques when the skills they employ are also systematic, when these skills are based on numerical measurements and when the results, which these measurements give, are reliable (Bochet, 1974).

Arguments supporting the need for better science education in elementary schools have been based on the desire to develop in today's students the knowledge, reasoning, and problem-solving skills required for the rapidly changing and technology based society (Plourde, 2002). Therefore, it is vital for science teaching practice to prepare classroom environment for inquiry and establish routines that help children make meaning, and facilitate conversation (Duschl et al., 2007).

2.3 Lesson Plans for Effective Science Teaching in Pre-primary Schools

Lesson plan is a step-by-step of what the teacher intends to do with his/her pupils in the course of lesson period in order to realize a change in behaviour outlined in the lesson objectives (Ngaroga, 1996). According to Mbunda, good teaching (2006) refers to teaching which successfully achieves the learning by students intended by the teacher. In science teaching, we are leading pupils to 'see' phenomena and experimental situations in particular ways, to learn to wear scientist's conceptual displays (Driver et al., 1985).

As Ngaroga (1996) explained that learning activity refers to task a pupil is expected to perform during a lesson in order to achieve the objectives intended by a teacher. This includes activities such as observing, recording, ordering, classifying, listening, writing, drawing, playing and performing physical skills. Knowles (1950) emphasised that,

teachers should involve students in the learning process placing less emphasis on transmitting knowledge and more on developing students' science process skills. He added that, it is important for teacher to involve students in higher order thinking skills, engage them by placing greater emphasis on students' own exploration of their own attitudes, values and belief about learning.

Therefore, it is necessary for a teacher to have a lesson plan made in advance. According to Ngaroga (1996), lesson plans help teachers to collect or make teaching aids ahead the time. They also help the teacher to focus on problems that are likely to arise ahead of time and make adjustments where necessary. Again, they help teachers to refine their objectives and gain insight that enables them to become more orderly and effective. Lastly, lesson plans help in guiding the development of a lesson from known to unknown by ensuring that there is continuity and flow in inspite of a rising discourse.

2.4 Teaching Strategies Recommended for use in Pre-primary Schools in Tanzania

Pre-primary syllabus currently used in Tanzania emphasises the use of teaching and learning techniques elements that are also used in other countries in the world taking into account the ability and age of the child. During teaching/learning process, the child is the main actor while the teacher is the facilitator to the whole process (MOEVT, 2005). Learner-centeredness can be defined as the perspective that couples a focus on Individual learners about their heredity, experiences, perspectives , backgrounds, talents, interests, capacities, and needs with a focus on learning (McCombs & Whisler, 1997). Principles of learning that place the learner at the centre emphasise that the student is the main agent of learning. These principles makes learning the principal goal as they concentrate on the use of intentional processes, which encourage teacher-student interaction in which students become more active learners who expect the

teacher to act as a facilitator while focusing on how well students learn, not the frequency of information transmission (McCombs & Whisler 1997).

2.5 Appropriate Science Teaching Strategies

Effective teaching depends on whether the teacher has enough knowledge of the subject matter and teaching skills as Scout (2006) explained that having deep understanding of the subject matter is an important aspect of being a competent teacher. They also add that in constructivist view, teachers should encourage children to explore their world, discover knowledge, reflect and think critically while they give them careful monitoring and meaningful guidance. As Vaidya (1993) stated that teachers' science content knowledge, as well as their pedagogical content knowledge, are both issues of concern. When teachers begin to better understand science content, student-learning outcomes will probably change for the better.

However, professionals understand the importance of the early years for developing children's first language and cultural identity. Identity and belonging are linked to children's self-esteem and wellbeing. Children learn and develop through their relationships with family and community. A child's first language is a connection to their family and culture and it provides many benefits in learning and development. Each child has a unique experience of context and culture. When this is understood, children are more likely to feel supported and have a strong sense of belonging (Kitson & Bowes, 2010).

Various researches stress on the importance of the role of the teacher for effective science teaching in ECE centres. Grieshaber and Diezmann (2000) stated that adults provide children with conceptual support by stating what is known, paraphrasing,

redirecting, questioning ideas and approaches, providing information and assisting with problem solving. Similarly, Mooney (2000) emphasized that scaffolding, interaction, conversation, and experimentation helped children learn about both science processes and contents. She stated that those children exposed to this kind of learning increased their skills gradually and accomplished their goals in science.

Moreover, Grieshaber and Diezmann (2000) stated that teachers provide children with materials and equipment, as well as conceptual support, during a scaffolding process since the teacher is one of the important factors that increases or decreases the quality of science education in early childhood pupils. Gallas (1995) explained that young children must be allowed to co-construct their knowledge about science by imagining possible worlds and then inventing, criticising, and modifying those worlds as they participate in hands-on exploration. Real science begins with childhood curiosity, which leads to discovery and exploration with teachers' help and encouragement. It involves three major components; content, processes, and attitude of a scientist that is, curiosity and the desire to challenge theories and share new ideas. Scientific exploration presents accurate opportunities to develop and use both receptive and expressive language skills (Gallas, 1995).

Research findings worldwide show that teaching science activities in young children focuses on Inquiry based programmes which describe science as an ongoing process of exploration and discovery rather than a content domain to be memorised (Mastropieri & Scruggs, 1994). Therefore, deep understanding of most science concepts comes with inquiry-oriented instruction that engages students in the investigative nature of science. In its essence, inquiry-oriented teaching engages students in investigations to answer questions. These questions are usually answered when students have constructed mental

frameworks that adequately explain their direct experiences. Hands-on science is intrinsically fun and more interesting for students. Instead of using a traditional approach to science, it indicates that dramatic differences are found in more than just the development of science process skills (Mastropieri & Scruggs, 1994).

According to the above discussion, all children need to have enough knowledge of scientific thinking as part of their development of general intellectual skills, so that they are able to distinguish reliable information from less reliable information (Katz & McClellan, 1997). Teachers can guide them to refine their thinking and support them by bringing theories together to create understanding of concepts, by referencing to what the children already know from home or community experiences (Hedges, 2008).

2.6 Indoor and Outdoor Play and Learning Contexts

Learning environment is an important and powerful teaching tool. If the environment is set up with the knowledge of how children learn and develop, it can positively support teaching and learning. An active learning environment is one in which children are encouraged to explore and interact with the environment to construct meaning and knowledge through their experiences (Worth, 2010). Furthermore, children learn most from experiences in which they themselves participate (TET, 2005). They tend to learn most through play which usually occupies a major part of the children's lives (Uprichard, 2007).

Outdoor learning offers a vast array of possibilities not available indoors. Play spaces in natural environments invite open-ended interactions, exploration, discovery and connection with nature. Plays can expand children's thinking and enhance their desire to know and to learn, they can promote positive dispositions towards learning. Indoor

and outdoor plays promote opportunities for sustained and shared thinking and collaborative learning (Uprichard, 2007).

Therefore, the outdoors plays offer concrete elements and flexible resources with which to experiment and discover real life about hands-on learning. These qualities particularly endorse values such as authenticity, love of rich sensory environments and physicality. This seems to ensure a greater sense of ownership, facilitate more engagement and higher levels of usage (Moore & Wong, 1997).

2.7 Parents Roles in Fostering Science Learning Among Young Children

According to Fler (1996), children with adult support will think differently about everyday things in their world, and with these new scientific lenses, will explain their world in new ways. However, she further argue that babies actively explore their world and reach scientific understandings when supported by the adults that surround them. Satisfying a questioning mind or stimulating curiosity in the everyday things in a child's world, has been shown to lead to a lifelong interest in science. Free flow conversations are important, but so are conversations, which seek to understand the science in the activity. Each of the activity helps learners you set up the experience, and provides them with any background science ideas they may need (Fler, 2009).

Therefore, parents should recognise that young children have innate curiosity and interest in science as the development and learning benefits of early childhood. Children's social skills develop best when they have opportunities to learn and practise them in the context of meaningful activities (Katz & McClellan, 1997).

2.8 Challenges of Teaching Science Activities

Teaching and learning are complex processes. Throughout history, society has looked for better enlightenment of our diverse population and the rapid rate of technological

change. For example, the editors of Time magazine featured this challenge with a recent cover entitled *How to Build a Student for the 21st Century* (Wallis & Steptoe, 2006).

In research done by Stevens and Wenner (1996) it was noted that one might reasonably expect to find a negative relationship between lower level of science subject-matter knowledge and decreased confidence in ability to teach science. Also, it has been discovered through research that, a lack of background knowledge in science often reduces the capacity to exercise judgment in handling the unexpected behaviours of children when using hands-on materials. Lawton (1997) found that there were barriers to implementing an inquiry-oriented approach to teaching science and teachers' doubt about not only factual information but also about hands-on methods, discomfort with the subject of science itself, a lack of available resources and the sometimes limited science content knowledge that many elementary level teachers seem to possess.

Although the vision of education which guides Tanzania into 21st Century is aimed at building peaceful environment, caring development of committed nation of well-educated, informed skilled decent courteous and morally, ethically and cartulary obliged people for all national development (URT 1999a), however, the study conducted by Kweka et al. (1997) about the situation on early education in Tanzania mentioned that there were unqualified teachers, many of them not adequately trained for pre-primary education. In addition, teaching materials were not available and therefore learning at this level was mainly theoretical rather than practical. Given this reality therefore, it is possible that Tanzania may not realise its vision about education in the 21st Century.

According to URT (1995), the minimum qualifications of pre-primary teachers are grade IIIA plus preschool training. Tsitouridou (1999) argues that in the professional

development of early childhood teachers, there is a need to integrate the learning of science and the pedagogy necessary to implement effective programmes. Therefore, the effective implementation of pre-primary curriculum and effective teaching of science activities to young children depends on the teacher's competence to bring positive outcomes for children learning.

2.9 Conceptual Framework

The study intended to investigate science teaching in pre-primary schools. The study was guided by the CIPP model by (Stufflebeam, 1999). A researcher adapted the context, input, and process and product evaluation model from Stufflebeam (1999). This is because this model advocates that “the purpose of evaluation is not to prove, but to improve” Stufflebeam (ibid). The model was modified by the researcher to fit the study. The model insists that there is relationship between the four components of the CIPP model (Anderson 1997; Stufflebeam, 1999). In this study, the context involved school environment both indoor and outdoor, educational policy and child's family. In this context, input includes qualified teachers and teaching and learning materials, whereas process includes quality teaching and learning process and the product involves the change in cognitive and academic learning outcome.

In teaching science, context, input and process are the determinants of effective science teaching to pre-primary schools. In this study, the researcher focused much on these three aspects that is context, input and process due to the fact that improvement for the science teaching is influenced much by these variables (Howie, 2002). For example school context, education policy and home environment (in context) are the issues that stimulate pre-primary pupils to learn science and (in input) teaching and learning materials motivate and guide the type of scientific skills to be practised during and after

the lesson whereby (in process) the teacher plays a big role in guiding pre-primary pupils to develop knowledge that will foster scientific disposition. Therefore, the coordination among context, input and process is important in developing scientific skills (product).

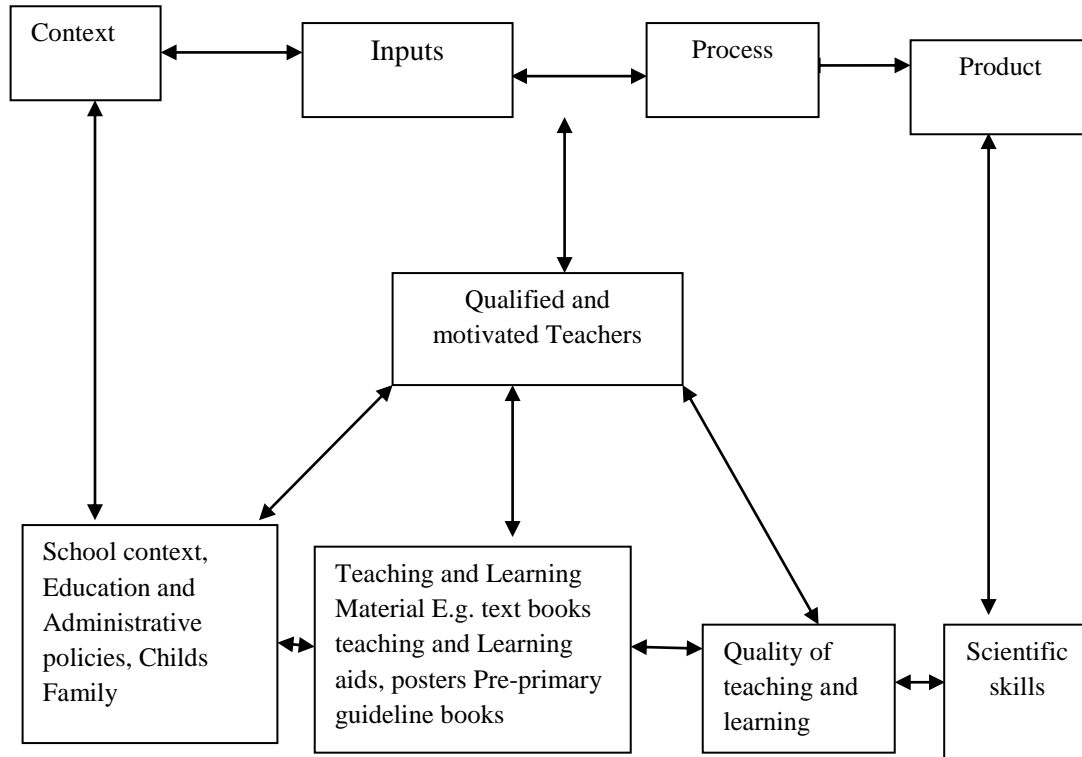


Figure 2:1 Conceptual Framework

Source: Modified Stufflebeam (1999)

2.10 Summary of literature review and knowledge gap

The review of the relevant literature has been done in this study. This reviewed literature has shown that, involving children through participation in hand-on exploration leads to successful science learning, and that child-centred approach is better rather than having teachers act as sole sources of knowledge. The literature reviewed also showed that there are barriers for implementing effective science

teaching such as lack of teaching and learning resources, limited content knowledge and pedagogical knowledge teachers seem to possess.

In the previous studies done in Tanzania, less has been said about the issue of the state of science teaching in pre-primary schools as most studies have focused on investigation of science teaching in other levels and not much on science teaching for young children. Therefore, the objective of the present study was to specifically examine the state of science teaching in pre-primary pupils in Dodoma Municipality so as to address this knowledge gap.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter describes how the research was conducted. The chapter covers research design, the research approach, study area, target population, sampling techniques, research instrumentation, data collection techniques, ethical considerations and data analysis procedures.

3.1 Design of the study

Research design is the plan showing the approach and strategy of investigation, aiming at obtaining relevant data, which fulfil the research objectives and give answers to the questions. In this study, the researcher employed a case study design. This is because it gives an in-depth understanding of a specific situation and its meaning of those involved (Merriam, 1998). The case study as a technique in data collection involves fieldwork in which the researcher interacts with study participants in their natural setting (Gall et al., 2005).

The researcher employed this type of research design because it gives detailed information which enabled her to develop possible explanations and evaluate the phenomena of the teacher teaching practice. This design enabled the researcher to study the state of science teaching in pre-primary schools in a natural setting and investigate reasons behind the choice of specific teaching strategies that helped the researcher in suggesting the improvement of teaching strategies. Since learning occurs within the

child's natural setting which is the child's context, the method gives room for the study to be deeply conducted rather than impregnating it with sweeping statistical survey data.

3.2 Research Approach

A qualitative research approach was deployed with some aspects of quantitative research in order to help illustrate the qualitative information. According to Creswell (2003) qualitative research approach allows the researcher to enter the respondent's personal world in order to gain deeper and clear understanding of their knowledge, experience and feelings. The approach was suitable for this study because it was used to understand pre-primary teachers' ability to support children scientific learning.

The reason for selecting qualitative research approach was based on the fact that it involves direct experience during field work in order to be able to understand and interpret the setting as well as the individuals (Hatch 2007). In this study, teaching science to early childhood is culturally situated. This is because it makes use of qualitative method thought necessary in order to understand the situated nature of the teaching strategies for pre-primary children.

Sandelowski (2000) contends that, "mixed methods research is a dynamic option for expanding scope and improving the analytic power of studies." Therefore, the researcher also opted to use quantitative method in collection of quantitative data as well as converting some of the qualitative data into numeric data subject to statistical analysis.

3.3 Location of the study

The study was conducted in Dodoma Municipality. Dodoma Municipality is located in the centre of the country. It is bordered by Chamwino district in the East and Bahi district in the West. The Municipality occupies an area of 2769 square kilometres. According to the 2002 Tanzania census, the population of Dodoma urban district was 462,968. Administratively, it is divided into 4 divisions, 30 wards, 40 villages and 70 streets. Economically, about 75% of the municipality income comes from agriculture and 25% of the population is engaged in petty business (DMC Profile, 2008).

The choice of Dodoma municipality was done purposively based on the introduction of the new international University that offers Bachelor Degree in ECE as well as cultural contexts in which the University is located. This kind of composition of scholars will offer various experiences concerning the state of science teaching in pre-primary pupils. The researcher expected to have rich information based on qualifications pre-primary school teachers have in applying new technology and skills to meet changing global demand. Similarly, the area was chosen because of its large population which is composed of various levels of education possessed by either teachers or parents. Having this view the researcher expected to get rich information based on the differences with regard to education aspects since teaching strategies are socially and culturally embedded.

The researcher selected 5 public pre-primary schools and 5 private pre-primary schools. The researcher expected to have different experiences concerning the teaching strategies of pre-primary schoolteachers because of different statuses of private and public schools. Those differences rely on provision of services, availability of teaching

and learning materials, social economic status of the families and availability of qualified teachers.

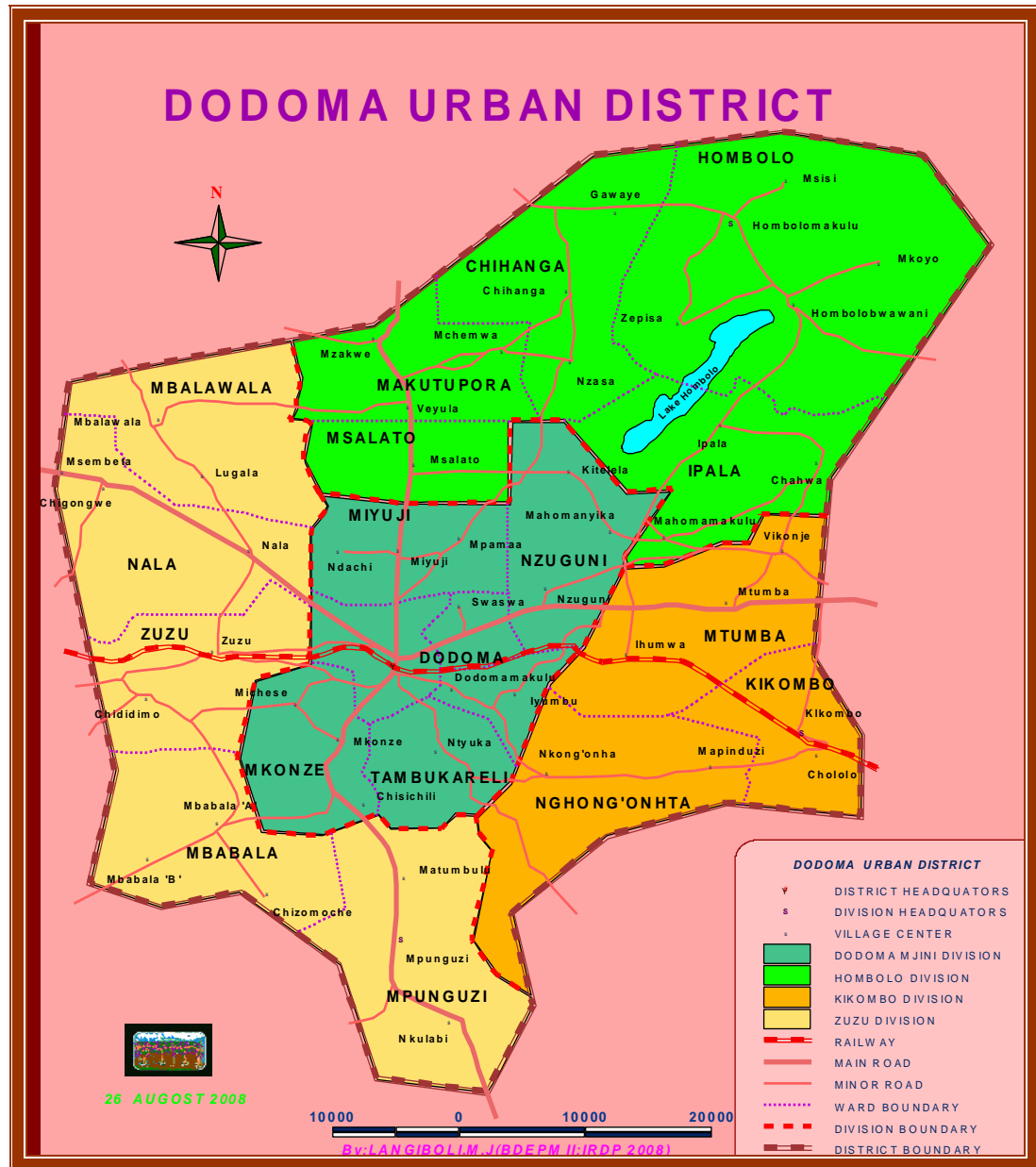


Figure 3.1: Location of the Study

Source DMC Profile

3.4 Target Population

Target population refers to a group of individuals, objects or items from which samples are taken for measurements. Kombo and Tromp, (2006), Best & Kahn (2006), define the term population to mean a group of individuals who have one or more characteristics in common that are of interest to the researcher. In this study, the targeted population were parents, pre-primary pupils, teachers and head of schools from both public and private pre-primary schools in Dodoma Municipality. The study involved a total population of 50 participants. Hence, this study was governed by these factors such as time and financial aspects rather than statistical determination.

3.5 Sample and Sampling Procedures

A sample is a small group of respondents drawn from a population in which the researcher is interested in gaining information and drawing conclusion (Ezzy, 2002). Sampling procedures are the ways or techniques used by the researcher to get the sample for data collection. For the purpose of this study, purposive sampling was used. Purposive sampling is a one of the non-probability procedures used to select sample for the study by selecting cases, which are rich in information used for obtaining comprehensive understanding of the subject under study (Patton, 1990 in Mtahabwa 2007).

For the purpose of this study, purposive random strategy was utilised. The aim is to select cases that are likely to be rich in information so as to serve purpose of the study. It provides a clear criterion or rationale for the selection of the participants or places to observe that relate to the research question (Ezzy, 2002). The criteria of selecting this sample was based on the argument that no specific number is required to be included in the study, except that it should be large enough to serve as an adequate representation

of the population about which the researcher wishes to generalise and small enough to meet the time frame and costs (Omari, 2011). The schools, head of schools, pre-primary school teachers, parents and pupils were purposefully selected in order to obtain rich information about the state of science teaching in pre-primary schools.

3.6 Data collection methods

In this study, more than one technique was used for gathering information since no single technique is completely adequate by itself (Kothari, 2004). The data collection techniques in this study included documentary review, interviews and direct observations.

3.6.1 Interviews

The interview method involves presentation of oral-verbal stimuli and reply in terms of oral-verbal responses (Kothari, 2004). This type of interview provided room for flexibility in the discussion in order to extract deeper information concerning the topic under study, also the method is more focused and time effective (Patton,2002). Bryman (2008) says that flexibility enables the researcher to ask questions in different orders as well as search for clarity on answers that are not clear.

In this study, open-ended questions were used as it is asserted that they allow respondents to answer as much as they wish as they are free to add the remarks (Marrison et al., 2010). Semi-structured interview was used to collect data from teachers, parents and pupils of selected pre-primary schools. This technique was useful in obtaining rich and detail information concerning the state of science teaching in pre-primary schools. Note taking was used to record data.

3.6.2 Direct observations

Observations allow first-hand experience of what is taking place in a setting (Patton, 2002). Non-participatory observation technique was used to observe and understand the general situation of science teaching and learning in pre-primary schools. In this study, data collection focused on indoor and outdoor activities, involving teacher-pupils interactions.

This method was used by researcher to collect information from the whole process of teaching and learning through observing teacher-student interaction inside and outside classroom. The researcher observed methodology, teaching and learning materials, student participation and questioning strategy. Note taking and video camera were used to record data.

3.6.3 Documentary review

The researcher used documentary data to supplement interview and observation data. Analysis of documents enhances expansion and further clarification of the data base (Hutchinson, 1990). As stated by Yin (1994 in Moshi, 2007), documents are used to support and supplement evidence from other sources. The reason for selecting documents was substantiated with evidence from various literatures regarding the state of science teaching in pre-primary schools.

The review was done in these documents in order to assess: (1) Pre-primary syllabus teaching and learning strategies suggested, to examine the extent to which they are learner-centred; (2) Text books, teacher guide and pre-primary guideline books: the quality and effectiveness in imparting scientific skill to pre-primary pupils were also, examined for determining the quantity of teaching and learning materials; (3) Lesson plans for the involvement of pupils in different activities that develop scientific enquiry.

3.7 Validity of the Instruments

Validity determines whether the researcher's true instruments are as intended to measure or how true the research results are (Golafshani, 2003). In qualitative research, subjectivity and biases during data collection, data analysis and interpretation of data needs to be justified. Justifiability means transparent, communicable and coherent research work (Aurerbach & Silverstein, 2003).

Therefore, in qualitative research, validity is an accuracy and trustworthiness of the instruments data and findings in the study (Bernard, 1995). In this study, the following techniques were used to maximise the validity of instrument data and findings:

1. *Triangulation.* According to Patton (2002), multiple sources of information are sought and used because no single source of information can be trusted to provide a comprehensive perspective on the programme. The researcher involved semi-structured interviews, direct observations and documentary review. Patton, (1999) asserts that the main focus in triangulation method is to compare the data collected from different sources and to compare the people's perspectives from different points of view so as to come with single, totally consistent picture. In this study, triangulation of data sources was deployed to compare teachers' perspective and parents' perspective about science teaching in early childhood classroom.
2. *Thick description.* According to Ponterroto (1996) thick description involves the use of participants' voices such as the use of quotes from the participants. It helps to capture feelings and thoughts of participants. In this study, several quotations from participants were used and described to make the reader develop insight and have feeling of the meanings contained in the data collected.

3. *Back translation.* This is referred to as the process of translating materials from its original language to different languages (Chrisler & Mc Creary, 2010). In this study, the semi-structured interview was translated into Kiswahili for easy communication with participants in the field and then back into English when writing the report.

3.8 Reliability of the Instruments

Reliability, which refers to certainty of an instrument to yield similar results over time, is a difficult criterion in qualitative research approach (Mtahabwa, 2007). To ensure reliability, the researcher consistently administered the instruments allowing triangulation in data collection. According to Bashir (2008) in order to enhance the reliability of qualitative research, two things must be put into account namely, spending enough time in the field and use of multi-methods. These were deployed to maximise the reliability of the study. A high degree of stability will indicate a high degree of reliability, which means the results. In addition, the researcher's class observations notes and documents review helped in increasing reliability of data.

Before data collection, the researcher conducted pilot study in one of the schools in Dodoma Municipal. In this pilot study, the researcher administered interview guides to pre-primary teacher and head of school. Moreover, direct observation and documentary review were practised. The pilot study intended to check any language ambiguity in the tools and the contents to see if they could measure what was supposed to measure.

3.9 Ethical issues

A research clearance letter was sought and obtained from the office of Graduate Studies- University of Dodoma which was used to ask for permission to conduct a research, a request sent to Municipal Executive Director. The researcher was personally visiting the study area (schools) in order to explain the intention of the study, the researcher planned to conduct the research as well as the participants who were involved in the study. In order to maintain confidentiality and privacy of interviewees and schools, their names were not disclosed.

Once the permission to start the research was granted, the researcher began by scheduling interview sessions and observations in the classrooms. At the beginning of each interview and group interviews the researcher. I explained the purpose of the study, asked for interviewee's' consent to conduct the interview and explain their rights as participants to participate in the interview. Considering the subjects of the research, that are the main source of information, is important. Benefits participants would get as a result of their participation, helped them to understand properly the strategies of science teaching in pre-primary schools. Therefore, ethical issues ought to be observed during fieldwork.

3.10 Data Analysis

Data analysis refers to the computation of certain measures along with searching for patterns of relationship that exist among data groups (Kothari, 2004). The data collected from the respondents were described by the researcher using qualitative data interpretation. The collected data were classified into meaningful categories; with the responses edited, classified, grouped and analysed as related to study objectives and questions.

3.11 Reflexivity in Data Collection

The role of the researcher in the data collection process was to describe the personal experiences and reactions of the researcher in the field. According to Gall et al. (2005) the researchers' analysis of their own role as constructors and interpreters of the social reality being studied, is based on the premise that many words from the interview, observation and documentary are reduced to categories in which words share the central meaning. This was done on the ground of the theoretical framework. A critical reading was done and the themes having the same conceptual features were grouped together. In this study the constructs were used to retell the story of the participants by using them as sub-titles and sub-sections in the chapter. It involves working with data so as to organise, break and synthesise it so as to discover what is important, what is to be learned and decide what to tell others (Connaway & Powell, 2010). Table 3.1 below show the data collection process and the analysis procedure.

			Three steps by Huberman & Miles (1994) were applied.
2.Direct observation	Pre-primary school teachers Pre-primary pupils	How teachers taught children in real situation of learning. How learners participated indoor and outdoor learning contexts.	Events were classified into categories and coded by assigning symbols.
3.Documentary review	Lesson plans Schemes of work Student exercise books	Teaching methods used to teach pre-primary pupils. Teacher's records. Data on how respective schools teach their pre-primary school pupils.	They were subjected to content analysis. Extraction, summarization and computation of frequency were applied.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter presents, analyses and discusses the research findings based on the four research objectives, namely: (i) assessing teachers' lesson plans as preparations for the teaching of science activities in early childhood classrooms; (ii) establishing actual classroom teaching strategies in pre-primary schools; (iii) evaluating the quality of the indoor and outdoor learning contexts in the teaching of science and; (iv) examining the challenges of teaching science in pre-primary schools. The main themes in this study were developed deductively whereas the sub themes were developed inductively based on the issues that emerged from the findings. Moreover, interview, direct observation and documentary review were used to gather information. To obtain in-depth information for this study, pre-primary school teachers, pre-primary pupils, heads of schools and parents were interviewed; direct observation was applied for both indoor and outdoor learning environments and some documents were reviewed. Three steps of qualitative data analysis by Huberman and Miles (1994) were used to analyse the data obtained in this study.

4.2 Background information

This study collected information from 50 informants from Dodoma Municipality. The background information of various informants which included gender, education level, occupation and age is shown below. Table 4. 1 Summarises all the background information of all informants.

Table 4.1 Background of the informants

CATEGORY	HTs	PTs	PRs	PS	Frequency
SEX					
Female	03	10	04	10	27
Male	07	-	06	10	23
AGE					
05years				12	12
06 years				08	08
20-40 Years	03	04	02		09
40-60 Years	07	05	08		20
60-80 Years	-	01	-		10
EDUCATIONAL					
LEVEL					
			03	-	03
Primary	02	04	03	-	09
Form four	08	05	04	-	17
Form six					
PROFESSIONAL					
LEVEL					
Certificate of Education	02	04	-	-	06
		05	-	-	05
Certificate of ECE	03		-	-	03
Diploma in Education			-	-	
Diploma in ECE	05	01	-	-	06
Degree in education.			-	-	
Non qualification					
OCCUPATION					
				-	
Civil servant	-	-	06	-	06
Peasants	-	-	03	-	03
Businessman	-	-	01	-	01

Source Field Data, 2013

Key

HTs Head teachers**PTs** Pre-primary teachers**PRs** Parents

PPs Pre-primary pupils

It was observed from Table 4.2 that out of 10 heads of schools 3 heads of school were females and 7 were males. With regard to education level, it was observed that out of 10 heads of schools 5 had bachelor degree, 3 diploma in education and 2 had certificate in education.

It was observed that among the 10 pre-primary school teachers, all 10 were females and none was found to be male. In terms of education level, 5 pre-primary school teachers were diploma holders, 4 pre-primary school teachers were certificate holders and 1 had no ECE qualifications.

Moreover, it was observed that among 10 parents, 5 were males and 5 were females. In terms of education level, 3 parents had primary education, 3 had secondary education, 2 were diploma holders and 2 were degree holders. Six parents were civil servants whereby 4 were teachers, 1 policeman and 1 nurse. 3 were peasants and 1 was a businessman.

Table 4.2 Main Themes and Sub-themes of the Study

Main Themes	Sub-themes
1. Preparing to Teach	Knowledge about Pre-primary School Syllabus Lesson Plan Preparation
2. Actual Classroom Teaching	Teaching Strategies Used by Pre-primary School Teachers Familiar Language of Instruction
3. Quality of Indoor and Outdoor Learning Contexts	Size and Space Organisation Nature/Types of Materials
4. Challenges of Teaching Science	Insufficient Teaching and Learning Materials Limited Parents' Awareness about Science Teaching Poor Motivation Insufficient funds from Government

Source: Field Data, 2013

4.3 Preparing to Teach

The researcher intended to know how pre-primary school teachers prepared lesson plans for teaching science for the young children. It was assumed that pre-primary school teachers prepared lesson plans without involving pre-primary pupils. Moreover, it was assumed that in the process of teaching and learning, there was a big possibility for pre-primary school teachers to dominate the whole process. Interview, direct observation and documentary review were used to gather data from the pre-primary school teachers respectively. The table below shows the availability of lesson plans with pupils' involvement.

Table 4. 3: The availability of lesson Plans with Pupils involvement

Pre-primary schools	LP 1	LP 2	LP 3	LP 4
A				✓
B		✓		
C				✓
D	✓			
E		✓		
F		✓		
G	✓			
H		✓		
I				✓
J		✓		
Total	2	5	0	3

Source: Field Data, 2013

Key:

LP 1 Lesson plans available, well planned and pupils' involvement clearly stated

LP 2 Lesson plans available, well planned but pupils' involvement not clearly stated

LP 3 Lesson plans available but not well planned with pupils' involvement not clearly stated

LP 4 Lesson plans not available

4.3.1 Knowledge about Pre-primary School Syllabus

It was also found that there was a tendency of most of the teachers not to read and use pre-primary syllabus. As a result, most of the heads of schools and pre-primary teachers were unaware of proper time allocation for each period in the pre-primary schools in Tanzania. Furthermore, this observation revealed that 8 of the teachers interviewed were not aware of the allocated time as stated above. This was revealed in the responses of pre-primary teachers in schools B, C, D, E, F, G, H and I when they were required to mention the time allocated for teaching science activities suggested for the pre-primary children. Most of them mentioned 30 minutes, which was not true because the true time is 20 minutes. For example, one teacher from school F answered as follows:

“...I am using 30 minutes to teach science activities per period. The school time Table allocated 2 periods per week single period and the other as double periods. But this time is not enough according to material prepared to be taught in pre-primary class...” (Interview, 18th February 2013).

From these findings, it is revealed that the experience of the pre-primary school teachers shows that they were not aware of the pre-primary syllabus they were teaching. From the foregoing, teachers need to have knowledge about the syllabus which they are teaching and implementing about science activities. It was observed that, pre-primary school teachers prepared lesson plans without reading the syllabus something that affected even their preparation of the lessons they were going to teach. This is because effective lesson preparation requires that teachers read books, guidelines, and syllabi in order to be able to prepare particular topics, specific objectives, effective teaching learning strategies, teaching and learning aids and tools for assessment of science activities (MOEVT, 2005).

In addition, teachers' abilities to teach effectively depend on their knowledge which occurs in a variety of forms. For example, subject content knowledge is concerned with

the subject matter to be taught, and which encompasses what Bruner (1996) calls the structure of knowledge. This is concerned with the organisation of basic concepts of essential structures and the ways to validate them (Shulman, 1986). Therefore, scientific knowledge is necessary for pre-primary teachers to extend a child scientific learning (Fleer 2009; Hedges, 2008). It enables the teacher to keep in mind both the everyday practice where the concept is used or built and the core concept that is to be taught (Fleer, 2009). In addition, observational skills are very important for teachers, this is because, as added by Gestwicki (1999) teachers develop science activities that will deepen the children's interest and encourage them to further explore the world around them.

4.3.2 Lesson Plan Preparation

In this study, the researcher conducted interviews in order to extract deeper information from pre-primary school teachers. The interviews were done based on lesson plans as preparation for teaching. Also, documentary review was used to supplement the interviews.

Table 4.3 shows that pre-primary teachers in schools B, E, F, H, and J which means 5 prepared lesson plans but pupils involvement was not clearly stated. Furthermore, in school D and G which means 2 teachers were found to involve the young children in all stages of learning. For instance, in preparing instruction materials together with their teacher, also teaching and learning aids were used. In schools A, C and I 3 teachers were found teaching without preparing lesson plans for about two months. A pre-primary teacher claimed from school A that:

“... Tanzania syllabus contains many activities to be learned by children, I’m one teacher in my class I can’t afford to prepare a lesson plan for each activity. I have selected only two activities and prepare a lesson plan effectively but for the four activities I’m teaching, I do not prepare lesson plan...”
(Interview, 5th February 2013).

It was noted that in all lesson plans observed, there were no clear statement, which showed how each child was involved in each stage of activities. There were just general sentences, which were aimed at children such as be able to practice/discuss; mention a few scientific observations such tooth brush, clean water, toothpaste etc.

In the light of these findings, it was evident that in all pre-primary schools, educational levels and qualifications of pre-primary school teachers played big roles in preparation of science teaching for pre-primary pupils. Teachers having low level of education failed to prepare effective lessons compared with those who had diplomas. This is because, the way teachers design learning experiences, how they engage children and respond to them, how they adopt their teaching and interactions to children’s background and the feedback they give matters greatly in children’s learning science. This is also supported by Doherty and Canadian Child Care Federation (2003) who recommended that teachers should build children’s interest when planning activities, provide a variety of science learning materials that allow the children to pursue their interests as this encourages children making them become actively involved in lesson related to their interests.

According to the findings of this research, effective lesson preparations were in most cases not adequate due to the low level of education and qualifications of the teachers. This is well substantiated by Kweka’s study who discovered that the quality of pre-primary schools (including performance and acquisition of scientific skills) was very low due to unqualified teachers (Kweka et al., 1997). Therefore, the implication of this

is that pre-primary pupils are likely in most cases to lack necessary required scientific skills. Therefore, pre-primary school teachers need to use different teaching methods in order to reach all children's potentials while planning and implementing science activities. Alisinanoglu et al. (2012) showed that the qualification level of teacher candidates should be able to provide children with quality science education.

The teacher is required to plan how he/she is going to involve each child from the beginning of the lesson by stating why a particular proposition is deemed necessary and worth knowing (Gestwicki, 1999). In this regard therefore, teachers have to increase their understanding of what science teaching entails at the preschool level. Science itself is not an activity but an approach to doing an activity. Hence this approach involves a process of inquiry-theorizing, hands-on investigation, and discussion (Conezio & French, 2002)

4.4 Actual Classroom Teaching

The researcher also investigated the teaching strategies used by pre-primary teachers in teaching science activities to young children. However, in the teaching and learning process the child is the main actor whereas the teacher is the facilitator to the whole process of teaching and learning. Therefore, this research was conducted according to the child-teacher centred methods by administering interviews to pre-primary teachers, pre-primary pupils and head of schools. The data were categorised and tabulated as shown in Table 4: 4 below:

Table 4. 4: Teaching Strategies Identified for Each School

School	Games, Role	Field trip	Questions and answers	Constructing	Discovery, Project work	Demonstration,	Discussion	Songs, Drawing	Inquiry
A			✓					✓	
B			✓				✓	✓	
C			✓				✓	✓	
D	✓	✓	✓	✓			✓	✓	✓
E			✓					✓	
F			✓				✓	✓	
G	✓	✓	✓	✓			✓	✓	
H	✓		✓				✓	✓	
I			✓						
J			✓				✓	✓	
Total	3	2	10	2	0		7	9	1

Source: Field Data, 2013

4.4.1 Teaching Strategies Used by Pre-primary School Teachers

In this study, the researcher conducted interviews in order to obtain in-depth information from pre-primary school teachers. The interview was done based on teaching strategies used for science teaching. Also direct observation was used to observe the whole process of science teaching and learning in pre-primary schools.

Table 4.4 Shows that all 10 pre-primary school teacher's applied questions and answers. Nine out of 10 were using songs and drawing from schools A, B, C, D, E, F, G, H and J. Moreover, 7 pre-primary teachers out of 10 were using demonstration and

discussion from schools B, C, D, E, F, G and J. One pre-primary teacher from school B when asked about the common methods uses in science teaching and their effectiveness had this to say:

“...In my class I prefer to use teaching strategies which involve children in learning according to their age and ability. Most of the times, I apply questions and answers, demonstration and songs. These teaching strategies enable the child understand the lesson, arouse child’s interest in learning and keep long term memory...” (Interview, 8th February 2013).

Pre-primary pupil from school F supported this when he said:

*“...Teachers ask us questions, therefore, to answer these questions every child should raise his/her hand so as to reply to teacher’s questions. Thereafter, she shows materials used to clean the mouth like tooth brush, water and toothpaste. She then tells to sing a song that is called **this is a way we brush our teeth** and another song **I clean my mouth because is mine...**”* (Interview, 18th February 2013).

To ensure that children as the main actors in teaching and learning, teachers involved them in games, drama and role-plays 3 from schools D, G and H, field trip 2 from schools D and G, inquiry 2 from schools D and G, constructing 1 from school D.

Moreover, pre-primary teacher from school D supported this when she said:

“...In the process of teaching and learning, I make sure that the children practise through playing, use their hand-on in learning and to send them on field trip which enable them to be innovative. These teaching strategies involve all senses of organs in learning...” (Interview, 13th February 2013).

Pre-primary teacher from school H supported this when she said:

“...By considering the real learning context of my children, I prepare a lot of teaching and learning resources that will enable them to understand the lesson. I also involve them in the indoor learning context through observation of pictures, toys and then send them outside to see real objects...” (Interview, 18th February 2013).

In all 10 pre-primary schools, there was no any pre-primary teacher who used discovery and project work as teaching strategies, which would assist the young children to discover their own ideas through participation in hands-on exploration.

From these findings, there were reasons compelling pre-primary school teachers to choose some teaching strategies. This fact was also substantiated by 10 pre-primary teachers who, when interviewed said that they preferred to use questions and answers as teaching strategy due to some compelling reasons. These findings also show that 9 pre-primary teachers out of 10 interviewed were most of the time using songs, nursery rhymes and drawings to teach young children. They said that these teaching strategies enabled pre-primary pupils to understand the lesson easily and keep memory for long time. However, on interviewing them closely, it was revealed that they preferred the method because of exceedingly large number of the pupils in the class.

Therefore, these data indicate that pre-primary teachers in most of the schools do not use effective pupils-teacher oriented methods (learning by doing). Hence, from the results of this research, this may imply the following possibilities: (i) there is probably lack of pedagogical content knowledge in a context of science activities that depends on understanding of a particular topic and how to explain it in a way that will make sense to the young children. Reasons for this have been connected to the limited opportunities the teachers have had to study science (Garbett, 2003). Alexander (2000) gives an example of the influence of pedagogy by linking the teacher's personal knowledge base

to their ability to ask probing questions and encourage higher cognitive thought. Teachers tend to be competence and confidence to teach science.

Also, (ii) effective teaching strategies may as well be known to the teachers but most of them do not use them, instead prefer to use unprofessional strategies. This may be contributed by several factors some of which this research has come across. For example, many of the teachers have overcrowded classes which influence them to use unprofessional strategies. Second, there is the critical condition or lack of the necessary teaching and learning materials in most of the schools especially government schools. This further influences most of the qualified teachers to solve this problem by using unfavourable strategies (songs, poem, drawing and nursery rhymes).

Third, the research results from face to face interviews with the teachers concerned, revealed that teachers lacked morale and vitality. Teachers explained that they were not paid handsomely something that made their lives difficult. This aspect as a social problem will be discussed in chapter 5.

This implies that teaching strategies used in most of pre-primary schools were based on rote learning and memorisation strategies, which differ from the constructivist belief that the teacher should encourage young children to explore their world, discover knowledge, reflect and think critically by using all senses of their organs in the teaching and learning processes (Scout, 2006). In contrast, those strategies involving questions and answers, drawings, nursery rhymes and songs do not in most cases provide room for scientific disposition in young children because they involve few senses of the organs in the learning process. Similarly, Doherty & Canadian Child Care Federation (2003) argued that young children do not learn in situations where the teacher simply

describes and demonstrates a concept. Children must have the opportunity to have hands-on experiences with any science activities or materials presented to them.

Furthermore, the pedagogical content knowledge implies understanding of the ways in presenting the subject that makes it comprehensive to others and understanding of what makes the learning of a specific topic be easy or difficult (Shulman, 1986). Teachers in their teaching are influenced by their respective levels of their pedagogical knowledge, skills and experience in selecting teaching strategies that enable the child to learn effectively. This is also supported by Edward & Loveridge (2011) with regard to supporting children's scientific learning that, the teacher's role is to plan science activity, prepare the learning environment, present the materials, allow children to explore the materials and then encourage them in further exploration through the use of effective questioning. Therefore, child-teacher centred method is better to use for the reason that the teacher must be present in the learning process as a facilitator (MOEVT, 2005). Moreover, the socio-cultural learning theory emphasises that the teacher should play one's role in assisting the children to master and internalise the concept being learnt (Vygotsky, 1978).

The elementary science programme should emphasise a hand-on and mind on approach to learning. This is because this approach allows pupils to practise problem-solving skills, develop positive science attitude and makes them learn new science content and increase scientific literacy (Eshach, 2007). It is argued that pupils learn effectively when they are actively engaged in discovery process which is often realised when they are working in small groups (Trundle & Sackes, 2008). In supporting this Marrison (1988) argued that in preschool, the learning activities should be child-centred with learners using concrete objects/materials, which will attract their interest in learning and hence sustain their attention in science activities.

4.4.2 Familiar Language of Instruction

During interview sessions to parents and teachers, it was revealed that some children did not participate well during teaching and learning processes because of not being familiar with the language of instruction. This was evidenced by responses of parents of children from school D and F who had these to say:

“...I think my child is not familiar with English language because the same questions which she failed to mention well at school, if I asked her again at home by using Kiswahili language I found that she did well. Also, the nature of the subject had too long words difficult for her to pronounce...” (Interview, 13th February 2013).

The parent from school F supported this when he said:

“...Teachers’ have burden to teach young children because they take more time to translate words from English to Kiswahili in order to convey the message to children even though children failed to understand what they are required to do, it is proper for schools to use Kiswahili as language of instruction because children understand it easily...” (Interview, 18th February 2013).

Arguments from the parents were also supported by teachers’ responses from all five schools using English as language of instruction when interviewed about the effectiveness of teaching and learning strategies to young children. This was evidenced by responses of head of school from school D who said:

“...English language is a big problem for these young children in learning science because it is different from the language the child is familiar and comfortable with (mother tongue), the child has to spend time and energy to decode meaning of the concepts compared to the child who uses Kiswahili as a medium of instruction...” (Interview, 13th February 2013).

This was also observed during classroom session when children were asked questions they replied in Kiswahili at school F, G and D. In school H and C, it was noted that teachers were supposed to translate English words into Kiswahili when it was found that most of the children failed to understand even to pronounce these words.

The findings show that, language is an important factor for teaching and learning processes. It was found that in all private pre-primary schools English language was difficult for the pupils to learn effectively. Pre-primary teachers argued that using unfamiliar language to teach leads to not realising the whole processes of science learning. This is because science subject has technical words that are difficult to be understood easily by young children. When children are instructed in the language they are comfortable with, and can communicate in it with ease, they stand to understand better. Mastery of language of instruction plays a crucial role because it assists the child to discern, decipher and scrutinize (Chonjo, 2006).

Language can shape our reality. It can define and constrain how the child thinks and reasons. It can give them an insight into how they think and reason. Qorro (2006) substantiates this fact that when teachers and students understand the language of instruction they are able to discuss, debate, ask and answer questions, ask for clarification and therefore construct and generate knowledge.

Brookes (2006) argues that in order to improve education, one needs to understand what is happening in the classroom. For instance, when students are learning science

there is a need to understand what they are doing and learning. Therefore, language is an important factor in determining the quality education.

4.5 Quality of Indoor and Outdoor Learning Contexts

It was found that in the interview session and classroom observations, the indoor and outdoor learning contexts were less supportive of science teaching in early childhood. This was revealed in the responses of pre-primary teachers and heads of schools from schools A, B, C, E, F, I and J when they were asked about the quality of indoor and outdoor contexts in science teaching. The following table summarises the findings of the quality of indoor and outdoor learning contexts as shown below:

Table: 4. 5: Categorisation of the Surveyed Pre-primary Schools

Categories	Observed items			
	Infrastructures	Administrative And Human Resources	Teaching and Learning materials	Nutrition and Transport
HIGHLY EQUIPPED SCHOOLS (HES)	<p>Classroom well ventilated with standard number of pupils.</p> <p>Good desks and chairs</p> <p>Good playground with many facilities</p> <p>Pupils latrines Hedge/fence</p>	<p>Separate head teacher office from primary school</p> <p>Well qualified staff, two per class</p> <p>Teachers motivate</p>	<p>Plenty of learning and teaching materials</p> <p>Visual and audio visual aids</p> <p>Books for pupils and teachers</p> <p>computers</p>	<p>Porridge and lunch available for pupils and teachers</p> <p>Transport available for pupils and teachers</p>
ADEQUATELY EQUIPPED SCHOOLS (AES)	<p>Classroom with standard number of the pupils</p> <p>Enough desks and chairs</p> <p>No playground and pupils latrine</p>	<p>No separate head teacher office</p> <p>Well qualified staff in adequate number to some schools</p> <p>Teachers not motivated</p>	<p>Adequately teaching and learning materials</p> <p>No books for pupils few books for teachers, no audiovisual but only visual aids</p> <p>No computers</p>	<p>Some schools have transport and others no</p> <p>Porridge for the pupils no lunch</p>
POORLY EQUIPPED SCHOOLS (PES)	<p>One classroom with over packed pupils</p> <p>No desks and chairs for pupils</p> <p>No playground and pupils latrine</p>	<p>No separate head teacher office</p> <p>Some qualified and unqualified teachers</p> <p>Not adequate number of the teachers</p>	<p>No books for both teachers and pupils</p> <p>No audio visual and visual aids</p> <p>No computers</p>	<p>Porridge for pupils no lunch</p> <p>No transport</p>

Source Field Data, 2013

Table 4. 6: categorisation of the surveyed Pre-primary Schools basing on Table 4:

5.

Pre- primary categories	A	B	C	D	E	F	G	H	I	J	Total
HES				✓			✓	✓			3
AES		✓				✓				✓	3
PES	✓		✓		✓				✓		4

Source: Field Data, 2013

Key

HES=Highly Equipped Schools

AES=Adequately Equipped Schools

PES=Poorly Equipped Schools

4.5.1 Size and Space Organisation

Size and space organisation in this study was explained as the arrangement of resources both of indoor and outdoor environments. It was observed that in the classroom session at school A, B, C, E, F, I and J the indoor and outdoor environments were not designed to foster physical environments. No equipment existed outdoor for children's use. The pre-primary pupils shared the same playground with the primary pupils. Most of the time the children were confined to the indoor environment except during break time. This can be observed below in the following pictures from school G.



Figure 4.1: Head of School G demonstrating in playground

4.5.2 Nature/Types of Materials

The researcher was interested to know indoor and outdoor classroom resources in terms of ready-made materials and locally-made materials. During classroom observation session, it was found that there were enough factory-made materials to some private pre-primary schools rather than public pre-primary schools. Also, there were few locally-made materials to all surveyed pre-primary schools.

In table 4.6 above, it is noted that only three pre-primary schools among ten their learning environments supported learning science to pre-primary pupils as they invited children to contribute ideas, interests and questions. This fact was also observed by the researcher in the classroom sessions, especially in private schools where the indoor and outdoor learning contexts were positive to foster exploration among the young children. This can be observed below in the following pictures.



Figure 4.2: Inside the Classroom at Pre-primary School G

The findings in this study show that, both indoor and outdoor learning environment of private pre-primary schools were designed to facilitate pre-primary pupils in learning science. Most of these schools had equipment for children use. These indoor and outdoor environments support all aspects of children's learning science and invite conversations between children and pre-primary school teachers. As Trundle and Sackes (2008) argued that observing phenomena in nature is important, the use of illustrations and images in the classroom offers a practical and effective way to introduce and teach science concepts with young children. For this reason, teachers had opportunity to observe what pupils were able to do or not.

This implies that the quality of the indoor and outdoor learning context in the teaching science to pre-primary school in Tanzania is still a big challenge, especially to government pre-primary schools. According to the findings of this research 7 of pre-primary schools had inadequate infrastructure and inadequate teaching and learning

materials. Hence, the teacher-child interactions were limited to the indoor environment. Furthermore, play provides opportunities for children to learn as they discover, create, improvise and imagine. This was also supported by Trundle & Sackes (2008) that inquiry based learning environment enable children to construct and understand science content. When teachers and children play scientifically together children actively build scientific thinking and understanding (Fleer, 1996). Teachers role in children activity is critical for building scientific learning. According to the findings 7 of pre-primary schools had no playgrounds. Therefore, pre-primary schools without playgrounds facilities will lead pre-primary pupils to lag behind in expanding their thinking which is expected enhance the desire to know and learn science activities. This is because plays promote positive dispositions towards learning science.

Piaget in Gonzalezmena, (2001) believes that putting children in a rich environment and letting them interact for new discoveries and new ways of expressing themselves fosters confidence, curiosity and innovatively. And play is important in promoting learning and fostering cognitive development of the child. When children play with other children they create social groups, test out ideas, challenge each other's thinking and build new understandings (Uprichard, 2007). This is also emphasised by Vygotsky (1978) that the outdoor environment is an optimal environment to learn because there are many concepts that can be learned through cooperative learning with peers.

Moreover, familiar context, according to Vygotsky (1978), is the social interaction of the child to adult in order to be helped and organised in the child's learning. That is, the importance of adults in guiding and monitoring the child's learning as it also emphasised by ECE educators. In addition to that, Piaget in Gonzalenzmena (2001)

insisted on the importance of the child to build his/her own scientific knowledge and understanding through provision of rich environment in order to interact in an exploratory way. Therefore, there is a need for the government ensure that all the government pre-primary schools are well equipped.

4. 6 Challenges of Teaching Science in Pre-primary Schools

In this study, the researcher intended to identify challenges facing teachers in science teaching in pre-primary schools. The information was obtained from pre-primary teacher, parents and heads of schools through interview and classroom observation. It was found that pre-primary teachers were facing challenges in science teaching in all the ten pre-primary surveyed.

4.6.1 Insufficient Teaching and Learning Materials

In this study, the researcher conducted interviews in order to elicit more information from pre-primary schoolteachers. The interviews were done based on planning and applying science activities for early childhood classrooms. It was noted that lack of teaching and learning materials contributed to ineffectiveness of science teaching and learning in pre-primary schools. The following table shows the availability of content books in schools A, B, C, D, E, F, G, H, I and J

Table 4.7 Science Books

School	Pre-primary syllabus	Teacher guide	Science text book
A	✓	X	X
B	✓	X	X
C	✓	X	X
E	✓	X	X
F	✓	X	X
I	✓ -	X	X
J	✓	X	X

Source: Field Data, 2013

Key

✓ Present

✓ - Present not used

X Absent

In table 4. 7 above it is noted that there were no Tanzanian teachers' guidebooks for all ten pre-primary schools and science books for seven pre-primary schools. And that most of the teachers used only syllabi and standard one book to teach pre-primary pupils. However, the situation was different for private schools G, H and D because they had plenty of teaching and learning materials. Pre-primary teachers pointed this out from schools A, B, C, J and F. A pre-primary teacher at school J pointed this out:

"...Text books are a big challenge especially to science activities compared to other activities like Mathematics, English and Kiswahili. I'm teaching science by using syllabus and experience because there are no science books..." (Interview, 27th February 2013).

Another pre-primary teacher also pointed this out from school F when she said:

“...I think the government should provide science text books, teacher’s guidelines for both private and public pre-primary schools. This will help to bring efficiency in science teaching...” (Interview, 18th February 2013).

In the light of these findings, it is evident that the government has not been injecting enough funds to facilitate pre-primary schools. This has contributed to the lack of the important learning needs and materials. According to teaching and learning materials, it was evident that there were inadequate resources for teaching and learning. Pre-primary school teachers explained that the scarcity of materials tended to be challenge in science teaching in pre-primary schools. The above table 4.7 implies that although the whole processes of teaching and learning is effective in some schools, for example, in schools D, H and G however it is not representative of other schools in Tanzania context, because may lack books, which are supposed to be used by the teachers in the teaching of science activities. Therefore, there is a danger of these schools to avoid the syllabus prepared by the Ministry of Education and Vocational Training (MOEVT, 2005).

As it is suggested in the syllabus, the choice of teaching and learning strategies will depend on teaching and learning resources and actual situation of the school environment. Moreover, teaching and learning materials from other countries and their contents are in most cases not suitable to the Tanzania context. The implication from this observation is that, there is the danger that these schools will be producing graduates who do not fit within the Tanzanian primary schools context.

Another problem related to the above issue is that most of the government pre-primary schools lack teaching and learning materials due to ineffective supply of these materials as pointed out by Kweka et al. (1997) and Mtahabwa (2007). Therefore, there is a need

for the government to ensure that all the government pre-primary schools are well equipped and staffed. In addition, it should be made mandatory use that private pre-primary schools Tanzania books and teaching and learning materials that are relevant to the context.

4.6.2 Limited Parents' Awareness about Science Teaching

It was found that 8 of the parents interviewed were not aware of their role of assisting the children in science learning at home. In their responses, it was revealed that children did not get any assistance in learning science from their parents, siblings and other relatives. This is because the parents were not aware of the syllabus used. However, most of the parents when interviewed responded that science subjects were only taught effectively in standard one, and thus their task was to assist their children only in mathematics, English and Kiswahili.

Table 4. 8: Various Ways in Which the Child is assisted in Learning Science

No.	Type of assistance	Frequency
1.	Provision of teaching and learning materials	2
2.	Involvement in children's plays	1
3.	Provision of play toys	4
4.	Asking and answering children's questions	3
5.	Assisting the child's curiosity in learning science	1

Source: Field data, 2013

Table 4. 8 shows that children got science learning assistance at home as follows: 2 out of 11 through provision of teaching and learning materials; 1 out of 11 through involvement in children plays; 4 out of 11 through provision of play toys; 3 out of 11 through asking and answering children's questions and 1 out of 11 through assisting the child's curiosity in learning science. Therefore, 4 out of 11 of the parents of schools D, F, H, G and E provided their children with play toys as tools that help children to learn science at home. For example, one parent at schools D said:

"...I have bought play toys like puzzle box. This helps my son to construct different figures. Also, at home I have computer which my son uses to play games. My intention is to assist my child to be knowledgeable in information communication technology..."

(Interview, 13th February 2013).

A parent from school F also said:

"...I have already bought a desk top computer at home. This tool helps my daughter to play games with her brothers. Through this I have prohibited the frequent watching television. Also, there are different play toys like puzzle, ball, babies' toys, and animal's toy like cat, dog and hen all of these materials enable my daughter to understand different things and being more creative..." (Interview, 18th February 2013).

Also, 3 out of 11 were explained by parents from schools G, D and H assisted their children in asking and answering children's questions. Young children learn themselves and the world around them. For example, a parent from school G said:

"...I try to build the spirit of asking more questions for anything happening to him and pay attention to what he replies to those questions. Also, I gave answers of his questions through careful explanations of real objects in order to make him understand well..." (Interview, 20th February 2013).

Also another parent from school D said:

“...My grandson has a lot of questions. As a parent I help to get the answers to those questions. I remember one day he asked me, ” grandmother where do tears come from?” The question was difficult to me but I tried to answer and I told him tomorrow go and ask his teacher at school...” (Interview, 22nd February 2013).

One parent of the child from school H supported this when she said:

“...I thinking order for children to be successful in learning science, it is worthwhile for teachers to give them sufficient materials for learning and use real object to teach these young children. It will help them to understand their environment and ideas about science. For example, my child one day shouted: I see the Snake! Snake! When I came close to him it was not true that he was seeing Earthworm but it was not the snake...” (Interview, 22nd February 2013).

In addition, 2 out of 11 of the parents assisted their children by providing them with teaching and learning materials like books, which enabled them to observe scientific events and pictures and hence, through observation young children could learn science activities. Lastly, 1 out of 11 of the parents involved their children in play and therefore assisting children’s curiosity in learning science.

Due to this situation, it was observed that parents’ role in monitoring and assisting their children to learn science is below standard. This implies that, education level and occupation differences of the parents were strong factors to involve young children in science learning while at home. It was revealed that some parents did not know the importance of assisting their children in learning science and therefore, they did not understand the areas that would enable their young children to explore their environment. However, most of the parents assisted their children in three areas; reading, writing and arithmetic (3Rs).

Second, the children whose parents did not have time to enquire their progress, their children had difficulties in learning science. It was observed that most of the parents after paying school fees left all the roles to teachers. However, parents' involvement in their children's learning is very important because children start learning at home, hence parents are the first teachers. In supporting this Prince and Rogers (2004) argued that there is a time-frame in which these experiences need to happen in order to create a lasting connection, parents should continue to encourage those explorations of our environment so that this connection is not lost because it still holds a lot for pre-primary learners to learn science.

Nevertheless, children tend to be more creative when their parents are involved in their play especially when adults play alongside their children. A very good example of this is Raffin (1993) that, children should be provided with opportunities to have direct experience with common objects, materials and living things in their environment. Also, for parents to play with children is a central locus for the development of relationships between objects, meaning and imagination. Parent's role in children's activity is critical for free flow conversations are important which seek to understand science in the activity (Fleer, 1996). Vygotsky emphasised that children can be successful in solving problems if they receive guidance from adults/ advanced peers than doing in their own (Vygotsky, 1978). Therefore, through plays, children learn to solve problems and in developing motor skills.

4.6.3 Poor Motivation

During interview session to pre-primary teachers it was found that lack of motivation to pre-primary teachers led to ineffective delivery of education to pre-primary pupils. This was pointed out by pre-primary teachers from schools A, B, J and F. Their claims were as follows:

- (a) There is a tendency of unrecognising pre-primary teachers from private colleges. A pre-primary teacher from school B pointed this out:

“...Pre-primary teachers who do not have grade IIIA training course are not recognised as qualified teachers. This is not fair because they are knowledgeable enough to teach pre-primary pupils and have qualification of teaching pre-primary schools. I am suggesting that those teachers should be recognised and given their rights...”
(Interview, 8th February 2013).

- (b) Taking care of children and guiding them into learning was a very sensitive work due to the fact that children were still very young with many developmental changes which required the teachers to teach them effectively. One of the parents also pointed this out from school F when he said:

“...Motivation for teachers is very important and nowadays teachers are passive in this field. Most of the teachers do not put effort in teaching as they did before, today you can't see teachers using their time even their money to buy materials for the preparation of learning facilities...”
(Interview, 18th February 2013).

With the above comments, it was observed that pre-primary school teachers were attracted to those schools with good packages. It was found that high pay attracted

highly qualified teachers. Therefore, teacher salary is closely related to teacher stability due to its impact upon job satisfaction. The above claims indicate that there is a need for the government to take serious measures to improve pre-primary education including catering for the teachers' needs. It should be noted that teaching of pre-primary children is not a simple task because pupils at this age need special care which is qualitatively different from primary pupils. Therefore, if pre-primary teachers are not motivated, unrecognised and paid low salaries, they will not be devoted in their teaching and consequently can leave pre-primary school teaching to seek employment in other fields.

Again, teachers' stability has been found to be one of the most important aspects for effective classroom teaching (Bery & Sharp, 1999). This is because teacher stability promotes strong attachment with children which in turn raises children joy and confidence in their interactions with teachers and materials. Furthermore, effective science teaching needs teachers to love and be committed to his/her teaching work. This stage is a foundation for the development of a positive attitude towards science as justified by (Eshach & Fried, 2005). Because of ignoring this, there might be poor delivery of science learning and education to young children. Therefore, there is a need of motivating teachers in order to increase their efficiency in teaching.

4.6.4 Insufficient Funds from the Government

In this sub-theme, the researcher conducted interviews in order to extract information from pre-primary teachers and heads of schools. It was revealed that lack of funds to support pre-primary schools from the government has led to poor learning environment. For instance, teaching and learning facilities like classrooms, desks and chairs, playgrounds and toilets impairs effective science learning. Teachers argued that pre-

primary schools were not included in the primary education development budget although the government decision of 1992 together with the Education and Training Policy of 1995, formalised the pre-primary education in our country (MOEVT, 2005).

It was also revealed that pre-primary schools, especially those under the government, are a burden to the heads of schools and cannot adequately manage them. This is because the schools have little funds from the parents of pre-primary pupils and this contribution is different for each school. For example, some schools paid Ts 1500 and others Ts 5000. However, this money is not enough for paying teachers salaries. One of the heads of school had this to say:

“...The contribution from parents is not enough to manage pre-primary schools according to their needs. In my school, a retired teacher teaches this class and she depends on this fund. Sometimes we can't afford to pay her at right time due to the delay of the contribution...” (Interview, 25th February 2013)

Desks and Chairs

It was found out that the lack of facilities such as desks and chairs especially in public schools affected pupils learning. For instance, in doing their exercises pupils in school A and I, had to sit down because there were neither desks nor chairs for them. This is illustrated by the picture in 4. 3 below:



Figure 4.3: Pupils Following a Lesson inside Classroom

Source: Field data, 2013

As illustrated in figure 4. 3, children are sitting down due to the absence of desks and because of this there is no effective science teaching because the teacher cannot pass around to each child because of this poor environment. Also, in school B although there were enough desks, they were not suitable for pre-primary pupils because they were made for older pupils of primary schools. This made learning uncomfortable. This picture here shows pupils using primary desks and chairs, as illustrated by the picture in 4. 4 below:



Figure 4.4: Adult-sized Desks for Young Children

Source Field Data, 2013

Toilets

It was found out that lack of enough toilets especially in government schools endangered

pre-primary pupils' health because children's immune system is low compared to adults and primary pupils. The head of school from school A had the following to say:

"...Pre-primary pupils should not share toilets with primary school pupils because they are too young and these toilets do not have appropriate size to ensure security of the children. Those toilets are dirty because of being used by many pupils and are not cleaned effectively..." (Interview, 5th February 2013).

Playgrounds

In addition to facilities problems, it was found that there were no playgrounds for children especially in public schools. Pre-primary schools face challenges of lacking playgrounds and inadequate play equipments. In schools A, B, C, E, I, F and J during outdoor learning, pupils shared playgrounds with the primary pupils, and that these playgrounds lacked quality to be playgrounds for children. The pre-primary teacher from school J had the following suggestions:

“...Pre-primary pupils should not share playgrounds with primary school pupils because most of these playgrounds have inadequate play equipment and learning materials. In most cases, these playgrounds lack necessary security for the children...” (Interview, 27th February 2013).

Also, it was explained by pre-primary pupils from school B when asked the kind of plays which are usually conducted in their school they had this to say:

*“...Our teacher told us to go to football ground. Once we reached there we started to play many games for example running, driving stones as cars and **lede** (throwing ball to each other)...”* (Interview, 8th February 2013).

Overcrowded Classes and Shortage of Teachers

It was also found that a large number of pupils associated with few teachers was another challenge leading to ineffective science teaching in pre-primary pupils. The following Table shows numbers of pupils and teachers:

Table 4. 9: Numbers of Pupils and Teachers in Actual Situation in the Field

School	Ownership	No. of Pupils	No. of Teachers
A	Government	44	1
B	Government	50	2
C	Private	49	2
D	Private	30	1
E	Government	88	1
F	Private	48	2
G	Private	35	2
H	Private	53	2
I	Government	114	1
J	Government	35	1

Source: Field Data, 2013

Table 4.9 shows that the teacher-pupils ratio in private pre-primary schools is small compared to the teacher-pupils ratio in government schools. Most of the private pre-primary classes have two teachers, with a reasonable number of pupils, which they are able to manage. It was revealed during classroom observation that pre-primary teachers from school D and G applied participatory methods to teach science activities.

This is contrary to government schools in which some classes are over crowded up to 114 pupils, others with 88 pupils, 50 pupils and 44 pupils as it shown in table 4.9 above. Pre-primary teachers E, A, B and I, pointed out this. This fact was revealed in a response given by a pre-primary teacher in school who said:

“...I have a large number of pupils about 114 in one class. This class is very big to me. In order to afford to teach all activities suggested in the syllabus, I am trying to teach only two activities out of six activities such as Kiswahili learning activities and arithmetic activities. Frankly speaking, I am concentrating in 3Rs, it is difficult to teach such a large number of pupils...” (Interview, 25th February 2013)

The head of school from school E supported this when she said:

“...My teacher faces more challenges to teach pre-primary pupils in learning science, because there are a large number of the children, about 88 pupils. So, it is not easy for the teacher to choose appropriate teaching methods which will enable young children to learn science effectively...” (Interview, 15th February).

According to the above findings, most of the teachers from government schools suggested that the government should allocate capitation grant to pre-primary schools to enable them afford to buy and build teaching and learning facilities for children such as desks and chairs, toilets, playgrounds and classrooms. This implies that in a situation like lacking enough funds, the learning process might be ineffective and can negatively affect the science teaching process, as it pointed out by Kissassi (1994) that pre-schools is faced financial problems with the exception of private schools.

Furthermore, the findings of this study showed that insufficient toilets affected the whole process of teaching and learning. The situation of lacking facilities like toilets implies that, there would be a great danger to pupils' health if quick measures were not taken to address the situation. In addition, making them share toilets with primary

pupils and adult people may lead to the outbreak of epidemic diseases, which could negatively affect the pupils' academic progress. Teaching and learning science activities to young children depends on appropriate environment that will enable them settle down and study. Therefore, quick measures need to be taken to ensure the safe and healthy environment to the children by providing enough toilets.

Playgrounds are an important factor in science teaching and learning to pre-primary pupils. Children learn through plays and that plays are critical to the healthy growth and development of children. Teachers complained about outdoor environment specifically in relation to that about playgrounds 70% of all ten pre-primary schools there were no playgrounds. Being this in mind, pre-primary schools without playgrounds makes it difficult for young children to discover important issues in the world around them. Thus, the surveyed pre-primary teachers failed to encourage science process skills that would provide children with scientific disposition among them because they lacked playgrounds as a key component to learning. As emphasized by Vygotsky (1978) that the pleasure children take in nature, in playing, in collecting, in observing, makes them, in this way, temperamentally ready not only for first steps towards the ideas of science but also better understanding of the scientific concepts.

The shortage of classrooms and pre-primary school teachers is an obstacle to science teaching to pre-primary pupils. The pre-primary schools investigated had large number of the pupils all crowded in one classroom especially public pre-primary schools whose problems were even more serious. This implies that the whole process of teaching and learning science activities to pre-primary pupils is ineffective due to a large number of pupils in one classroom. This situation has made teaching of science activities less

participatory. Also, teaching through practises and demonstrations is difficult because teachers are not able to organise pupils in groups, bearing in mind their large number. This is quite different from private schools where the situation gives room to pre-primary pupils to practise in learning real situation. In these schools teachers used different techniques in order to ensure that children were involved in teaching and learning science activities as it shown in table 4.5.

Mtahabwa (2007) supports the above findings, that there is a shortage of pre-primary teachers in Tanzania. He argues that the preschools located in rural areas are more affected with this problem. Also, he reveals that there were neither specific teacher ratio nor group standard in these schools. In these rural areas, the teacher-pupils ratio was about 1:82 and 1:98 while in urban areas the ratio was about 1:48 and 1:50. Given this reality therefore, the government should train more teachers in order to eradicate this problem. In addition, the government in collaboration with other education stakeholders should build more classes to reduce overcrowding in classes, therefore facilitating effective learning and development of children.

4.6 Chapter Summary

This chapter has presented, analysed and discussed the findings of the present study, which examined the state of science teaching in pre-primary schools in Dodoma Municipality in Tanzania. Background information of participants was presented. The findings were presented according to the objectives of the study followed by extensive discussion.

The findings of this study showed that most of pre-primary school teachers when preparing and implementing science activities, did not involve pre-primary pupils in the process of teaching and learning as main actors with teachers as facilitators. Under the

quality of indoor and outdoor learning contexts, the study found that the environments of pre-primary schools were not conducive to develop scientific enquiry to pre-primary pupils.

In case of challenges of teaching science, the study found that in many pre-primary schools teaching science was affected by the shortage of teaching and learning materials, overcrowded classes, poor motivation and insufficient funds from the government.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the study, the major findings, conclusion and recommendations in relation to the main findings of the study.

5.2 Summary of the study

The study aimed at studying the teaching of science in pre-primary schools in Tanzania so as to generate knowledge that would facilitate development of a scientific enquiry in pre-primary pupils. In fulfilling the objectives of the study, four research objectives guided the study: teachers lesson plans as a preparation for the teaching of science activities; actual classroom teaching strategies in pre-primary schools; the quality of indoor and outdoor learning contexts of science teaching; and challenges of teaching science in pre-primary schools.

This study was conducted in both public and private selected pre-primary schools in Dodoma Municipality. In the study, 10 pre-primary schools were involved and the sample size for the study was 50 respondents in which 10 were heads of schools, 10 were pre-primary school teachers, 20 were pre-primary pupils and 10 were parents from the selected pre-primary schools. Data collection methods employed in the study included interviews (specifically semi-structured interviews) direct observations and documentary review. The data collected were subjected to content analysis employing qualitative information where data with some quantitative were manually analysed and their frequencies and percentages were presented in tables and figures.

5.3 Summary of the Findings

(a) Preparing to teach

The study findings revealed that lesson plans prepared by pre-primary school teachers did not involve pre-primary pupils in science learning. It was found that in all 8 pre-primary schools, teachers did not have effective preparation, 5 teachers had lesson plans that did not clearly state the pupils' involvement and 3 teachers taught without preparing lesson plans. It was revealed that only 2 teachers had lesson plans that involved each child for each stage of learning and teaching. The findings of this theme are presented in table 4.3.

(b) Actual classroom teaching

In the study, findings revealed that pre-primary school teachers were using less participatory teaching strategies to teach pre-primary pupils. Based on research findings, teacher centred methods was found to be a commonly used teaching strategy, which was used by most pre-primary school teachers. It was observed that most of the pre-primary school teachers preferred teacher centred methods, which encouraged teaching of science through memorization instead of understanding. It was found that there were some reasons forcing teachers to opt for centred method instead of child centred. For instance, large number of the pupils in a class and shortage of teaching and learning materials warranted for this. On the other hand, English language was observed to be unfamiliar to pre-primary pupils as they failed to understand the concepts necessary to develop required scientific skills. This means that the language used to teach was seen to be difficult to be well understood by pupils. This situation was noted in private pre-primary schools. The findings of this theme are presented in table 4.4.

(c) Quality of Indoors and Outdoors Learning Contexts

It was revealed that, there were gaps between private pre-primary schools and government pre-primary schools about the quality of indoor and outdoor learning contexts. This is because the most of private pre-primary schools had better and enough equipment compared with the public pre-primary schools. The findings of this theme were presented in table 4.5.

(d) Challenges of Teaching Science

The study findings revealed that there were different challenges experienced which hindered scientific enquiry to pre-primary pupils. Here below are the lists of those challenges as revealed in the study.

- i. Lack of teaching and learning materials in most of the pre-primary schools especially pre-primary guidelines, teacher guide books, and science books for pupils.
- ii. Lack of awareness of the proper teaching strategies for the pre-primary pupils because some of the pre-primary school teachers did not read and use the pre-primary syllabus and guidelines.
- iii. Lack of awareness of Tanzania pre-primary syllabus to most of the parents of pre-primary pupils. It was revealed that some of the parents did not assist their children in science learning.
- iv. Lack of morale for some of the pre-primary school teachers due to the absence of incentives. For instance, some teachers did not have grade IIIA qualifications, thus they feel unmotivated to work. Some claimed for teaching allowance because of the difficult work of teaching young children which unfortunately, they did not get.

- v. Overcrowded classes were found to be an obstacle for the proper teaching strategies which forced the teacher to use less participatory methods to science teaching in pre-primary pupils during teaching and learning process. This situation was especially noted in government schools.
- vi. Lack of funds to pre-primary schools especially government schools led to the lack of teaching and learning materials and services, which in turn affected the whole process of learning and teaching.
- vii. Poor infrastructures in pre-primary schools especially government schools. Most of the pre-primary schools had no playgrounds, no latrines for pupils' uses who instead used the toilet of primary pupils and had no desks and chairs to sit on.

5.4 Conclusions

Based on the findings of the study, it is concluded that both public and private pre-primary school teachers need to prepare and use lesson plans and to apply learner-centred methods to teach pupils, as it is guided in the pre-primary school syllabus and guidelines provided by the Ministry of Education and Vocation Training in 2005. It was found that, pre-primary school teachers received low attention in planning and implementing science activities to young children. Moreover, it was found that there were poor indoor and outdoor learning environment to many pre-primary schools. These were attributed to the prevailing challenges highlighted by teachers such as lack of teaching and learning materials, lack of funds from the government, overcrowded classes, shortage of teachers and lack of teacher motivation. Thus, it is concluded that the government take into consideration the mentioned reasons for improvement of quality of pre-primary education.

5.5 Recommendations

a) Recommendation for Action

Based on the research findings, the following recommendations are made for the purpose of promoting science teaching for pre-primary pupils in Tanzania:

- For improvement of teaching to pre-primary schools pupils, seminars and workshops should be provided to all pre-primary teachers, head of schools and parents about the effective science teaching strategies to young children. In so doing, they will be more update and equipped with different issues or knowledge on science teaching. The findings revealed that the majority of these teachers were not aware of some of the strategies used in science teaching.
- The Government under the ministry of Education and Vocational Training should consider pre-primary education as an important level of education by strengthening the quality control system in order to ensure quality provision of education to pre-primary education; provision of funds to run pre-primary schools; train and provision of adequate and qualified pre-primary school teachers. The findings revealed that in many of the schools, the facilities were not satisfactory at all. Therefore, the government has to take urgent measures to curb the problems in the schools so as to help the pre-primary pupils have a friendly learning environment.
- Teaching strategies of the child need to be culturally relevant. Teachers have to make sure that their teaching strategies place the learner on the centre of learning, by using the actual things available in the surrounding environment. Therefore, pre-primary school teachers should prepare enough and quality teaching and learning aids for science teaching.

b) Recommendation for further Research

This study was confined to some few selected pre-primary schools owned by government and pre-primary schools owned by private investors in Dodoma Municipality. It is recommended that:

- (i) A similar study be done in the whole country in order to provide information on how pre-primary teachers in Tanzania teach science activities to children so as to get a wider picture of the state.
- (ii) It was observed that there was unawareness of parents to science teaching to young children. Therefore, there is a need to conduct a study to investigate the involvement of parents in science learning to pre-primary pupils.
- (iii) A comprehensive study should be undertaken to test science teaching strategies which are suggested in the pre-primary syllabus. This study was conducted basing on the case study design, therefore more studies ought to be conducted by using experimental design. Results of which will enable curriculum implementers to add more information on how to teach pupils by using reliable strategies.

5.6 Chapter Summary

This chapter is comprised of the following parts, summary of the study, and summary of the findings, conclusion and recommendations. The summary of the study consisted of the purpose and objectives of the study. The summary of the findings in this study was done in light of what was disclosed from the field in relation to the research objectives. The chapter also presented conclusion and recommendations based on the findings of the study.

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APPENDICES

My name is Paulina Lugenzi from the University of Dodoma in the School of Education pursuing a Master of Arts Education Degree. I am conducting a study on **examining the state of science teaching in pre-primary schools in the selected pre-primary schools in Dodoma Municipality**. I wish to assure you that, the information received in this study will be used for academic purposes only. Your responses will be treated as confidential and top secret. Please, note that no answer is regarded as right or wrong. Your co-operation determines the success of this study.

Appendix I: Interview guide for pre-primary school teachers

Part A: Personal Particulars

1. Name of the school.....
2. Gender: Male (.....) Female (.....)
3. Age
4. Qualification:
Certificate.....Diploma.....Degree.....Masters.....PhD.....
5. Others (Please specify).....

Part B: Questions

1. What is your opinion concerning the competence of pre-primary school teachers in planning and applying science activities in early childhood classroom? And what kind of support do you think they need most?
2. How do you develop the materials needed for science teaching in early childhood classroom?
3. What are the common methods you use in science teaching in childhood classroom and what are their effectiveness in developing science interest and scientific attitude in the children?
4. How do you design indoor and outdoor science activities? And what is the importance of play in learning process?
5. What is your opinion concerning the arrangement of indoor and outdoor environment in the effectiveness of science teaching in pre-primary school?
6. What are the points to which you pay the most attention to in the assessment of children on science teaching?
7. What challenges do you face in teaching science subject in pre-primary school?

Thank you for your willingness to participate in this session

Appendix II: Interview guide for heads of school

Part A: Personal Particulars

1. Name of the school.....
Owners.....
2. Gender: Male (.....) Female (.....)
3. Age
4. Qualification:
Certificate.....Diploma.....Degree.....Masters.....PhD.....
5. Others (Please specify).....

Part B: Questions

1. What is your opinion on the appropriateness of the school environment in implementing science teaching to young children?
2. As the head, of school what are the challenges faced by pre-primary school teachers to teach science subjects in pre-primary schools?
3. What are your proposed future plans for improving and advancing science teaching in pre-primary school?

Thank you for your willingness to participate in this session

Appendix III: Interview guide to pre-primary pupils

Part A: Personal Particulars

1. Name of the school.....
2. Gender: Male (.....) Female (.....)
3. Age.....
4. Class/Grade.....

Part B: Questions

1. How do your teachers involve you in learning science activities during indoor and outdoor hours?
2. What kinds of plays are usually conducted at your school? Where are they conducted?
3. How do you continue to learn science subject with your parents at home?

Thank you for your willingness to participate in this session

Appendix IV: Interview guide to Parents

Part A: Personal Particulars

1. Gender: Male (.....) Female (.....)
2. Occupation.....
3. Age.....
4. Education level.....

Part B: Questions

1. How do you assist your child to enhance their interest and curiosity on learning science subject?
2. What are your opinions as a parent concerning the teaching science subject in pre-primary pupils?
3. What are the challenges face your child in learning science subject?

Thank you for your willingness to participate in this session

Appendix: V Observation schedule

1. School.....
2. Class.....
3. Activity.....
4. Date.....

Behaviour Categories

1. Methodology of teaching

- Whole class teaching and teacher providing variety of activity.
- Small group teaching and allowing freedom for children to talk.
- Use of teaching aids.

2. Classroom resources

- Arrangement of resources.
- Locally available and Ready-made resources.
- Children's and teachers work products.

3. Teacher-child interaction

- Children's questions.
- Teacher's questions.
- Teacher's feedback to child response.
- Children's freedom to select structure and stay on activity.

Appendix VI: Documentary Analysis

Document	Source	Information
Pre-primary syllabus	Heads of schools	Teaching methods suggested to pre-primary pupils
Schemes of work	Pre-primary school teachers	Planning of work analysed for each topic to be taught
Text books, teachers guides and pre-primary guidelines	Pre-primary school teachers	How teachers are guided to teach pupils in each activity
Lesson plans	Pre-primary school teachers	Teaching and learning procedure analysed for each activity
Student exercise books	Pre-primary pupils	Learning activities

Appendix VII: Synopsis of the Classroom Ethnographic DATA

Date	Pre- prima ry School	Topic and Sub-topic	Observe r	Learnin g Activiti es	Teachi ng Aids	Teaching Strategies	Tim e
5/2/2013	A	BODY CLEANLINE SS Cleaning of the face	Research er	Pupils were singing a song Watche d and listened to their teacher	Picture s	Questions and answers Songs	30 min
8/2/2013	B	Cleaning of the mouth	Research er	Pupils were singing a song Watche d and listened to their teacher	Real objects Picture s	Questions and answers Songs Demonstrat ion	30 min
11/2/2013	C	Cleaning of the mouth	Research er and Camera man	Pupils were singing a song Watche d and listened to their teacher	No teachin g aids	Questions and answers Songs	30 min
13/2/2013	D	Cleaning of the mouth	Research er and Camera man	Discussi on in groups answer teachers question Draw	Real objects Model of the mouth Picture	Questions and answers Demonstrat ion Discussion Constructin	30 min

				pictures Touched and identifie d the material s Done practical s of cleaning mouths	s	g Drawing Role play Songs Games Field trip	
15/2/20 13	E	Washing parts of the body	Research er and Camera man	Pupils were singing a song Watche d and listened to their teacher	Picture s	Questions and answers Songs	30 min
18/2/20 13	F	Cleaning of the mouth	Research er and Camera man	Pupils were singing a song Watche d and listened to their teacher	Real object Picture s	Questions and answers Songs	30 min
20/2/20 13	G	Bathing	Research er and Camera man	Discuss in groups answer teachers question Draw pictures Touched and identifie d the material	Real objects Picture s	Questions and answers Demonstrat ion Discussion Constructin g Drawing Songs Games Field trip Role play	30 min

				s of bathing			
22/2/2013	H	Bathing	Researcher	Discuss in groups answer teachers question Draw pictures	Real objects Pictures	Questions and answers Songs Demonstration Discussion Role play Games	30 min
25/2/2013	I	-	Researcher	-	No teaching aids	Questions and answers Songs	30 min
27/2/2013	J	ENVIRONMENT Living things and non living things	Researcher and Camera man	Pupils were watching and listening Answered teachers questions Drew pictures	Real objects Pictures	Questions and answers Drawing Discussion Songs	20 min

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Unapojibu tafadhali taja:

Kumb. Na.HMD/T.40/6/VOL.11/

Tarehe: 30/01/2013

Mkuu wa Chuo
Chuo cha... UDOMA
S.L.P 70 DODOMA.

YAH: KUFANYA MAZOEZI KWA VITENDO/UTAFITI

Tafadhali rejea somo hapo juu.

Napenda kukujulisha kuwa ombi lako la mwanachuo/wanachuo wako... LUWENZI PAULINA... limekubalika.

Mtajwa afike Ofisi ya WEO ZIFUATAZO CHIM kwa ajili ya kuanza mazoezi hayo/kufanya utafiti huo kwa tarehe husika. Aidha Manispaa haitakuwa na fungu lolote la kumlipa/kuwalipa mwanachuo/wanachuo huyo/hao.

Nakutakia kazi njema.


Kny: MKURUGENZI WA MANISPAA,
DODOMA

Nakala: Mkuu wa Idara/Kitengo ELIMU MSINGI.

Mwanachuo Ndugu: ~~PAULINA~~ LUWENZI PAULINA

Mtendaji wa Kata/Kiji/Mtaa ya.....

1. IPACALA
2. KIZOTA.
3. KILIMANI
4. KIKUYU
5. KINDEKE.
6. VYEYULA
7. MTUMBA.

