EFFECTS OF CONSTRUCTIVE AND SOCIAL PLAY ON THE ACADEMIC PERFORMANCE OF PUPILS IN NUMERACY IN KWARA STATE, NIGERIA

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CERTIFICATION

This is to certify that this project was carried out by Asiata Olaide, RAFIU with Matriculation Number 16/27/MEE006 in the Department of Early Childhood and Primary Education for the award of master of education (M.Ed degree)in Early Childhood Education in the College of Education, Kwara State University, Malete, Nigeria.

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DEDICATION

I dedicate this thesis to my beloved parents, Alhaji Abdulrafiu and Hajia Rahmat Aromoke Abdulsalam Omopupa.

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ABSTRACT

Numeracy is the ability to apply simple numerical concept to the day to day activities of human. Poor performance in numeracy at the primary level of education, therefore, may be as a result of inadequate instructional materials, method or strategy used in teaching it. This study investigated effects of constructive and social play on academic performance of pupils in numeracy in Kwara State. Specifically, the study examined the interaction effects of constructive, social play, gender and school type on pupils academic performance in numeracy in Kwara State.

The study adopted socio-cultural theory by lev vygotsky because the theory gives learner freedom to construct knowledge for themselves. The research design used in this study was pretest-posttest control group non-equivalent quasi-experimental design. Stratified random sampling technique was adopted to select six schools for the study. The only instruments used was Numeracy Performance Test (NPT) reliability coefficient was 0.76. Frequency count, percentage, mean and ANCOVA were used to analyzed data collected.

The findings revealed that there was significant effect of constructive play and social play on pupils performance in numeracy ($F_{(2;\ 107)} = 159.022$, $P < 0.05$) There was no significant effect of gender on pupils performance in numeracy in Kwara State ($F_{(1;\ 107)} = 2.530$; $P > 0.05$) There was no significant interaction effect of treatment and gender on pupils' performance in Numeracy in Kwara State ($F_{(2;\ 107)} = 1.990$; $P > 0.05$) There was no significant effect of school type on pupils' performance in Numeracy in Kwara State ($F_{(1;\ 107)} = .158$; $P > 0.05$) There was no significant interaction effect of treatment and school type on pupils' performance in Numeracy in Kwara State ($F_{(2;\ 107)} = .753$; $P > 0.05$)

It was concluded that constructive play as well as social play enhanced performance in numeracy than the conventional method of teaching, also gender and school type had no significant effect on academic performance of pupils in numeracy. Based on these findings, it was recommended among others that numeracy teachers should be encouraged to use constructive play and social play to teach pupils at the basic one rather than the use of conventional method.

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CHAPTER ONE

INTRODUCTION

Background to the Study

Proper education of the child is a basic tool for effective child upbringing and overall societal development. Primary education is commonly observed to be an education given to children within their late childhood. This view may justify why the Federal Republic of Nigeria (2004) in her National Policy on Education defined primary education as the education given in an institution to children aged 6 to 11 plus. It went further to explain that the rest of the education system is built upon it and is the key to the success or failure of the whole system. It has been concluded that primary education is a preparatory ground for the child to acquire basic life skills that would assist the child throughout life. This can best be done by checking how the primary school system ideally, is expected to actualize its goals or what the achievements of primary education are. Among these include: to inculcates permanent literacy and numeracy and ability to communicate effectively; to lay a sound basis for scientific and reflective thinking; Given citizenship education as a basis for effective participation in and contribution to the life of the society; to mould the character and develop sound attitude and morals in the child; to develop in the child the ability to adapt to the changing environment; to give the opportunities for developing manipulative skills that will enable the child function effectively in the society within the limits of the child's capacity; and to provide the child with basic tools for further educational advancement, including preparation for trades and crafts of the locality.

The relevance of primary education to the overall development of the child is to inculcates permanent literacy and numeracy and ability to communicate effectively. The child at primary school level is taught basic arithmetic and language skills. The skills acquired enable him to effectively communicate and transact in the society (Nnamdi, 2014). The foundation for children's numeracy is established in the early years. Numeracy learning builds curiosity and enthusiasm of children naturally from their experience. Numeracy at early years, if appropriately connected to a child's world, is more than getting ready for school or accelerating them into elementary arithmetic. National Council of Teachers of Mathematics (NCTM, 2000) posited that appropriate mathematical experience challenges young children to explore ideas related to patterns, shapes, numbers and space with increasing sophistication. Numeracy is a particular way of thinking and all children everywhere do it quite naturally. Children explore the abstraction of numeration sequel to the development of language skills and the development of concepts related to basic area of numeracy. The basic numeracy concepts are patterns, sequence, seriation, spatial relationship, object permanence, sorting, comparing, classifying and one to one correspondent (Davis, 2009).

According to Lynn (2002), early numeracy in primary schools builds on children's desire to make sense of their world and helps them develop and demonstrate their mathematical understanding. Meihuish, Edward, Phan, Mai, Sylva, Sammon, Siraj, Taggart and Brenda (2008) opined that children use numeracy intuitively and develop their understanding of numeracy through their individual approaches to learning. Children need to be given learning experiences that are within the range of things they can do with

or without guidance (that is, in their zone of proximal development).Through active participation in numeracy investigation, including problem solving and discussions, children develop their ability to use numeracy as a way of making sense of their daily experiences. Educators introduce numeracy in preschool through active, hands-on, child-centred, and problem-based exploration in various learning centres. Concrete materials provide children with tactile experiences to help them explore and describe mathematical problems and solutions (Edward, 2008)

According to Gerardi, Goette and Meier (2013), numeracy is the ability to reason and apply simple numerical concept. Basic numeracy skills consist of comprehending fundamental arithmetic such as addition, subtraction, multiplication and division (Banks & Odea, 2010). Substantial aspect also includes number sense, operation sense, measurement, and geometry. According to the organisation for Economic Cooperation and Development's expert panel on Numeracy (2013), numeracy is the ability to access, use, interpret and communicate mathematical information and ideas in order to engage in and manage the mathematical demands of a range of situation in adult life. Fatola (2006) asserts that numeracy could be said to be the study of patterns and relationships which can be expressed in symbols, and it embraces many important ideas about numbers and space which involves problem-solving activities. Brook (2010) said numeracy is the ability to reason and apply simple numerical concepts.

Department of Education, Employment and Workplace Relation (DEEWR, 2009) posits that numeracy is more than just counting. Recognising patterns, sorting, and

categorising objects, talking about time and the patterns of the day, measuring and calculating amounts, arranging objects in space and identifying shapes are all examples of mathematical thinking that contribute to numeracy. Materials and resources that allow children to solve problem and explore the world mathematically are therefore key elements in the development of numeracy (DEEWR, 2009).

Similarly, Aubrey, Dahl and Godfrey (2006) posited that children think mathematically long before they start school. There is a substantial growth in numeric skills during preschool. Such informal knowledge about numbers is often referred to as number sense in many problem-solving situations involving numbers and measurement. Children informally build these skills in their interaction with careers and with other children, and they can be encouraged to develop their understanding in play situations. In fact, investigation in developmental cognitive psychology has found that children enter school with a wide range of early numeric skills but they vary greatly in how they acquire, and how quickly they acquire different concepts (klibanoff, Levine, Huttenlocher, Vaileva & Hedges, 2006). Children's informal number sense when they enter school provides a foundation for their school Mathematics achievement and strongly predicts their Mathematics competence later in school (Geary, 2015).

Many pupils meet with significant difficulties when learning numeracy. It has been reported that 6 to 14% of school-age children are estimated to have a specific learning difficulty in numeracy (Barbaresi, Collingan, Katusic, Jacobsen & Weaver, 2005). According to research by Bransford, Goin and Hasselbring (1988), general and special

education students with difficulty in numeracy are similar in the number of Math facts they can recall from memory at age seven. However, with numeracy difficulty age, they fall further behind their non-numeracy difficulty peer in the ability to recall basic Math facts from memory. In fact, this discrepancy increases each year between ages eight and fourteen. More recently, investigators using data from the Early Childhood Longitudinal Study Kindergarten Cohort (ECLS-K) investigator found that kindergarten pupils displaying difficulties in numeracy had significant slower growth rates in numeracy by fifth grade when compared to kindergarten pupils not demonstrating difficulties in numeracy (Morgan, Farka, & Wu, 2009). In other words, children are not likely to 'grow out of it' nor are they likely to benefit from 'the gift of time' when it comes to early numeracy difficulties.

Some studies have investigated the relationship between cognitive abilities and low numeracy achievement in school age children. Proctor, Floyd, and Shaver (2005) set out to illuminate the specific cognitive ability weaknesses that seemingly contribute to numeracy weaknesses. Using operational measures of the Cattell-Horn-Carroll (CHC) broad cognitive abilities as assessed by the Woodcock-Johnson III Tests of Cognitive Abilities (WJ-III COG), Proctor et al. (2005) examined the broad cognitive ability profiles of school-age children who display weaknesses in numeracy (n=120). The findings were unexpected and shed light on an important discovery. Roughly half of the children with weak numeracy calculation skills demonstrated no normative cognitive weaknesses. It seems that poor numeracy skills are not principally due to underlying cognitive deficits, leading one to consider other influences such as inadequate formal instruction and non-

enriching environments. It stands to reason that academic weaknesses which are not attributable to cognitive deficits are well suited for interventions that alter instruction and/or environment.

Using meta-analysis, Duncan, Claessen, Magnuson, Huston, Klebanov and Japel (2008) reviewed and analysed six major longitudinal studies and found that numeracy ability at the onset of kindergarten is a strong predictor of numeracy achievement throughout elementary school. Further, early tests in numeracy were the strongest predictor of later achievement in numeracy, stronger than attention skills in the classroom, cognitive abilities, social skills and socioeconomic status. A number of studies have demonstrated that pupils' achievement on numeracy depends on the context and its measurement.

Play dates back to antiquity and there is a rich heritage of children's play. From ancient time, great education thinkers and philosophers like Plato, Dewey, Piaget, Froebel and a host of others including professional organisation like the National Association for Education of Young Children (NAEYC) and Association for Childhood Education International (ACEI) Have recognized the essential role of play in children's lives. They promoted its role in education and the need for children of all ages to play in the course of their development. To them, play has always been in the centre of children's lives. Frost, Wartham and Reifel (2005) averred that children's play has come under serious attack, in recent years. Many parents, the general public, some teachers and even government in some countries, view play as frivolous (Oduolowu,2011).

Play enables children to make sense out of their world. Children possess a natural

curiosity to explore, and play acts as a medium to do so (Wiltz & Fein,2006). Play is mostly a self-chosen activity by the child, rather than prescribed by a parent or teacher, it is a process, rather than a predicted outcome or product. According to Dietze and Kashin (2011), in order for an activity to be considered a play, the experience must include a measure of inner control, ability to bend or invent reality, and a strong internally based motivation for playing. Dietze, and Kashin (2011) opine that play nourishes every aspect of children's development, it forms foundation of intellectual, social, physical, and emotional skills, necessary for success in school and in life. Play paves way for learning (Ottaw, 2006).

When children play, they are learning new words, how to solve problem and to be flexible. As children learn through purposeful, quality play experience, they build critical basic skills for cognitive development and academic achievement (Isenberg & Quisenberry, 2002). Through play, children learn a set of skills such as social skills, creativity, hand-eye coordination, problem solving and imagination. It is argued that these skills are better learned through play than through flashcards or academics. Furthermore, play is not a wasted time, but rather, time spent building new knowledge from previous experience. According to Chaile (2008), play is a serious business for the development of young learners. This is such an important understanding. A deliberate and effective play-based approach supports young children's cognitive development. When well designed, such an approach taps into children's individual interests, draws out their emerging capacities, and responds to their sense of inquiry and exploration of the world around them. It generates highly motivated children, enjoying an environment where the learning

outcomes of a curriculum are more likely to be achieved (Bruce, 2011). Play helps children learn by connecting with their senses and new language that contributes to their learning (Burton, 2011).

According to James, James and Walter, (2008), when children manipulate their environment to create things, they are engaged in constructive play. Experimenting with materials, they can build towers with blocks, construct objects with miscellaneous loose parts, play in the sand, and draw sidewalk murals with chalk. Drew, James, Marcia, Meckley, Nell and Walter, (2008) said constructive play focuses the minds of children through their fingertips to invent and discover new possibilities. It is a form of hands-on inquiry where children seek to learn something they don't already know by physically manipulating materials. They have a natural desire to find out things for themselves, and children build knowledge through active questioning and information gathered as they engage in constructive play. Mesa (2010) Constructive play develops imagination, problem-solving skills, fine motor skills, and self-esteem. Block building can help children learn important spatial relationships needed for Mathematics. Children who are comfortable in manipulating objects become good at manipulating words, ideas, and concepts. Frost, Joe, Pei-san, John, Sutterby, Candra & Thornton (2004) opined that creating gives children a sense of accomplishment. Controlling their environment empowers them, especially since there is no right or wrong in their creation. Constructive play helps children develop characters, virtues, such as tenacity and flexibility. Imaginations are often involved in constructive play, which leads to children learning to cooperate, stay on task, self-regulate, and be more responsible.

The importance of constructive play in learning of numeracy, working with construction materials gives children the opportunity to develop their Mathematics understanding by talking, using number language, exploring shape and space, estimating and measuring, making predictions and recording results (Carole, 2017). Children are able to learn important spatial concepts through constructive play as they understand words that define spatial relations like below, on top, above. Children also learn about quantity, measurement, weight, height, size and other concepts that involve numeracy. Constructive play also teaches children about shapes, sorting, matching, serriation and classification through the different materials provided during activities (Alka, 2013).

Furthermore, Sara, (2007) Opines that pupils construct their learning through block and brick play and they are natural activities for increasing children's mathematical and science skills. In fact, children who love to create complex block constructions often have strong Mathematics abilities. Children can learn mathematical skills from block and brick play such as shapes, sizes, colors with bricks), fractions, and classification. Children are measuring (visually) lengths, widths, and heights, comparing surface volumes and visualizing how they can fit the pieces together. These same abilities are used later when studying algebra, geometry or calculus in middle school or high school (Frost & Joe, 2010). Children who have a high interest in playing with bricks or blocks have also been shown to have very strong spatial skills. If a child displays spatial aptitude in the early years, they continue to exhibit these types of reasoning skills throughout their academic careers. (Pollman, 2010). A study by Jones, Stannard, and Wolfgang, (2001) found that children's block play in preschool is a predictor of Mathematics achievement in primary

and high school. Thus, by incorporating more play with block-building activities from a young age, children will have more opportunities to increase their spatial literacy.

A number of researchers have worked on the effect of constructive play as a strategy used to promote children's understanding of mathematical word problem solving and in public library programme it has been documented and reported all round the world. Such as Oostermeijer Boonen and Jolles, (2014) who worked on the relation between children's constructive play activities, spatial ability, mathematical word and problem-solving performance. Also McCleaf, (2012) worked on the importance of play, particularly constructive play, in public library programming, written for the association for library service to children. Researchers found that constructive play has significant effect on the achievement of mathematical word problem-solving and in public library programming. Mathematical word problem is a one of basic operation skills in numeracy.

Similarly, Fox (2015) asserted that children can develop their social competence from interacting with their friends, parents or teacher; enhance creativity, thinking skills and imagination when they play independently. Edward (2008) explains that, it is through play that much of children's early learning is achieved. Therefore, opportunity for play is a key aspect of the school program. Through touching, manipulating, exploring, and investigating, children find out about the world around them. Christie, Johnson & Wardle (2005) opine that, social play is a play that occurs in the interaction of children with adults or other children. Typically, social play is not classified as a unique category of play because any type of play (like object play, pretend play, and physical play) has the

potential to be enacted alone or with others. Interactions within play scenarios, however, provide great benefits to children whether their partners are adults or peers, it also helps children increase social competence and emotional maturity. Smilansky and Shefatya (1990) contend that school success largely depends on children's ability to interact positively with their peers and adult. Furthermore, social play enables children to practice both verbal and non-verbal communication skills by negotiating roles, trying to gain access to ongoing play and appreciating feeling of others (Spodek & Saracho, 1998). Social play helps to respond to their peers feelings while waiting for their turn and sharing materials and experiences (Sapon-Shevin, Dobbeleare, Carrigan, Goodman, & Martin, 1999). Social play is crucial for developing social skills and establishing friendships. Through social play, children learn how to share, cooperate, take turn, and express emotion (Alley, 2017). Children are not able to verbalize how they feel. They experience the same feelings and express them through play. Because they feel safe in play, and because play is a primary activity in the school years, young children exhibit the full range of their feelings in play activity (Hohmeyer and Landreth,1998). Children learn to interact socially with one another when they are engaged in constructive play. They see that it is more enjoyable to include other's ideas and to work in cooperation with their peers, applying concepts of team work and collaboration. Children learn about sharing, turn taking, taking risks and contributing toward a common goal. Children also learn the social skills and knowledge needed to engage in group play and the dynamics and attitudes that may apply. They increase their ability to solve problems, think creatively and apply logical reasoning. (Alka, 2013).

Parten (1932) establishes four levels of social play that are still used today as a broad framework to describe increasing social maturity in play over the early years are solitary play, parallel play, associative play and cooperative play. Parten (1932) found that children followed a developmental progression through each of the four levels. Moreover, Parten's research has also been criticized for underestimating children's ability to engage in social play at younger ages. In the first two years of life, there is little evidence that children choose playmates or have play preferences on the basis of gender. The separation of boys and girls into social groupings and specific patterns of play begins at around three years of age (Pellegrini, 2005). Between the ages of three and six years same sex groups increasingly constitute the context within which children's social experience occurs (Maccoby, 1998). With the emergence of pretend or fantasy play, gender differences are evident in the dominance of domestic and nurturing themes and co-operative role taking in girl's play and the preference of boys for a world of superheroes or themes associated with danger, dominance, fighting or competition (Holland, 2003; Maccoby 1998). Furthermore, whereas girls avoid physically active behaviours in order to interact, boys are stimulated to high levels of activity by other boys (Maccoby, 1998; Pellegrini, 2005).

A number researchers have work on the social play and it has been reported and documented all round the world. Among them are Amber (2004) who worked on effect of socioeconomic status on the social play of preschool age children in Ithaca, New York. Also Gavin, Kenobi, Connor, (2014) investigated Social play spaces for active community engagement. The researcher found that social play spaces are opportunity to utilize both technology and body for the benefit of community culture and engagement.

Academic performance of pupils can be regarded as the observable and measurable behaviour of pupils in a particular situation. For example academic performance of pupils in numeracy includes observable and measurable behaviour of pupils at any point in time during a course. In numeracy, pupils academic performance consist of scores at any particular time obtained from teacher-made test, terminal examination, mid semester test (Yusuf, 2003). Academic performance, which is measured by the examination results, is one of the major goals of a school. Hoyle (1986) argued that schools are established with the aim of impacting knowledge and skills to those who go through them and behind all this is the idea of enhancing good academic performance. Nguku (2015) investigated play and children's academic performance in Yatta Sub- county, Machakos county, Kenya and the researcher found out that role play and group play significantly enhanced children's academic performance.

Gender difference in Numeracy education is seen as an important aspect of school achievement (Schrader and Helmke, 2008). However the picture of gender differences in numeracy achievement is less clear (Hannover and Kessels, 2011; Stanat et al., 2012). While in some studies, boys exceeded girls in numeracy achievement, in other studies, no gender differences in numeracy achievement were found. Machin and Pekkarinen (2008) argued that mixed evidence for gender differences in school achievement could be explained in part by a higher variance of boys in comparison to girls' school achievement.

Better understanding of the effect of school characteristics on learning is important because public policy can influence the characteristics of public schools, as well as the

cost of private schools through vouchers and scholarship. Ibia (2005) opined that in addition to educational materials supplied to schools, the settling based on school type also influences teaching and learning of the students and hence the level of the students' academic performance. Thus, the specific type of school dictates what is taught, how it is taught and what materials are available. Ibia further maintained that where educative materials are deprived, pupils suffer from academic deterioration and mental imbalance. Also, where the teacher relates positively with the pupils, the school becomes conducive and learners perform well in their academic endeavors. Based on the reviewed, there was no empirical evidence on constructive and social play has it combined in this study, this created a research gap in which researcher filled, that is the effect of constructive and social play on pupils' academic performance in numeracy.

Statement of the Problem

High quality education depends on the quality of teachers, how proficient teachers are, instructional strategy, assessment and context in which learning takes place. Numeracy is the ability to apply simple numerical concept. It involves logical reasoning, problem solving skills and having the confidence and competence to use numbers and measures in different contexts. Numeracy occupied a compulsory status in the list of subject to be offered at the primary level of education. Poor performance in numeracy at the primary level of education which may be as a result of inadequate instructional materials, method or strategy used to teach numeracy has been a source of concern to all stakeholders in education as numeracy is a compulsory subject in schools. Based on this

reason researcher investigate effects of constructive and social play on academic performance of pupils in numeracy in kwara state.

While theoretical and empirical evidence on learner-centre method of teaching has been documented in numeracy across the world. Empirical evidence on some of these innovative strategies that is, constructive and social play as combined in this study are scanty in numeracy. Also, a critical examination of the literature review in this research revealed that researchers have focused attention on pre-school children. There seems to be no documented empirical evidence on the effects of Constructive and Social Play on the Academic Performance of Pupils in Numeracy in Kwara State, Nigeria. Although some researchers have worked on numeracy but they used another strategy such as guided discovery and problem solving method and other researcher worked on the relation between children's constructive play activities, spatial ability, mathematical word and problem-solving performance. In spite of these efforts, the problem of pupils poor academic performance in numeracy skills has persisted. This therefore created a research gap in this part of the country, part of which this present research intends to fill by examining the effects of constructive and social play on the academic performance of pupils' Numeracy in Kwara State, Nigeria.

Purpose of the Study

The main purpose of the study was to examine the effects of constructive and social play on the academic performance of pupils in Numeracy in Kwara State, Nigeria.

The specific purposes for the study are to:

1. Determine the effect of gender on pupils' academic performance in Numeracy in Kwara State.
2. Determine the interaction effect of constructive play, social play and gender on pupils academic performance in numeracy in Kwara state.
3. Determine the effect of school type on pupils academic performance in Numeracy Kwara state.
4. Determine the interaction effect of gender and school type on pupils academic performance in numeracy in Kwara state
5. Determine the interaction effect of constructive play, social play and school type on pupils academic performance in Numeracy in Kwara State.
6. Compare the interaction effect of constructive play, social play, gender and school type on pupils academic performance in numeracy in Kwara state.

Research Hypotheses

The following research hypotheses were tested in the study

Ho_1: There is no significant effect of constructive play and social play on pupils academic performance in Numeracy in Kwara State

Ho_2: There is no significant effect of gender on pupils academic performance in Numeracy Kwara State

Ho_3: There is no significant interaction effect of constructive play, social play and gender on pupils academic performance in Numeracy in Kwara State

Ho_4: There is no significant effect of school type on pupils academic performance in Numeracy In Kwara State

Ho_5: There is no significant interaction effect of gender and school type on pupils academic performance in Numeracy in Kwara State

Ho_6: There is no significant interaction effect of constructive play, social play and school type on pupils academic performance in Numeracy Kwara State

Ho_7: There is no significant interaction effect of constructive play, social play, gender and school type on pupils academic performance in Numeracy in Kwara State

Significance of the Study

This study would be beneficial to stakeholders such as teacher, school administrators, parents and families to advocates for effectiveness of constructive play as

well as social play as teaching method that improve performance of pupils in numeracy. The findings of this study could enlighten teachers on the effectiveness of constructive play as well as social play on pupils' academic performance as a way of engaging pupils in classroom activities which would enable them to be actively involved in the teaching and learning process. Teachers may also use the performance of the pupils to explore and find out what types of play materials, type of play and time might be more effective when used to build up a good academic performance.

The policy maker may identify areas of concern and address them in the best interest of the pupils. Also, the school management and administration may also benefit from the study because findings might challenge them to change the methodology of delivering content..

This study would be significant to pupils because building toys have significant and academic benefit for children of all ages, not only they have fun and excitement, but also help kid to develop a wide variety of skills, abilities and improve their fine motor manipulation strength and develop children's Numeracy skills such as counting, adding, sorting, patterning, shape and basic geometry. It would also serve as a reference for educational researchers conducting similar research and add to existing body of knowledge.

Scope of the Study

The study examined the effects of constructive and social play on academic performance of pupils in numeracy in Kwara State. Constructive play and social play was the method used to teaches numeracy, the constructive play was used as whole but the social play covered some area which are cooperation and turn taking. The study was carried out on basic one pupils in two local government area of Kwara State, which are Ilorin West and Ilorin East local government area of Kwara State, Nigeria.

Operational Definition of Terms

The following are operationally defined:

Constructive Play: Pupils using objects, toys to build, create things and manipulate their environment.

Conventional Teaching: refers to strategies commonly used in schools in which pupils listen and depend on the teacher who is regarded as the main source of knowledge. The teacher is actively doing most or all of the talking during the lesson during the lesson while pupils are passive, merely listen.

Academic Performance: refers to the total grade or scores that pupils in the experimental and control groups received in the numeracy performance test

Social Play: this is a type of play in which primary one pupils interact with each othe**r** in learning of numeracy

School type: this refers to public primary schools and individual or organization own schools (private schools) in Kwara State

Numeracy: is the ability to apply simple numerical concept such as addition of numbers, multiplication, division and subtraction of number

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Relevant literature was reviewed under the following sub-headings:

Theoretical Review:

Social Constructivism Theory

Conceptual Review

Concept, Nature, Scope and Objective of primary education

Nature and importance of numeracy in everyday living

How Children Learn Numeracy

Concept, Benefit and Types of Play

Learning through Play

Concept of Constructive Play

Concept of Social Play

Concept of Academic Performance

Review of Empirical Studies

Constructive Play and the Academic Performance in Numeracy

Social Play and Academic Performance in Numeracy

Pupils Gender and Pupils Academics Performance

School Type and Academic Performance In Numeracy

Appraisal of Literature Reviewed

Theoretical Review

Given the nature of the study, variables of constructive play and social play as teaching methods and pupils' academic performance on the other hand are up for consideration. The study would be guided by the social constructivism theory as widely applied in education practices which is presented by different opinions, views and arguments of scholars in teaching and learning.

Social Constructivism Theory

Socio-cultural approaches to learning and development were initially applied systematically by Vygotsky and his collaborators in Russia in the 1920s and 1930s (Steiner & Mahn, 1996). While psychologists were intent on developing simple explanations of human behaviour at that time, Vygotsky came up with a rich, multi-layered theory through which he examined a range of subjects including the psychology of art, language and thought, and learning and development, including a focus on the education of students with special needs (Steiner & Mahn, 1996). Vygotsky identified the greater socio-cultural context. However, Vygotsky places more emphasis on the social environment as a facilitator of development and learning (Tudge & Scrimsher, 2003).

Vygotsky (1896) stated that the human mind is constructed through a subject's interactions with the world and is an attribute of the relationship between subject and object (Verenikina, 2010). He finds a significant role in humans' understanding of the world and of themselves. These roles are attributed as 'tools' (Turuk, 2008). Furthermore, Vygotsky advocates that humans do not act directly on the physical world without the intermediary of tools. These tools can be any artifacts, whether symbolic or signs, created

by human under specific cultural and historical conditions carrying with them the characteristics of the culture in question (Turuk,2008). He argues that mental processes could only be understood if we understand the tools and signs that mediate them (Verenikina, 2010).

According to Vygotsky, a child is completely dependent on other people during the early stages as the sociocultural environment keeps on presenting the child with a variety of tasks and demands, engaging the child in his world (Turuk, 2008). These other people could, especially, parents who instruct the child on what to do, how to do what, as well as what not to do; initiating the child's action. Parents, as representatives of the culture and the conduit through which the culture passes into the child, actualize these instructions primarily through language. Vygotsky further explains that children appropriate these cultural and social heritages by acquiring knowledge through contacts and interactions with people as the first step (referred as interpsychological plane) and then later assimilates and internalises this knowledge adding own personal value to it (referred as intrapsychological plane) (Turuk, 2008). This transition from social to personal property is not considered as a mere copy, rather it is a transformation of what had been learnt through interaction, into personal values. In addition, Vygotsky claims that, in schools also, students are not copying the teachers' capabilities but transforming what teachers offer them during the processes of appropriation (Turuk, 2008).

Vygotsky emphasize that children and adults are both active agents in the process of child's development. Cole and Cole (2001) mention that the development in this case is co-constructed. When applied to teaching it means that both the teacher and the student are

seen as active agents in children's learning. The teacher's intervention in children's learning is necessary, but it is the quality of the teacher-learner interaction which is seen as crucial in that learning (Verenikina, 2010).

The theory emphasize the importance of what the learner brings to any learning situation as an active meaning-maker and problem-solver (Turuk, 2008). It acknowledges the dynamic nature of the interplay between teachers, learners and tasks, and provides a view of learning as arising from interactions with others. Ellis (2000) as cited by Maturuk (2008) states that Vygotsky's theory assumes that learning arises not through interaction, but in interaction. Learners first succeed in performing a new task with the help of another person and then internalize this task so that they can perform it on their own. In this way, social interaction is advocated to mediate learning. According to Ellis, the theory goes further to say that interactions which successfully mediate learning are those in which the learner scaffold the new tasks (Turuk, 2008). Vygotsky developed Zone of Proximal Development (ZPD) in 1896-1934. The ZPD refers to the difference between what a learner can do without help and what he or she can achieve with guidance and encouragement from a skilled partner. Thus, the term ''proximal'' refers to those skill the learner is close to mastering. The zone of proximal development has been defined as the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem-solving under adult guidance, or collaboration with more capable peers (vygotsky, 1978). The ZPD is a moving target. As a learner gain new skill and abilities, this zone moves progressively forward. Teachers and parent can take advantage of this by continually

providing educational opportunities that are a slight stretch of a child's existing knowledge and skills. By giving children tasks that they cannot quite do easily on their own and providing the guidance they need to accomplish it, educators can progressively advance the learning process.

The Social constructivism theory is relevant to this study because its gives learner freedom to construct knowledge for themselves. From all intents and evidences, it has resulted in the development of learner-centred teaching methods such as constructive play and social play which forms the major focus of this study**.**

Basic Assumptions of Social Constructivism Theory

1. Learning is constructed: people learn from experience. It is a process in which one builds an internal representation of the world

2. Interpretation is personal: reality is not share. What a person learns is based on his or her personal interpretation of his or her experience.

3. Learning is active: The learner takes an active role in developing knowledge through experience.

4. Learning is collaborative: conceptual growth comes from interacting with others and sharing multiple perspectives. Through sharing perspectives, people change their internal representation.

5. Learning is situated: learning should be placed in real world situations. Settings should be realistic.

6. Testing is integrated: testing should not be separate activity. It should be integrated with the learning experience.

Concept, Nature, Scope and Objective of Primary Education

Primary education is the foundation of formal education. It is an essential component in the echelon of educational system of every nation. In order to qualify for other levels of education one must first pass through primary schools, as such it is an institution upon which all other levels of education and educational achievements are built. It prepares the mind and trains the child for higher academic pursuits. It provides young learners with the fundamentals of reading, writing, arithmetic, skill acquisition, information and attitudes necessary for proper adjustment into the society. (Asodike and Ikpitibo, 2010)

Fafunwa (1974) stated that the aims of primary education in all states of the federation were to help the child to master three Rs- Reading, Writing and arithmetic, this is to develop permanent literacy and numeracy, develop sound standards of individual conduct and behavior and acquire some skills and appreciate the value of manual work. The issues of primary education can be considered in terms of its broad based functions to the society (FRN, 1986) An essential function of primary education is effective communication skills that will enable the pupils to be relevant to the social and economic development of the nation. This important function is aimed at providing a literate population and to lay down the foundation for further education. The objective of primary education as stated in National policy on education (NPE, 2004) are to address the

following: to Inculcate permanent literacy and numeracy and ability to communicate effectively; to lay a sound basis for scientific and reflective thinking; to give citizenship education as a basis for effective participation in and contribution to the life of the society; to mould the character and develop sound attitude and morals in the child; to develop in the child the ability to adapt to the child's changing environment; to give the child opportunity for developing manipulative skills that will enable the child function effectively in the society within the limits of the child's capacity; to provide the child with basic tools for further educational advancement, including preparation for trades and crafts of the locality.

Nature and Importance of Numeracy in Everyday Living

Numeracy is a methodical application of matter. It is said because the subject makes a man methodical or systematic. Numeracy makes our life orderly and prevents chaos. Certain qualities that are nurtured by numeracy are power of reasoning, creativity, abstract or spatial thinking, critical thinking, problem solving ability and even effective communication skills. Numeracy is the cradle of all creations, without which the world cannot move an inch. Be it a cook or a farmer, a carpenter or a mechanic, a shopkeeper or a doctor, an engineer, or a scientist, musician, or a magician everyone needs numeracy in their day-to-day life. (Bennett, 2018)

A growing body of research supports the implementation of curriculum of resources and program standard of numeracy for preschool learners (Richardson, 2012; National Association for Education of Young Children (NAEYC, 2009) and National

Association of Early Childhood Specialist/State Department Of Education NAECS/SDE, 2003; Clement Sarama & Diebiase, 2004, NAEYC, 2009 National Research Council, 2009). The National Association for Education of Young Children (NAEYC) and The National Association of Early Childhood Specialist in the State Department of Education (NAECS/SDE, 2003) recommend the implementation of curriculum that thoughtfully planned, challenging, engaging, developmentally appropriate, culturally and linguistically responsive, comprehensive and likely to promote positive outcome for all young children." In numeracy curriculum and programme standards should be flexible and guidelines based on available ideas and a range of expectations for outcome that are developmentally appropriate for children (Clement, Sarama & Diebiase, 2004). The ideas in numeracy must include mathematical experience that incorporate content in areas such as number and operation, geometric, algebra reasoning and measurement. The numeracy curriculum and teaching should rest on solid understanding of numeracy development of young children. Understanding should be monitored by observation and other informal evaluations to ensure that instructional decision are based on each child's Numeracy needs.

Fatola (2006) opines that numeracy could be said to be the study of pattern and relationship which can be expressed in symbols. It embraces many important ideas about numbers space and involves problem-solving activities. (Barnett, Esposito and Lamy, 2006; Dickinson & Tabors, 2002) report on the overwhelming evidence that children's life-chances are most heavily predicated on their development in the first five years of life. In particular, it is during these early years that the foundation for numeracy is laid through the experience of children at home with parents and other adults. The quality and quantity

of children's interactions with adults through conversations, songs, games and play are important to develop basic knowledge of numeracy and facilitate later numeracy achievement (Heckman & Wax, 2004)

Current views of numeracy education are inextricably linked to ideas about equity and access the vision that numeracy is for all (Bishop & Forganz, 2007). All children should have opportunities to engage with and benefit from numeracy education and no child should be excluded. (National Research Council, 2001) opined that, numeracy is a key aim of mathematics education, it is promoted through engagement with processes such as connecting, communicating, reasoning, argumentation, justifying, representing, problem-solving and generalizing. All of these are encompassed in the overreaching concept. This involves children interpreting and expressing their everyday experiences in numerical form and analyzing real world problems in a numerical way through engaging in these key processes (Beishuizen, 1999, Ginsburg, 2009 & Treffers). Thus, numeracy is identified as a key focus of mathematics education and as such it is given considerable attention in this report. Numeracy education should address the range of numerical ideas that children need to engage with. It should not be limited to number.

Research on children's learning in the early six years demonstrate the importance of early experience in numeracy. An engaging and encouraging climate for children' early encounters with numeracy develops their confidence in their ability to understand and use numeracy. These positive experiences help them to develop dispositions such as curiosity, imagination, flexibility, infectiveness, and assistances, which contribute to their future

success in and out of the school (Clement and Conference Working Group, 2004). Preschoolers have the capability of thinking about and solving numerical problems in different ways. Ginsburg (2009) cite evidence of Baroody, Lai, & Mix (2006) and Clements & Sarama (2007) that young children from birth to five years of age develop informal ideas of size, space, pattern, shape, more and less, taking away, location, and position that are actually quite sophisticated, complex, and broad. This informal knowledge sets the stage for learning more complex Numeracy skills and concepts (Osana, Lacroixs, Tucker & Desrosiers 2007). The Numeracy knowledge children acquire prior to entering school has implications for school performance. Shaklee, O'Hara & Demarest (2008) suggest that children's early numeracy experiences play an enormous role in the development of their understanding of numeracy and can predict later school success at the high school level. According to the National Council of Teachers of Mathematics (NCTM,2007), Research on children's learning in the first six years of life validates the importance of early experiences in numeracy for lasting positive outcomes. Duncan et al (2008) used data from six large-scale longitudinal studies and found that across all six studies the strongest predictors of later achievement were school-entry numeracy.

How Children Learn Numeracy

The role of numeracy in the early years of a child is very importance. The Tasmanian Department of Education's Early Childhood Review year also affirms that current curriculum developments firmly position numeracy as a core mathematical concern of the early childhood curriculum (MacNaughton, 1999). There are at least two

incentives for supporting this emphasis. One is that, the foundations of numeracy are laid in the experiences of children as they 'undergo unparalleled cognitive, social, and emotional growth' during their early years (Diezman and Yelland, 2000,). Research, such as that of Stevenson and Stigler (1992) has claimed that the quality and quantity of early numeracy experiences are the main factors in determining subsequent achievement. (Young-Loveridge, Peters, & Carr, 1997). The second incentive is the large number of children entering pre-schools and schools with some well-developed numeracy skills.

Numeracy is defined as the ability to apply simple numerical concept such as enumeration, classification, comparison, seriation, or one-to-one correspondence' (Munn & Schaffer, 1993). However, other researchers, notably in Australia, argue that the foundational processes for numeracy are more general. (Hunting, 1999) offers the view that 'meaningful numeracy learning occurs when each child associates some personal experience grounded in action, or negotiated through social interactions with others (Hunting, 1999,), while Diezman and Yelland (2000) argue that the foundational processes of numeracy are representation, manipulation, reasoning, and problem-solving. This position is in agreement with approaches to numeracy adopted in Australia. Similarly, Smyth (2001) reports on three-year-olds engaged in activities that involve number and spatial sense, and suggests further activities that focus on measuring, time and number.

According to Ahmed (2017), understanding how children learn in the area of early numeracy is essential to meaningful teaching and learning of numeracy. Research points to the effectiveness of the following support strategies as stated by the National Association

for the Education of Young Children (NAEYC) and National Council of Teachers of Mathematics (NCTM, 2010)

1. Encourage Exploration and Manipulation – provide materials that have diverse sensory attributes and allow children to have sufficient amount of time and space to discover their properties.
2. Observe and Listen- attend to question children ask. The problems they pose for themselves or to adults offer a window into their Numeracy thinking
3. Model, Challenge and Coach- Demonstrate hands-on activities that children can imitate and modify. Discuss what does and does not work (using facial expression and gestures-satisfied smile, raised eyebrows, head scratching), pose question and suggest alternative approaches to finding a solution.
4. Encourage Reflection and Self Correction- when children are stuck or arrived at an incorrect Numeracy solution or explanation, do not jump into solving the problem or correct their reasoning. Instead, provide hints to help children reconsider their answer and figure out solution or alternative explanations on their own.
5. Provide the Language for Mathematical Properties, Processes, and Relationships- Introduce the language for children to label their observations, describe transformations, and share the reasoning behind their conclusions.
6. Play Games with Mathematical Elements- games for or by children offer many opportunities to address such concepts as non equivalent, spatial and temporal relations, and measurement

7. Introduce Numeracy Content- children enjoy good books about counting, especially when these involve participation. Storybooks and nonfiction texts are also a wonderful way to introduce real-life problems whose solutions depend on mathematical reasoning.
8. Encourage Peer Interaction- children can sometimes explain numeracy ideas to their peers more effectively than adults can. Sharing ideas, particularly conflicting ones, prompts children to articulate and, where necessary, modify their understanding.

Learning Through Play

Learning through play is a term used in education and psychology to describe how a child can learn to make sense of the world around them. Through play, children can develop social and cognitive skills, mature emotionally, and gain the self confidence required to engage in new experiences and environment (Jack, 2016). Key ways that young children learn include playing, being with other people, being active, exploring new experiences, talking to themselves, communicating with others, meeting physical and mental challenges, being shown how to do new things, practising and repeating skills and having fun (Bruce, 2011). Playing with sand, blocks, water and clay helps children to develop their skills in logic. Playing with blocks encourages problem-solving, reasoning and divergent thinking and playing with water leads to knowledge of volume. Being familiar with shapes, directions, and positions as they use boxes to build a tower helps children in their understanding of numeracy. Bredecamp and Copple (1997) stated that in

constructive play children understand relationships and concepts which they acquire through first hand experiences. Tromberg and Bergen (1998) asserted, play is vital to the development of children's numerical thinking. Unlike some forms of knowledge, numeracy knowledge, which deals with relationships between and among things, cannot be learned by hearing adults talk about it.

Play enhances motor expression which is learning by doing as against learning by rote, Onukaogu, Oyinloye and Iroebgbu (2010) aver that play can help children to learn Numeracy in the following ways: learn about equal lengths, open and close space topography, solid geometrics shape as they play with blocks of different colors and shapes; learn about set theory as they group, sort and classify object like abacus, counters, and mathematical shapes; learn to compare sets develop one by one correspondence, and solve problems using numeracy (such as counting the pieces needed for each to play a game); learn to recognize, duplicate and extend simple patterns using a variety of materials; begin to recognize, describe, compare and name common shape, their parts and attributes; progress in the ability to put together and take apart shapes; develop increasing ability to count in sequence to 10 and beyond.

According to Fisher, Hirsh, Golinkoff, Berk & Singer (2010), there are several ways educators can facilitate children's learning during play. Adult can role-model positive attitude towards play, encouraging and providing a balance of indoor and outdoor play throughout. When adults join in, they should guide, shape, engage in and extend it, rather than dictating the play; Orchestrate an environment by deciding what toys, materials, and equipment to be included in that environment. It is important to offer a

variety of materials and experiences at varying level of difficulty. The choice of materials is important, because it provides motivation, children's exploration and discovery. The play environment should allow children to make choices and explore play possibilities; observe carefully as children begin to use toys, materials and equipment. Observation is an on-going process, providing information about the child's interests, abilities and strengths and opportunities for further learning. Observation help to identify ways adults can build on and guide the learning; provide social knowledge while allowing children opportunity to learn the physical and logical-mathematical knowledge that helps them understand the world around them.

Disney (2012) assert that it has been acknowledged that there is a strong link between play and learning for young children, especially in the areas of problem solving, language acquisition, literacy, numeracy, social, physical, and emotional skills. Young children actively explore their environment and the world around them through learning-based play (Ditze, Diane & Kashin, 2011), Researchers agree that play provides a strong foundation for intellectual growth, creativity, problem-solving and basic academic knowledge (Fisher, Hirsh, Golinkoff, Berk, &Singer, 2010). Learning occurs when children play with blocks, paint a picture. During play, children try new things, solve problems, invent, create, test ideas and explore. Children need unstructured, creative playtime; in other words, children need time to learn through their play.

Benefit and Types of Play

Play has long been regarded as a critical element of early childhood curriculum and pedagogy. In addition to being recognized as a vehicle for learning, it is described as a context in which children can demonstrate their own learning and help scaffold the learning of others (Wood, 2008). As children learn through purposeful, quality play experience, they build critical basic skills for academic achievement. These include verbalization, language comprehension, vocabulary, imagination, questioning, problem-solving, observation, empathy, co-operation skills and the perspectives of others (Ontario, 2010). Play is a multifaceted concept. It is the freely chosen, self-satisfying activity that children engage in. It is a natural, instinctive activity of children. Children have natural curiosity that motivates them to play. Play is voluntary, meaningful, symbolic, rule-governed, pleasurable and episodic (Oduolowu, 2011). Play is a legitimate right of childhood, representing a crucial aspect of children's physical, intellectual and social development (Peter, 2013).

Play enables children to make sense of their world. Children possess a natural curiosity to explore and play act as a medium to do so. In order for an activity to be considered a play, the experience must include a measure of inner control, ability to bend or invent reality, and strong internally based motivation for playing (Dietze & kashin, 2011). Play helps children learn by connecting with their senses and new languages that contribute to their learning (Burton, 2011). Young children's play often involves numerical concepts, ideas and explorations (Dockett and Perry, 2008; Ginsburg and Seo,

2004). Ginsburg (2006) described a range of numeracy experiences and concepts embedded in early childhood environments: children's free play; play about numeracy and children's play with the ideas and approaches that have been introduced by educators. Educators who facilitate children's play and who are aware of the nature and complexity of that play are well positioned to build on children's existing knowledge and understandings. Significant benefits are more likely, when teachers follow up by engaging children in reflecting on, and representing the numerical ideas that have emerged in their play (NAEYC/NCTM, 2002)

Children need the freedom to explore and play. Play also contributes to brain development. Evidence from neuroscience shows that the early years of a child's development (from birth to age six) set the basis for learning, behaviuor and health throughout life. The child's neural pathways are influenced in their development through the exploration, thinking, problem-solving and language expression which occur during play (Diane, 2011) According to the Canadian Council on Learning, Play nourishes every aspect of children's development – it forms the foundation of intellectual, social, physical, and emotional skills necessary for success in school and in life. Play 'paves the way for learning (Ottawa, 2006). Learning occurs when children play with blocks, paint a picture. During play children try new things, solve problems, invent, create, test ideas and explore. Children need unstructured, creative playtime; in other words, children need time to learn through their play. (Wiltz & fein, 2006)

Henniger (2009) explains the concept of play by listing common characteristics of the experiences of play. Some of the attributes that stand out as essential to the understanding of the term are as follows: play is pleasurable and enjoyable. Children are motivated to play because of the pleasure of the activities. Since there is no right and wrong way to play, children can try a variety of play options without fear of failure. Play is pressure free; spontaneous and voluntary. It is not obligatory but it is freely chosen by children and controlled by the player; play is active. When children play, they use all their body. Play involves movement-the use of both large and small muscles. Children by nature active beings; play is all engrossing. Children spend time with what they enjoy doing. It is intrinsically motivated; play is child's private reality. When children play, they set aside the reality of their world and enjoy activities that may seem silly but fun. Play is non-serious in the sense that consequences of play action are not real; play is non-literal. It gives children opportunities to escape the constraints of the here and now. Often play is pretence or "as if" mode; it is the central activities in the life of healthy children; play is often social but does not have to be; it is free from external rules.

The National Playing Fields Association (NPFA, 2000) posits that the benefits of play in a number of areas of children's lives are as follows: (1) play useful in learning (2) complements schooling by providing an opportunity for children to review and absorb and to give personal meaning to what the learn in formal educational settings; play helps children to acquire "not specific information but a general (mind) set towards solving problems"; play is central to the development of good physical and mental health; the physical activities involved in most play provides exercise, encourages co-ordination and

develop skills for the growing child. With respect to mental health, “many of the attributes enhanced by play are found to be helpful to developing resilience; play offers opportunities for testing boundaries and exploring risk.

Types of Plays

According to Moyles (1989), for every aspect of children’s development, there is a form of play. However, the various kinds of play are generally divided into five broad types based upon the developmental purposes which each serves, how each relates to and supports children’s learning. These types of play are commonly referred to as physical play, constructive play (play with object), symbolic play, pretence/socio-dramatic play, social play and games with rules. Although each type of play has a main developmental function or focus, arguably all of them support aspects of physical, intellectual and social-emotional growth. From all the available evidence, a balance of experience of each of these types of play is likely to be beneficial to children’s development.

Physical Play:- This type of play also refers to active exercise play such as jumping, climbing, dancing, skipping, bike riding and ball play, rough-and-tumble with friends, siblings or parents/guardians and fine-motor practice (sewing, coloring, cutting, junk modeling and manipulating action and construction toys). This type of play includes chasing, grappling, kicking, wrestling and rolling on the ground, and it appears to have evolved as a mechanism through which children learn to control aggression. (Jarvis, 2010). A study by Mellen (2002), for example, looked at father-son rough and tumble behaviours that involved direct body contact in 157 suburban families in the United States

and found that it is related very strongly with three-year-old sons' social competence, as demonstrated in pre-school. (Tovey, 2007 and Frost, 2010). Fine-motor play refers to a wide range of activities which support young children's development of their fine-motor hand and finger co-ordination skills. These activities are often solitary and can be beneficially supported by an adult (e.g.: sewing, construction), due to their absorbing nature, help children develop their concentration and perseverance skills.

Constructive Play/ Play with Object:- Play with objects begins as soon as infants can grasp and hold on to them; early investigative behaviours include mouthing/biting, rotating while looking, rubbing/stroking, hitting and dropping. This might be described as 'sensori-motor' play when the child is exploring how objects and materials feel and behave. From around eighteen to twenty four months, toddlers begin to arrange objects, which gradually develops into sorting and classifying activities. By the age of four years, building, making and constructing behaviours emerge. When young children are making or building, they are also often developing a story or narrative.

Symbolic Play: Humans are uniquely equipped to use a wide variety of symbolic systems including spoken language, reading and writing, number, various visual media (painting, drawing, collage) music and so on. Not surprisingly, during the first five years of life, when children are beginning to master these systems, these aspects of their learning are an important element within their play. This type of play supports their developing technical abilities to express and reflect upon their experiences, ideas and emotions. This type of play is a powerful support for developing language abilities and, crucially, through its

support for phonological awareness, impacts upon the ease with which young children develop early literacy skills (Christie and Roskos, 2006). By placing basic numeracy in meaningful, real life contexts, play involving counting and other basic mathematical operations similarly supports young children's ability to engage with formal Mathematics with confidence (Whitebread, 2000; Carruthers and Worthington, 2006).

Pretence/Socio-Dramatic Play: In the urbanized, technologically advanced modern world, this is clearly the most prevalent type of play amongst young children, emerging around the age of one year old. It is also the most heavily researched. High-quality pretence play has repeatedly been shown to be very closely associated with the development of cognitive, social and academic abilities. An aspect of socio-dramatic play which often causes concern amongst parents and teachers that are related to play with guns. However, the research evidence suggests that these concerns are misplaced and that attempts by adults to discourage or forbid them are generally counter-productive. Gun play, similar to rough-and-tumble, is easily distinguishable from real aggression or violence. In this kind of play, as in all other aspects of socio-dramatic play, children are developing their co-operative and social skills in contexts which are salient to their interests, and which arise from their real and vicarious experiences (Holland, 2003; Levin, 2006).

Social play: Rubin and his colleagues have continued to develop their understanding of the progression of social play (Rubin et al., 1983, Calkins, Fox, & Stewart, 1994; Rubin & Coplan, 1998) report that piaget's structural components of play and Smilansky's stages of play can be utilized to better understand progress in social play. To understand children's

social participation, observers need to view play content within the context of the play (Rubin et al., 1983). The play observation scale developed to achieve this purpose demonstrates how a broader exploration of social play indicators was achieved (Rubin, 1986 and Rubin & Coplan, 1998)

Games with Rules: Young children are strongly motivated to make sense of their world, they are very interested in rules. As a consequence, from a very young age, they enjoy games with rules, and frequently invent their own. Opie and Opie's (1959) game with rule include physical games such as chasing games, hide and –seek, throwing and catching etcetera and as children mature more intellectual games such as board and card games, electronics and computer games and whole variety of sporting activities. As well as helping children to develop their understanding about rules. While playing with their friends, sibling and parents, young children are learning a range of social skills related to sharing, taking turns, understanding other perspective (Devries, 2006)

Concept of Constructive Play

Constructive play involves building and making things with construction material. As young children fiddle with, sort, and arrange materials, ideas and imagination begin to flow. (Chang, Filipowiez, Golinkoff, Hirsh-Pasek, Newcombe and Verdine, 2013). Constructive play focuses the minds of children through their fingertips to invent and discover new possibilities. It is a form of hand-on inquiry where children seek to learn something they don't already know by physically manipulating materials. They have natural desire to find out things for themselves and children build knowledge through

active questioning and information gathered as they engage in constructive play (Walter, James, Johnson, Alice and Marcia, 2008). Constructive play develops imagination, problem-solving skills, fine motor skills, and self-esteem. Research has shown that block building can help children learn important spatial relationships needed for Numeracy (Alice, Drew, James, Johnson, Marcia, Meckly, Nell, and Walter, 2008). Children who are comfortable in manipulating objects become good at manipulating words, ideas, and concepts. Creating gives children a sense of accomplishment. Controlling their environment empower them, especially since there is no right or wrong in their creation. Constructive play helps children develop character virtues, such as tenacity, flexibility, creativity, courage, enthusiasm, persistence, and adaptability. Social interaction and shared imaginations are often involved in constructive play, which leads to children learning to cooperate, stay on task, self regulated and be more responsible (Child Development Institute, 2010).

Constructive Play and Numeracy: Children are able to learn important spatial concept through constructive play as they come to understand words that define relations like 'below', 'on top', 'beside,' 'above', Children also learn about quantity, measurement, weight, height, size, and other concepts that involve Numeracy. Constructive play also teaches children about shapes, sorting, matching, serrations and classification through the different materials that are provided during activities (Burman, 2013).

Principles for Using Constructive Play to Meet Early Learning Standards

Walter, James and James, (2008) identify three key principles that explain why developmentally appropriate constructive play is an ideal instructional strategy for meeting early learning standards. These principles are:

During the preschool years, constructive play merges with exploration allows children to strengthen inquiry skills and build conceptual understanding: Constructive play is organized and goal-oriented. Children use play materials to create or build something (Johnson, Christie, & Wardle, 2005). It often begins during the toddler years and becomes increasingly complex with age. Constructive play involves open-ended exploration, gradually becoming more functional in nature. According to Bodrova and Leong (2004), constructive play promotes learning and has three critical components: imaginary situations, explicit roles, and implicit rules. The process of constructive play and intentional strategies for interacting with children succeed in helping children develop essential concepts and skills in all content areas. Making things is an activity that is a key to successful learning for young children.

They combine the dexterity of their little fingers with the power of their brains to develop a knack for representation and the capacity for creative visual symbolizing. It is interesting to consider this as the ability to imagine the future. The ability to physically construct new connections between thoughts and objects is the act of innovation and change. Teachers who understand and encourage this process of learning help children develop a very important talent. By taking known elements and creating new connections, children demonstrate the lifelong process of accommodation and improvisation (Bowman and Moore 2006).

Professional development experiences that feature hands-on constructive play with open ended materials help early childhood educators extend and deepen their understanding of constructive play as a developmentally appropriate practice for meeting early learning standards.

Concept of Social Play

Rubin and his colleagues have continued to develop their understanding of the progression of social play (Rubin et al., 1983, Calkins, Fox, & Stewart, 1994; Rubin & Coplan, 1998) report that piaget's structural components of play and Smilansky's stages of play can be utilized to better understand progress in social play. To understand children's social participation, observers need to view play content within the context of the play (Rubin et al., 1983). The play observation scale developed to achieve this purpose demonstrates how a broader exploration of social play indicators was achieved (Rubin, 1986 and Rubin & Coplan, 1998)

Parten (1932) observed and described how social play develops in preschool children. Parten observed that social play increases with age and described development of social play in six categories: unoccupied behaviour, onlookers behaviour, solitary play, parallel play, associative play and cooperative play. The first two categories are considered to be non-play behaviour, and the last three categories are indicators of social participation (Caster, 1984; Frost, 1992; Berk, 2002;). Frost (1992) defined the six categories as follows:

Unoccupied Behaviour: The child is not playing but occupies himself/herself with

watching anything that happens to be of momentary interest. When there is nothing exciting taking place, he/she plays with her own body, gets on and off chairs, just stands around, follow teacher, or sits in one spot glancing around the room (playground)

Onlooker Behaviour: The child spends most of his/her time watching the other children play. He/she often talks to the children being observed, asks questions or gives suggestions, but does not overtly enter into the play. This type differs from unoccupied in that the onlooker is definitely observing particular groups of children rather than anything that happens to be exciting. The child stands or sits within speaking distance from other children.

Solitary Play: The child plays alone and independently with toys that are different from those used by the children within speaking distance and makes no effort to get close to other children. He pursues his own activity without reference to what others are doing.

Parallel play: The child plays independently, but the activity chosen naturally brings him/her among other children. He/she plays with toys that are like those the children around him/her are using but she plays with the toys, and does not try to influence or modify the activity of the children near him/her. He/she plays beside rather than with the other children.

Associative Play: The child plays with other children. The communication concerns the common activity; there is borrowing and loaning of play materials following one another with trains or wagons; children engage in similar activity, there is no division of labour, and no organization of the activity around materials, goal, or product. The children do not

subordinate their individual interests to that of the group.

Cooperative play: The child plays in a group that is organized for the purpose of making some materials product, striving to attain some competitive goal, dramatizing situation of adult and group life, or playing formal games.

Characteristics of Social Play

1. Social play becomes more prominent during the preschool years to include an increase in the frequency of social contacts, longer social episode and more varied social episodes (Jones,1972; Rubin, Watson, & Jambor, 1978; Holmberg, 1980;).

2. Although preschoolers tend to spend more time playing alone or with others they play with a wider range of peers (Howes, 1983)

3. The major developmental change in preschool play is related to cognitive-developmental maturity within the categories. The frequency of play in the categories remains the same during the preschool years; the significant changes come in social dramatic play and games with rules (Rubin et al.,1978)

The Concept of Academic Performance

Performance is defined as the observable or measurable behaviour of a person in a particular situation (Simpson and Weiner, 1989). This means that performance measures the aspect of behaviour that can be observed at a specific period. To determine performance, a performance test is conducted. Singer (1981) defines performance test as a type of mental test in which the subject is asked to do something rather than to say

something. Performance test is the type of test which throws light on the ability to deal with things rather than symbols (Drever, 1981)

For teachers to establish the strength or otherwise of pupils' learning in relation to stated performance objectives, both formative and summative evaluation instruments like teacher-made test are administered such that the outcome in terms of the scores or grades that a pupil received is used to capture the competence or skill acquired. Thus, academic performance of pupils then become enabler for a school to maintain or lose its reputation and standard (Owede, 2016). It also serves as one of the yardsticks to establish whether or not the standard of education is falling or rising. In addition, Owede (2016) also opines that grouping pupils into low, middle or high ability learners is a function of academic performance.

Armstrong (2006) argues that academic performance from all intents and purposes means more than to support, encourage and examinations. However, he posits that academic performance also entails academic content and skills, grade and standardized testing and academic curriculum that is rigorous, uniform and compulsory for all learners as a prerequisite for promotion and placement. On her part, Barcon-LaShawn (2011) sees academic performance in terms of scores and grades received in a standardized test reflecting the ability level and performance outcomes of learners. York, Gibson and Rankin (2015) postulate that academic performance is a direct outcome of meeting specific learning objectives in addition to learned new skills, knowledge and competencies whereby grades or scores are used to measure pupils learning abilities.

Constructive Play and Performance in Numeracy

Constructive play has been linked with numeracy skills, the complexity of a child's play at age of four has long-term predictive power in the achievement of Numeracy. it complexity play during the preschool years is correlated with achievement in numeracy (Wolfgang et al 2001). Other researchers have revealed links between a preschooler's ability to recreate specific structure and his or her current numeracy skill (Verdine et al 2013). Investigators report similar results for studies of teen and adolescents link construction play with superior performance on tests of spatial skills and numeracy. (Boonen, Jolles and Oostermejier, 2014). A study in the Netherlands found that 6th grade students who spent more free time in construction play performed better on a test of numeracy world problems. Construction play involves product formation through the use of physical manipulative such as blocks and similar materials. Wolfgang, Stannard, and Jones (2003) summarized the findings of Ginsburg (2003) on skill acquired through construction play including measuring, classifying, counting, ordering, and gaining awareness of length, width, symmetry, shape, depth, and space. Block play has been linked with numeracy skills.

Sri (2016) investigated the 4 To 5 Years Old Children Speaking Ability Through Constructive Play With Peer Group at Bon Thoriff Kindergarten. The result of this research showed that there was improvement on pupils speaking ability whose ages were from 4 to 5 through constructive play with peer group. The research was carried out in Thoriff kindergarten. The method was classroom action research from Kemmis and

Taggart which consisted of planning, treatments were conducted in 2 cycles and each cycles consisted of six treatment. The data were analyzed quantitatively and qualitatively. The quantitative analysis showed that pupils speaking ability was improved from pre-treatments to the second cycled which was 82.2%. This showed the treatment's success with 75% improvement. It indicates that the research was successful. The qualitative analysis by using a model proposed by Miles and Huberman with triangulation was also carried out consisting: (1) data reduction; (2) data display;(3) verification through observation, interview and documentation during the result, it further revealed that constructive play with peer group could improve pupils speaking ability. Through some experiences in playing, having recreation, and interacting with peer group, all aspect of pupils' speaking ability are improved.

McCleaf (2012) investigated the importance of play, particularly Constructive Play, in Public Library Programming written for the Association for Library Service to Children. The study concludes by emphasizing the importance of constructive play, not due to its effect on literacy skills and children's future success in reading and writing, but also, to increase a Library Science, Technology, Engineering and Mathematics (STEM) educational programming.

A study by Pellegrini and Gustafson (2005) for example, observed three to five year olds systematically over an entire school year. They demonstrated that the amount of playful exploration, construction and tool used in engaging children predicted their subsequent performance on physical problem-solving tasks.

Edo, Plana & Badillo (2009) have stressed the value of play in the teaching and learning of Mathematics during the preschool years. Researcher citing the need for longitudinal studies into the long-term effects on learning (Van, 1996)

Social Play and Academic Performance in Numeracy

Social play serves as children's primary means for peer interaction. As such, social play provides the opportunity for children to practise and develop social skills including perspective taking, sharing, cooperation, peer interaction, turn-taking, resolving social conflicts, and understanding social rules (Sheridan & Walker, 1999). Social play is critical to early development because it helps the child to develop the social skills needed to be socially competent. Social competent, the ability to interact effectively with others.

Amber (2004) investigated the effect of socioeconomic status on the social play of preschool –age children in Ithaca, New York. The participants were 25 children (10 females, 15 males) from 2 to 5 years of age who were recruited from four preschool programme in Central New York. The participants were divided into two groups based on pre-tax family income: a low socioeconomic status group (n=8,2 females, 6 males) and high socioeconomic status group (n=17,8 females, 9 males). Each participant was observed for 20minutes during free playtime at school. For every 30 second interval, the higher level of participant's social play was recorded using social play rating scale. The data was analyzed using independent t-test. No significant difference in interactive and non interactive play behaviour was found between the two groups. Additional analyses indicated that females engaged in significantly more non-interactive play behaviour than

males and male engaged in more onlooker behaviour than females.

Also Gavin, Kenobi, Connor, (2014) investigated social play spaces for active community engagement. The researcher find out that social play spaces are opportunities to utilize both technol ogy and body for the benefit of community culture and engagement.

Pupils Gender and Academic Performance

Gender is the range of physical, biological, mental and behavioural characteristics pertaining to and differentiating between masculine and feminine (Haig, 2004). Academic achievement refers to an expression used to represent pupils' scholastic standing (Ajobeje, 2005). According to Shuaib (1995), academic achievement refers to what an individual can obtain within a specific criteria domain. The influence of gender on academic achievement has also been an issue of concern to most researchers. This is because gender appears to have some powerful effects on learning. According to Fauto and Friedman (2005), there is no significant difference between male and female cognitive ability. Research results vary widely, different conclusions that male are more abstract learners, females have more anxiety about study success, male are more instructive, and females are more analytical and organized. Okoye (2008) postulates that sex differences may have little or no effect on academic performance, rather, he submitted that eventual achievement on learners is predicted by personal effort than sex variable.

Gender differences in play behaviours and preferences can be explained by a complex interplay of biological and social factors. One biological explanation is that

overall; boys are more active, relative to girls (Pellegrini, 2005). It has also been suggested that there is some degree of prenatal hormonal priming involved in boys' greater propensity towards more physical and aggressive activity like play (Maccoby, 1998). Additionally, from a very early age, children are learning gender stereotypes. That is, they are learning the cultural standards and practices regarding the behaviour of the two sexes and how society expects them to behave. From their pre-school years children will attempt to adapt themselves to these standards and practices by behaving in 'sex-appropriate' ways (Maccoby, 1998). According to Ciampa, Philip, Osborn, Chandra, Peterson, Neeraja, Rothman and Russel (2010), there are many components that play key roles in the development of numeracy at a young age such as parenting, socioeconomic status and age. Children who are brought up in families with high socioeconomic status tend to be more engaged in developmentally enhancing activities (Ciampa et al, 2010). These children are more likely to develop the necessary ability to learn and become more motivated to learn. More specifically, a mother's educational level is considered to have an effect on the child's ability to achieve in numeracy. That is, mother with a high level of education will tend to have children who succeed more in numeracy.

Chebet (2011) investigated gender differences in mathematics performance among secondary school students in Bureti Sub-County, Kericho County Kenya. The findings of the study showed that there was significant difference in performance based on gender because male students performed better than female students in Mathematics. Also Adigun, Onihunwa, Irunokhai, Sada, Adesina (2015) investigated effects of gender on academic performance in Computer Studies in secondary schools in New Bussa, Borgu

Local Government of Niger State. The results revealed that male students performed better when compared to their female counterparts. However, male students' performance vary a little more around average compared to the female students. Literature indicates that the role played by gender in Mathematics education is multifaceted. Maccoby and Jacklin, 1974; Shibley-Hyde, Fennema and Lamon, 1990; Fennema, Carpenter, Jacobs, Franke & Levi, 1998; showed that many reports of differences in Mathematics performance related to gender have been presented over the past decades.

Performance differences have been postulated to be due at least in part, to attitudinal differences regarding mathematics. Fennema and Sherman (1977) using the Fennema-Sherman Mathematics attitudes scales, found several gender differences in high school students' attitude. For the students in those high schools in which the males performed significantly better in Mathematics achievement tests, they found that males also had higher scores on attitude scales including confidence in learning Mathematics, viewing Mathematics as male domain attitude. Mathematics achievement is the attainment, accomplishment or successful performance in a Mathematics examination, measured in scores that candidates obtain in an examination (Makau, 1997). Kenya's records show that girls continue to underachieve in Mathematics in national examinations. In the 1999 KCSE examination results, for instance, showed that girls obtained a lower Mathematics performance mean score of 10% compared to 14% for boys (Mureithi, 2000; Mwaniki, 2000; Muthini, 2006).

Gender differences in Mathematics achievement begin to appear at the upper primary school level and increase in secondary schools. These differences are caused by an interaction of many factors within and outside the school as well as by the students' background (Makau, 1987; Makau and Coombe, 1994). Kosgei and Bii (2007) in their research on gender differences and attitudes towards learning Mathematics among secondary school students, found that both boys and girls have positive attitudes towards learning of Mathematics though boys were more inclined than girls. Guzel (2004) stated that the female students' attitude towards Mathematics is more positive than the male students. Students' perceptions of parental, teachers and peer expectations were found to significantly influence gender differences and attitudes towards learning of Mathematics.

School Type and Pupils Academic Performance

Pupils' academic performance more often than not is closely linked to their school type. For the purpose of clarity and better understanding, some of the key research findings on school type and academic achievements are presented in the following paragraph

Using data from Indonesia, Newhouse and Beegle (2005) evaluated the impact of school type on academic achievement of junior secondary school students (grades 7-9). The primary data source for the study was the three full rounds of the Indonesia Family Life Survey (IFLSI, IFLS2, and IFLS3). The result revealed that students that attended public junior secondary schools, controlling for other characteristics, have higher test scores upon completion than those who attended private school.

Also, Alimi, Ehinola and Alabi (2012) investigated the influence of school types and facilities on students' academic performance in Ondo State. The study was designed to find out whether facilities and students' academic performance are related in private and public secondary schools respectively. Descriptive survey design was used. Proportionate random sampling technique was used to select 50 schools in Ondo state. Two sets of research instruments: School Facility Descriptive and Students Academic Performance Questionnaire (SFDAPQ) for principals; and school Facility Descriptive Questionnaire (SFDQ) for the teachers were used for the study. T-test was used to analyze the data. All hypotheses were tested at a significant level of 0.05. The study revealed a significant difference in facilities available in public and private schools in Ondo State. The study also revealed that there is a significant difference in the facilities available between public and private senior secondary schools. It however revealed no significant difference in academic performance of students in the two types of schools.

Yusuf and Adigun (2010) examined the influence of school type, sex and location on students' academic performance in Ekiti State secondary schools. The sample of the study consisted of forty (40) secondary schools, four government colleges (State Unity Colleges) were purposively selected for the study while thirty-six (36) public secondary schools were randomly selected for the study. The school sampled had presented candidates for both West Africa Examination Council (WAEC) and National Examination Council (NECO) respectively. An instrument, school type, sex, location and students' academic performance inventory was used to collect data for the study. Data collected were analyzed using percentage scores and the t-test statistical tool. Three null hypotheses

were generated and tested at 0.05 level of significance. Findings from the study showed that the level of students' academic performance was low. It was also revealed that school type, sex and location had no significance on students' academic performance.

Okon and Archibong (2015) examined the difference in academic achievement of students in both private and public secondary schools in Akwa Ibom State. The sample size was 940 respondents drawn from both private and public schools. Ex-post facto design was used for this study and t-test analysis was adopted to analyze the data. The findings of this study revealed that students in private secondary schools performed better in Social Studies than those in public schools. From the reviewed researches in the above paragraphs, it is evident that school type influence academic performance of learners, but there is a controversy on the influence. Some researches revealed that public school students performed better than private school students while others revealed that private school students performed better than public school students. Also, the researches focused on secondary (junior and senior) leaving out the lower level of education.

Appraisal of the Literature Reviewed

Through play, children develop social and cognitive skills, mature emotionally, and gain the self confidence required to engage in new experiences and environment. Key way that young children learn include playing, being with other people, being active, exploring new experiences, talking to themselves, communicating with others, meeting physical and mental challenges, being shown how to do new things, practising and repeating skills and having fun. Playing with sand, blocks, water and clay helps children to

develop their skills in numeracy. Playing with blocks encourages problem-solving, reasoning and divergent thinking and playing with water leads to knowledge of volume. Being familiar with shapes, directions, and positions as they use boxes to build a tower helps children in their understanding of numeracy. It was discovered that pupils developed and learned numeracy better when they are provided with experiences that allow them to explore and manipulate materials to construct numeracy ideas. As children learn through purposeful, quality play experience, they build critical basic skills for academic performance.

However, to give review a broader focus, empirical studies were reviewed so as to determine the extent to which previous finding could be evaluated in relation to the problem of the study stated in chapter one. Several empirical studies were conducted in foreign educational settings and in other subject areas, language and mathematics respectively. The researcher discovered that during extensive literature review in constructive and social play in the academic performance in numeracy, there was no empirical evidence on constructive and social play as it combined in this study. This created a research gap which the researcher filled. That is, the effects of constructive and social play on pupils academic performance in numeracy in Kwara State

Lastly, the moderating variable of pupils' gender and school type considered in this study were found to have an effect on pupils' academic performance in most of the school subjects and at the primary to tertiary school levels. At this point, the researcher's voice in this study was always informed by views, opinions and findings as reflected in the

literature review. Therefore, review does not represent the diverse opinions of students and parents, market women and laymen; except those found in both printed and online published literatures. Nevertheless, the reviewed literature failed empirically to establish a considerable link between the moderating variables of the pupils and the effect these variables have on the pupils academic performance. This was what this study did. The reviewed however did not establish how the variable of gender could influence student performance why these methods. This seeming neglect was what necessitated this study.

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter discussed: Research Design; Population; Sample and Sampling Techniques; Research Instrument (i) Validity (ii) Reliability; Procedure for Data Collection; Method of Data Analysis.

Research Design

The research design employed for the study was the pre-test, post test, control group non-equivalent quasi-experimental design. The design was adopted because random assignment of participants to groups was difficult. The design is suitable in establishing the possible cause and effect relationship. It is a non-equivalent because primary school classes mostly operate as intact groups and as such, most school heads will not permit a situation where the classes would be disorganized or re-arranged for the purpose of carrying out a research work. The design requires a pre-test and a post-test for treatment and comparison groups. Moreover, Dinardo (2008) opine that quasi experimental design is used to estimate the causal impact of an intervention on its target population without random assignment.

A factorial design of 3X2X2 was adopted to test the null hypotheses for this study. The first three levels were two experimental groups (constructive and social form of play method of teaching) and the control group. The second factorial level was based on gender that is male (M) or female (F), while third factorial level was the school type (public and

private). This design allows for the experimental groups to receive treatment (i.e constructive play and social play) while the control groups did not receive any treatment, although the control group was taught the same topics as the experimental group using the conventional teaching method. However, both the experimental and control groups received the pre-test and the post-test before and after treatment respectively.

Table 1: **Factorial design on constructive play and social play teaching methods with a control group**

Variable	Gender Male Female	School type Private Public	Academic Performance High Average Low
	Pre-test	Treatment	Post-test
Experimental Group 1 CP	0_1	X_1	0_2
Experimental Group 2 SP	0_3	X_2	0_4
Control Group	0_5	-	0_6

keys:

O_1 = pre-test of the experimental group 1 (CP)

X_1 = Treatment of the experimental group 1 (CP)

O_2 = Post-test of the experimental group 1 (CP)

O_3 = pre-test of the experimental group 2 (SP)

X_2 = Treatment of the experimental group 2 (SP)

O_4 = Post-test of the experimental group 2 (SP)

O_5 = Pre-test of the control group

O_6 = Post-test of the control group

Population of the Study

The population for this study was all primary school pupils in Kwara State. There are 2,626 public primary schools and there are 1,107 registered private schools in Kwara State. The target population was all primary one pupils in Kwara State, there are 38,953 primary one pupils in public primary schools in Kwara State and 23,856 primary one pupils in private schools in Kwara State, Nigeria (Kwara State Ministry of Education, 2017/2018)

Sample and Sampling Techniques

Sample for this study was all primary one pupils in six selected schools in Kwara State. Stratified random sampling technique was adopted. Schools were stratify into two strata (public and private), in each stratum three schools were randomly selected. Three private schools as well three public schools. (one private and one public school as experimental group one) and (one private and one public school as experimental group two) and the control group also, involved (one private and one public). After this, all primary one pupils of the selected schools were the participants for both experimental groups as well as the control group.

Research Instrument

One research instrument was employed in this study which was Numeracy Performance Test (NPT). The NPT consisted of ten multiple choice test items on the instructional content (Numeracy). The multiple choice questions were drawn from school curriculum through the scheme of work by the researcher and the questions were based on the topic taught (two-dimensional shape, numbers, less than and greater than sign, half, quarter and comparison) and the researcher subjected the instrument to validity and reliability test. (see appendix A p90). Also, three treatment packages were used.

Treatment Packages

Three treatment packages were employed in this study. They are:

Constructive Play Instructional Package for Numeracy (CPIPN) contains twelve lesson plans based on the Constructive Play Method for the experimental group 1. (See Appendix C p93) Social Play Instructional Package for Numeracy (SPIPN), Contains twelve lesson plans based on the Social Play Method for the experimental group 2. (See Appendix D p115). The lesson plans were drawn from the Numeracy curriculum. The lesson plan were based on the topics scheduled for the pupils during the week of experiment. The lesson was prepared on the Instructional Content (Numeracy) of the study by the researcher. The lesson plans outlined the periods, topics and behavioral objectives of each lesson.

Validity of the Instrument

Face and content validity were employed by the researcher in this study. Constructive Play Instructional Package for Numeracy was given face and content validity by selected teachers of the pupils, researcher's supervisor and some lecturers in the Department of Early Childhood and Primary Education Kwara State University, Malete. Also, Social Play Instructional Package for Numeracy was given face and content validity by the selected teachers of the pupils, the researcher's supervisor and some lecturers in the Department of Early Childhood and Primary Education Kwara State University, Malete. Finally, Numeracy Performance Test was given face and content validity by the selected teachers of the pupils, the researcher's supervisor and lecturers in the Department of Early Childhood and Primary Education Kwara State University, Malete.

Reliability of the Instrument

To ascertain the reliability of Numeracy Performance Test (NPT), 20 copies of the final draft were trial-tested two times, giving two weeks interval on the randomly selected pupils outside the sample schools. Thereafter, Pearson Product Moment Correlation coefficient was used to determine the reliability coefficient of 0.76 was obtained.

Procedure for Data Collection

The researcher collected letter of introduction from the Head of Department of Early Childhood and Primary Education, Kwara State University, Malete. This enabled the researcher to sought permission from the school authority and the class teachers concerned. Eight research assistants were employed and trained for the period of one week. Five out of eight research assistants were the class teachers of primary one pupils in the selected schools and they were trained in their various schools by the researcher prior to the treatment period to acquaint them with the instructional package. The remaining three research assistants were researcher course mate and they were required to assist the teachers and also served as monitoring team to the research assistants during treatment. The study was carried out in 3rd term' The study covered a period of seven weeks. During the first week, the experimental group teachers received training designed to equip them with necessary pedagogical strategies for implementing treatment. The control group teachers were given instructions to teach following traditional method as stipulated in the teaching instrument for the control group. The second week, was for administration of the Numeracy Performance Test (NPT) as the pre-test (to both the experimental and control

groups). Treatment for all the groups took place for a period of four weeks (3rd to 6th) while the Numeracy Performance Test (NPT) was administered as post-tests to all the groups (both the experimental and control groups) in seventh weeks. The arrangement is summarized as shown below:

1st week:	Training of teachers
2nd week:	Administration of pre-test
3rd – 6th Week:	Treatment
7th week:	Post-test administration.

Method of Data Analysis

The data were analyzed using descriptive and inferential statistics. The demographic data of the participants as well as their score were analyzed using frequency counts, mean and percentage, while the research hypotheses were tested, using Analysis of Co-variance (ANCOVA) at 0.05 level of significance.

CHAPTER FOUR

DATA ANALYSIS AND RESULTS

This chapter is concerned with data analysis and the result of study. Demographic profile of the participants was presented using frequency counts and percentages. Inferential statistics of Analysis of Covariance (ANCOVA) was adopted to analyze the research hypotheses generated at 0.05 alpha level of significance.

Table 2: Demographic Information of the Groups

Groups	No of Pupils	Gender	Frequency	Percentage (%)
Constructive Play	29	Male	12	10.0
		Female	17	14.2
Social Play	52	Male	23	19.2
		Female	29	24.2
Control group	39	Male	11	9.2
		Female	28	23.3
Total	120		120	100.0

Table 2 shows the demographic information of the groups (Constructive play group, Social play group and control groups). There were twenty-nine pupils in Constructive play

group in which 12 were male (10.0%) and 17 were females (14.2%). There were also 52 pupils in Social play group in which 23 were males (19.2%) and 29 were females (24.2%) while the control group had 39 pupils in which 11 were males (9.2%) and 28 were females (23.3%). There were 120 pupils altogether.

Research Hypothesis One: There is no significant effect of treatment on pupils' academic performance in Numeracy in Kwara state.

Table 3: Summary of ANCOVA analysis showing the effect of treatment on pupils' academic performance in Numeracy in Kwara state

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	19975.842[a]	12	1664.653	56.543	.000
Intercept	5310.815	1	5310.815	180.391	.000
Pretest	52.331	1	52.331	1.778	.185
Treatment	9363.424	2	4681.712	159.022	.000
Gender	74.490	1	74.490	2.530	.115
School type	4.662	1	4.662	.158	.691
Treatment * Gender	117.148	2	58.574	1.990	.142
School type * Treatment	44.351	2	22.175	.753	.473
School type * Gender	55.426	1	55.426	1.883	.173
School type * Treatment * Gender	41.711	2	20.855	.708	.495
Error	3150.150	107	29.441		

Total	736301.000	120
Corrected Total	23125.992	119

Table 3 shows the effect of treatment on pupils' academic performance in Numeracy in Kwara state. There was significant effect of treatment on pupils' academic performance in Numeracy in Kwara state ($F_{(2;\ 107)} = 159.022$, $P < 0.05$). The hypothesis is therefore rejected in the light of the result since the significant value (.000) is less than 0.05. This implies that treatment had significant effect on pupils' academic performance in Numeracy in Kwara state. Table 6 revealed the sources of the difference in the academic performance of pupils.

Table 4: Summary of Bonferroni's Post Hoc pairwise Comparison of the scores within the three Groups

Treatment	**Mean Score**	**Experimental 1**	**Experimental 2**	**Control Group**
Constructive Play	92.932		*	*
Social Play	81.088	*		*
Conventional Method	59.183	*	*	

Table 4 revealed that the significant main effect exposed by table 2 is as a result of the significant difference among: constructive play, social play and conventional method. The difference in the performance between constructive play and social play was 11.844 which

was statistically significant. Also, the difference in the performance between social play and the conventional method was 21.905 which was statistically significant. Finally, the difference in the performance between constructive play and conventional method was statistically significant with a mean difference of 33.749.

Research Hypothesis Two: There is no significant effect of gender on pupils' academic performance in Numeracy in Kwara State

Table 3 also revealed the effect of gender on pupils' academic performance in Numeracy in Kwara State. There was no significant effect of gender on pupils' academic performance in Numeracy in Kwara State ($F_{(1; 107)} = 2.530$; $P > 0.05$). The hypothesis is therefore not rejected in the light of the result since the significant value (.115) is greater than 0.05. This implies that gender had no significant effect on pupils' academic achievement in Numeracy in Kwara State.

Research Hypothesis Three: There is no significant interaction effect of treatment and gender on pupils' academic performance in Numeracy in Kwara State

Table 3 also revealed the interaction effect of treatment and gender on pupils' academic performance in Numeracy in Kwara State. There was no significant interaction effect of treatment and gender on pupils' academic performance in Numeracy in Kwara State ($F_{(2; 107)} = 1.990$; $P > 0.05$). The hypothesis is therefore not rejected in the light of the result since the significant value (.142) is greater than 0.05. This implies that interaction of

treatment and gender had no significant effect on pupils' academic achievement in Numeracy in Kwara State.

Research Hypothesis Four: There is no significant effect of school type on pupils' academic performance in Numeracy in Kwara State.

Table 3 also revealed the effect of school type on pupils' academic performance in Numeracy in Kwara State. There was significant effect of school type on pupils' academic performance in Numeracy in Kwara State ($F_{(1; 107)} = .158$; $P > 0.05$). The hypothesis is therefore not rejected in the light of the result since the significant value (.691) is greater than 0.05. This implies that school type had no significant effect on pupils' academic achievement in Numeracy in Kwara State.

Research Hypothesis Five: There is no significant interaction effect of gender and school type on pupils' academic performance in Numeracy in Kwara State

Table 3 also revealed the interaction effect of gender and school type on pupils' academic performance in Numeracy in Kwara State. There was no significant interaction effect of effect of gender and school type on pupils' academic performance in Numeracy in Kwara State ($F_{(1; 107)} = 1.883$; $P > 0.05$). The hypothesis is therefore not rejected in the light of the result since the significant value (.178) is greater than 0.05. This implies that the interaction of gender and school type had no significant effect on pupils' academic achievement in Numeracy in Kwara State.

Research Hypothesis Six: There is no significant interaction effect of treatment and school type on pupils' academic performance in Numeracy in Kwara State

Table 3 also revealed the interaction effect of treatment and school type on pupils' academic performance in Numeracy in Kwara State. There was no significant interaction effect of treatment and school type on pupils' academic performance in Numeracy in Kwara State ($F_{(2; 107)} = .753$; $P > 0.05$). The hypothesis is therefore not rejected in the light of the result since the significant value (.473) is greater than 0.05. This implies that treatment and school type had no significant effect on pupils' academic achievement in Numeracy in Kwara State.

Research Hypothesis Seven: There is no significant interaction effect of treatment, gender and school type on pupils' academic performance in Numeracy in Kwara State.

Table 3 also revealed the interaction effect of treatment, gender and school type on pupils' academic performance in Numeracy in Kwara State. There was no significant interaction effect of treatment, gender and school type on pupils' academic performance in Numeracy in Kwara State ($F_{(2; 107)} = .708$; $P > 0.05$). The hypothesis is therefore not rejected in the light of the result since the significant value (.495) is greater than 0.05. This implies that treatment, gender and school type had no significant effect on pupils' academic achievement in Numeracy in Kwara State.

Summary of Major Findings

1. There was significant effect of treatment on pupils' academic performance in Numeracy in Kwara state.
2. There was no significant effect of gender on pupils' academic performance in Numeracy in Kwara State.
3. There was no significant interaction effect of treatment and gender on pupils' academic performance in Numeracy in Kwara State.
4. There was significant effect of school type on pupils' academic performance in Numeracy in Kwara State.
5. There was no significant interaction effect of effect of gender and school type on pupils' academic performance in Numeracy in Kwara State.
6. There was no significant interaction effect of treatment and school type on pupils' academic performance in Numeracy in Kwara State.
7. There was no significant interaction effect of treatment, gender and school type on pupils' academic performance in Numeracy in Kwara State

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATION

This chapter focuses on discussion, conclusion and recommendations of the study. In the discussion, findings were examined in relation to findings from relevant previous studies especially those reviewed in chapter two of this study. Based on the discussion, conclusions were drawn and recommendations were made while suggestions for further studies were made on the basis of the limitation of this study.

Discussion of the Finding

Finding emanated from this study was that there was significant effect of constructive play and social play on pupils' academic performance in numeracy in Kwara State. This means that the pupils taught using constructive play and social play performed better than their counterparts taught with conventional method. This finding corroborates the findings of past research works of (Oostermejier et al, 2014), A study in the Netherlands in which he found that 6th grade students who spent more free time in construction play performed better on a test of numeracy world problems. Also, it supports the finding of Wolfgang, Stannard, and Jones (2003) who summarized the findings of Ginsburg (2003) on skill acquired through construction play including measuring, classifying, counting, ordering, and gaining awareness of length, width, symmetry, shape, depth, and space. Block play has been linked with numeracy skills. With the findings of this study and the past research findings on constructive and social play, so it has been concluded that constructive play was effective in teaching of numeracy.

The present finding also supports the finding of Gavin, Kenobi, Connor, (2014). They investigated Social Play spaces for active community engagement. The researcher finds out that social play spaces provided the opportunity to utilize both technology and body for the benefit of community culture and engagement.

Another findings in this study revealed that, there was no significant effect of gender on pupils' academic performance in Numeracy in Kwara State. This implies that gender has no significant effect on pupils' academic performance in Numeracy in Kwara State. The findings from this study support the findings of Okoye (2008) who postulates that sex differences may have little or no effect on academic performance, rather, the achievement of learners is predicted on personal effort than sex variable.. The finding negates the findings of Chebet (2011) and Adigun, Onihunwa, Iruokai, Sada, Adesina (2015), who assert that there was significant difference in academic performance based on gender in secondary schools in Kenya and New Bussa respectively. Also Fennema and Sherman (1977) found that males had high scores on attitude scales including confidence on learning mathematics, viewing mathematics as male dominated. The significant effect of males in having high score in mathematics may be as a result given males full support in their academic than females counterpart

The study also revealed that, there was no significant interaction effect of constructive play, social play and gender on pupils' academic performance in Numeracy in Kwara State. This implies that interaction effect of constructive play, social play and

gender had no significant effect on academic performance of pupils in numeracy in Kwara state.

The study also disclosed the effect of school type on pupils' academic performance in Numeracy in Kwara State. There was no significant effect of school type on pupils' academic performance in Numeracy in Kwara State. This implies that school type had no significant effect on pupils' academic performance in Numeracy in Kwara State. The finding supports the findings of Yusuf and Adigun (2010), who examined the influence of school type, sex, and location on students academic performance in Ekiti State Secondary Schools. Their result revealed that school type, sex, and location had no significance on students academic performance. The finding does not support the findings of Okon and Archibong (2015), who examined the differences in academic achievement of students in both private and public secondary schools in Akwa Ibom State. The findings revealed that students in private secondary schools performed better than those in public schools. This significant effect may be as a result of proper monitoring and supervision in private schools.

The finding affirm the interaction effect of gender and school type on pupils' academic performance in Numeracy in Kwara State. There was no significant interaction effect of gender and school type on pupils' academic performance in Numeracy in Kwara State. This means that, gender and school type had no significant effect on academic performance of pupils in numeracy in kwara state.

The study divulge the interaction effect of constructive play, social play and school type on pupils' academic performance in Numeracy in Kwara State. There was no significant interaction effect of treatment and school type on pupils' academic performance in Numeracy in Kwara State. This implies that constructive play, social play and school type had no significant effect on pupils' academic achievement in Numeracy in Kwara State.

The study bring to light the interaction effect of constructive play, social play, gender and school type on pupils' academic performance in Numeracy in Kwara State. There was no significant interaction effect of constructive play, social play, gender and school type on pupils' academic performance in Numeracy in Kwara State. This implies that treatment, gender and school type had no significant effect on pupils' academic achievement in Numeracy in Kwara State.

Conclusions

Based on the discussion above, it can be stated that constructive play as well as social play can facilitate higher and better performance in numeracy than the conventional method of teaching. But constructive play is more effective than social play. By the outcome of this study, it can therefore be said that gender had no significant effect on academic performance of pupils in numeracy in Kwara State and school type had no significant effect on the academic performance of pupils in numeracy in Kwara State. There was no significant interaction effect of constructive play, social play and gender on pupils academic performance in numeracy. Also, there was no significant interaction

effect of gender and school type on pupils academic performance in numeracy in Kwara State. The interaction effects of constructive play, social play and school type had no significant effect on academic performance of pupils in numeracy in kwara state. Finally, the interaction effect of constructive play, social play, gender, and school type had no significant effect on academic performance of pupils in numeracy in Kwara State.

Recommendations

Based on the findings of this study, the following recommendations were made:

I. Teachers who teach numeracy teachers should be enlightened on the effectiveness of constructive play as well as social play on pupils' academic performance in numeracy

II. Curriculum developer in Numeracy such as the Federal and State Ministries of Education, school proprietors and NERDC should incorporate more concepts that encourage constructive play and social play into the Numeracy curriculum as well as the day to day activities of pupils.

III. It is also important that colleges and Faculties of Education should be sensitized on their responsibility to train pre-service teachers on the use of constructive play and social play in learning. Similarly, practising teachers should be encouraged to learn the use of constructive play and social play through seminars and workshops.

IV. Pupils' academic performance should not be determined based on their gender and school type because, the two factors have been found not to be strong factors that hinder pupil's academic performance.

Limitation of the study

The study was limited to Basic one pupils and Basic operation (such as counting of number, comparison and two dimensional shapes), also limited to primary schools and carried out in Kwara State. If the investigation had a wide coverage such as all pupils in lower primary schools in both public and private schools in Kwara State, the findings would have had a more generalizable effect.

Suggestions for Further Studies

Further researchers could be carried out the study to examine the effects of constructive play and social play in another numeracy content. This can be extended to other subject areas throughout the pre-school and primary levels of education. This study can be replicated on different groups of students, preferably from other locations throughout the nation to ascertain whether the findings generated from the study is valid and generalizable in a larger or different context.

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Appendix A

Numeracy Performance Test (NPT)

Dear pupils, this performance test is from M.Ed. student from the kwara state university, Malete, working on the effects of constructive and social play on the academic performance of pupils in numeracy in kwara state, Nigeria.

Kindly supply answers to the following questions as possible as you can. Any information given shall be treated confidentially.

SECTION A

Name of school _____

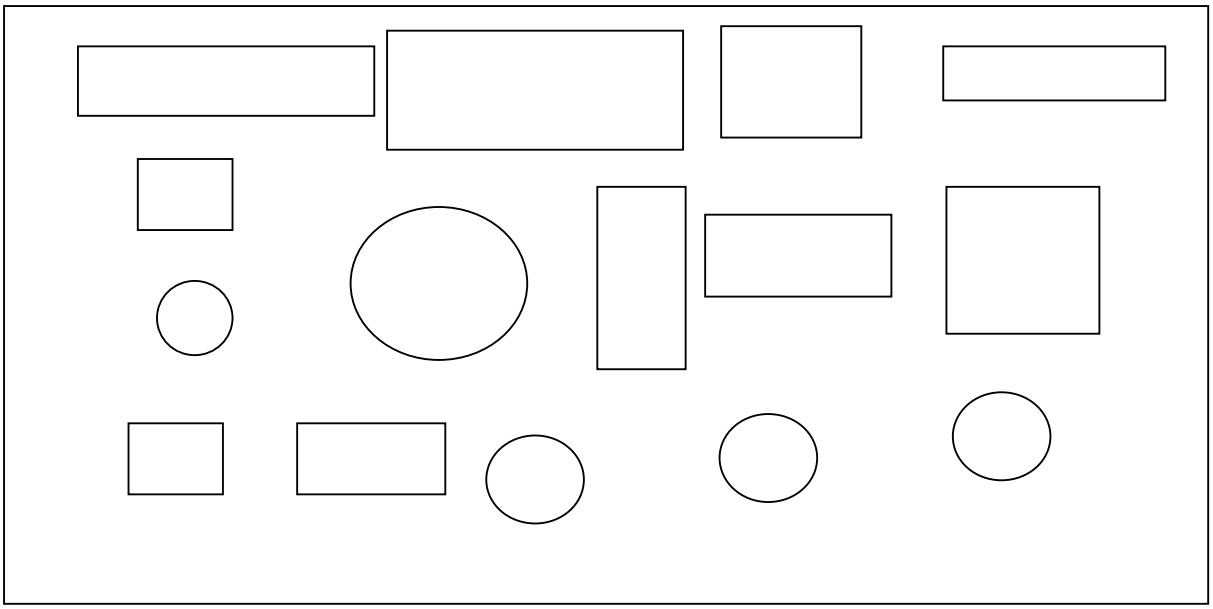
School type private ( ) public ( )

Gender male ( ) female ( )

SECTION B

INSTRUCTION: Answer all questions, choose your answer from option A-D

Use the table below to answer question 1-3



1. How many squares are in the box?
   (a) 4 (b) 5 (c) 7 (d) 6
2. How many circles are in the box?
   (a) 5 (b) 8 (c) 6 (d) 7
3. How many rectangles are in the box?
   (a) 7 (b) 6 (c) 5 (d) 4

Write the correct sign of greater than and less than (> or <)

4. 5 ☐ 10
5. 73 ☐ 84
6. 9 ☐ 7
7. The next three numbers of the following numbers 15, 16 -----are: (a) 17, 18, 19 (b) 20, 22, 24 (c) 10, 11, 12 (d) 15 16 17
8. Half is written as ---------- (a) 2/3 (b) ½ (c) ¼ (d) ¾
9. Quarter is written as--------- (a) ¾ (b) 5/ 4 (c) ¼ (d) 7/4
10. Longer and shorter are use to compare two objects (a) yes (b) no (c) both (d) All

Marking Guide

ANSWER

1. B	5. >	9. C
2. A	6. <	10. A
3. C	7. A	
4. <	8. B	

```
GET
  FILE='C:\Users\Obafemi\Desktop\Asiata Reliability.sav'.
DATASET NAME DataSet2 WINDOW=FRONT.
CORRELATIONS
  /VARIABLES=First_Admini Second_Admini
  /PRINT=TWOTAIL NOSIG
  /MISSING=PAIRWISE.
```

Correlations

[DataSet2] C:\Users\Obafemi\Desktop\Asiata Reliability.sav

Correlations

		First Administration of NPT	Second Administration of NPT
First Administration of NPT	Pearson Correlation	1	.755**
	Sig. (2-tailed)		.000
	N	20	20
Second Administration of NPT	Pearson Correlation	.755**	1
	Sig. (2-tailed)	.000	
	N	20	20

**. Correlation is significant at the 0.05 level (2-tailed).

Appendix C

Constructive Play Instructional Package for Numeracy (CIPN)

LESSON 1

Subject: Numeracy

Date:

Class: Primary One

Topic: Numbers

Sub-topic: Counting 0-99

Duration: 40minutes

Method: Constructive Play

Behavioral Objective: at the end of the lesson, pupils should be able to

1) Give reason while they need to tell the time
2) Count numbers from 0-99

Instructional materials:
Large clock with moveable hands, a set of 0-9 number blocks for each pair of pupils, bundles of 9 tens and 10 units, using straws or sticks for each pair.

	DURATION	TEACHERS ACTIVITIES	PUPILS ACTIVITIES
INTRODUCTION		The teacher introduces the lesson by asking pupils to count from 0-100 forward and then backwards. Teacher also call out numbers and choose some pupils to tell the next three numbers e.g: 17 (18, 19, 20)	Pupils are able count the numbers very well
PRESENTATION Step 1		The teacher writes random two digit numbers on the chalkboard and choose some pupils to read them to the class.	Pupils read the two digit number correctly
Step 2		The teacher chooses some other pupils to tell the number that come before and after each number write on the chalkboard	Pupils answer it well
Step 3		The teacher gives each pair a set of 0-9 number block and ask them to pick two blocks and make a two – digit number using those two blocks.	Pupils make uses of 0-9 number block and they able to make two digit number
Step 4		The teacher asks pupils to use the same two block to make a different number and write it in their exercise books. She askthe pair to repeat until they have 10 numbers written in their exercise books	Pupils make each number using their bundles of tens and units.
EVALUATION		The teacher asks each pair to read out a number from their list and ask them to show the class their bundles of Tens and Units.	Pupils response to the question and answer it correctly
CONCLUSION		The teacher explains the topic again briefly	Pupils listen

Constructive Play Instructional Package for Numeracy (CIPN)

LESSON 2

Subject: Numeracy

Date:

Class: Primary One

Topic: Numbers

Sub-topic: Making Number

Duration: 40minute

Method: Constructive Play

Behavioral Objective: At the end of the lesson, pupils should be able to

Make two-digit numbers.

Instructional materials:
Big clock and card clock with moveable hands, a set of 0-9 number blocks for each pair of pupils, bundles of 9 tens and 10 units, using straws or sticks for each pair.

	DURATION	TEACHERS ACTIVITIES	PUPILS ACTIVITIES
INTRODUCTION		The teacher introduces the lesson by draw a blank hundred square on the chalkboard and chooses some pupils to writes in the numbers. The teacher also asks pupils to count forwards and backwards using the hundred square.	Pupils are able write the numbers very well
PRESENTATION Step 1		The teacher say a number from 0-99 and asks the pupils to point to it.	Pupils point at the two digit number correctly Pupils answer it well
Step 2 Step 3		The teacher writes three consecutive numbers on the chalkboard, e.g: 45, 46, 47. And ask pupils to tell the next two numbers	Pupils write that number in their exercise books and say it to their partner
EVALUATION		The teacher gives each pair bundles of tens and units and set of 0-9 number block. Teacher call out two-digit number and ask pupils to use their bundles of tens and units to make the number, teacher repeat for five different number The teacher asks pupils to explain how to writes tens and unit as T and U and then write the number.	Pupils make each number using their bundles of tens and units.
CONCLUSION		The teacher explains the topic again briefly	Pupils response to the question and answer it correctly Pupils listen

Constructive Play Instructional Package for Numeracy (CIPN)

LESSON 3

Subject: Numeracy

Date:

Class: Primary One

Topic: Numbers

Sub-topic: Reading and Matching the Numerals 0-100

Duration: 40minute

Method: Constructive Play

Behavioral Objective: At the end of the lesson, pupils should be able to

Order numbers from 0-100

Instructional materials:
Have ready a set of 0-100 number blocks, bundles often and 10 sticks. Practice singing ’10 little fingers.’

	DURATION	TEACHERS ACTIVITIES	PUPILS ACTIVITIES
INTRODUCTION		The teacher introduces the lesson by arrange the pupils in a circle and sing '10 little fingers.' And ask each pupils say a number, counting in order from 1. Pupils continue until they have all had a turn and repeat starting with different numbers	Pupils sing 10 little finger very well.
PRESENTATION Step 1		The teacher divides the number cards into Tens, shuffle them and give each group a set of Ten, e.g 0-9 or 30-39 and asks the pupils to put their cards in the correct order	Pupils put their cards in the correct order
Step 2		The teacher asks each group to readout their numbers in order, starting with the group that has 0-9 and counting until it reach 100.	Pupils answer it well
Step 3 EVALUATION		The teacher asks each group to come out and arrange themselves with their number cards in order from 0-100 and asks them to read their numbers in order until they reach 100	Pupils arrange themselves and read the numbers in order
		The teacher asks each group to make 36 with their bundles and sticks	Pupils make each number using their bundles of tens and units.
CONCLUSION		The teacher explains the topic again briefly	Pupils listen

Constructive Play Instructional Package for Numeracy (CIPN)

LESSON 4

Subject: Numeracy

Date:

Class: Primary One

Topic: Numbers

Sub-topic: Less than and Greater than

Duration: 40minute

Method: Constructive Play

Behavioral Objective: At the end of the lesson, pupils be able to identify the terms greater than and less than' sign

Instructional materials:
bottle top, small block, and a write different number between 0-100 inside each block, chart display less than and greater than on large flash card

	DURATION	TEACHERS ACTIVITIES	PUPILS ACTIVITIES
INTRODUCTION PRESENTATION Step 1 Step 2 Step 3 Step4 EVALUATION CONCLUSION		The teacher introduces the lesson by showing the 'less than' and greater than flash card and ask two pupils to come out, choose a number block each and hold them up. Teacher ask another pupil to stand between the pupils holding the greater than card and rest of pupils to read it, e.g: 73 is greater than 84. The teacher asks the rest of the class to say if it is correct or not. And it is wrong, teacher write the result on the chalkboard and repeat with different numbers.Teacher repeat this activity using the 'less than' card. The teacher asks each group to choose 6 number cards and put them on the floor in front of them. teacher give out the bottle tops and ask the pupils to place each bottle top on one of the number cards. Ask the group member to say whether the number written on the bottle top is less than or greater than the number underneath it.Teacher ask pupils to writes the results in their exercise books, eg: '12 is less than 65. Ask each group to say a 'greater than' and 'less than' answer they have made.Teacher ask pupils make 3	Pupils choose a number block and hold them up and another pupil say the answer Pupils answer it well Pupils listen Pupils make each number using their bundles of tens and units.

		different number and write ‘greater than and less than Teacher explains	Pupils write the result in their exercise book

Constructive Play Instructional Package for Numeracy (CIPN)

LESSON 5

Subject: Numeracy

Date:

Class: Primary One

Topic: Two Dimensional Shapes

Sub-topic: Sorting of two Dimensional Shapes

Duration: 40minutes

Method: Constructive Play

Behavioral Objective: At the end of the lesson, pupils should be able to;

1) Sort shapes into squares, rectangle, circles
2) Identify and name two dimensional shapes as squares, rectangle and circle
3) Identify shapes in our environment that are squares, rectangle and circle

Instructional materials:
Blocks, straw, card board, ball

	DURATION	TEACHERS ACTIVITIES	PUPILS ACTIVITIES
INTRODUCTION		The teacher introduces the lesson by asking pupils to name different shapes they are familiar with? Teacher also ask the following questions: i. what is the shape of clock? ii. What is the shape of desk? iii. What is the shape of your classroom?	Pupils give their various understanding of two dimensional shapes
PRESENTATION Step 1 Step 2		The teacher explains two dimensional shapes (2D) two dimensional shapes is geometrical figure that has two dimensional which are length and width. The two dimensional shapes has no height and it also known plane shapes Teacher gives examples of two dimensional shapes e.g squares, rectangles, and circles	Pupils participate by naming shapes they are familiar Pupils bring out the shapes from their block
Step 3 EVALUATION		The teacher asks pupils to sort into shapes. From the blocks sort out the following shapes: i. Squares ii. Rectangles iii. Circles Teacher asks pupils sort shapes into square, rectangle and circles and identify and name two dimensional shapes	Pupils sort out the shapes Pupils response to the question and answer it correctly
CONCLUSION		The teacher concludes the lesson by emphasize necessary point.	Pupils listen

Constructive Play Instructional Package for Numeracy (CIPN)

LESSON 6

Subject: Numeracy

Date:

Class: Primary One

Topic: Halves and Quarter

Sub-topic: Halves

Duration: 40minutes

Method: Constructive Play

Behavioral Objective: At the end of the lesson, pupils should be able to;

1) Identify circles, squares, rectangles, and triangle
2) Divide a shape into two equal parts and describe each part

Instructional materials:
Have ready a two dimensional shape (circle, square, rectangle, and triangle for each pupils), also make a larger circle, square, rectangle and triangle written on each shape .

	DURATION	TEACHERS ACTIVITIES	PUPILS ACTIVITIES
INTRODUCTION		The teacher introduces the lesson by cut the large circle into equal pieces and show the two halves to the class. And place one on top of the other and show the pupils that are exactly the same size.	Pupils listen attentively
		The teacher asks the pupils if they remember what we call each part, ie: a half. ½	
PRESENTATION Step 1		The teacher gives each pupils a circle. And ask them to draw a picture on their circle and then fold it exactly in half. Teacher also tell them to unfold the circle and draw along the dividing line.	Pupils say that when we divide something into equal parts each parts is called a half
Step 2		The teacher asks the pupils to cut or tear their shape down the dividing line and put them face down on the desk. Asks the groups to mix their shapes up and spread them out. In turn, tell the pupils to turn over two halves and see if they match, return them face down and the next pupil takes turn	Pupils follow the instruction given to them by their teacher
Step 3			The pupil to collect the most whole shapes is the winner.
EVALUATION		The teacher asks each group to explains what they get when separate the two pieces (two halves)	Pupils make each number using their bundles of tens and units.

CONCLUSION		The teacher explains the topic again briefly	Pupils listen

Constructive Play Instructional Package for Numeracy (CIPN)

LESSON 7

Subject: Numeracy

Date:

Class: Primary One

Topic: Halves and Quarter

Sub-topic: Dividing Numbers in Half

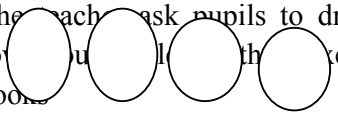
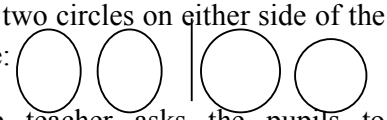
Duration: 40minutes

Method: Constructive Play

Behavioral Objective: At the end of the lesson, pupils should be able to;

1) Say which two dimensional shapes fit together
2) Divide objects in half

Instructional materials:
Have ready a two dimensional shape (circle, square, rectangle, and triangle for each pupils), also have ready the everyday objects with the 2D faces, several pairs of scissors and some newspapers.

	DURATION	TEACHERS ACTIVITIES	PUPILS ACTIVITIES
INTRODUCTION PRESENTATION Step 1 Step 2 Step 3 EVALUATION CONCLUSION		The teacher introduces the lesson by ask pupils to stand facing the class, shoulder to shoulder . stand in between them, dividing them in half, then we now have one pupil on each side of teacher The teacher explains that divide means to put into groups. and also tell pupils that you have divided the number two in half. Say half of 2 is 1. Teacher repeat with four pupils. That is half of four pupils is two pupils The teacher gives each group a bag of blocks and ask them to divide the blocks in half. Teacher ask them to say their answers: Half of number of block is -------. The teacher ask pupils to draw a row of circle in their exercise book  The teacher asks pupils to draw a line down the middle so that there are two circles on either side of the line:  The teacher asks the pupils to writes how many circles they have in each half: 1 of 4=2 2 Teacher ask pupil to draw circles to work out half of the following numbers:6, 8, 10 Teacher explains the topic again	Pupils listen attentively Pupils also repeat with different numbers Pupils say their answer half of number of blocks Pupils draw arrow of circle in their exercise book Pupils draw a line down the middle to have two circles on either side of the line Pupils draw circle and workout the following numbers 6,8,10 Pupils listen

Constructive Play Instructional Package for Numeracy (CIPN)

LESSON 8

Subject: Numeracy

Date:

Class: Primary One

Topic: Halves and Quarter

Sub-topic: Quarters

Duration: 40minutes

Method: Constructive Play

Behavioral Objective: At the end of the lesson, pupils should be able to;

1) Identify and name 2D shapes
2) Divide shapes into quarter

Instructional materials:

Have ready a two dimensional shape (circle, square, rectangle, and triangle for each pupils), also have ready the everyday objects with the 2D faces, several pairs of scissors and some newspapers.

	DURATION	TEACHERS ACTIVITIES	PUPILS ACTIVITIES
INTRODUCTION		The teacher introduces the lesson by ask pupils, How many parts are there when you divide something in half? And what can you tell me about each part? (they are the same size.) teacher also show pupils the orange and say it is a whole orange, teacher writes 1 orange on the chalkboard. Cut it and ask pupils what I have done	Pupils answer question correctly
PRESENTATION Step 1		The teacher chooses a pupil to write ½ on the chalkboard. Teacher tell the pupils you are going to cut each piece in half again.	Pupils write it correctly on the chalkboard
Step 2 Step 3		The teacher shows the pupils the four equal parts and tell them that four equal parts are called quarters. And writes ¼ on the chalkboard.	Pupils listen
step 4		She takes a paper circle and remind the pupils how to fold it in half and show them how to fold it into half again. Open up the circle and show the lines dividing it into quarters.	Pupils listen and repeat the activity
EVALUATION		She gives each pupil a square and tell them to fold it into quarter. Asks them to draw lines to showing the quarters and ask them to writes ¼ in each part and ask pupils to colour in one quarter the teacher asks pupils how many people can have an equal share of an orange divided in half and also how many people can have an equal share of an orange into	Pupils fold into quarters Pupils answer the question correctly
CONCLUSION			Pupils listen

		quarters Teacher	

Constructive Play Instructional Package for Numeracy (CIPN)

LESSON 9

Subject: Numeracy

Date:

Class: Primary One

Weekly theme: Halves and Quarter

Topic: Halves and Quarter

Duration: 40minutes

Method: Constructive Play

Behavioral Objective: by the end of lesson, pupils should be able to;

1) Identify and write the names of shapes
2) Identify halves and quarters in 2D shapes

Instructional materials:
Have ready lots circle, square, rectangle, and triangle cut out of paper for each group, several pair of scissors, lots of coloured pencils and lots of newspaper.

	DURATION	TEACHERS ACTIVITIES	PUPILS ACTIVITIES
INTRODUCTION		The teacher gives each pupil a sheet of newspaper and asks them to fold it in half and then quarters.	Pupils fold paper in halves and quarters
PRESENTATION Step 1		The teacher writes the names of the shapes on the chalkboard. Give out shapes and asks pupils to sort out the shapes that are same.	Pupils sort out the shapes that are the same.
Step 2		The teacher gives each group a set of shapes and tell them to divide each shape into halves and quarters by folding. On each shape teacher ask them to label one half ½ and one quarter ¼ teacher also ask the pupils to look carefully at their shapes and say what they notice about halves and quarters	Pupils divide each shapes in halves and quarter
Step 3		The teacher show them that two quarters are the same as a half. And show them how to write 2/4	
Step 4		The teacher tell them to shade in three quarters on one of their shapes. And show them how to write ¾	Pupils listen
		The teacher ask pupils to name the shapes and identify halves and quarters in 2D shapes.	Pupils fold into quarters
EVALUATION			
CONCLUSION		The teacher explain the topic again briefly	Pupils answer the question correctly Pupils listen

Constructive Play Instructional Package for Numeracy (CIPN)

LESSON 10

Subject: Numeracy

Date:

Class: Primary One

Weekly theme: Comparing Length

Topic: Taller and Smaller

Duration: 40minutes

Method: Constructive play

Behavioral Objective: At the end of the lesson, pupils should be able to;

1) Use a number square to identify missing numbers.
2) Use the 'taller' and 'smaller'.

Instructional materials:
Draw hundred square on the chalkboard. Rub out the numbers: 2,7, 12, 15, 18, 21, 23, and 27. And practicing singing 10 chunky chickens.'

	DURATION	TEACHERS ACTIVITIES	PUPILS ACTIVITIES
INTRODUCTION	10minute	The teacher briefly explains what 'height' means in the pupils' local language. And asks all pupils to stand up and make a line around the classroom in order of their height. Explains to them that we use the words 'tall' and 'short' when we are estimating height.	Pupils listen
PRESENTATION Step 1 Step 2	5minute	The teacher asks pupils the following questions: who is the tallest in the class?'who is the shortest in the class?'Is (pupil's name) shorter than (another pupils' name)?'Is (pupil's name) taller than (another pupils' name)?	Pupils answer (giga) and comply with teacher instruction
Step 3	10minute	The teacher tell the pupils to find a partner. Asks them to decide which one of them is the tallest and which is the shortest. Teacher asks pupils to draw a line to divide a page of their exercise books in half and ask them to draw themselves on one half and their partner on the other half.	Pupils listen and answer the question correctly
Step 4	5minute 5minutes		Pupils answer the question correctly
	5minute	The teacher tell the pairs to writes names and the words 'taller' and 'shorter' underneath the correct drawing.	Pupils response to teacher question
EVALUATION	7minutes	Teacher asks pupils to estimate if they are taller or shorter than the door, the chalkboard and them Teacher explains the topic again	Pupils estimate and say the answer Pupils listen
CONCLUSION	3minutes		

Constructive Play Instructional Package for Numeracy (CIPN)

LESSON 12

Subject: Numeracy

Date:

Class: Primary One

Weekly theme: Comparing Length

Topic: Comparing Lengths

Duration: 40minutes

Method: Constructive Play

Behavioral Objective: At the end of the lesson, pupils should be able to;

1) Identify the Tens and Units in a two-digit number
2) Estimate lengths using the phrase 'shorter than'.

Instructional materials:
Pairs of objects of different lengths, eg long and short rulers, books and sticks.

	DURATION 45minute	TEACHERS ACTIVITIES	PUPILS ACTIVITIES
INTRODUCTION	10minute	The teacher introduces the lesson by writes 'longer than' and 'shorter than' on the chalkboard. And showing pupils pairs of objects and asks them which is shorter? And which is longer?	Pupils listen and response to teacher question
PRESENTATION Step 1		The teacher explains to the class that we use 'is taller than' when we are estimating heights. And also explains that we use the words 'longer than whenever we are estimating length or distance.	
Step 2	5minute	The teacher take pupils out of the class to school garden and asks them to say which tree is taller, ie 'this tree is taller that tree.'	Pupils listen Pupils listen and answer the question correctly
Step 3	10minute 5minute	The teacher asks the pupils to compare the length of two sticks and say 'this stick is longer than that tree.	Pupils draw snakes and name them.
Step 4		The teacher draw and name snakes of different sizes on the chalkboard and ask pupils to draw the snakes in order of size Teacher write the following questions on the chalkboard: Which snake is longest? Which snake is shortest? Which snake is longer than the other snakes? Teacher ask pupils to show their pictures of snakes to the class and say 'this snake is shorter than this snake or this. The	
EVALUATION	5minutes		Pupils response to teacher question very well Pupils the show the picture of their snake to the class.sPupils listen
CONCLUSION	7minutes		

	3minutes	teacher explains the topic briefly.	

Appendix D

Social Play Instructional Package for Numeracy (SIPN)

LESSON 1

Subject : Numeracy

Date:

Class: Primary one

Topic: Numbers

Sub-topic: Counting 0-99

Duration: 40minute

Method: Social play

Behavioral Objective: by the end of lesson, pupils should be able to;

Count numbers from 0-99

Instructional materials:

Large clock with moveable hands, a set of 0-9 number blocks for each pair of pupils, bundles of 9 tens and 10 units, using straws or sticks for each pair.

Introduction:

Teacher's activity: Teacher introduces the lesson by asking pupils to count from 0-100 forward and then backwards. Teacher also call out numbers and chooses some pupils to tell the next three numbers e.g: 17 (18, 19, 20)

Pupils' activity: Pupils are able count the numbers very well, they were answer the one after the other l

Presentation:

Teacher activity step 1: Teacher writes randomly two digit numbers on the chalkboard and chooses some pupils to read them to the class.

Pupils activity step 1: Pupils take turns in reading the two digit number correctly to the class

Teacher activity step 2: Teacher chooses some other pupils to tell the number that come before and after each number writes on the chalkboard

Pupils activity step 2: some of the pupils chosen answer it correctly

Teacher activity step 3: Teacher gives each pair a set of 0-9 number block and asks them to pick two blocks and make a two –digit number using those two blocks.

Pupils activities step 3: Pupils take turns when pick the block, they were able to make two digit using two block and write that number in their exercise books and say it to their partner.

Teacher activity step 4: Teacher ask pupils to use the same two block to make a different number and write it in their exercise books. She asks the pair to repeat until they have 10 numbers written in their exercise books

Pupils activity step 4: Pupils make each number using their bundles of tens and units

Evaluation : Teacher asks each pair to read out a number from their list and asks them to show the class their bundles of Tens and Units.

Conclusion Teacher concludes the lesson by emphasizing necessary points and ideas.

Social Play Instructional Package for Numeracy (SIPN)

LESSON 2

Subject : Numeracy

Date:

Class: Primary one

Topic: Numbers

Sub-topic: making number

Duration: 40minute

Method: Social play

Behavioral Objective: by the end of lesson, pupils should be able to;

Make two-digit numbers.

Instructional materials:

Big clock and card clock with moveable hands, a set of 0-9 number blocks for each pair of pupils, bundles of 9 tens and 10 units, using straws or sticks for each pair.

Introduction:

Teacher's activity:

Teacher introduces the lesson by draw a blank hundred square on the chalkboard and chooses some pupils to writes in the numbers. Teacher also asks pupils to count forwards and backwards using the hundred square.

Pupils' activity: Pupils are able write the numbers very well

Presentation:

Teacher activity step 1: Teacher write a number from 0-99 and ask the pupils to point at two digit number.

Pupils activity step 1: Pupils take turns when point at the two digit number correctly

Teacher activity step 2: Teacher writes three consecutive numbers on the chalkboard, e.g: 45, 46, 47. And asks pupils to tell the next two numbers

Pupils activity step 2: pupils answer it well one after the other

Teacher activity step 3: Teacher gives each pair bundles of tens and units and set of 0-9 number block. Teacher call out two-digit number and ask pupils to use their bundles of tens and units to make the number, teacher repeat for five different number

Pupils activities step 3: Pupils writes that number in their exercise books and say it to their partner

Evaluation : Teacher asks pupils to explains how to writes tens and unit as T and U and then writes the number.

Conclusion Teacher concludes the lesson by emphasizing necessary points and ideas.

Social Play Instructional Package for Numeracy (SIPN)

LESSON 3

Subject : Numeracy

Date:

Class: Primary one

Topic: Numbers

Sub-topic: Reading and matching the numerals 0-100

Duration: 40minute

Method: Social play

Behavioral Objective: by the end of lesson, pupils should be able to;

Order numbers from 0-100

Instructional materials:

Have ready a set of 0-100 number blocks, bundles often and 10 sticks. Practice singing '10 little finger'

Introduction:

Teacher's activity: Teacher introduces the lesson by arrange the pupils in a circle and sing '10 little fingers.' And asks each pupils say a number, counting in order from 1. Pupils continue until they have all had a turn and repeat starting with different numbers

Pupils' activity: Pupils sing together 10 little finger very well .

Presentation:

Teacher activity step 1: Teacher divide the number cards into Tens, shuffle them and give each group a set of Ten, e.g 0-9 or 30-39 and asks the pupils to put their cards in the correct order

Pupils activity step 1: Pupils wait for their turn when collecting number card and put their cards in the correct order

Teacher activity step 2: Teacher asks each group to readout their numbers in order, starting with the group that has 0-9 and counting until it reach 100.

Pupils activity step 2: Each group of pupils cooperate with each when the answer question

Teacher activity step 3: Teacher asks each group to come out and arrange themselves with their number cards in order from 0-100 and asks them to read their numbers in order until they reach 100

Pupils activities step 3: Pupils take turns in arrange themselves with their number card and read the numbers in order

Evaluation: Teacher asks each group to make 36 with their bundles and sticks

Conclusion: Teacher asks each group to make 36 with their bundles and sticks

Social Play Instructional Package for Numeracy (SIPN)

LESSON 4

Subject : Numeracy

Date:

Class: Primary one

Topic: Numbers

Sub-topic: less than and greater than

Duration: 40minute

Method: Social play

Behavioral Objective: by the end of lesson, pupils should be able to identify greater than and less than sign

Instructional materials:

bottle top, small block, and a writes different number between 0-100 inside each block, chart display less than and greater than on large flash card

Introduction:

Teacher's activity: Teacher introduces the lesson by show the 'less than' and greater than flash card and asks two pupils to come out, chooses a number block each and hold them up. Teacher asks another pupil to stand between the pupils holding the greater than card and rest of pupils to read it, e.g: 25 is greater than 14.

Pupils' activity: Pupils chooses a number block and hold them up and another pupil say the answer

Presentation:

Teacher activity step 1: Teacher asks the rest of the class to say if it is correct or not. And it is right, teacher writes the result on the chalkboard and repeat with different numbers.

Pupils activity step 1: Pupils answer it well

Teacher activity step 2: Teacher repeat this activity using the 'less than' card.

Pupils activity step 2: pupils listen

Teacher activity step 3: Teacher asks each group to chooses 6 number cards and put them on the floor in front of them. Teacher give out the bottle tops and asks the pupils to place each bottle top on one of the number cards. Asks the group member to say whether the number written on the bottle top is less than or greater than the number underneath it.

Pupils activities step 3: Pupils cooperate with each other and the group member take turn in answer the question.

Teacher activity step 4: Teacher ask pupils to write the results in their exercise books, eg: ’12 is less than 25. Asks each group to say a ‘greater than’ or ‘less than’ answer they have made.

Pupils activity step 4: Pupils said 12 is less than 25

Evaluation: Teacher asks pupils make 3 different number and write ‘greater than and less than’

Conclusion: Teacher asks each group to make 36 with their bundles and sticks

Social Play Instructional Package for Numeracy (SIPN)

LESSON 5

Subject : Numeracy

Date:

Class: Primary one

Topic: Two dimensional shapes

Sub-topic: Sorting of two dimensional shapes

Duration: 40minute

Method: Social play

Behavioral Objective: by the end of lesson, pupils should be able to;

4) Sort shapes into squares, rectangle, circles
5) Identify and name two dimensional shapes as squares, rectangle and circle
6) Identify shapes in our environment that are squares, rectangle and circle

Instructional materials: Blocks, straw, card board, ball

Introduction:

Teacher's activity: Teacher introduces the lesson by asking pupils to name different shapes they are familiar with? Teacher also asks the following questions:

i. what is the shape of clock?
ii. What is the shape of desk?
iii. What is the shape of your classroom?

Pupils' activity: pupils give their various understand of shapes of clock, desk and classroom

Presentation:

Teacher activity step 1: Teacher explains two dimensional shapes (2D) two dimensional shapes is geometrical figure that has two dimensional which are length and width. The two dimensional shapes has no height and it also known plane shapes

Pupils activity step 1: pupils take turn in naming shapes that have length and width

Teacher activity step 2: Teacher gives examples of two dimensional shapes e.g squares, rectangles, and circles

Pupils activity step 2: pupils take turn in naming object that have shapes of the square, rectangle and circle

Teacher activity step 3: from the block provided teacher sort out into squares, rectangles and circle

Pupils activities step 3: pupils work together as a group to sort out shapes into squares, rectangle, circles

Evaluation : Teacher asks pupils sort shapes into square, rectangle and circles and identify and name two dimensional shapes

Conclusion Teacher concludes the lesson by emphasizing necessary points and ideas.

Social Play Instructional Package for Numeracy (SIPN)

LESSON 6

Subject : Numeracy

Date:

Class: Primary one

Topic: Halves and quarter

Sub-topic: Halves

Duration: 40minute

Method: Social play

Behavioral Objective: by the end of lesson, pupils should be able to;

1) Identify circles, squares, rectangles, and triangle
2) Divide a shape into two equal parts and describe each part

Instructional materials:

Have ready a two dimensional shape (circle, square, rectangle, and triangle for each pupils), also make a larger circle, square, rectangle and triangle written on each shape .

Introduction:

Teacher's activity: Teacher introduces the lesson by cut the large circle into equal pieces and showing the two halves to the class. And place one on top of the other and show the pupils that are exactly the same size.

Pupils' activity: pupils listen attentively

Presentation:

Teacher activity step 1: Teacher asks the pupils if they remember what we call each part, ie: a half. **1/2**

Pupils activity step 1: Pupils say that when we divide something into equal parts each parts is called a half

Teacher activity step 2: Teacher gives each pupil a circle. And asks them to draw a picture on their circle and then fold it exactly in half. Teacher also tells them to unfold the circle and draw along the dividing line.

Pupils activity step 2: Pupils follow the instruction given to them by their teacher and take turn in showing the teacher their result

Teacher activity step 3: Teacher asks the pupils to cut or tear their shape down the dividing line and put them face down on the desk. Asks the groups to mix their shapes up and spread them out. In turn, tell the pupils to turn over two halves and see if they match, return them face down and the next pupil takes turn

Pupils activities step 3: pupil cooperate with each other, pupils to collect the most whole shapes is the winner.

Evaluation: Teacher ask each group to explains what they get when separate the two pieces (two halves

Conclusion: teacher explains the topic again briefly

Social Play Instructional Package for Numeracy (SIPN)

LESSON 7

Subject : Numeracy

Date:

Class: Primary one

Topic: Halves and quarter

Sub-topic: dividing numbers in half

Duration: 40minute

Method: Social play

Behavioral Objective: by the end of lesson, pupils should be able to;

1) Say which two dimensional shapes fit together
2) Divide objects in half

Instructional materials:

Have ready a two dimensional shape (circle, square, rectangle, and triangle for each pupils), also have ready the everyday objects with the 2D faces, several pairs of scissors and some newspapers

Introduction:

Teacher's activity: Teacher introduces the lesson by ask pupils to stand facing the class, shoulder to shoulder. Teacher stand in between them, dividing them in half, then we now have one pupil on each side of teacher

Pupils' activity: pupils comply with their teacher instruction and pupils understand half

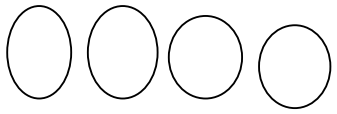
Presentation:

Teacher activity step 1: Teacher explains that divide means to put into groups. and also tell pupils that you have divided the number two in half. Say half of 2 is 1. Teacher repeat with four pupils. That is half of four pupils is two pupils

Pupils activity step 1: Pupils take turns in repeat with different numbers

Teacher activity step 2: Teacher gives each group a bag of blocks and asks them to divide the blocks in half. Teacher asks them to say their answers: Half of number of block is -------.**Pupils activity step 2:** Each Pupils draw arrow of circle in their exercise books

Teacher activity step 3: Teacher asks pupils to draw a row of four circles in their exercise books



Teacher asks pupils to draw a line down the middle so that there are two circles on either side of the line:

Teacher asks the pupils to write how many circles they have in each half: 1/2 of 4=

Pupil̄s activities step 3: Pupils draw arrow of circle in their exercise books

Evaluation: Teacher ask pupil to draw circles to work out half of the following numbers:6, 8, 10

Conclusion: teacher explains the topic again briefly

Social Play Instructional Package for Numeracy (SIPN)

LESSON 8

Subject : Numeracy

Date:

Class: Primary one

Topic: Halves and quarter

Sub-topic: Quarter

Duration: 40minute

Method: Social play

Behavioral Objective: by the end of lesson, pupils should be able to;

1) Identify and name 2D shapes
2) Divide shapes into quarter

Instructional materials:

Have ready a two dimensional shape (circle, square, rectangle, and triangle for each pupils), also have ready the everyday objects with the 2D faces, several pairs of scissors and some newspapers.

Introduction:

Teacher's activity: Teacher introduces the lesson by ask pupils, How many parts are there when you divide something in half? And what can you tell me about each part? (they are the same size.) teacher also show pupils the orange and say it is a whole orange, teacher write 1 orange on the chalkboard. Cut it and ask pupils what I have done

Pupils' activity: pupils take turns in saying you cut into equal part and each part is called half

Presentation:

Teacher activity step 1: Teacher chooses a pupil to write ½ on the chalkboard. Teacher tell the pupils you are going to cut each piece in half again.

Pupils activity step 1: pupil write 1/2 on the chalkboard and cut piece of paper into equal part

Teacher activity step 2: Teacher show pupils the four equal parts and tell them that four equal parts are called quarters. And writes ¼ on the chalkboard.

Pupils activity step 2: pupils listen and watch teacher while divide into quarter, pupils repeat activities themselves by divide into quarter

Teacher activity step 3: Teacher take a paper circle and remind the pupils how to fold it in half and show them how to fold it in half again. Open up the circle and show the lines dividing it into quarters.

Pupil̄s activities step 3: pupils fold into quarter

Evaluation: Teacher asks pupils how many people can have an equal share of an orange divided in half and also how many people can have an equal share of an orange into quarters

Conclusion: teacher explains the topic again briefly

Social Play Instructional Package for Numeracy (SIPN)

LESSON 9

Subject : Numeracy

Date:

Class: Primary one

Weekly theme: Halves and quarter

Sub-topic: Halves and quarter

Duration: 40minute

Method: Social play

Behavioral Objective: by the end of lesson, pupils should be able to;

1) Identify and write the names of shapes
2) Identify halves and quarters in 2D shapes

Instructional materials:

Have ready lots circle, square, rectangle, and triangle cut out of paper for each group, several pair of scissors, lots of colour pencils and lots of newspaper.

Introduction:

Teacher's activity: Teacher gives each pupil a sheet of newspaper and ask them to fold it in half and then quarters.

Pupils' activity: Each pupils fold paper in halves and quarters and take turn in showing it to their teacher

Presentation:

Teacher activity step 1: Teacher writes the names of the shapes on the chalkboard. Gives out shapes and ask pupils to sort out the shapes that are the same.

Pupils activity step 1: Pupils sort out the shapes that are the same.

Teacher activity step 2: Teacher gives each group a set of shapes and tell them to divide each shape into halves and quarters by folding. On each shape teacher ask them to label

one half ½ and one quarter ¼ teacher also asks the pupils to look carefully at their shapes and say what they notice about halves and quarters

Pupils activity step 2: pupils divide each shapes into halves and quarter

Teacher activity step 3: Teacher show them that two quarters are the same as a half. And show them how to write 2/4

Pupil̄s activities step 3: pupils watch their teacher and repeat the activities themselves

Teacher activity step 4: Teacher tell them to shade in three quarters on one of their shapes. And show them how to write ¾

Pupils activity step 4: pupils fold into quarter

Evaluation: Teacher asks pupils to name the shapes and identify halves and quarters in 2D shapes.

Conclusion: teacher explains the topic again briefly

Social Play Instructional Package for Numeracy (SIPN)

LESSON 10

Subject : Numeracy

Date:

Class: Primary one

Weekly theme: comparing height

Topic: Taller and smaller

Duration: 40minute

Method: Social play

Behavioral Objective: by the end of lesson, pupils should be able to;

1) Use a number square to identify missing numbers.
2) Use the 'taller' and 'smaller

Instructional materials:

Draw hundred square on the chalkboard. Rub out the numbers: 2,7, 12, 15, 18, 21, 23, and 27. And practicing singing 10 chunky chickens.'

Introduction:

Teacher's activity: Teacher briefly explains what 'height' means in the pupils' local language. And asks all pupils to stand up and make a line around the classroom in order of their height. Explain to them that we use the words 'tall' and 'short' when we are estimating height.

Pupils' activity: pupils take turn in measure their height with the line made around the classroom

Presentation:

Teacher activity step 1: Teacher asks pupils which words they use in their language. The tallest person should be at one end and the shortest at the other. And writes the words 'taller' 'shorter' and 'tallest' and 'shortest' on the chalkboard

Pupils activity step 1: Pupils answer (giga) and comply with teacher instruction

Teacher activity step 2: Teacher ask pupils the following questions:

'who is the tallest in the class?

'who is the shortest in the class?

'Is (pupil's name) shorter than (another pupils' name)?

'Is (pupil's name) taller than (another pupils' name)?

Pupils activity step 2: pupils (tallest and shortest) stay in front of the classroom for other pupils to understand meaning of tallest and shortest

Teacher activity step 3: Teacher tells the pupils to find a partner. Asks them to decide which one of them is the tallest and which is the shortest. Teacher ask pupils to draw a line to divide a page of their exercise books in half and ask them to draw themselves on one half and their partner on the other half.

Pupīls activities step 3: pupils take turns in showing their result to their teacher

Teacher activity step 4: Teacher tells the pairs to writes names and the words 'taller' and 'shorter' underneath the correct drawing.

Pupils activity step 4: pupils response to teacher question

Evaluation: Teacher asks pupils to estimate if they are taller or shorter than the door, the chalkboard and them

Conclusion: teacher explains the topic again briefly

Social Play Instructional Package for Numeracy (SIPN)

LESSON 11

Subject : Numeracy

Date:

Class: Primary one

Weekly theme: comparing height

Topic: longer and shorter

Duration: 40minute

Method: Social play

Behavioral Objective: by the end of lesson, pupils should be able to;

1) Use the terms ‘longer’ and ‘shorter’
2) Group number from 10-99 into Tens and Units.

Instructional materials:

Bundles of Tens and Units for each group and two sticks of different sizes for each pairs

Introduction:

Teacher’s activity: Teacher introduces the lesson by show the class two sticks asks them which is longer and which is shorter in their local language. Teacher also tells pupils that we can use the words ‘long’ and ‘short’ when we are estimating length

Pupils’ activity: pupils listen and response to teacher question

Presentation:

Teacher activity step 1: Teacher explains that ‘longer’ and ‘shorter’ are used to compare two objects

Pupils activity step 1: pupils listen

Teacher activity step 2: Teacher asks pupils questions to help them understand the meaning of longer and shorter, eg:

Is this pencil longer or shorter than this pencil?

Is this finger longer or shorter than (other finger)?

'Is (pupil's name) taller than (another pupils' name)?

Pupil's activity step 2: pupils listen and answer the question correctly

Teacher activity step 3: Teacher gives out the sticks and asks each pair to hold up the shorter stick. Teacher tells them to say this stick is shorter stick and repeat with longer stick.

Pupil's activities step 3: Pupils take turn in talk about the objects they have drawn using the longer and shorter

Teacher activity step 4: Teacher asks pupils to draw a long stick and a short stick in their exercise books. And tell them to write 'longer' and 'shorter' under the correct drawings.

Pupils activity step 4: pupils draw long and short stick in their exercise book and pupils were asks to bring their drawing one and after the other

Evaluation: Teacher ask them to draw other longer and shorter objects eg: pencils, rulers, and ask them to writes 'longer' and 'shorter' under the correct drawings.

Conclusion: teacher explains the topic again briefly

Social Play Instructional Package for Numeracy (SIPN)

LESSON 12

Subject : Numeracy

Date:

Class: Primary one

Weekly theme: comparing height

Topic: comparing height

Duration: 40minute

Method: Social play

Behavioral Objective: by the end of lesson, pupils should be able to;

1) Identify the Tens and Units in a two-digit number
2) Estimate lengths using the phrase ‘shorter than’.

Instructional materials:

Pairs of objects of different lengths, eg long and short rulers, books and sticks.

Introduction:

Teacher’s activity: Teacher introduces the lesson by write ‘longer than’ and ‘shorter than’ on the chalkboard. And show pupils pairs of objects and asks them which is shorter? And which is longer?

Pupils’ activity: pupils listen and response to teacher question

Presentation:

Teacher activity step 1: Teacher explain to the class that we use ‘is taller than’ when we are estimating heights. And also explain that we use the words ’longer than whenever we are estimating length or distance.

Pupils activity step 1: pupils listen

Teacher activity step 2: Teacher take pupils out of the class to school garden and asks them to say which tree is taller, ie 'this tree is taller that tree.' Teacher ask the pupils to compare the length of two sticks and say 'this stick is longer than that tree.

Pupils activity step 2: pupils listen and the question correctly

Teacher activity step 3: Teacher draw and name sticks of different sizes on the chalkboard and asks pupils to draw the sticks in order of size

Pupils activities step 3: Pupils draw sticks and name them.

Teacher activity step 4: Teacher writes the following questions on the chalkboard:

Which snake is longest? Which stick is shortest? Which stick is longer than the other sticks?

Pupils activity step 4: pupils take turn in response to the question

Evaluation: Teacher asks pupils to show their pictures of sticks to the class and say 'this stick is shorter than this stick or this stick is longer than this stick' one after the others.

Conclusion: teacher explains the topic again briefly