RELATIONSHIP BETWEEN USE OF EDUCATIVE PLAY MATERIALS AND COGNITIVE DEVELOPMENT OF NURSERY SCHOOL CHILDREN IN NIGER STATE, NIGERIA

BY

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FACULTY OF EDUCATION
AHMADU BELLO UNIVERSITY, ZARIA, NIGERIA

AUGUST, 2015.

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Rhoda Stephen GATA
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A DESSERTATION SUMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES
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DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION
FACULTY OF EDUCATION
AHMADU BELLO UNIVERSITY, ZARIA, NIGERIA

AUGUST, 2015.

DECLARATION

I declare that the work in the Dissertation titled "Relationship between use of Educative Play materials and cognitive development of Nursery School Children in Niger State" has been conducted by me in the Department of Vocational and Technical Education, under the supervision of Prof. P.E. Onuigbo and Prof. E. Ike. The information derived from the literature have been duly acknowledged in the text and a list of references provided. No part of the thesis was previously presented for another degree or Diploma at this or any University.

_____ _____

Rhoda Stephen GATA **Date**

CERTIFICATION

This Dissertation "Relationship Between use of Educative Play Materials and Cognitive Development of Nursery School Children in Niger State" written by Rhoda Stephen GATA, meets the regulations governing the award of the Degree of Master in Education, Home Economics (family and child development) of Ahmadu Bello University Zaria and was approved for its contributions to knowledge and literary presentation.

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DEDICATION

This work is dedicated to my beloved father Mr. Bawa Bahago (late).

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ABSTRACT

This study objective was to investigate the "Relationship between use of Educative Play Materials and cognitive Development of Nursery School Children in Niger State". Four specific objectives with four research questions were stated and three null hypotheses were raised. Among the objectives were to identify different types of Educative play materials in Nursery schools in Minna Educational Zone, Niger state, and to assess the difference in cognitive development among Nursery school children who were exposed to Educative play materials and those that were not: Experimental research design was adopted for the study. The population for the study was 10,152 nursery school children. The sample size for the study was 240 Nursery school children. Sixty (60) children per school were drawn from four private Nursery schools Minna Educational Zone, Niger State. Thirty (30) children, 15 male and 15 female served as experimental group and control group respectively. Two types of instruments were used to collect data. Questionnaires were administered to the proprietors/proprietresses of the four sampled schools. The questionnaire provided information for research question one, while Intelligence (standardized Intelligent Quotient (IQ) test Wechsler Preschool and primary scale of intelligence revised (WPPSIR) modified by the research was the instrument used to collect data from Nursery school children through administration of pre and post tests. The collected data from proprietors of the four sampled schools were statistically analyzed in a tabular form using descriptive statistics such as frequencies and percentages, while data from children were analyzed using one sample t-test to test for the three null hypotheses at 0.05 level of significance. The result on the tested null hypotheses showed $P<0.05$ for all the null hypotheses at 0.05 level of significance, that (1) There was a significant difference in the cognitive development of nursery school children who used Educative play materials and those who did not (2) There was a significant different in the cognitive development between male and female nursery school children who were exposed to Educative play materials. (3)There was also a significant difference in the cognitive development between urban and rural nursery school children who were exposed to Educative play materials. The study concluded that Educative play materials actually helped in improving children cognitive development and performance when they are effectively utilized for the purpose of teaching and learning. The study recommended that there is the need for schools to invest more in purchasing Educative play materials as it has been found that it could enhance children cognitive development.

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Operational Definition of Terms

EPM : An abbreviated form for Educative Play Materials being the research instrument designed to assess nursery school cognitive development and performance.

Nursery school : A pre-primary school setting established to prepare children for primary education

Post-Test : A post-situational assessment of the children either in the experiment or control groups with the design instrument for the research

Pre- Test : A pre-situational assessment of the children either in the experiment or control groups with the design instrument for the research

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Children are the future leaders of every nation and are the most treasured possessions in our homes and the society at large. It is therefore important to see to their overall development particularly cognitive wise. Bergen and Mauer (2000) in their longitudinal study, found that children who had high level of play with literacy play materials in pre-school and kindergarten programs were likely to be spontaneous readers of placed signs and had greater pretend verbalization in a "town building" activity at age five. Almon (2002) asserted that play materials serves the purpose of constructive behavior and cognitive development Akande (2007) see child's play as a phrase which described a simple task, requiring little effort. Play importance to the cognitive development of pre-school child cannot be over emphasized. Hildebrand (2007), affirms that most psychologist believe that the environment in which the child grows up play an important role on the child's cognitive development. He further said that an environment that is rich in stimulation and offers a variety of experience helps to promote cognitive development, while an environment that lacks stimulation hamper it. He also noted that children will not read if there are no books and they will not draw if there are no drawing materials such as plain papers, pencils, crayon and others.

In spite of the above mentioned benefits of play and play materials on cognitive development of nursery school children, few research have been undertaken in this areas for instance, study on the use of playground facilities on pre-school children psychomotor development (Okosun, 2009). "Effects of play materials on pre-school social development" (Tabal, 2009).

Play is highly desirable and cherished by children. It is said to be a vehicle for accelerating the child's cognitive development. Dacey and Travers (2004) define play as an activity that children engage in, because they enjoy it for its own sake. They see play as one of the most profound expressions of human and one of the greatest innate resources for learning and invention. Play is a universal activity for all healthy children. It is a form of recreation that has a great educational value. Play is a state of being that is intensely pleasurable. It energizes and enlivens one

Educative toys or play materials according to Wikipedia Encyclopedia (2007) are typical objects typically built for and used by children to play with, they help them learn. Studies has shown that early exposure of children to appropriate play activities and materials is important and provides a sound basis for development. Play and play materials are essential to pre-school children because they contribute to cognitive, physical, social and emotional well-being of children.

Hobart and Frankel (2000) defined cognitive development as the way in which we learn to think. It includes being able to concentrate, remember, recall and understand information. As children develop intellectually, they are able to think logically and creatively and to relate past learning to solving present problems. Cognitive development or thinking and reasoning skills progresses from simple to more complex understanding of time, letters, counting and color. As children are able to follow increasingly more detailed commands, play gradually become more intensive and richly imaginative (http://children .webbing/com./te./ growth and development-ages 2 to 5 years topic cover view 4/18/10).

Cognitive development according to Aggarwal, (2005) is the progressive changes in the mental process which go on from birth to death. Cognitive or intellectual development is the development of mental abilities and capacities which help an individual to adjust his behavior to the ever changing environmental conditions or to enable him to accomplish a task that needs complex cognitive abilities.

Hildebrand (2007) viewed cognitive development as a child's growing ability to perceive, remember, think reason and solve problems. He went further to say that studies have shown that cognitive development increases if children live in a stimulating environment during their early years. Such an environment is one that enables them to use their five senses such as colorful objects to look at, interesting sounds to hear and a variety of things to touch.

Nursery/Pre-school Education is the education given in an educational institution to children aged 3-5years prior to their entering primary school. (Oyekan, 2006). This is done to lay a solid foundation for the child to have all round development. According to Dacey & Travers (2002) pre-school education involves the earliest phases of childhood, beginning in infancy and ending upon entry into Primary School at about 5 to 6 years of age. The Pre School years is a time when stable concepts are formed, mental reasoning emerges, egocentrism begins strongly and then weakness, while magical beliefs are constructed. Huxley, (1996) considered Nursery Schools Children as whirlwind of activities, as active explorers of the world around them. He described them in terms of their cognition as "little Explorer" as they seek to understand how the world operates and functions.

1.2 Statement of the Problem

Studies have shown that play help children adjust to the school setting and also enhance to children's learning readiness, learning behaviour and problem solving skills that increase their intelligent quotient (IQ) as well as emotional health (Hobart and Frankel, 2000; Minnet, 2000; Thornton, 2003; Fantuzzo, Sekino and Cohen, 2004; Kytta, 2004; Gwen, 2008; and Oncu and Omluver,2010). Most of these researches were conducted in developed countries like United of America, Britain, France, Canada, Japan, Germany and Netherland reported positive correlation between play materials and children cognitive development.

However their findings, most schools and parents in developing countries like Nigeria do not care to provide or purchase their children with educative play materials to play with at school environment and home specifically (Olaitan and Akpan, 2003; Akande, 2007; Ari and Auta, 2007; Ike, 2007; Okosun, 2009; and Tabat, 2009). The researcher also observed that majority of schools in Niger state lacked play materials that are vital to children cognitive development. It is against this backdrop, that this study is being undertaken to investigate, interrogate and assess the relationship of educative play materials and cognitive development of Nursery-school children in Niger state.

1.3 Objectives of the Study

The main objective of the study was to assess the relationship between the use of educative play materials and cognitive development of Nursery-school children in Niger State. (Minna Education Zone).

Specific objectives of the study were:

1. Identify different types of Educative Play Materials in Nursery Schools in Niger State.
2. assess the difference in cognitive development among Nursery School children who are exposed to Educative Play Materials and those that are not.
3. assess the difference in cognitive development between male and female Nursery School children who are exposed to educative play materials.
4. ascertain the difference in the cognitive development of urban and rural Nursery School Children who are exposed to educative play materials.

1.4 Research Questions

This study will attempt to provide answers to the following research questions.

1. What are the different types of Educative Play materials in Nursery Schools in Minna Educational Zone Niger State?
2. What is the level of cognitive development of Nursery School children who used educative play materials and those that did not?
3. What is the difference in the cognitive development between male and female Nursery School Children that were exposed to Educative Play Materials?
4. What is the difference in the cognitive development between urban and rural Nursery School Children who were exposed to Educative Play Materials?

1.5 Research Hypotheses

The researcher formulated and tested the following null hypotheses:

$H0_1$. There is no significant difference in the cognitive development of Nursery School children who have used educative play materials and those that did not.

$H0_2$. There is no significant difference in the cognitive development between male and female Nursery School children that were exposed to educative play materials.

$H0_3$. There is no significant difference in the cognitive development between urban and rural Nursery School Children who were exposed to educative play materials.

1.6 Significance of the Study

The findings of the study would benefit relevant Ministry of Education of the Niger state, School Regulators and Educational Inspectorate Divisions, School Facility Supervisors, Proprietors and Proprietress of Schools in the State, Colleges of Education, Faculties and Department of Educations, Parents and Researchers in the Field of Children Education. This study will be significant in the following ways

The Government performing its regulatory and inspectorate function could make sure that the provision of child play equipment and materials that would enhance the cognitive development of children in both public and private schools becomes part of requirement needed for the establishment of Schools in the State.

It will guide School Inspectors/Supervisors in proper monitoring of Schools to ensure Schools are up to standard as regard the provision of Educative Play items and Materials by ensuring that findings of the research documented at the State Ministry of Education could be harnessed to achieve this.

The result of this research will guide educators and proprietor to plan and provide suitable Educative Play Materials for different age level of Nursery Schools children to enhance their cognitive development since it does significantly lend credence to their appreciation and performance cognitively.

The study will be of great importance to Teaching Institutions, Departments and Colleges of Educations to know the suitable Educative play materials to provide to Nursery school children for their play activities that would stimulate better cognition of the children in nursery schools.

It will enlighten parents on the importance of adequate provision of play materials on cognitive development of children and guide them on wise selection of Nursery Schools for their children.

The result when completed will serve as terms of reference for future researches; bridge the gap created by previous findings and add to existing body of literature in Children cognitive development vis-à-vis play materials.

1.7 Basic Assumptions of the Study

This study was based on the following assumptions that:

1. majority of parents are ignorant of the benefits of educative play materials on cognitive development of their children.
2. if educative play materials or toys are made available by parents and proprietors of Nursery Schools, their children cognitive development will be enhanced
3. pre-school children who are exposed to educative play materials will develop high level of cognition than those children not exposed to the play materials.

4. male Nursery school children will develop high level of cognition than female children when exposed to Educative Play Materials.
5. nursery school children in urban areas will develop high level of cognition than those in rural areas when exposed to Educative Play Materials.

1.8 Delimitation of the study

The study was delimited to the assessment of the relationship between the use of educative play materials and cognitive development of Nursery School children in Minna Educational Zone of Niger state. This zone was chosen for the study due to the fact that Minna Educational Zone has a high number of private schools. It was delimited to private schools as majority of Nursery are operated by private establishment and individuals. Four Nursery school schools, two in an urban area and two in rural areas with their various proprietor were used for the study.

The study was delimited to Nursery School children between ages of 4 to 5 years who were in nursery three, this was because the researcher felt at this age children could respond to the indices of pre-test and post-test (verbal and non-verbal) The study was also delimited to selected play activities and play materials such as Building blocks, Alphabet blocks, Number blocks, Alphabet and Number Puzzles, Picture Books, and Art &Writing Materials (papers pencils and crayons).

CHAPTER TWO

REVIEW OF RELATED LITERATURE

The related literature for this study was reviewed and presented under the following sub-headings

2.1 Theoretical framework

2.2 Concept of Play and Play materials

2.3 Types of Play

2.4 Types of Play Materials

2.5 Selection of Play materials by parent and teachers

2.6 Play materials for different age levels

2.7 Play materials and activities that stimulates cognitive development in children

2.8 Benefit of play and play materials on children

2.9 Effect of Play/Play materials on child development

2.10 Empirical studies

2.11 Summary of the reviewed literature

2.1 Theoretical Framework

This study is guided by Piaget (1973) theory of cognitive development Jean Piaget's prominent work is his theory on the four stages of cognitive development. He was one of the most influential researchers in the area of developmental psychology in the 20th century whose primary interest was in biological influences on how we come to know, and the developmental stages we move through as we acquire this ability (Singer & Revenson, 1997:13). Piaget (1973) believed that the child plays an active role in the growth of intelligence and learns by doing. He regarded the child as a philosopher who perceives the world only as he has experienced it. Therefore, most of Piaget's inspiration in cognitive

and intellectual development came from observations of children. In fact, Piaget observed and studied his own three children through each stage of their cognitive development. The theory of cognitive development focuses on mental processes such as perceiving, remembering, believing, and reasoning. Reasoning is the essence of intelligence, and reasoning is what Piaget studied in order to discover "how we come to know" (Singer & Revenson, 1997:13). Piaget believed that cognitive development is cumulative; that is, understanding a new experience grows out of a previous learning experience.

Piaget (1973) developed a systematic study of cognitive development in children. His work included a theory on cognitive development, detailed observational studies of cognition in children, and a series of tests to reveal differing cognitive abilities. Through his work, Piaget (1973) showed that children think in considerably different ways than adults do. This did not mean that children thought at a less intelligent degree, or at a slower pace, they just thought differently when compared to adults. Piaget's work showed that children are born with a very basic genetically inherited mental structure that evolves and is the foundation for all subsequent learning and knowledge. He saw cognitive development as a progressive reorganization of mental processes resulting from maturation and experience. Piaget (1973) believed children will construct an understanding of the world around them, and will then experience discrepancies between what they already know and what they discover in their environment. To explain his theory, Piaget used the concept of stages to describe development as a sequence of the four following stages:

Singer and Revenson (1997) explain that these stages unfold over time, and all children will pass through them all in order to achieve an adult level of

intellectual functioning. The later stages evolve from and are built on earlier ones. They pointed out that the sequence of stages is fixed and unchangeable and children cannot skip a stage. They all proceed through the stages in the same order, even though they may progress through them at different rates. At each stage, the child will acquire more complex motor skills and cognitive abilities. Although different behaviours characterize different stages, the transition between stages is gradual, and a child moves between stages so subtly that he may not be aware of new perspectives gained. However, at each stage there are definite accompanying developmental changes in the areas of play, language, morality, space, time, and number (Singer & Revenson, 1997).

Cognitive development is defined by Hobart and Franket (2000) as the way in which we learn to think. It includes being able to concentrate, remember, recall and understand information. It is the progressive changes in the mental process. From birth to death, it is the development of mental abilities and capacities which help an individual to adjust his behavior to the ever changing environmental conditions or to enable him to accomplish a task that needs complex cognitive abilities (Aggarwal 2005).

According to Piaget (1973), cognitive development involves an ongoing attempt to achieve a balance between assimilation (process of taking in new information by incorporating it into an existing schema) and accommodation (what happen when the Schema itself change to accommodate new knowledge) that he termed equilibration. His principle is that cognitive development occurs in a series of four distinct universal stages, each characterized by increasingly sophisticated and abstract levels of thought. Piaget's theory describes the cognitive development of children. Cognitive development involves changes in

cognitive process and abilities. In Piaget's view, early cognitive development involves processes based upon actions and later progresses into changes in mental operations.

Key Concepts of the Theory

The following are the basic concepts of Piaget (1973) cited in Cherry (2012):

Schemas - A schema describes both the mental and physical actions involved in understanding and knowing. Schemas are categories of knowledge that help us to interpret and understand the world. In Piaget's view, a schema includes both a category of knowledge and the process of obtaining that knowledge. As experiences happen, this new information is used to modify, add to, or change previously existing schemas. For example, a child may have a schema about a type of animal, such as a dog. If the child's sole experience has been with small dogs, a child might believe that all dogs are small, furry, and have four legs. Suppose then that the child encounters a very large dog. The child will take in this new information, modifying the previously existing schema to include this new information.

Assimilation - The process of taking in new information into our previously existing schemas is known as assimilation. The process is somewhat subjective, because we tend to modify experience or information somewhat to fit in our preexisting beliefs. In the example above, seeing a dog and labeling it "dog" is an example of assimilating the animal into the child's dog schema.

Accommodation - Another part of adaptation involves changing or altering our existing schemas in light of new information, a process known as accommodation. Accommodation involves altering existing schemas, or ideas, as a result of new

information or new experiences. New schemas may also be developed during this process.

Equilibration - Piaget believed that all children try to strike a balance between assimilation and accommodation. This is achieved through a mechanism Piaget called equilibration. As children progress through the stages of cognitive development, it is important to maintain a balance between applying previous knowledge (assimilation) and changing behavior to account for new knowledge (accommodation). Equilibration helps explain how children are able to move from one stage of thought to the next.

The child cognitive development according to Piaget has six sub-stages and intelligence is demonstrated through motor activity without the use of symbols. Their development is based on physical interaction and experience. Children acquire object permanence at about the seventh month (memory). Physical development allows the child to begin developing new intellectual abilities, while some symbolic (language) abilities are developed at the end of this stage. Intelligence is demonstrated through the use of symbols, language use matures, and memory imagination are developed but thinking is done in a non-logical, non reversible manner. This stage of the theory commence from age two to age seven. This stage is characterized with symbolic representation. Children at this stage use symbols such as words and in make believe play, imitation and drawing or sculpturing to represent something they have seen or experienced.

Piaget's focus on qualitative development had an important impact on education. While Piaget did not specifically apply his theory in this way, many educational programes are now built upon the belief that children should be taught at the level for which they are developmentally prepared. In addition, a number of

instructional strategies and tools have been derived from Piaget's work which are of immense interest to this research. Of great significance is the demonstrable use of play items or materials across the different stages in the development and growth of the child age. The play materials helps in providing a supportive environment, utilizing social interactions and peer teaching, and helping children see the possibilities of learning especially as they play and relate with the play materials. Consequently, this theory comes handy in explicating the use of Educative Play Materials as a way of enhancing children cognitive development so long as it has shown that cognition could be enhanced through the difference stages of the child age and through the exposure of the child to certain play items that have intrinsic learning symbols as well as play tools embedded in them.

Piaget Summary of Cognitive Development of Children

AGE	ACTIVITY
1 month	Watches person when spoken to
2 months	Smile at familiar person talking. Begins to follow moving persons with eyes.
4 months	Show interest in bottle, breast, familiar toy or new surroundings.
5 months	Smiles at own image in mirror, Looks for fallen objects
6 months	May stick out tongue in imitation. Vocalizes at mirror image, may act shy around strangers.
7 months	Responds to own name. Tries to establish contact with a person by cough or other noise.
8 months	Reaches for toys out of reach. Responds to "NO"
9 months	Shows likes and dislike. May try to prevent face or other activities that is disliked. Shows excitement and interest on foods or toys that are well liked.
10 months	Start to understand some words, waves bye-bye. Holds out arm or leg for dressing.
11 months	Repeats performance that is laughed at. Likes repetitive play. Show interest in books.
12 months	May understand some "where is …..?" question, may kiss or request
15 months	Asks for objects by pointing, starting to feed self. Negativism begins.

2 years	Names a few familiar objectives. Draws with crayons. Obeys and participate in paralled play.
2 ½ years	Names several common objects. Begins to draw specific objects. Dresses and undresses doll. Participate in co-operative play. Talks about things that have happened
4 years	May make up silly words and stories. Begins to draw pictures that represent familiar things. Pretend to read and write. May recognize a few common words such as own name
5 years	Can recognize and reproduce many shapes, letter and numbers. Tell long stories, begin to understand the difference between real events and make believe ones. Asks meaning of words.

Source: Miller-Keane (1999).

2.2 Concept of Play and Play Materials

Play according to The Toy Manufacturer for America (2002) is the essential joy of childhood and it is also the way children learn about themselves, their environment and people around them. As they play, they learn to solve problems, get along with other people and control their bodies as they enrich their creativity and develop leadership skills. Almon (2002) believe that play is a dynamic active and constructive behavior; it is an essential and integral part of all children's health, growth, development, and learning across all ages domain and culture. It is a dynamic process that develops and changes as it becomes increasingly more varied and complex. Play is essentially an unproductive activity in which the process is more important than the end.

Dacey and Travers (2002) defined play as an activity that children engage in because they enjoy it for its own sake. They see play as one of the greatest innate resources for learning and invention. Play is the business of children or young ones and they learn from it, to organize their perceptions, test out their experience, manage their feelings, discover themselves, and the world around them, project their self-images, assert their ego, and lead others around them

(Ononuju, 2004). Play allows children to explore on their own rate and on their level. Every child is by nature curious and this curiosity leads directly to learning.

Okeke (2006) Stated that, play occurs daily in the lives of young children as they constantly imitate the people, animals and events around them and around the world.Play is said to be a vehicle for accelerating the child's cognitive development. It transcends all levels of a child's life and engages the emotions and so aids emotional development. (Akande 2007). Play is seen as a universal activity for all healthy children,It is a form of recreation that has great educational value and is generally regarded as something done for enjoyment or pleasure to unwind or relax. Hildebrand (2007) view play as any activity that individual chooses to do and it can be fun and self motivated, it may involve body movement, problem solving and creativity.

Play materials/educative toys according to (Wikipedia Encyclopedia 2007) are typical objects that are typically build for, and used by children to play with, they help children learn. Play materials are those equipment or objects that stimulate children's senses and motor skills, they are open ended materials which enable children learn how to become their own persons they are objects that stimulate play (Gutierrez and Bos 2007).Studies have shown that, early exposure of children to appropriate play activities and materials is important and provides a sound basis for development. Play and play materials are essential to pre-school children because they contribute to cognitive, physical, social and emotional well-being of children.

According to Microsoft Encarta, (2008) play materials are in broad categories and encompass games, puzzles, balls, and other sporty equipments, dolls and action figures, play sets, creative and artistic materials, collectibles,

miniatures of all kinds and a wide variety of other items. When children play with a broad variety of toys/ play materials, the experience help them to develop to their fullest potential. Play materials can be described as those objects or toys that enable children to exercise their imagination in preparation for school and other social settings. They also encourage creativity and skill building, such as, colouring books construction sets and modeling clay.

Play material for age 2 to 6 years are classified into gender specific categories. For example, toy kitchens, make up, house wears and dolls reinforced traditional female roles and are often used in role playing while traditional favourables among little boys are toy trunk and cars, miniature construction equipment, blocks and building sets. Toy weapons such as cap guns, space guns and cow boy guns have also long been popular with boys (Gutierrez and Bos 2007) other play materials designed for early childhood are crayons and paints, modeling clay, board games and push toys. All are desirable for both boys and girls.

2.3 Types of Play

Minett (2000) and Hildebrand (2007) pointed out that children like variety, and during the day changes from one type of play to another. Sometimes they use the same toy. More often, they use different toys because changes stimulate different types of play. Play makes children grow in many ways. It develops their bodies but the category of play differs from one author to another.

Minett (2000) and Hildebrand (2007)

Categorized play into six types. They are:

1. Exploratory or discovery play
2. Physical play

3. Social play
4. Creative play
5. Imaginative, drama or pretend play
6. Manipulative play

2.3.1 Exploratory or Discovery Play: According to Minett (2000) exploratory play enables a child to find out about things, what they are like, their size, shape, texture, colour, how they are made, what he/she can do with them. The child will also discover that they could be broken this can teach the child to take care of his possessions. Hildebrand (2007) stated that exploratory play enables children know how things work, while curious children like to examine and handle many different objects. some may take new toy and squeeze it, shake or put part in their month. They may also discover that musical toy makes a pleasant sound when they pull a string.

White and Stoecklin (1998) In Tabat (2009) discovered that some of the most important learning takes place when children play aimlessly. Some of the basic components of a naturalized play environment that stimulates exploration in children as outlined by them are as follows:

a. Water
b. Plenty indigenous vegetation such as trees, buses, flowers and long grasses that children can explore and interact with.
c. Animal, creatures in ponds, butterflies, bugs.
d. Sand mixed with water
e. Diversity of colour, texture and materials
f. Ways to experience the changing seasons, wind, light, sounds and water

g. Natural places to sit in, on, under, lean against, climb and provide shelter and shade.

h. Different levels and nooks and crannies/places that offer socialization, privacy and view.

i. Structures, equipment and materials that can be changed, actually or in their imaginations, including plentiful loose parts. Attractive toys or play materials lure children into exploration, and independent behavior or engender a sense of security because of familiarity.

2.3.2 Physical play

This type of play takes place when a child is actively moving around, running, jumping climbing, crawling, balancing, swinging and throwing a ball (Watson 1995 in Tabat 2009). Physical play enables them exercise their bodies and improve motor skills, in addition, permits children to relieve tension and also help them master anxiety. Some children enjoy climbing, for this reason climbing structure should be provided to them for climbing experiences, but should not be so high so that children will not fall off them. Swinging ropes and sliding equipment should be erected for children plays but most be properly fixed to avoid accident in homes, schools, or play ground.

2.3.3 Social Play

According to Minett (2000) social play takes place when children play together. It teaches them that antisocial behavior like cheating leads to isolation and loss of friendship. Children often quarrel and in doing so, learn about each others reaction. Hildebrand (2007) opined that between the ages of two and three, children begin to look forward to having another child around when they play. At this ages, they play side by side (parallel play) in this type of play, children make

plans, talk things over and pretend they are people they know from story books, television or the neighbourhood. Through this type of play, children practice these social skills of sharing, taking turns and develops feeling of concern and respect for each other. Friendship becomes more important, children are less self-centered and learn how people differs in their physical looks, personalities, habit and lifestyle at this age (Quisenber 2002 in Tabat 2009).

2.3.4 Creative Play

According to Wilson, (2000) creativity is often associated with artistic expression, music, art, drama and dance but children in their artistic expression may not represent any object that an adult would recognize as such children need to feel free to explore, to put things together and to try using different materials. Children should therefore be provided with different materials for their creative play.

Minett (2000), affirm that creative play is when a child expresses his/her own ideas and feelings to make something which is original for instance, animal in modeling dough, a house in building blocks. Creativity is the ability to produce something original and unique. It is closely related to imagination to create, children use their imagination to make or invent new objects, ideas or processes. (Hildebrand 2007) In creative activities, the process and not the product is important for instance, children try creative ideas by drawing, painting or try modeling things important to them

2.3.5 Imaginative, drama or pretend play

This type of play is also referred to as pretend, dramatic, and representational or fantasy play. In this type of play, the child imagines that he/she is someone else or an animal such as a rabbit or dog. Children imitate the way of

adult when they play in a Wendy house or play shopping. Attempting to behave like someone else helps the child to understand more clearly the ways other people behave (Minett 2000). Through dramatic play, children continue to have bold understanding of their world just like toddlers and young infants do through exploratory play. Stambak and Sinclair (1993) in Tabat (2009) observed that engaging in a dramatic play can have beneficial effects on children's learning, peer relationships and emotional well-being. They further stated that dramatic play allow children the opportunity to use toys and say things they cannot verbalized, do thing they would otherwise feel uncomfortable doing and to express feelings and emotions they might be reprimanded for expressing in their contents.

2.3.6 Manipulative play

Minett (2000) asserted that manipulative play involves skillful use of the hands. During this play, the hand, eyes and brain are being trained to co-ordinate, that is to work smoothly together for instance, babies become increasingly skillful with their hands as they benefit from playing with such things as water, sand and modeling dough. Manipulative play involves hand-eye co-ordination and motor skills. Children need the opportunity to work on finer skills that involves a litter more control and direction. Manipulative play develops the sense of co-ordination, challenging their little fingers to follow the lines or use their tools properly. Examples of manipulative play are:

a. Coloring, especially in a defined area
b. Paper crafts and art involving moving parts that need to be "put together"
c. Using a safe and simple tool kit to help with tasks around the house.
d. Cutting out a sunshine from the window or painting within lines

Davenport (1991) in Okosun (2009) on the other hand stated that, the way children play reflects the way their general behavior develops, from egocentrism to co-operation. He outlined four stages, in young children's play activities as follows:

Age	Type of play	Main features
0 – 2	Solitary play	Toddlers live in a very private world. They play with things in all kinds of inventive ways, exploring and trying things out
2 – 3	Paralleled Play	Although aware of each other's existence, children aren't able to cooperate for very long since each is still thinking egocentrically. They will play alongside, but not with each other.
3 +	Associative Play	The awareness of the other child is increased as they start to communicate
3 +	Co-operative Play	As children start to be able to take other people's wishes and needs into account they start to become more sociable. They gradually learn that co-operation can lead to new and interesting things to do and games to play. They start to be able to make "best friends" out of people who live near and have similar interests, although they can also 'fall out" just as quickly.

2.4 Types of Play Materials

According to Dacey and Travers (2002) play materials can be grouped into four categories such as:

1. Exploratory and mastery play materials
2. Art, music and movement play materials
3. Gross motor play materials
4. Social and fantasy play materials

2.4.1 Exploratory and Mastery Play Materials

These types of play materials according to Kytta, (2004) increases children's knowledge about the physical world. They encourage children to devise ways to enrich their comprehension of "how things work" they also help children

find out about things such as what they are like, their size, shape, texture, colour, how they are made and what they can do with them. The exploratory play materials include puzzle, patterm-making, games, sand, water and string which encourages children search for knowledge (Gutierrrez and Bos, 2007).

2.4.2 Art, Music and movement play materials

These types of play materials helps in the development of artistic expression and include arts, crafts and instrument.

Christie (2001) stated that pre-school children appreciate toys for imaginative play-drawing and painting materials, coloured paper to make pattern, dressing ups clothes. They also enjoy being active outdoor with toys such as balls, climbing frames, tricycles, jigsaws and card games.

2.4.3 Gross Motor play materials

These are types of play materials that aid in the development of motor skills, body movement like running, climbing, jumping, drawing and picking. These types of play material leads to co-ordination of body parts such as picking up a raisin with thumb, and fore-fingers, beading. Some of these play materials including blocks, swings, slides, sand box, tires to mention but a few (Okosun 2009).

2.4.4 Social and Fantasy play materials

These types of play materials encourages the use of imagination and mental representation of objects and events, likewise for deeper understanding of people and the rules one live by. These materials are mostly used in dramatic play, solitary fantasy play and role play. These materials include bricks, dolls and soft toys for bath time (water, floating objects and containers for scooping up water) others include pictures and drawing books, drawing and painting materials, ball,

cards, games, computer games, sewing kids and books which they are able to read (Minett, 2000).

Other play materials/learning toys according to Minnet (2000) and Hildebrand (2007) are:

a. Art and writing supplies
b. Alphabet and number blocks
c. Books, books books
d. Dress up clothes and accessories
e. Music, musical instruments and sound toys
f. Plastic food, plates and cooking untensils
g. Plastic tubs filled with water, sand, corn meal, oatmeal, shaving cream or other sensory rich materials.
h. Pots, pans and plastics storage containers
i. Puppets
j. Puzzles
k. Wooden building blocks

2.5 Selection of Play materials for Children by parent and teachers

Children play happily with many different objects they see around the house or school. They use these objects as toys which come in many forms. According to Essa (1999), Ninnett (2000), Berger (2000), play materials selected for children usage should match the stage of their development. For instance, the construction of early childhood materials should take cognizance of children interest and safety. Children material should eventually be involving and exploratory, they should be the type that can stimulate play. He further said that

children's problem solving skills and imagination would be enhanced by the multitasking and multipurpose roles of the materials.

Minnet (2002) pointed out that items purchases for children use should be sturdy and well-constructed and should be of high quality. For instance, they should be made from hardwood and non-breakable plastics. Young children should not be given toys that requires electricity to power them and all materials should be checked regularly for loose parts, sharp edges, splinter or chipping paint. Play materials for children should convey a sense of equality and tolerance rather than reinforce sexist, racial, or cultural stereotype. There should be ample materials to develop cognitive and psychomotor skills, exercises, promotional language uses that would encourage children socialization and provide them with emotional gratification essential for their cognition.

Berger (2000), opined that some of the best early childhood play materials are not purchase commercially but are made or constructed by teachers and parents. According to him teachers and parents develop and organize classroom resource materials to facilitate planning and programming like dramatic play kits which contains a collection of props for common drama play theme like; Health theme-bandages, empty syringe, hospital gowns, stethoscopes, empty medicine vials, and similar items donated by local doctors hospitals and health care providers. Bakery theme such as rolling pins, cookie cutters, baking pans, muffin, liner and apron. Self-care theme such as small mirror, comb, tooth brushes, hair rollers, empty shampoo bottles and other cosmetics. Other items in play category are empty food containers, plastic cash register, bags, play money and plastic footwears.

The Toy Manufacturers of America (2000), adviced parents on the need to study their children in order to know their interests, abilities and limitations since

not all children enjoy the same kinds of play; one child may be interested in building with blocks or doing puzzles , another may prefer riding bikes or playing ball, your child may enjoy pretending with a doll house or playing board games (Gutierre and Bos 2007) parents and teachers should try matching toys to their children and keep in mind that each child's interest in a toy will often carry through more than one age group.

2.6 Play materials /toys for different age levels

Minett (2000) grouped toys according to children ages

2.6.1 Toys in the first year: - Babies start to play at three months or earlier. They love having objects to handle and to look at. They prefer toys which are brightly coloured and which make noise. Toys for this age group should be attractive, manageable, fun, unlikely to break, washable and safe. (Minett 2000).

2.6.2 Three months

The baby first toy is likely to be rattle, which has to be placed in the baby's hand. The rattle should be light and with a handle which is the right size for a baby to grasp.

2.6.3 Four months

The baby gets pleasure from waving a rattle about. He will also enjoy beads on his pram. The baby handles and kicks the hanging mirrors rattles and beads.

2.6.4 Five months

The baby is able to pick up objects. A wide variety of toys will give him pleasure in the pram, on the tray of his chair on the floor, in the bath and in the garden. As the baby is able to sit up unaided, the range of toys that can be enjoyed is increased.

2.6.5 Ten months

Children of this age level have better co-ordination. They can easily reach for, graph and pick up objects. They enjoy putting things into containers such things as bags, boxes, tins and also taking them out again.

2.6.6 Toys for age 1 – 2years: children begin to take interest in books, children can now stack bricks and play with other toys requiring similar co-ordination skills. They like picture books with simple stories or nursery rhymes. Children who can walk likes "push and pull" toys at two years, they can thread large beads, play with ball, like helping with cleaning, cooking and other jobs their parents do.

2.6.7 Toys for aged 2 – 3 years: children now have sufficient skills with their hands to manage large interlocking bricks, toys which unscrew, the posting box with holes of different shapes, peg boards to harmmer, blackboard and chalks, coloured crayon and posters, paints and modeling dough. They also likes books with pictures and books which they can draw and colour. Children in this age group are particularly interested in sorting and fitting toys, all kinds of blocks and simple puzzles and at sometimes enjoy musical instrument such as tambourines, toy pianos, horns and drums as well as listening to tapes (Mcveign and Duchan, (2003).

2.6.8 Children aged 3 – 5years children of this age group likes toys for imaginative play, drawing and painting materials, coloured paper to make patterns and dressing up clothes. They enjoy being active outdoor with toys like balls, climbing frames. Their interest in books is increased and this help in learning.

2.6.9 Children aged 5 years and above: children at this age are ready for Jigsaws, card game, boards games, computer games, sewing kit and books. They are able to read for themselves (Minett 2000). Olsen and Samson (2000) affirm

that play materials like Dolls and teddy bears have helped countless children to cope with difficult moment. Children sometimes express their feelings to toys and share emotion with them that they may otherwise kept to themselves.

Minett (2000) opined that since play materials comes in many form, only those which gives pleasure should be used as they will give children opportunity to learn. So also materials sold as educative' toys will only be used or played with if the child finds them either funny or interesting. He further stated that children of this age group love toys for imaginative play, drawing and painting materials, coloured papers to make patterns, and dressing up clothes, books, colouring sets, crayons, puzzles, stuffed toys and dolls. Trunks, cars, planes, trains, boats and tractors are fun at this age and wheeled vehicles, 2 wheeled bicycles, helmet and training wheels are also appropriate at this age.

Ari and Auta (2007) also suggested play materials for children/ preschoolers as follows:

Age 0 – 2 years

Sand

Mud

Soft dolls

Tin rattles

Shakers

Age 3 – 5 years

Sand

Mud

Soft doll

Mashed paper

Old cartons

Coloured pencils

Plasticine

Water

Boxes with lids

Water colour

Brushes

Paper scissors

Building blocks

Form boards

2.7 Play Materials and activities that stimulates/enhance cognitive development in children

Cognitive development is the construction of thought processes, including remembering, problem solving and decision making from childhood through adolescent to adulthood (Hildebrand, 2007).

Most psychologists agree that the environment in which a child grows up play an essential role in the Childs cognitive development. An environment that is rich in stimulation and offers a variety of experiences helps promote cognitive development. An environment that lacks stimulation hampers it (Hildebrand 2007). He went further to say that at school and at home, children need to engage in activities that stimulate their cognitive abilities as they will not read if there no books and they will not draw if there are no drawing materials. Studies have shown that the nature and richness of play and the quality of play are influence by the type and variety of play materials and equipment available. Materials and activities should therefore be easily accessible so that children can make use of them.

The following are the play activity that enhance cognitive development as outline by Minett (2000) and Hildebrand (2007).

2.7.1 Learning new words: Hildebrand (2007) opined that talking with children and listening to them are the best ways to help them develop language skills. Books, songs and word games can enrich both listening and speaking skills, pretend games such as housekeeping or workshop play encourages vocabulary development.

2.7.2 Reading Books

Children enjoy having someone read books for them. Parent and caregiver should encourage young children to think about and express what they know as they point out and name the objects thy see in a book. They can look at pictures, identify objects and talk about story. Reading aloud helps children learn new words and ideas (Minnet, 2000).

2.7.3 Supervising Television

Parents or caregiver should set rules limiting children's television viewing, they can select the programme worth watching and turn off the set at other times. Parent should watch television with their children, discuss the programme and clear up any misunderstanding.

2.7.4 Using Computer:

Special Computer programmes can help children learn so many things. Many of the software's programme are designed to teach reading Mathematics and perceptual skills for different and specific age groups. Being exposed to computer at an early age enable children develop computer literacy quickly (Hildebrand, 2007).

2.7.5 Providing extra activities: Trips are wonderful learning opportunity whether they be a visit to an orchard at a harvest time or bus trip down town. Library books and children encyclopedia are good sources of information which can contribute to their cognitive development (Dacey and Travers, 2002).

Others activities includes

2.7.6 Role play

This allows children to use imagination to build up new stories and ideas. They develop images in their mind and try to understand how a particular character will behave. It gives them an understanding of the roles of things and human being in different works of life such as Doctors, fire-fighters Police men.

2.7.7 Puzzles: Pre-schoolers grasp concepts very fast and so, using puzzles involving numbers, alphabets, shapes, colours, sizes aid in their cognitive development, likewise, blocks shapes sorters, jigsaw puzzles also make them think beyond their usual mental boundaries and they try different things by applying their thought processes. These activities encourage the development of problem solving capacities (Okeke, 2006).

2.7.8 Rhymes and finger plays: Music stimulates the senses in a very effective way, listening to nursery rhymes and educational songs involving counting and word formation makes deep Impression on their memory and encourages them to learn in a fun way. Finger plays with puppet and finger toys tickle their creative abilities and inspire them to try something new without any fear (Minnett, 2000).

2.7.9 Memory development

Teachers in pre-schools play a major role in memory development by re-introducing children to activities and tools or toys that were used previously. It

compels them to think in terms of distance and the mere activity of trying to recall works very well. Concrete experience help children in remembering thing of past.

2.8 Benefits of play and play materials on children

Play is a self expressive activity that gives children freedom to try out ideas as well as experiment with old ones. It develops a Childs unique personality and individuals style of creativity. Raver and Zigler (1997) affirmed that play is integral to the academic environment. It ensures that the school setting attends to the social and emotional development of children as well as their cognitive developments. It has also been shown to help children adjust to the school setting and even to enhance children's learning readiness, learning behavior and problem solving skills. Plays are especially useful form of human adjustment, helping the child master anxieties and conflicts. Because tension and anxieties are relieved in play, the child can cope with life problems. What child learn as fun becomes the foundation for intrinsic motivation now and later in life (Minett 2000).

Thornton (2003) stated that play increase intelligence and the more intense the play the higher the chance of high Intelligent Quotient (IQ) as well as emotional health. In the same development. Santrock (2004) sees play as an imitation of the adult world and when properly guided will help children acquire creative skills. He further pointed out that play allows child to use their creativity while developing their imagination, dexterity, physical, cognitive and emotional strength. He asserted that play is important for healthy brain development and that it is through play that children at a very early age engage and interact in the world around them. Play permits children to practice their competencies and play provides the perfect setting for this exercise. For instance, children who have just

learned to add and multiply begin to play with numbers in different ways as they perfect these operations laughing, they are indirectly learning. (Akande 2007).

Eyken (1969) in Okosun (2009) opined that forms of play a child does are the care of his whole future since the entire person is developed and revealed in the most sensitive qualities of his mind. He stressed further that play is seen as equivalent to work and it is even more important in the development of the individual personality. It is a dynamic process that develops and changes as it becomes increasingly more varied and complex.It is considered a key facilitator for learning and development across domain and reflects the social and cultural contexts in which children live. Play is considered as a key facilitator for learning and development across domain and reflects the social and cultural contexts in which children live. As the business of early childhood, play also help children increase concentration and attention and give kids chance to socialize, express emotion and practice motor skills (Ike, 2007, Tabat, 2009).

2.9 Effect of play and play materials on child development

An extensive amount of peer interactions during childhood involves play and childhood play influences the learning skills and learning is the interest of the future of the child (Akande 2007) play as it is aids all types of development be it physical, emotional, social and cognitive.

2.9.1 Physical and motor development:

Children in their nature are restless and are always mobile. Motor skills contribute immensely to their agility and physical fitness (Santrock 2004). He further stressed that motor skills make life much more interesting to children, they naturally use these skills in their play. The skills of running, jumping, climbing, dancing are vital for both boys and girls in the accomplishment of mental

learning. According to Akande (2007) plays like hide and seek provide plenty of physical fitness and require no special equipment.

2.9.2 Cognitive Development

Exploration and mastery play materials increases children knowledge about the physical world, encouraging children to device ways to enrich their comprehension of how things work. (Papalia 2004) Akande (2007) opined that children learn about the objects in their world, what things do and how they were made, like balls, cars, aeroplane and so on. He further said that they operate these objects through play and learn behavioural skills that will help them in the future. Games are good for memory, word pictures or number recognition, all foster cognitive development.

2.9.3 Social and emotional development

According to Santrock (2004) learning to relate with others and learning how to handle, emotions involved in relating to others eventually becomes crucial parts of play. Play increases a great deal the emotional and social development of others, demand a give and take that teaches early childhood youngster the basis of forming relationships (Akande 2007) Hildebrand (2004) opined that co-operative play helps children practice the social skills of sharing toys and take turns, they develop the feeling of concern and respect for each other. He further stressed that when children play with others, they get to know themselves better. They form ideas about themselves by the way others play with them and they develop autonomy and a sense of self-identity. When children decrease their egocentrism, they recognizes the right of others and have a willingness to share. These social skills do not simple appear, they are learned and much of the learning comes through play (Okeke 2006).

2.10 Empirical Studies

The researcher reviewed journals, thesis and research related reports from internet and came up with the following related studies on the topic.

Sook-Young (2001) conducted a research titled "preschoolers' play behaviors with peers in classroom and playground setting". The purpose of the study was to examine the relationship between different setting for young children's play behaviors with peers, forty-one children from 2 to 5 years of age (twenty-one 2- and 3- year old) enrolled in three child care programs participated in the study. The children were videotaped for five minutes each on four different days both indoors and outdoors (total of 40 minutes). The assessment profile for early childhood programs described the quality of the child care program, and additional measures described the playground setting, children play behaviors were categorized using the pattern-smilansky scale, which combines social play categories and cognition play categories of peer interaction. Results showed that the children were more likely to engage in the most complex form of peer play (i.e., interactive dramatic play) outdoors than indoors. In outdoor play, the older age groups were more likely to interact with peers than were the young age group. The outdoor playground offered older preschoolers particular types of play experience (i.e, functional play and dramatic play) more readily than the classroom. These finding reinforced the importance of both indoor and outdoor environment for promoting more complementary play behaviors and peer interactions.

Present study is similar to the past study in the sense that subject (preschool) children were used but sample size of the study differs. Past study used 41 children as sample size, while present study used 240 children and 4

proprietors. The instrument used in collecting data for the past study was parten smilansky scale, while the present study used Wechsler pre-school and primary scale of intelligence (IQ) tests and questionnaire. Present researcher agreed with past research findings which stated that children interaction with peers offered unique contribution to the growth of social and emotional competence, to the acquisition of social skills and values and to the development of the capacity to form relationship with others.

Gmitrova and Gmitrov (2004) conducted a research titled "the impact of pretend play on young children's cognitive development". The research was carried out on two mixed age classes of children 3-6 years attending one kindergarten in the Slovak republic using video to record 26 lessons lasting 25 minutes each. Their analysis was based on observed behavior, such as child to child and /or child to teacher, looking at interaction/communication. The result of their findings indicated that "Pretend" play enhanced the Child's social, emotional and cognitive development. The authors then concluded that high quality pretend play serves as a medium through which children can progress in areas beyond the knowledge curriculum, thus preparing them more fully for the next stage in their formal education.

There are similarities in the past and present study. The past study was on "Impact of pretend play on young children cognitive development" while the present study is also titled "relationship between use of educative play materials and cognitive development of Nursery-school children". The subject used were similar but the instrument for collections of data for past study was videotaping and observation, while the present study used questionnaire and intelligent test. The researcher observed that instrument and the sample of the study was not

stated but agreed with the past research finding and result that showed that pretend play has impact on the cognitive development of young children.

Russ in Ike (2007) conducted a research titled "importance of good fantasy play on children". Experimental research design was used, sample size of the study was 121 children in their first and second years of primary school. Creativity test was used by researcher as instrument for collection of data. At the end of the study, it was found that those children who used more fantasy expressed more emotions as they play with blocks and puppets, and scored highest in uses-for-the object test. In the second study using 31 of the same children in primary six.

The study found out that those who were most sophisticated at play when they were younger did better four years later, not just on object test, but on their ability to sort their way out of stressful situation. He then concluded that good early play skill predicted the ability to be creative and generate solution to everyday problems. Past research is similar to the present in the sense that experimental research design were used for both studies. There were difference in sample size and instrument for collection of data. Previous study made use of 121 children in their first and second years in primary, while in the second study he used 31 of the same children in primary six, this showed that the study was longitudinal. Russ used creativity test as an instrument for collecting data. Present study used 240 children all in nursery three and 4 proprietors. The instrument for collection of data were questionnaires and intelligent (IQ) tests. Present researcher agrees with the previous research findings that early exposure of children to play activities influenced their later creative abilities but felt the sample size in the

second study supposed to be same with the first (121) children for valid assessment and conclusion.

Another research was conducted by Tabat (2009) titled "the Effect of play and play materials on the social development of pre-school children in Kaduna metropolis". The purpose of the research was to assess the effect of play materials on social development of pre-school children in Kaduna state. Experimental research design was used and the sample size was made up of 60 pre-schools children who were randomly selected. Thirty (30) pre-schooler were used as experimental group and thirty (30) as control group. The data were collected through the use of observation by the researcher (watching and recording). The result of the study showed that there was significant difference in the social development of the preschool children who had access to and also used free play and play materials than those who did not.

The present study is similar to the past study because it had similar research problem, research design (experimental) and subject of study but the difference lied in the instrument for collection of data, past study used observation while the present study used questionnaire and intelligent test, past study was carried out in Kaduna metropolis, while the present study was carried out in Minna Educational Zone of Niger State. The researcher agreed with the past research finding and conclusion that children who are exposed to the right play materials and were allowed to engage in free play would be better socially developed then those not exposed to and allowed to engage in free play.

Oncu and Umluer (2010) conducted a research study to examine creativity in children's play and their preference of play materials in a materialist and technological world. Forty (40) children (20) male (20) female were selected from

four pre-schools in the city of Kocaeli, in Turkey. The study consisted of two steps. In the first study, pre-school children (4-5 and 6 years old) preference of toys and real objects as play materials in a pre-organized play area was observed. Observation process was 35 minutes. Children's preference of play materials and /or real objects as play materials and their creativity expressions in play were recorded by two observers.

In the second study, children's individual views about real objects (a whisk, nutcrackers, colander, wrench, hanger, and a badminton ball) as play materials were evaluated within three weeks after the first study. The general results showed that most of the children were not able to show creative expression with different kinds of play materials in their play. In the first study, the result showed that children were highly preferred to use toys as play materials, while in the second study it was found that most of the children were not able to use the object as play materials creativity. It hypothesized that playing children were expected to be creative but the result showed that children had to spend more time for quality and free play and the pre-school teachers had to encourage their children to play freely with different unstructured materials and tools and to play in different areas and situations.

The previous study examined creativity in children's play and their preference of play materials in a materialist and technological world, while the present study assessed relationship between use of educative play materials and cognitive development of Nursery-school children. The previous study was similar to the present in the following ways, pre-school children were used and their age range were similar to the present study, play materials were used in both previous and present study, likewise the research design were same.

The differences lies on the sample size, previous study used two forty pre-school children (20) female and 20 male) while the present study used hundred and forty (240) Nursery-school children and 4 proprietors as sample size. Observation was the instrument used in collection of data on the previous study, while present study used questionnaire and Intelligence Test (IQ) result. The present researcher observed that the sample size of forty (40) pre-school children was inadequate in reference to Gay and Diehi (1992) cited in Okosun (2009) who suggested a sample size of 30 subject per group in an experimental design.

Obadiah (2011) conducted a research title" the impact of After-School-Programme on the socio-emotional behaviors of pre-school children in Federal Capital Territory Abuja". Descriptive research design was used for the study. The sample size of the study was 1,721 pre-school children and 54 teachers. Questionnaire and observation were the instrument used for collection of data.

The result revealed that academic performance of children was low During-After-School programme, level of social behavior exhibited by pre-school children During-After-School-Programme was also low. Present study is was on relationship between use of educative play materials and cognitive development of Nursery school children in Niger State. Present study is similar to the post study in term of subject of study. Both study used pre-school children. There are difference on the research design used, past study used descriptive research design while present study used experimental research design; sample size for past research was 1,721 pre-school children and 45 teachers while present study used 240 pre-school children and 4 proprietor. Past study used questionnaire and observation as instrument for collection of data, while present study used questionnaire and IQ test as instrument for collection of data, present research

agreed with the findings of past study that academic performance of children was low During-After-School-Programme and also that the level of social behavior exhibited by pre-school children During-After-School-Programme was also low.

2.10 Summary of the Literature Review

The literature reviewed for this study addressed the following areas: Piaget Theory of Cognitive development was the theoretical framework for the study, Conceptualization of Play and Play materials as well as types of play and Play Materials used to enhance children cognitive development. Other areas reviewed in this study included the selection of play materials by teachers and parents and how it does contribute to children cognitive development through the various stages of their development.

The literature showed that play materials for children that would enhance their cognition were mostly in toy form, brightly coloured, attractive, fun like and not easily broken. That is to say that they should be durable. The study also reviewed literature that showed that cognitive development of children helped them in identification of problems, problem solving and decision making that enhanced the rate of their performance in school. The study also showed the benefit of educative play materials among other things that it is an integral part of the academic environment where the children learn, enhanced children playability that is natural and medically good for their brain development that is to their psychomotor.

The literature also reviewed empirical studies of the following scholars whose research is significant to this study. Some of the work reviewed included studied on the impact of pretend play on young children cognitive development, the importance of good fantasy play on children. Other empirical studies reviewed

in this study were on the effect of play and play materials on the social development of pre-school children in Kaduna metropolis. A lot other studies were also reviewed to bring out the methodologies adopted as well as their findings in order to really understand the gap in their research in order to make the researcher streamlined this study into the mainstream of this study. However, the past studies reviewed did not look into relationship between Educative play materials and cognitive development of Nursery school children. It is this gap that the current study filled.

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter dealt with the procedures and methodology used in the study under the following sub-headings.

3.1 Research Design

3.2 Population for the study

3.3 Sample size and Sampling procedure

3.4 Instrument for Data Collection

3.4.1 Validity of the Instrument

3.4.2 Pilot Study

3.4.3 Reliability of the Instrument

3.5 Procedure for Data Collection

3.6 Procedure for Data Analysis

3.1 The Research Design:

Experimental research design was used for the study. Experimental design is the type of design that is concerned with cause-effect relationship, so as to find out any effect the independent variables have on the dependent variables. From the two types of experimental design (laboratory and field), the researcher used laboratory design. Subjects were selected from the population randomly and divided into experimental and control groups. These two groups were given a pretest. Experimental group were exposed to the following Educative Play Material-EPM: Building blocks, Alphabet blocks, number blocks, alphabet and numbers puzzles, picture books, Art and writing materials (papers pencil and crayons). Another test (post test) was administered into the two groups

(experimental and control) in order to determine the difference. The effect of the pretest and post test were recorded.

3.2 Population for the Study

The population for the study comprised of one hundred and eleven registered Nursery Schools in Minna Educational Zone, Niger State and the total number of Nursery School children in these schools according to Niger State Ministry of Education, Planning and Statistics Department 2012 is Ten thousand one hundred and Fifty-two (10,152).

Table 3.1 Population for the Study

S /no	Educational Zones	Number of Private Nursery Schools	Number of children
1	Minna	111	10,152
	Total	**111**	**10,152**

Source: Niger State Ministry of Education Planning and Statistics Department, Minna (2012)

3.3 Sample size and Sampling Procedure:

Asika (2001) opined that, "The sample is precisely the part of the population." It is the small part of the population intended as a representative of the whole. For this study, stratified random sampling technique was used to select thirty (30) children from each class based on gender distribution. This is because, it is a method whereby samples are selected based on sub-group within a given population such as sex, age, race, size to mention just a few (Bello & Ajayi, 2000). This technique is also a generally effective method used in experimental research design that investigates cause and effect of the dependent and independent variables and the relationship between them.

Thus, the sample size of two hundred and forty (240) Nursery School children were selected. Children between the age 4 and 5 that were in Nursery 3, this is in line with Roscoe (1975) cited in Tabat (2009) who suggested a small sample size from the parent population in an experimental research. Thus, thirty (30) Nursery School children 15 male and 15 female as experimental group and another thirty (30) Nursery School children 15 male and 15 female were used as control group in four different schools for convenience of the researcher especially when administering play materials to experimental groups. This is in line with the suggestion made by Gay and Delhi (1992) cited in Okosun (2009) that a minimum of 30 subjects per group is ideal for experimental research. On the other hand, proprietors/proprietress of four (4) schools were used. Table 3.2 shows the detail information of sampled schools and their locations, number of proprietors, nursery school children according to their group i.e. experimental and control, gender

Table 3.2 Sample Size for the Study

S/No	Name/Location of Schools	No. of proprietors	Treatment	Gender		Total
				Male	Female	
1.	Baptist Model Nursery and Primary School, Kafin-koro (Rural)	1	Experimental	15	15	30
			Control	15	15	30
2.	Divine Child Nursery/ Primary School Kaffin-Koro(Rural)	1	Experimental	15	15	30
			Control	15	15	30
3.	Goodnews Nursery/Primary School Minna (Urban)	1	Experimental	15	15	30
			Control	15	15	30
4.	Challenge Nursery/Primary School, Minna (Urban	1	Experimental	15	15	30
			Control	15	15	30
	Grand total	**4**	**-**	**120**	**120**	**240**

3.4 Instrument for Data Collection

The Instrument that was used for data collection for this study was questionnaire and Intelligence Test. Questionnaire were designed by the researcher for proprietors/proprietress of Nursery Schools on the first objective and research question. Questionnaire were used to gathered relevant information on the types and availability of Educative Play Materials-EPM's in four (4) Schools selected for the study while Intelligence test (standardized) was administered to both experimental and control groups. Wechsler Preschool and Primary Scale of intelligence modified by the researcher for better understanding and responses by the children (Refer to appendices IV and V for details).

Intelligence Tests according to Olayiwola (2007) are tests that are constructed and administered to measure an individual's mental ability, the tests are meant for assessing individual Intelligence Quotient (IQ). Obe (1980) in Olayinwola (2007) described intelligence as "general Scholastic ability or ability to perceive and understand relationship which involve verbal, numerical, spatial perceptual, logical and memory factors."

3.4.1 Validity of the instrument

In order to ensure validity of the instrument for this study, the original questionnaire and indices for pre-test and post-test were drafted by the researcher and reviewed by her supervisors. Their experts' feedback and suggestions helped in the face and content validity of the instrument. They reviewed the sections of the instrument and made recommendation concerning clarity, relevance and readability of items. After the restructuring and corrections were made based on their recommendations, the instrument were put to test through a pilot study.

3.4.2 Pilot Study

Pilot study was carried out in Tafa Local Government Area in Niger State. This area was chosen for the study due to the fact that the schools in these areas had similar characteristics with the sampled schools. The study was mainly carried out in order to determine the suitability of the instrument of the study, and to ascertain any difficulty that the researcher may have when conducting the tests using the indices. The pilot study was conducted on twenty (20) Nursery School children, where ten (10) children that is, five (5) males and five (5) females served as experimental group and where another ten (10) children that is, five (5) males and five (5) females services as control group.

3.4.3 Reliability of the Instrument

An instrument is only reliable to a degree that it measures accurately and consistently what it is suppose to measure, yielding comparative results when administered a number of times (Akwezuilo and Agu 2003). The Cronbach's Alpha reliability test of 0.75, the Spearman-Brown Coefficient of 0.76 and the Guttman Split-Half coefficient of 0.70 were got from the scale of the score between nursery school children who used educative play materials and those who did not. These are considered adequate, according to Stevens and Spegel (1999) cited in Guar and Guar (2009) who asserted that an instrument is considered reliable if the coefficient lies between 0 and 1. The closer it is to 1 the more reliable is the instrument. Hence, the result is reliable enough for the instrument to be used in subsequent investigation. Below is the reliability table.

Reliability Statistics

Cronbach's Alpha	Male	Value	.752
		N of Items	20
		Total N of Items	20
		Correlation Between Forms	.619
Spearman-Brown Coefficient		Equal Length	.765
		Unequal Length	.765
		Guttman Split-Half Coefficient	.701

3.5 Procedure for Data Collection

A letter of introduction was obtained from the office of the Head of Department of Vocational and Technical Education, Faculty of Education, Ahmadu Bello Univeristy, Zaria seeking approval from head of schools involved in this study. The letter explained the purpose of the study and nature of assistance required from the schools. The approval aided the researcher in the administration of the instrument as well as in the conduct of the experiment on the children (See appendix 1 for evidence).

The researcher trained two research assistants for the study. They helped her to conduct the pre-test on the two groups (experimental and control) groups. After these the experimental groups were exposed to the following educative play materials. Building blocks, Alphabet blocks, number blocks, alphabet and number puzzles, , picture books, and art and writing materials (papers pencil and crayons), while the control group were not exposed to those play materials. After a period of 2 weeks, post-test was conducted on the two groups (experimental and control) using modified intelligence tests indices and recorded (Wechsler Pre-School and

Primary Scale of Intelligence-R WPPSI-R) (Refer to appendix II, III and IV for detail).

3.6 Procedure for Data Analysis

Data collected were from proprietors of the four sampled schools were statistically analyzed in a tabular form using descriptive statistics such as frequencies and percentages to answer research questions one, while data from children were analysed using one sample t-test to test for three null hypotheses at 0.05 level of significance. Decision rule for the testing of null hypotheses: when t-calculated value is greater then t-critical, the null hypothesis would be rejected (t-cal > t-crit, significance), but when t-calculated value is less than t-critical, the null hypothesis would be accepted (t-cal < t-crit not significance).

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF DATA

This chapter contains the analyzed data collected from the sampled schools used in this research. Different types of educative play materials found in the sampled nursery school were presented and analysed using frequencies and percentages, while the pre and post Intelligent Quotient (IQ) tests scores for children who used and those who did not use educative play materials were entered into a distinctive data sheet schools by schools.

The resultant scores were further tested using t-test to bring out the level of significance that could preempt the rejection or acceptance of the result as well as show the varying degree in mean difference of each school as outlined in the research objectives and hypothesis. This chapter is presented under the following sub-headings:

4.1 Answers to Research Questions

4.2 Testing of Null Hypotheses

4.3 Summary of Major Findings

4.4 Discussion of Major Findings.

4.1 Answers to Research Questions

This section presents the analysis of data used for answering four research questions in chapter one of this research work.

Research Question One: What are the different types of Educative Play Materials in Nursery schools in Minna Educational Zone, Niger State?

The answer to this research questions is presented in Table 4.1.1

Table 4.1.1 Types of Educative Play Materials

S/no	Play materials	Frequency	Percentage (%)
1	Alphabet and Numbers blocks	3	75
2	Building blocks	2	50.
3	Alphabet and Numbers puzzles	1	25
4	Art material	4	100
5.	Picture Books	4	100
6.	Writing material	2	50

From Table 4.1.1 above, three (3) schools representing 75% have alphabets and number blocks as Educative Play Materials used in the schools. More so, building blocks and writing materials were acknowledged as Educative Play Materials in two (2) schools each representing 50.0% of the sampled schools, as alphabet, and numbers puzzle were identified by only one (1) school accounting for 25% of the population. Picture books and Art material as Educative Play Material were used by all the schools representing (100%).

Research Question Two: What is the level of Cognitive Development of Nursery school children who Used EPM and those who did not?

The answer to this research questions is presented in Table 4.1.2

Table 4.1.2 Pre and post IQ test results of Children exposed and those not exposed to Educative Play Materials from Challenge Nursery and Primary school.

One-Sample Test

	Test Value = 0				Test Value = 0	
					95% Confidence Interval of the Difference	
	T	Lower	Sig. (2-tailed)	Mean Difference	Lower	Upper
Pre Test Score On Experimental group Challenge	46.824	29	.000	67.167	64.23	70.10
Post Test Scores Experimental group Challenge	37.752	29	.000	76.767	72.61	80.93

One-Sample Test

	Test Value = 0				Test Value = 0	
					95% Confidence Interval of the Difference	
	T	Lower	Sig. (2-tailed)	Mean Difference	Lower	Upper
Pre Score On Control group On Challenge	88.257	29	.000	68.033	66.46	69.61
Post Test Scores Control group On Challenge	44.750	29	.000	65.900	62.89	68.91

Table 4.1.2 showed the total computation of Children using Educative Play Material-EPM scores obtained from Challenge Nursery and Primary school. Thus, t (29) =46.82, p=0.000 for the pre-test scores and t(29)= 37.75, p=0.000. From the computed result of pre and post-test scores of Challenge school, it could be observed that the p-value is less than p-alpha (P=0.000<0.05) thereby leading to the rejection of the null hypothesis. Therefore, it could be deduced here that there is a significant difference between the total pre and post test scores of Challenge Nursery and Primary school. Furthermore, a look at the mean difference revealed a mean difference of 9.6 which is significant.

The result also showed the total computed data collected on Children that did not use Educative Play Material-EPM scores obtained from Challenge Nursery and Primary school. Thus, t (29)= 88.25, p=0.000 for the pre-test scores and t(29)= 44.75, p=0.000. From the computed result of pre and post test scores of Challenge school, it be observed that the p-value is less than p-alpha (P=0.000<0.05). Therefore, it could be deduced here that there is also a significant difference between the total pre and post test scores of children who did not use Educative Play Materials in Challenge Nursery and Primary school. Furthermore, a look at the mean difference further revealed a mean difference of 2.1 which was significant. However the differences in mean and level of significance, the comparative analysis between these groups shows that those children Educative Play Material had better cognitive performance than those who did not.

The analysis of data generated to determine the level of cognitive development of Nursery School who used EPM and those that did not (Baptist) is shown in Table 4.1.3

Table 4.1.3 Pre and post test result of children exposed and those not exposed to Educative Play Materials from Baptist Nursery and Primary school

One-Sample Test

	Test Value = 0				Test Value = 0	
					95% Confidence Interval of the Difference	
	T	Lower	Sig. (2-tailed)	Mean Difference	Lower	Upper
Pre Score Experimental group Baptist	24.138	29	.000	53.667	49.12	58.21
Post Score Experimental group Baptist	31.001	29	.000	68.400	63.89	72.91

One-Sample Test

	Test Value = 0				Test Value = 0	
					95% Confidence Interval of the Difference	
	T	Lower	Sig. (2-tailed)	Mean Difference	Lower	Upper
Pre Score Control group Baptist	34.634	29	.000	52.700	49.59	55.81
Post Score Control group Baptist	41.740	29	.000	58.233	55.38	61.09

Table 4.1.3 showed the total computation on scores obtained from Baptist Nursery and Primary school. Thus, t(29)= 24.13, p=0.000 for the pre-test scores and t(29)= 31.00, p=0.000. From the compute result of pre and post test scores of Baptist school, it could be observed that the p-value is less than p-alpha (P=0.000<0.05) thereby leading to the rejection of the null hypothesis. Therefore, it could be deduced here that there is a significant difference between the total pre and post test scores of Baptist Nursery and Primary school. Furthermore, a look at

the mean difference further revealed a mean difference of 14.8 which is very significant.

Further analysis on those children not exposed to Educative Play Materials from Baptist Nursery and Primary school shows the total computation on scores obtained. Thus, t (29)= 34.63, p=0.000 for the pre-test scores and t(29)= 41.740, p=0.000. From the computational result of pre and post test scores of Baptist school, it could be observed that the p-value is less than p-alpha (P=0.000<0.05) thereby leading to the rejection of the null hypothesis. Therefore, it could be deduced here that there is a significant difference between the total pre and post test scores of Baptist Nursery and Primary school. Furthermore, a look at the mean difference further revealed a mean difference of 5.5 which is very significant. However the differences in mean and level of significance, the comparative analysis between these groups' shows that those children exposed to Educative Play Material had better cognitive performance.

The analysis of data generated to determine the level of cognitive development of Nursery School who used EPM and those that did not (Goodnews) is shown in Table 4.1.4

Table 4.1.4 Pre and post IQ test results of children exposed and those not exposed to Educative Play Materials from Goodnews Nursery and Primary school

One-Sample Test

	Test Value = 0				Test Value = 0	
					95% Confidence Interval of the Difference	
	T	Lower	Sig. (2-tailed)	Mean Difference	Lower	Upper
Pre Score Experimental group Goodnews	27.918	29	.000	54.733	50.72	58.74
Post Score Experimental group Goodnews	30.096	29	.000	66.467	61.95	70.98

One-Sample Test

	Test Value = 0				Test Value = 0	
					95% Confidence Interval of the Difference	
	T	Lower	Sig. (2-tailed)	Mean Difference	Lower	Upper
Pre Score control group Goodnews	24.024	29	.000	52.567	48.09	57.04
Post Score control group Goodnews	26.205	29	.000	58.067	53.53	62.60

The total computation on scores obtained from Goodnews Nursery and Primary school shows that t(29)= 27.91, p=0.000 for the pre-test scores and t(29)= 30.09, p=0.000. From the computational result of pre and post test scores of Goodnews school, it could be observed that the p-value is less than p-alpha (P=0.000<0.05) thereby again leading to the rejection of the null hypothesis. Therefore, it could be deduced here that there is a significant difference between the total pre and post test scores of Goodnews Nursery and Primary school. Furthermore, a look at the

mean difference further revealed a mean difference of 11.7 which is very significant.

The total computation on scores obtained from children in Goodnews Nursery and Primary school who were not exposed to Educative Play Materials shows that t(29)= 24.02, p=0.000 for the pre-test scores and t(29)= 26.20, p=0.000. From the computational result of pre and post test scores of Goodnews school, it could be observed that the p-value is less than p-alpha (P=0.000<0.05) thereby again leading to the rejection of the null hypothesis. A look at the mean difference further revealed a mean difference of 5.5 which is very significant. Therefore, it could be deduced here that there is a significant difference between the total pre and post test scores of children from Goodnews Nursery and Primary school who used and did not use Educative Play Materials.

The analysis of data generated to determine the level of cognitive development of Nursery School who used EPM and those that did not (Divine) is shown in Table 4.1.5

Table 4.1.5 Pre and post IQ test result of children exposed and those not exposed to Educative Play Materials from Divine Nursery and Primary school

One-Sample Test

	Test Value = 0				Test Value = 0	
					95% Confidence Interval of the Difference	
	T	Lower	Sig. (2-tailed)	Mean Difference	Lower	Upper
Pre ScoreExperimental group Divine	38.184	29	.000	57.567	54.48	60.65
Post Score Experimental group Divine	71.920	29	.000	73.533	71.44	75.62

One-Sample Test

	Test Value = 0				Test Value = 0	
					95% Confidence Interval of the Difference	
	T	Lower	Sig. (2-tailed)	Mean Difference	Lower	Upper
Pre Score Control group Divine	34.955	29	.000	54.867	51.66	58.08
Post Score Controlgroup Divine	32.701	29	.000	58.133	54.50	61.77

The total computation on scores obtained from Divine Nursery and Primary school shows that t(29)= 38.18, p=0.000 for the pre-test scores and t(29)= 71.92, p=0.000. From the computational result of pre and post test scores of Divine school, it could be observed that the p-value is less than p-alpha

(P=0.000<0.05) thereby again leading to the rejection of the null hypothesis. It could also be deduced that, there is a significant difference between the total pre and post test scores of Divine Nursery and Primary school. Furthermore, a look at the mean difference further revealed a mean difference of 16.0 which is very significant.

The total computation on scores obtained from children in Divine Nursery and Primary school who were not exposed to Educative Play Materials shows that t(29)= 34.95, p=0.000 for the pre-test scores and t(29)= 32.70, p=0.000. From the computational result of pre and post test scores of Divine school, it could be observed that the p-value is less than p-alpha (P=0.000<0.05) thereby again leading to the rejection of the null hypothesis. A look at the mean difference further revealed a mean difference of 3.3 which is very significant. Therefore, it could be deduced here that there is a significant difference between the total pre and post test scores of children from Divine Nursery and Primary school who were exposed to Educative Play Materials.

Research Questions Three: What is the difference in cognitive development between Male and Female Nursery School Children that were exposed to EPM's

The analysis of data generated to determine the level of cognitive development between male and female Nursery School children (Challenge) is shown in Table 4.1.6

Table 4.1.6 Pre and post IQ test result of male and female children exposed to Educative Play Materials from Challenge Nursery and Primary school.

One-Sample Test

	Test Value = 0				Test Value = 0 95% Confidence Interval of the Difference	
	t	Lower	Sig. (2-tailed)	Mean Difference	Lower	Upper
Pre-Test Male Experimental group Challenge	31.446	14	.000	66.067	61.56	70.57
Post-Test Male Experimental group Challenge	26.383	14	.000	79.600	73.13	86.07
Pre-Test Female Experimental group Challenge	34.402	14	.000	68.267	64.01	72.52
Post-Test Female Experimental group Challenge	28.186	14	.000	73.933	68.31	79.56

One-Sample Test

	Test Value = 0				Test Value = 0 95% Confidence Interval of the Difference	
	t	Lower	Sig. (2-tailed)	Mean Difference	Lower	Upper
Pre-Test Male Control group Challenge School	95.326	14	.000	69.533	67.97	71.10
Post-Test Male Control group Challenge	36.342	14	.000	67.467	63.49	71.45
Pre-Test Female control group Challenge	51.031	14	.000	67.000	64.18	69.82
Post-Test Female control group Challenge	27.221	14	.000	64.933	59.82	70.05

A further analysis of the pre and post test scores of both male and female children who were exposal to Educative Play Materials from Challenge Nursery and Primary school were produced. Here the result shows t(14)=31.44, p=0.000

for male pre-test and t(14)=26.38, p=0.000 for male post score. Furthermore, a look at the mean difference further revealed a mean difference of 13.5 which is a difference that is statistically significant. Here in the table, t(14)=34.40, p=0.000 for female pre-test and t(14)=28.186,p=0.000 for female post-test. A look at the mean difference further revealed a mean difference of 5.7 which is a difference that is also statistically significant. Therefore it could be deduced that there is a significant difference in among children of Challenge Nursery and Primary school who were exposed to Educative Play Materials.

From the Table 4.1.6 a further analysis of the pre and post test scores of both male and female children not exposed to Educative Play Materials from Challenge Nursery and Primary school was produced. Here the result shows t(14)= 95.32, p=0.000 for male pre-test and t(14)= 36.34, p=0.000 for male post score. Furthermore, a look at the mean difference further revealed a mean difference of 2.1 which is a difference that is statistically significant. Here in the table the analysis shows that, t(14)=51.03, p=0.000 was obtained for female pre-test and t(14)= 27.22,p=0.000 for female post-test. A look at the mean difference further revealed a mean difference of 2.1 for both test results which is also statistically significant. Therefore it could be deduced that there is a significant difference in among children of Challenge Nursery and Primary school who were exposed to Educative Play Materials.

The analysis of data generated to determine the level of cognitive development between male and female Nursery School children (Baptist) is shown in Table 4.1.7

Table 4.1.7 Pre and post IQ test result of male and female children exposed to Educative Play Materials from Baptist Nursery and Primary school.

One-Sample Test

	Test Value = 0				Test Value = 0 95% Confidence Interval of the Difference	
	T	Lower	Sig. (2-tailed)	Mean Difference	Lower	Upper
Pre-test male experimental Baptist	16.764	14	.000	50.800	44.30	57.30
Post-test male experimental group Baptist	18.298	14	.000	68.667	60.62	76.72
Pre-test female experimental group Baptist	17.769	14	.000	56.533	49.71	63.36
Post-test female experimental group Baptist	27.643	14	.000	68.133	62.85	73.42

One-Sample Test

	Test Value = 0				Test Value = 0 95% Confidence Interval of the Difference	
	t	Lower	Sig. (2-tailed)	Mean Difference	Lower	Upper
Pre-test male control group Baptist	24.279	14	.000	53.333	48.62	58.04
Post-test male control group Baptist	29.821	14	.000	59.333	55.07	63.60
Pre-test female control group Baptist	23.993	14	.000	52.067	47.41	56.72
Post-test female control group Baptist	28.812	14	.000	57.133	52.88	61.39

From the table above, the analysis of the pre and post test scores of both male and female children exposed to Educative Play Materials from Baptist Nursery and Primary school was produced. Here the result shows t(14)= 16.76, p=0.000 for male pre-test and t(14)= 18.29, p=0.000 for male post score. Furthermore, a look at the mean difference further revealed a mean difference of

17.9 which is a difference that is statistically significant. Here in the table, t(14)= 17.76, p=0.000 for female pre-test and t(14)= 27.64,p=0.000 for female post-test. A look at the mean difference further revealed a mean difference of 11.6 which is a difference that is also statistically significant. Therefore it could be deduced that there is a significant difference in among children of Baptist Nursery and Primary school who were exposed to Educative Play Materials.

Further analysis on children who were not exposed to Educative Play Materials shows that t(14)= 24.27, p=0.000 for male pre-test and t(14)= 29.821, p=0.000 for male post score. Furthermore, a look at the mean difference further revealed a mean difference of 6.0 which is a difference that is statistically significant. Here in the table, t(14)= 23.99, p=0.000 for female pre-test and t(14)= 28.81,p=0.000 for female post-test. A look at the mean difference further revealed a mean difference of 5.1 which is a difference that is also statistically significant. Therefore it could be deduced that there is also a significant difference in among children of Baptist Nursery and Primary school who used Educative Play Materials. However the differences in mean and level of significance, the comparative analysis between these groups' shows that those children exposed to Educative Play Material had better cognitive performance.

The analysis of data generated to determine the level of cognitive development between male and female Nursery School children (Goodnews) is shown in Table 4.1.8

Table 4.1.8 Pre and post IQ test results of male and female children exposed to Educative Play Materials from Goodnews Nursery and Primary school

One-Sample Test

	Test Value = 0				Test Value = 0	
					95% Confidence Interval of the Difference	
	t	Lower	Sig. (2-tailed)	Mean Difference	Lower	Upper
Pre-test male experimental group Goodnews	17.007	14	.000	57.267	50.04	64.49
Post-test male experimental group Goodnews	25.564	14	.000	70.867	64.92	76.81
Pre-test female experimental group Goodnews	27.253	14	.000	52.200	48.09	56.31
Post-test female experimental group Goodnews	19.870	14	.000	62.067	55.37	68.77

One-Sample Test

	Test Value = 0				Test Value = 0	
					95% Confidence Interval of the Difference	
	T	Lower	Sig. (2-tailed)	Mean Difference	Lower	Upper
Pre-test male control group from Goodnews	19.186	14	.000	55.600	49.38	61.82
Post-test male control group from Goodnews	16.203	14	.000	57.800	50.15	65.45
Pre-test female control group from Goodnews	15.569	14	.000	49.533	42.71	56.36
Post-test female control group from Goodnews	21.151	14	.000	58.333	52.42	64.25

The analysis of the pre and post test scores of both male and female children using Educative Play Materials from Goodnews Nursery and Primary school shows t(14)= 17.01, p=0.000 for male pre-test and t(14)= 25.56, p=0.000 for male post score. Furthermore, a look at the mean difference further revealed a

mean difference of 13.6 which is a difference that is statistically significant. Here in the table, t(14)= 27.25, p=0.000 for female pre-test and t(14)= 19.87,p=0.000 for female post-test. A look at the mean difference further revealed a mean difference of 9.9 which is a difference that is also statistically significant. Therefore it could be deduced that there is a significant difference in among children of Goodnews Nursery and Primary school who were exposed to Educative Play Materials.

Further analysis on the children who were not exposed to Educative Play Materials shows that t(14)= 19.186, p=0.000 for male pre-test and t(14)= 16.203, p=0.000 for male post score. Furthermore, a look at the mean difference further revealed a mean difference of 2.2 which is a very low mean difference. Here in the table, t(14)= 15.569, p=0.000 for female pre-test and t(14)= 21.151,p=0.000 for female post-test. A look at the mean difference further revealed a mean difference of 8.8 which is a difference that is also statistically significant. Therefore it could be deduced that there is also a significant difference in among children of Goodnews Nursery and Primary school who did not used Educative Play Materials. However the differences in mean and level of significance, the comparative analysis between these groups shows that those children exposed to Educative Play Material had better cognitive performance.

The analysis of data generated to determine the level of cognitive development between male and female Nursery School children (Divine) is shown in Table 4.1.9

Table 4.1.9 Pre and post IQ test result of male and female children exposed to Educative Play Materials from Divine Nursery and Primary school

One-Sample Test

	Test Value = 0				Test Value = 0	
					95% Confidence Interval of the Difference	
	t	Lower	Sig. (2-tailed)	Mean Difference	Lower	Upper
pre-test male experimental group Divine	27.344	14	.000	59.800	55.11	64.49
post-test male experimental group Divine	46.542	14	.000	76.067	72.56	79.57
Pre-test female experimental group Divine	27.945	14	.000	55.333	51.09	59.58
Post-test female experimental group Divine	82.377	14	.000	71.000	69.15	72.85

One-Sample Test

	Test Value = 0				Test Value = 0	
					95% Confidence Interval of the Difference	
	t	Lower	Sig. (2-tailed)	Mean Difference	Lower	Upper
Pre-test male control group Divine	22.276	14	.000	54.600	49.34	59.86
Post-test male control group Divine	20.694	14	.000	55.067	49.36	60.77
Pre-test female control group Divine	26.937	14	.000	55.133	50.74	59.52
Post-test female control group Divine	28.324	14	.000	61.200	56.57	65.83

Table 4.1.9, shows the analysis of the pre and post test scores of both male and female children exposed to Educative Play Materials from Divine Nursery and Primary school. From the result, $t(14)= 27.34$, $p=0.000$ for male pre test and $t(14)= 46.54$, $p=0.000$ for male post score. Furthermore, a look at the mean

difference further revealed a mean difference of 16.2 which is a difference that is statistically significant. Here in the table, t(14)= 27.94, p=0.000 for female pre test and t(14)= 82.37,p=0.000 for female post test. A look at the mean difference further revealed a mean difference of 15.7 which is a difference that is also statistically significant. Therefore it could be deduced that there is a significant difference in among children of Divine Nursery and Primary school who were exposed to Educative Play Materials.

Further analysis on children not exposed to Educative Play Materials shows that t(14)= 22.27, p=0.000 for male pre test and t(14)= 20.69, p=0.000 for male post score. Furthermore, a look at the mean difference further revealed a mean difference of 0.5 which is a very low mean difference. Here in the table, t(14)= 26.93, p=0.000 for female pre test and t(14)= 28.32,p=0.000 for female post test. A look at the mean difference further revealed a mean difference of 6.1 which is a difference that is also statistically significant. Therefore it could be deduced that there is also a significant difference in among children of Divine Nursery and Primary school who were not exposed to Educative Play Materials. However the differences in mean and level of significance, the comparative analysis between these groups shows that those children exposed to Educative Play Material had better cognitive performance.

4.2 Test of Null Hypotheses:

Comparison of IQ of children who used EPM and those who did not

The following results were computations used in testing the null hypotheses formulated for the research to test for level of significance in cognitive development of children who use and those who did not used Educative Play Materials.

4.2 Test of Null Hypotheses

Ho1: There is no significant difference in the cognitive development of Nursery school children who have used Educative Play Materials and those that did not.

TABLE 4.2.1 Mean Pre and Post IQ test results from the four schools on comparing the IQ of children who used and those who did not use EPM

	Test Value = 0				Test Value = 0 95% Confidence Interval of the Difference	
	t	Lower	Sig. (2-tailed)	Mean Difference	Lower	Upper
Pre-test score of all pupil that used Educative Play Materials	57.226	119	.000	58.283	56.27	60.30
Post-test score of all pupil that used Educative Play Materials	69.595	119	.000	71.292	69.26	73.32

One-Sample Test

	Test Value = 0				Test Value = 0 95% Confidence Interval of the Difference	
	t	Lower	Sig. (2-tailed)	Mean Difference	Lower	Upper
Pre-test score of all pupil that did not use Educative Play Materials	58.083	119	.000	57.042	55.10	58.99
Post-test score of all pupil that did not use educative play materials	65.666	119	.000	60.083	58.27	61.90

The total computation on scores obtained from all children in Nursery and Primary schools that used Educative Play Materials, the results shows that t(119)= 57.22, p=0.000 for the pre-test scores and t(119)= 69.59, p=0.000. From the computational result of pre and post test scores, it could be observed that the p-value is less than p-alpha (P=0.000<0.05) thereby again leading to the rejection of the null hypothesis. Furthermore, a look at the mean difference further revealed a mean difference of 13.0 which is very significant.

More so, the total computation on scores obtained from Nursery school children who did not use Educative Play Materials shows that t(119)= 58.08,

p=0.000 for the pre-test scores and t(119)= 65.66, p=0.000. From the computational result of pre and post test scores of Nursery school children who did not use Educative Play Materials, it could be observed that the p-value is less than p-alpha (P=0.000<0.05) hence the rejection of the null hypothesis one.

A look at the mean difference further revealed a mean difference of 3.0 which is very significant. However the differences in mean and level of significance, the comparative analysis between these groups shows that those children who used Educative Play Material had better cognitive performance than those who did not based on their mean differences of the test results computed. The null hypothesis one hereby rejected.

Ho2: There is no significant difference in the cognitive development of male and female Nursery school children that were exposed to Educative Play Materials.

TABLE 4.2.2 Mean Pre and Post IQ test results of four schools on the comparison of male and female who were exposed to EPM

	Test Value = 0				Test Value = 0	
					95% Confidence Interval of the Difference	
	t	Lower	Sig. (2-tailed)	Mean Difference	Lower	Upper
Pre-test scores of male exposed to educative play material	38.814	59	.000	58.483	55.47	61.50
pre test scores of female exposed to educative play material	41.999	59	.000	58.083	55.32	60.85
Post test scores of male exposed to educative play material	48.640	59	.000	73.800	70.76	76.84
Post test scores of female exposed to educative play material	52.484	59	.000	68.783	66.16	71.41

One-Sample Test

	Test Value = 0				Test Value = 0	
					95% Confidence Interval of the Difference	
	t	Lower	Sig. (2-tailed)	Mean Difference	Lower	Upper
Pre-test scores of male that were not exposed Educative Play Material	42.266	59	.000	58.267	55.51	61.03
Pre-test scores of female that were not exposed to educative play material	39.658	59	.000	55.933	53.11	58.76
Post-test scores of male exposed to educative play material	42.625	59	.000	59.917	57.10	62.73
Post-test scores of female exposed to educative play material	50.123	59	.000	60.400	57.99	62.81

The test result on the second hypothesis shows the total analysis of all male and female who were exposed to Educative Play Materials. From the result,

t(59)= 38.8, p=0.000 for male pre test and t(59)= 41.99, p=0.000 for male post score. Furthermore, a look at the mean difference further revealed a mean difference of 0.4 which is a mean difference that is statistically significant. Here in the table, t(59)= 48.64, p=0.000 for female pre test and t(59)= 52.50,p=0.000 for female post test. A look at the mean difference further revealed a mean difference of 5.01 which is the mean difference that is still very statistically significant. Here it could be deduced that there is a significant difference in between male and female children who were exposed to Educative Play Materials based on the post test differences obtained.

Further analysis on the post test result shows that t (59) = 42.26, p=0.000 for male pre-test and t(59)= 39.65, p=0.000 for male post score. Furthermore, a look at the mean difference further revealed a mean difference of 2.3 which is a very low mean difference. Here in the table, t (59) = 39.65., p=0.000 for female pre-test and t (59)= 50.12,p=0.000 for female post test. A look at the mean difference further revealed a mean difference of 0.4 which is a difference that is also statistically significant.

Therefore it could be deduced that there is also a significant difference in among children who were exposed to Educative Play Materials and those who were not. However the differences in mean and level of significance, the comparative analysis between these groups' shows that male and female children using Educative Play Material had better cognitive performance than those who did not based on their mean differences of the test results computed. The null hypothesis is hereby rejected. Therefore, the research stated that there is a significant difference in the cognitive development of male and female nursery

school children who were exposed to Educative Play Materials and those who were not.

Ho3. There is no significant difference in the cognitive development between urban and rural nursery school children who were exposed to Educative Play Materials.

Table 4.2.3 Comparison of the IQ test of children from urban and rural areas exposed to EPM

	Test Value = 0				Test Value = 0 95% Confidence Interval of the Difference	
	t	Lower	Sig. (2-tailed)	Mean Difference	Lower	Upper
pre score on experimental group Challenge(urban)	46.824	29	.000	67.167	64.23	70.10
pre test scores experimental group Baptist(rural)	24.138	29	.000	53.667	49.12	58.21
post score experimental group Challenge(urban)	88.257	29	.000	68.033	66.46	69.61
post score experimental group Baptist(rural)	34.634	29	.000	52.700	49.59	55.81

One-Sample Test

	Test Value = 0				Test Value = 0 95% Confidence Interval of the Difference	
	t	Lower	Sig. (2-tailed)	Mean Difference	Lower	Upper
pre score controlgroup Goodnews(urban)	38.184	29	.000	57.567	54.48	60.65
pre test scores controlgroup Divine(rural)	27.918	29	.000	54.733	50.72	58.74
post score control group Divine(rural)	34.955	29	.000	54.867	51.66	58.08
Post score control group Goodnews(urban)	30.096	29	.000	66.467	48.09	57.04

The test results on the third hypothesis shows the total analysis of children from urban and rural nursery schools who were exposed to Educative Play Materials in Nursery schools. From the result, t(29)= 46.82, p=0.000 for Challenge Nursery school pre test which is an urban and t(29)= 24.13, p=0.000

for Baptist Nursery school which is a rural school. Furthermore, a look at the mean difference further revealed a mean difference of 13.5 which is a very high mean difference that is statistically significant. Here in the table, t(29)= 88.25, p=0.000 for Challenge Nursery school post test and t(29)= 34.63,p=0.000 for Baptist Nursery school post test. A look at the mean difference further revealed a mean difference of 16.9 which is a very high mean difference that is statistically significant.

Further analysis on children who were not exposed to Educative Play Materials shows that t(14)= 38.18, p=0.000 for urban nursery school pre test and t(29)= 27.91, p=0.000 for rural pre test score. Furthermore, a look at the mean difference further revealed a mean difference of 2.8 which is a good mean difference. Here in the table, t(29)= 34.95, p=0.000 for urban post test and t(29)= 30.09,p=0.000 for rural post test. A look at the mean difference further revealed a mean difference of 11.6 which is a difference that is also statistically significant.

Therefore it could be deduced that there is also a significant difference in among children from urban and rural areas that were exposed to Educative Play Materials. However the differences in mean and level of significance, the comparative analysis between these groups' shows that there is a significant difference in cognitive performance between urban and rural nursery schools children using and those not using Educative Play Material. The null hypothesis is hereby rejected. Therefore, the research stated that there is a significant difference between nursery school children from urban and rural schools who were exposed to Educative Play Materials and those who were not.

4.3 Summary of Major Findings

This study established that:

1. Majority of schools have EPM but they don't make use of them as expected. Four 4 (100%) of school have picture books and Art materials, three 3(75%) schools has alphabet and number blocks, two 2(50%) schools has building blocks, two 2(50%) schools has writing materials 1(25%) has alphabet and number puzzles.
2. There was significant difference in the cognitive development of the children who were exposed to Educative play materials from all the nursery schools children used in this research. The mean pre-test is 9.6 while the post-test is 2.1 for the IQ of those who were exposed to EPM ($p=0.000<0.05$)
3. There was also significant difference in the cognitive development between the male and female children from all the schools that were exposed to Educative Play Materials**.** The overall analysis of the mean differences revealed that the male children had better mean cognitive performance than female children. The mean pre-test and post-test male was 13.5 and 5.7 while the pre-test and post-test female is 2.1 respectively for the IQ of those who were exposed to EPM ($p=0.000<0.05$).
4. There was significant difference in the cognitive development of children from urban and rural nursery schools. The mean pre-test between urban and rural schools is 13.0 and 2.8 while the post-test between urban and rural is 16.0 and 11.6 respectively for the IQ of those who were exposed to EPM (($p=0.000<0.05$).

4.4 Discussion of Major Findings

The need to improve learning abilities of children as well as their intelligence is said to be of vital importance for the development and improvisation of items and tools that would better lead to the achievement of a better cognition. As cognitive development of children rests on their ability to think, concentrate, remember or recall as well as understand the information inherent in the tools and items produced for such use. The development of mental capacities and abilities which assists children to adjust their behavior in order to enable them accomplish a task that need complex cognitive reasoning, equally required visual tools and items that could better lead to accomplishment of this capabilities as supported by Aggarwal (2005) assertion.

What has brought to the frontline in children education is the use of Educative Play Materials for children cognitive development from crèche, kindergarten and all through nursery education. Piaget (1973) opined that children attachment to objects that could spur positive learning starts from as early as Seven (7) months of their birth. This close physical attachment to symbolic Educative Play Materials allows the child to begin to adopt and adapt the latent information of the items and tools that would become manifest information through the child's ability to decipher the message inherent in the items and tools when the child is being assessed through recall or remembrance.

Educative Play Materials in this regard is seen as a veritable tool for accelerating a child's cognitive reasoning and development where properly designed and adopted for teaching and learning altogether. From the research, children saw the Educative Play Materials given them as that which serve their recreational needs but also went a step forward to create a positive scenario for

learning. The use of Educative Play Materials has been identified to help children to think, learn, understand cognitively and at the same time engage the children in recreational and fun filled exercise as corroborated by Hildebrand (2007) and Almon (2002) who they both asserted that Play Materials serves the purpose of constructive behavior and cognitive development.

Having noted the importance of using Educative Play Materials in cognitive development, the research went further to ascertain whether or not, it had any impact on the children's cognitive performance at such an early stage of their basic education. In this regard, that the researcher after having designed some Educative Play Materials took time to experiment with children from some selected Nursery schools both from urban and rural areas in Minna Educational Zone, Niger State, North Central Nigeria. From the experiment conducted, the researcher found that children that were exposed to Educative Play Materials not only became fond of the items and tools but went to think, learn and understand the intended message.

The result in their performance which was conducted in two stages that is pre-test and post test showed a very significant mean difference of 9.6 for nursery school children exposed to Educative Play Materials and 2.1 mean difference for children not exposed to Educative Play Materials for children from Challenge Nursery School. A further test on children from Baptist school also revealed that children exposed to Educative Play Materials had a mean score of 14.8 while those who were not exposed had 5.5.

Another result computed for Goodnews showed that children who had Educative Play Materials had a cumulative mean difference of 11.7 and those who did not had 5.5 cumulative mean score. The result for children from Divine

Nursery school showed that children with Educative Play Materials had a cumulative mean score of 16.0, while those not exposed to the Educative Play Materials scored 3.3. Conversely, the researcher found that while the level of mean performance of children being exposed to Educative Play Materials was very high, those not exposed to the Educative Play Materials had very low cumulative mean scores.

These findings in agreement with the assertions of Hildebrand (2007) , Aggarwal (2005) and Almon (2002) that Play Materials used for Educational purposes served the purpose of constructive behavior and cognitive development where effectively and efficiently used as teaching and learning tools. This was further buttressed by the test on null hypothesis one which stated that there is a significant difference in the cognitive development of Nursery school children who had used Educative Play Materials and those who did not.

The need to also find out how the Educative Play Materials could assists both male and female children in their cognitive development as well as performance was also investigated by the researcher. The essence of this assessment was to understand the level of attachment and appreciation of the two genders to teaching and learning items and tools given to them to improve their thinking and learning abilities and capacities. From the research, result on the mean difference for Challenge Nursery school showed that a mean difference of 13.5 was recorded for male children, while a mean difference of 5.7 was recorded for female children exposed to the materials. Both male and female children that were not exposed to Educative Play Materials were also investigated. The result from Challenge Nursery school showed a mean differences, of 2.1 for the males and another 2.1 was recorded for females.

Another test was conducted for male and female children from Baptist Nursery school and the results showed a mean difference of 17.9 for male and 11.6 for female children exposed to Educative Play Materials. Similarly, the mean result of 6.0 and 5.1 were also computed for male and female children who were not exposed to Educative Play Materials from the same school. Comparing the mean results of children from Goodnews Nursery School, Male children exposed to Educative Play Materials had 13.6 mean differences while female children had 9.9.

For other male and female children not exposed to Educative Play Materials a mean differences of 8.8 was computed. Finally, the result for male and female children from Divine Nursery School exposed to Educative Play Materials showed mean differences, of 16.2 and 15.7 respectively. For male and female not exposed to Educative Play Materials from the same school, the mean differences of 0.5 and 6.1 were computed. The researcher noted that, the use of Educative Play Materials had the tendencies of significantly improving both male and female cognitive development and performance.

As far as this was possible, male children performed better than their female counterparts as revealed in this study. This could be closely linked to the socio-cultural contexts in which the children lived which could make them adventurous as well as other emotional aspect and social relationship as supported by Akande (2007), Sekino and Conen (2004) and further buttressed by the test on the test null hypothesis two which revealed that there was a significant difference in the cognitive development of male and female Nursery school children that were exposed to Educative Play Materials and those that were not.

The location in which the Educative Play Materials could be adopted and adapted to teaching and learning could significantly also add credence to the level of pupil's cognitive development and performance respectively. In order to further ascertain this presumption, tests were conducted using the Educative Play Materials among children from urban and rural nursery schools. As shown in the result analysis, the mean difference of 13.5 was obtained for the pre test and 16.9 for post test scores on children who were exposed to Educative Play Material from Challenge Nursery School located in the urban area and Baptist Nursery School located in the rural areas.

Similarly, another test was conducted on Divine Nursery School located in the rural area and Goodnews Nursery school located in the urban area. From the result, a mean difference of 2.8 was obtained from the pre test and 11.6 were obtained from the post-test on children who were exposed to Educative Play Material from these two schools. Thus, it could be inferred here that the children improved significantly due to the adoption and use of Educative Play Materials and that there is a significant difference between nursery children from urban and rural schools who were exposed to Educative Play Materials.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter is presented under the following sub-heading:

5.1 Summary

5.2 Conclusion

5.3 Recommendations

5.4 Suggestions for further studies

5.1 Summary

This study was aimed at investigating the relationship between use of educative play materials and cognitive development of nursery school children in Niger state. The topic was chosen because of its importance to the total cognitive and educational development of children in all ramification. Conversely, the study outlined four basic objectives and research questions alongside some hypotheses to guide the work as well as test for the extent of the significance of exposure to educative play materials on children cognition.

Thus, the study set out to (i) identify types of educative play materials in Nursery schools in Niger state, (ii) assess the difference in cognitive development among Nursery school children who are exposed to educative play materials, and those that are not (iii) assess the difference in cognitive development between male and female Nursery school children who were exposed to educative play materials (iv) ascertain the difference in the cognitive development between urban and rural nursery school children who were exposed to educative play materials. Four research question were also raised from the objectives and answered in the study. Furthermore, the three null hypotheses that were postulated in the study

and tested using one sample t-test at 0.05level of significance were all rejected as their results showed a significant level of mean difference.

Related literatures were reviewed and the research design which was an experimental research was conducted on Nursery school children in Minna Educational Zone, Niger State. The researcher was able to experiment with Educative Play Materials specially designed and developed for the study in four schools namely Challenge Nursery School Minna (Urban), Baptist Nursery School Kafin-Koro (Rural), Divine Nursery School, Kafin Koro (Rural) and Goodnews Nursery School, Minna.

A population of sixty (60) children was sampled from each school bringing the total population to two hundred and forty (240) children. Each school had two groups classified as experimental and control respectively. This was done in order to assess the difference in the level of their cognitive performance vis-à-vis the Educative Play Materials.

Test of the data and result gathered by the researcher were presented and analysed. The three null hypotheses showed that there were significant mean difference from the result obtained among the nursery school pupils exposed to educative play materials in this study. Thus, the concluding chapter is a summary of the research findings on the topic being investigated.

5.2 Conclusion

The effective and efficient education of children at an early stage warrant the use of items and tools that could better enhance their cognitive development, reasoning as well as performance as research has proven the capabilities and capacities of children to learn from the very first month of birth. Also, the development of these learning capabilities and capacities cannot be said to be

possible without parents and teachers alike developing and improvising on items and tools that have connotative educational messages.

One very important aspect of children growth is that which concern their mental or cognitive development.

From the research, significant mean difference was obtained that shows that children exposed to or those that made use of Educative Play Materials had better cognitive development and performed better than those not exposed to educative play material. In the same vein, the research also revealed that male children exposed to or that made use of Educative Play Materials performed better than female children.

Conversely, the researcher also observed that there exists difference in mean score between urban and rural schools where Educative Play Materials were used. The researcher concludes that not only was there a significant difference between those who were exposed to Educative Play Materials but that the children's cognitive development and performance were enhanced. Hence, it could be said that Educative Play Materials actually helped in improving children cognitive development and performance where it is effectively and efficiently utilized for the purpose of teaching and learning.

5.3 Recommendations

From the findings and analysis of this study, the following recommendations were made:

1. Parents should enroll their children into nursery schools that have adequate educative play materials for indoor and outdoor use.
2. Parents should improvise or purchase Educative Play Materials (toys) for their children and encourage them to play and use them while at home (after

school hours or on holidays) instead of providing cartoons and movies for them.

3. Proprietors and Proprietresses should ensure that they invest more by purchasing Educative Play Materials as they have been found that they could enhance children cognitive development.
4. Proprietors and Proprietresses should from time-to-time organize workshop, seminars, training and re-training for their teachers as a way of updating them with useful knowledge in the area of pre-school education, importance and uses of educative play materials as well.
5. The Government Ministry of Education should endeavour to supervise schools to see that they are equipped with the necessary and standard play facilities and materials that can enhance children cognitive development.
6. The Government should create awareness through workshops in various schools and spread information through the mass media on the importance of Educative play and Play Materials that would enhance the cognitive development of children especially those of nursery school age.
7. Individuals and Non-governmental organizations –NGO's should assist in financing and donating some play materials to these schools to see that children who are the leaders of tomorrow are properly equipped and taught well to enhance all round development especially cognitive wise.
8. School proprietors irrespective of where the school is located either in urban or rural areas should endeavour to make available Educative Play Materials for their children especially those in crèche, kindergarten, and Nursery school to aid them in their cognitive development.

5.4 Suggestions for Further Studies

Based on the findings and recommendations of this research, the followings were suggested as further studies by the researcher:

1. A similar research study using same topic should be undertaken in other states of the Federation so as to come up with a wilder picture on the use of Educative Play Materials and its relationship and implications on children's cognitive development and performance.
2. Effect of play and Educative Play Materials on emotional and moral development of pre-school children in Nigeria.
3. The Influence of Educative Play Materials on Children creativity in Nigeria.
4. The importance of Pretence Play on Children's social and cognitive development in Niger State, Nigeria.

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APPENDIX I

DEPARTMENT OF VOCATIONAL & TECHNICAL EDUCATION

AHMADU BELLO UNIVERSITY, ZARIA, NIGERIA.

FACULTY OF EDUCATION

VICE CHANCELLOR: Prof. Ibrahim Garba (B.Sc., M.Sc. (A.B.U.); Ph.D. (London) D.I.C.)

HEAD OF DEPARTMENT: Professor A. A. Udoh (B.Ed. (Hons) Nsukka; M. Ed. & Ph.D. Bus Edu. [A.B.U.])

Telephone: 069-51755, 50692

Date: 12th April, 2012

Your Ref: _____

Our Ref: P13EDVE8004

Letter of Introduction

RHODA STEPHEN GATA – P13EDVE8004

This is to certify that the above mentioned name is a Postgraduate student (M.Ed Home Economics) in the Department of Vocational and Technical Education, Ahmadu Bello University, Zaria carrying out a research topic: ***Relationship Between Use of Educative Play Materials and Cognitive Development of Nursery School Children in Niger State.***

Please, kindly give her every assistance she may require.

DEPT. OF VOC. & TECH. EDUCATION
HEAD OF DEPT
DATE
A.B.U. ZARIA

Professor A.A. Udoh
HEAD OF DEPARTMENT

APPENDIX II

WECHSLER PRE SCHOOL AND PRIMARY SCALE OF INTELLIGENCE (WPPSI-R.TEST)

1. Block Design

While viewing a constructed model or a picture in a stimulus book, the child uses one or two colour blocks to re-create the design within a specific time limit.

2. Information

For picture items the child responds to a question by choosing a picture from four response options.

For verbal items, the child answers questions that address a broad range of general knowledge topic.

3. Matrix Reasoning

The child looks at an incomplete matrix and select the missing portion from 4-5 response option.

4. Vocabulary

For picture items, the child names pictures that are displayed in a stimulus book.

For verbal items the child gives definitions for words that the examiner reads aloud.

5. Picture Concepts

The child is presented with two or three rows of pictures and chooses one picture from each row to form a group with a common characteristics.

6. Symbol Search

The child scans a search group and indicates whether a target symbol matches any of the symbols in the search group.

7. Word Reasoning

The child is asked to identify the common concept being described in a series of increasingly specific clues.

8. Coding

The child copies symbols that are paired with simple geometric shapes.
Using a key, the child draws each symbol in its corresponding shape.

9. Comprehension

The child answers questions based on his or her understanding of general principles and social situations.

10. Picture Completion

The child views a picture and then points to or names the important missing part.

The child read an incomplete sentence containing two concepts that share a common characteristic. The child is asked to complete the sentence by providing a response that reflects the shared characteristics.

11. Reception Vocabulary

The child looks at a group of four pictures and point to the one the examiner names aloud.

12. Object Assembly

The child is presented with the pieces of a puzzle in a standard arrangement and fits the pieces together to form a meaningful whole within 90 seconds.

13. Picture Naming

The child names pictures that are displayed in a stimulus book.

14. Letter Number Sequence

The child is presented a mixed series of numbers and letters and repeat them number first (in numerical order) then letter (in alphabetical order).

SOURCE: Wechsler Preschool and Primary Scale of Intelligence revised WPPSI-R http//www/kid.test.com.wechslerhtml. retrieved 29/7/2011

APPENDIX III

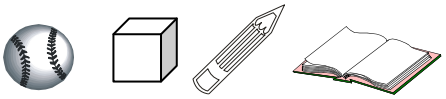
MODIFIED WECHSLER PRE-SCHOOL AND PRIMARY SCALE OF INTELLIGENCE KEY

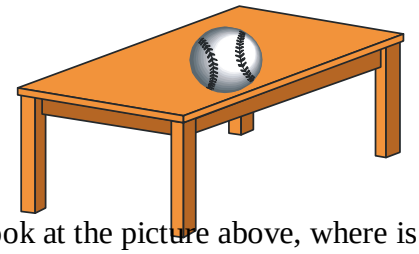
S/N	Seale	Question No.
1	Block design	Section B. 10
2	Information	Section A.4
3	Matrix Reasoning	Section B.5
4	Vocabulary	Section-A.7.8.9.13
5	Picture Concept	Section B.11
6	Symbol search	Section- B.4
7	Word reasoning	Section A.5.9.10
8	Coding	Section B.12
9	Comprehension	Section a.1.2.3.13
10	Picture Completion	Section A.6
11	Reception Vocabulary	Section B.6
12	Object Assembly	Section B.8
13	Picture Naming	Section A12
14	Letter Number Sequence	Section B.7

APPENDIX IV
MODIFIED WECHSLER PRE-SCHOOL AND PRIMARY SCALE OF INTELLIGENCE-REVISED (WPPSI)
SECTION 'A'

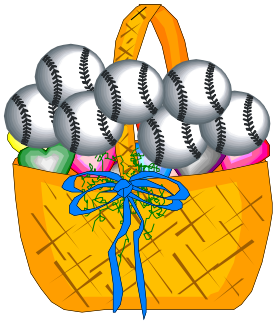
VERBAL TEST

1. What is your name?
2. Which class are you in?
3. Are you a boy or a girl?
4. Identify a pencil from four options (Ball, Pencil, Box and Book)
5. What is pencil used for?





6. Look at the picture above, where is the ball?



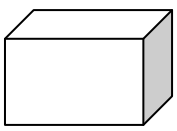
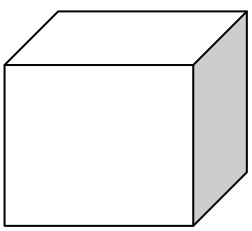
7. Look at the picture above, where are the Balls?

8. Compare line A and B

A  B 

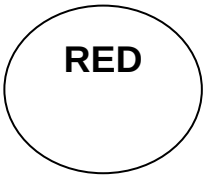
Which of the lines is short line A or B?

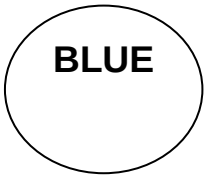
9. Compare Box A and B

A  B 

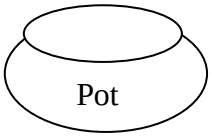
Which of the Boxes is bigger?

10. Name these colours

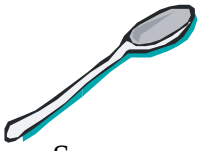




11. Identify these objects



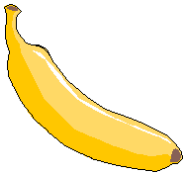
Pot



Spoon

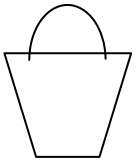


Cup



Banana

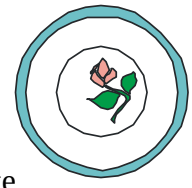
12. Name these Pictures



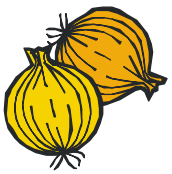
Bucket



Kettle



Plate



Onion

13. Identify 4 parts of your body and their uses (Eye, Ear, Nose, Mouth, Hand etc)

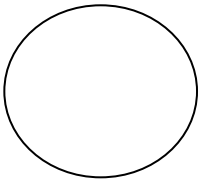
SECTION 'B'

NON-VERBAL TEST

1. Trace the square



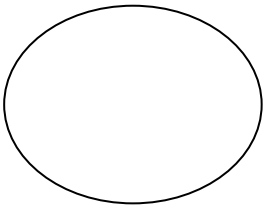
2. Colour the circle



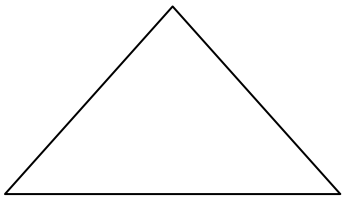
3. fill in the missing letters

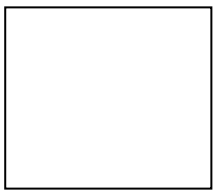
Pot	P – t
Apple	Ap –le
Book	B - - k

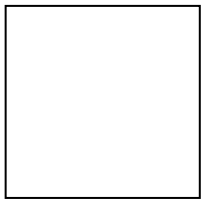
4. Match Similar Shapes

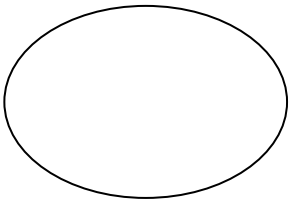


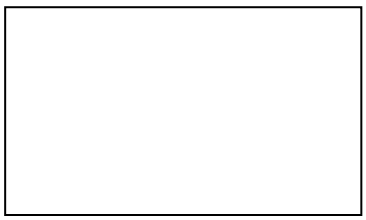


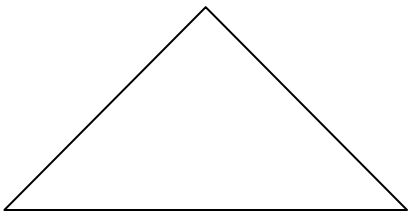




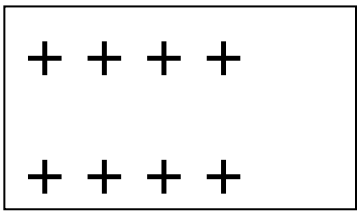




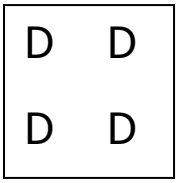




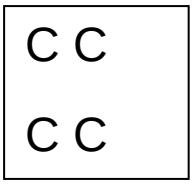
5. Select symbol from A –D to complete the missing symbol on the left.



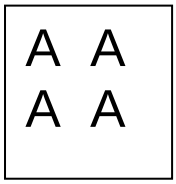
A



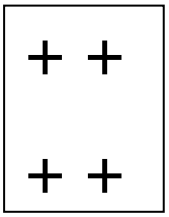
B



C



D

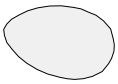


6. Show this object

Apple



Ball



Cup



Fish



Egg



7. Arrange these letters in alphabetical order using alphabet blocks

   D, B, C, A, E.

8. Arrange these numbers in numerical order using number puzzles

   4, 2, 3, 5, 1.

9. Identify these currencies (real currency)

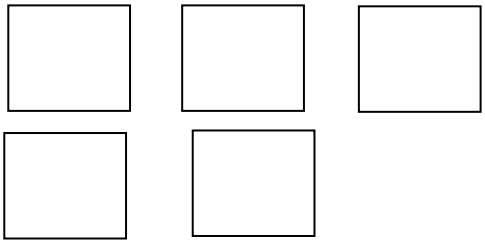
   ~~₦~~5

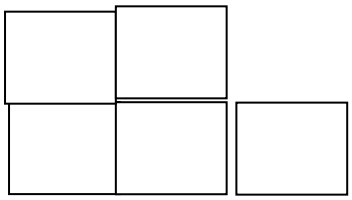
   ~~₦~~10

   ~~₦~~20

   ~~₦~~50

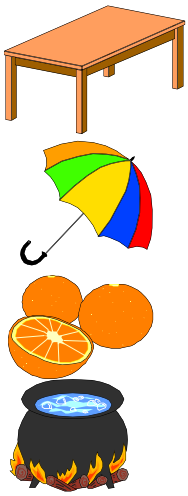
10. Use 5 square blocks on the left to create pattern on the right.





11. Match Pictures from Row A and B that are Similar

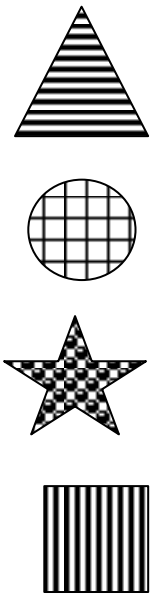
A

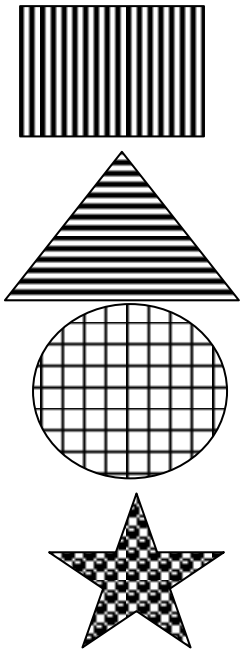


B



12. Match the following shapes using their code





APPENDIX V

QUESTIONNAIRE FOR PROPRIETORS / PROPRIETRESS OF PRIVATE NURSERY SCHOOLS

Home Economic Section,
Department of Vocational for Technical Education,
Faculty of Education,
A.B.U. Zaria.

Dear Respondents,

Request to Complete Questionnaire

I, Rhoda S. Gata is a Postgraduate Student of the above University. I am carrying out a research titled "Relationship between use of Educative play materials and cognitive development of Nursery School Children in Niger State".

I wish to request you to fill the attached questionnaire. Your responses will be used purely academic purposes and will also be treated as confidential.

Thanks for your anticipated co-operation.

Yours faithfully,

GATA RHODA STEPHEN

Types of Educative Play materials in your school.

S/N	Types of Educative Play Materials	✓ Tick
1.	Alphabet and number blocks	
2.	Building blocks	
3.	Alphabet and number puzzles	
4.	Picture Books	
5.	Writing materials	
6.	Art (drawing/ Painting) Material	

NB: Indicate others you have but not listed above
