

**TWO MODES OF SCHOOL-BASED OUTDOOR EDUCATIONAL ACTIVITIES
AND LEARNING OUTCOMES OF PUBLIC PRE-PRIMARY SCHOOL
CHILDREN IN IBADAN, NIGERIA**

BY

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ABSTRACT

One of the objectives of pre-primary education is to inculcate cognitive and social skills in pre- primary children. Deficiency in these skills is partly accountable for poor learning among the pre-primary school children in Ibadan. Previous studies largely focussed on home, indoor classroom activities and children-related factors with little emphasis on interventions through outdoor activities. This study, therefore, was carried out to determine the effects of structured and unstructured school-based outdoor educational activities on learning outcomes (cognitive and social skills) of pre-primary school children in public schools in Ibadan, Oyo State, Nigeria. The moderating effects of parental involvement and gender were also examined.

Cognitive and Social Constructivist Learning theories provided the framework, while the pretest-posttest control group quasi-experimental design with a 3x2x2 factorial matrix was adopted. The multi-stage sampling procedure was used. Three Local Government Areas (LGAs), (Ibadan North, Ibadan North East and Ibadan North West) were randomly selected. Purposive sampling was used to select three public pre-primary schools (one per LGA) based on availability of space and resources to carry out outdoor exploration. Three intact classes (one per school) were randomly assigned to Structured School-based Outdoor Educational Activities (SSOEA-16), Unstructured School-based Outdoor Educational Activities (USOEA-15) and control (18) groups. The instruments used were Cognitive Skills Assessment ($r = 0.89$), Social Skills Rating Scales ($r = 0.80$), Parental Involvement Questionnaire ($r = 0.85$) and instructional guides. The treatment lasted 12 weeks. Data were subjected to descriptive statistics, Analysis of covariance and Bonferroni post-hoc test at 0.05 level of significance.

There were more males (59.2%) and majority (73.5%) had low parental involvement. There was a significant main effect of treatment on pre-primary school children's cognitive skills ($F_{(2; 46)} = 120.90$; partial $\eta^2 = 0.87$). The children in the SSOEA ($\bar{x} = 78.90$) improved on their cognitive skills better than those in USOEA ($\bar{x} = 54.41$) and control ($\bar{x} = 42.09$) groups. There was a significant main effect of treatment on pre-primary school children's social skills ($F_{(2; 46)} = 108.33$; partial $\eta^2 = 0.85$). The SSOEA had the highest mean score ($\bar{x} = 47.89$) followed by USOEA ($\bar{x} = 28.97$) and control ($\bar{x} = 14.15$) groups. There were no significant main effects of parental involvement and gender on the cognitive and social skills. The two and three-way interaction effects were not significant.

Structured and unstructured school-based outdoor educational activities improved cognitive and social skills of pre-primary school children in Ibadan, Nigeria. Pre-primary school teachers in public schools should adopt these strategies for improved cognitive and social skills of pre-primary school children regardless of gender and parental involvement.

Keywords: Pre-primary school children in Ibadan, Cognitive and social skills, Structured and unstructured outdoor activities

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DEDICATION

This work is dedicated to God.

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CERTIFICATION

I certify that this work was carried out by Rasidat Funmilola LEIGH in the Department of Early Childhood and Educational Foundations, Faculty of Education, University of Ibadan, Ibadan, Nigeria.

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ABBREVIATIONS

SSAS.	Social Skills Assessment Scale
CSA.	Cognitive Skills Assessment Scale
USOEA	Unstructured Outdoor Educational Activities
ZPD	Zone of Proximal Development
ADHD	Attention Deficit Hyperactivity Disorder
IGSSBOEA	Instructional Guide on Structured School – Based Outdoor Education Activities
IGUSBOEA	Instructional guide on Unstructured School –Based Outdoor Education
IGCTS	Instructional Guide on Conventional Teaching Activities
PTOTCS	Preschool Teacher's Outdoor Teaching Competence Scale
AFMPC	Attention Functioning Measure for Pre-Primary Children
PSM	Problem Solving Measure
PSM	Numeracy Skills Measure
ANCOVA	Analysis of Covariance
EMM	Estimated Marginal Means
CSA	Card Sorting Activities
PMA	Picture Matching Activity
QC	Quantity Comparism

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

One among the fundamental goals of education is equipping the individual with a range of skills and competencies required to become successful learners and responsible residents who could make meaningful contributions to the development of the society. Both cognitive and social skills are among dimensions of skills and competencies that should be acquired during the process of education. These skills equip individuals with the capacity to function, create new skills and flourish in the society. They are critical to further learning and often add much to attainment in many aspects of life including economic productivity and social well-being (Weinberger, 2014).

Interestingly, it has been observed that the formation of cognitive and social skills usually follows a life-cycle process in which the early years form the basis for fruitful outcomes in the future (Diamond, Barnett, Thomas, and Munro, 2007; Cunha and Heckman, 2008; Essa, 2011 and Bredekamp, 2011 Anderson and Reidy, 2012). These findings have led to intensive focus on the quality of early education as foundation for skills development.

Cognitive skills are intellectual capacities that help us to think, learn and attend to basic tasks. It does not merely show the depth of knowledge acquired, but more of the capacity to process information, make meanings out of experience, solve problems, and pay attention (Welsh, Nix, Blair, Bierman and Nelson, 2010). They are required to perform nearly every daily human action. Individuals will need to apply their knowledge to solve problems, they will require strong literacy and numeracy skills to make sense out of information and make decision about so many aspects of their lives. These skills are also very important to educational attainment (Cunha, Heckman, Lochner and Masteroy, 2006; Hanushek and Woessmann, 2008), as many school activities require students to use these skills. Nikoloski and Muhamed, (2014) observed that cognitive skills add to employability, productivity and job satisfaction.

Despite the relevance of cognitive skills, international comparisons incorporating expanded data on performance have indicated poor level in Nigerian children. For example, UNDP's (2015) Human Development Index placed Nigeria on

152 among 187 countries. In another reports, primary school children here in Nigeria performed worst out of 22 neighbouring African countries (World Bank, 2008). Many young people in Nigeria have also been observed to graduate from school without the necessary cognitive skills they need to thrive in the society and compete globally (World Bank, 2015). This observation calls for serious attention to development of cognitive skills in Nigerian children especially, at the foundation level. Among several dimensions of cognitive skills are memory, reasoning, literacy, attention-functioning, problem-solving, numeracy and literacy skills, this study is concerned with three i.e. numeracy, attention functioning and problem solving.

Many Nigerian children are reported to exhibit poor numeracy skills at all levels of education (STAN, 2000; Kurumeh and Imoko, 2008) including pre-primary school (NEDS, 2015), primary (Aremu 1998; Makiki, Ngban and Ibu, 2009; okeke-oti and Adaka, 2012; Inko-Tariah, 2014) and post primary (Popoola, 2008; Okafor and Anuduaka, 2013; Oyinloye and Popoola, 2013). According to Nigeria Education Data Survey (NEDS), (2015), the national mean score for numeracy skills dropped from 48% in 2010 to 34% in 2015. Poor performance at the foundation is likely responsible for the observations at the higher levels and this requires attention to ensure solid foundation for numeracy skills.

A close observation of many school children equally showed that many of them cannot maintain attention for a long period. Adewuya and Famuyiwa, (2007); Egbochukwu and Abikwi, (2007); Ndukuba, *et al.* (2007) confirmed inattentiveness as the most prevalent of the sub-types of hyperactive deficits among school age children in Nigeria. Attention functioning problems will make it difficult to benefit from instruction, or to persist when confronted with challenging situation. Consequently, children may perform poorly in school and on tasks that require higher level of concentration. When such children become adults, the nation may be bereaved of people who could engage in tasks that require higher order thinking. Meanwhile, many indigenous studies that have focused on cognitive skills have inadvertently left out the area of attention functioning. This area therefore demands research efforts that will focus on building these essential skills early in children.

Closely related to attention functioning is problem solving. Some studies have revealed that many Nigerian children exhibit poor problem solving skills (Adeleke, 2007; Akinsola and Awofala, 2008; Adeyemo, 2010; Salami, 2014, Majebi, 2017). This is likely due to an earlier observation (Oduolowu, 1998) that problem solving

skills were neglected in Nigerian primary school system. The deficiency may be connected with abstract teaching style and learning that encourages students to memorize lots of facts in a subject so as to pass an examination. Such practices do not provide opportunity to develop deep concepts about how things work naturally and to solve real life problems. In the opinion of the researcher, any nation with substantial number of such individuals would lack problem solvers who could bring lasting solution to myriads of her challenges. There is therefore the need to build problem solving skills early in children.

It may be impossible for children to exhibit cognitive skills effectively without acquisition of social skills (Stankov and Lee, 2014) which refer to personality and behaviours of the individual. It involves a wide variety of positive interactions with others including ability to manage own feelings, and understand those of others (Pecjak, *et al.*, 2009). It also includes behaviours like taking turns, working with others, sharing, conversing with others using polite language and so on. Social skills include dimensions like cooperation, responsibility, tolerance, relationship, self-regulation, and friendship. This study considered self-regulation, cooperation and responsibility skills. The importance of social skills to educational success and achievement has been observed (Estes, 2004; Farcas, 2003). Successful learning requires that children interact positively among themselves and with their teachers, follow rules and routine effectively and so on. Poor social skills in childhood have also been linked to a range of risky behaviours and criminal tendencies in adolescence (Heckman and Rubenstein, 2001). This was why Aubrey and Ward, (2013) reported that the development of social skills should be taken seriously early in life. Social skill has also been recognised as crucial to meaningful life outcomes and effective functioning (Almlund, Duckworth, Heckman and Kautz, (2011). Improvement of social skills is therefore central to social and economic development of the society (Deming, 2017).

In the traditional African society, social skills was taken seriously by every adult. According to Akinbote, (2006), every adult in a community ensures that the child behaves in line with the norms and values of the community. Unfortunately, the tradition is gradually fading away due to industrialization, globalization and electronic communication (Oduolowu, 2011). Studies have showed also that many pre-primary school children are deficient in many dimensions of social skills (Alisinanoglu, Ozbey and Kecisiogw, 2012;Olowe, Kutelu and Majebi, (2014). Ali, Dada, Isiaka and

Salmon, (2014) equally observed a similar trend of social deficiency among secondary school students. It is vital to note that effective social skill is not automatic. There must be an intentionally planned strategy to nurture social skills in children of pre-primary schools.

Nowadays, teachers and parents constantly complain that children cannot keep their property in good condition. Many will tear their books, and be careless about how they use things in their environment (Akpan, Ojinnaka, and Ekanem, 2010). The country as a whole is also witnessing increase in the vandalism of public facilities. Observations such as these are indications that self-regulation and responsibility skills are lacking in many children. However, studies on classroom practices have shown that development of these skills is not given much attention as children's activities are often directed mainly by teachers and such children do not have opportunity to take responsibility for their learning as well as things in their environment (Odinko, 2016).

Studies have also shown that a typical classroom in Nigerian schools provide limited opportunities for interactions among children and their peers during teaching and learning (Amali, Bello and Okafor, 2012; Majebi, 2017), as activities are teacher-dominated. Thus, there exist currently within our early schools, few experiences for children to learn how to interact, cooperate and imbibe these essential social skills. This may be responsible for high incidence of social problems currently ravaging our Society. There is the need therefore to direct efforts also at building social skills in our children.

The deficiencies expressed in the practices of early childhood education in Nigeria may suggest that development of cognitive or social skills in a good number of our pre-primary children may never be achieved if active learning methods are not explored. Many of the contributions on ways to improve cognitive and social skills in early childhood education in Nigeria have focused mainly on the classroom setting (Orji, 2014; Unachukwu, 2015; Majebi, 2017) without much consideration for intervention through outdoor based learning. Investigating the outdoor environment is also not common among researchers in early childhood education specialty in Nigeria. Few evidences available indicate that pre-school teachers do not engage children in learning using the outdoor environment (Lawani, 2012; Oduolowu and Leigh, 2015). These authors also reported that teachers lacked knowledge of the benefits derivable from outdoor educational activities which may be due to lack of information on the part of teachers and schools management.

The outdoor environment has a number of qualities that make it an essential learning context that can be rich, active and authentic, thus offering ways to build essential cognitive and social skills in children. In the outdoor based education, teaching and learning offered practical experience-based process that helps children to connect school learning to daily life activities (Jordet, 2010; Ertaş, Şen and Parmasızoğlu, 2011 and Fägerstam, 2014). Outdoor based education provide opportunities for unprompted, planned and purposeful activities (Bentsen, SØdergaard, Mygind, Barfoed and Randrup, 2010). This is very important because children of pre-primary school age are naturally active, love to move and explore their environment and as they do, they learn, by taking information through their senses (Civelek, 2016).

Some studies conducted outside Nigeria have proved the effectiveness of outdoor based education activities (Stone and Faulkner, 2014). Studies have similarly shown that school based outdoor classrooms methods significantly improved student achievements in science, social science, mathematics, languages and arts (Quigley, Pongsanon and Akerson, 2011; Cooper, 2015). It is often observed that outdoor experience has a stimulating effect on play and on the social conduct of children.

Giving the importance of outdoor environment, scholars have advocated that outdoor education should be included in the school curriculum. Öztürk, 2009; Talay, Aslan and Belkayalı, 2010; Yayla Ceylan and Ülker, 2014). School-based outdoor education is considered to be school learning that happens outside of the normal classroom setting that follows the programme established by the Ministry of Education. In this instance, teaching/learning takes place in a prepared place within the school premises (Türkmen, 2010).

Meanwhile, researchers differ on how children should explore the outdoor environment. While some advocate for unstructured play, others favoured structured play that is guided by the teacher. There is therefore the need to explore the significance of teachers' engagement of children during the learning process in the outdoor environment. Structured outdoor activities consist of different forms of intentional and goal-oriented educative activities (Cutter-Mackenzie and Edwards, 2013). In this, children follow rules or instructions to achieve a particular goal, while the teacher acts as partners to assist with difficult task and reflect with children on their experiences. Structured outdoor activity has been found to support the ability of

the child to solve problems, collaborate and improve communication skills (Burdette *et al.*, 2004; Olatundun, 2008; Weinstein, Przybylski and Ryan, 2009).

Unstructured outdoor activities allow children to be free to decide on what, and how they want it. The teacher only prepares the environment and observes them. This therefore gives children a sense of complete freedom to direct their activities. This kind of experiences will enable children to use their ingenuity and creativity. Stirling, (2011) observed that through unstructured outdoor activities, children learn acts that solve problems, socialize, self-regulate, and self-confidence. Kuo and Taylor, (2004) found that it expanded imagination and attention spans in children. Similarly, Stone and Faulkner (2014) observed an increase in physical skills. Not many studies have investigated the effects of two modes of outdoor in a single study. Earlier literatures in early childhood are primarily from other countries (White and Stoecklin, 1998; Çelik, 2012; Yayla Ceylan and Ülker, 2014). Within Nigeria, and to the best knowledge of the researcher, there is a paucity of research efforts in this direction.

Parent involvement is considered as one of the vital context in the early advancement of cognitive and social skills of children (Bernier *et al.* (2010). Parental involvement is believed to facilitate development of acceptable social behaviour through showing of good example at home (Bronfenbrenner and Ceci, 1994). Parental involvement is conceived in this study as parental provisions and engagement of children with activities in the environment, parent-child dialogue, intellectual encouragement and good models of positive societal behaviour. It is generally believed that a child's relationship, interactions and experiences at home provides a framework of how the child will interpret his/her world.

However, studies on parental involvement and children's cognitive skills have had controversial outcomes. While some found weak relations between parental involvement and children's academic achievement (Reynolds, 1992; Okpala, Okpala, and Smith, 2001), others reported no relations (Sui-Chu and Willms, 1996). Moreover, studies on parental involvement have focused mainly on student's performance, paying little attention to social skills of children. Most of these studies also concentrated on parent's involvement in school related activities which included the quality of involvement in school functions and rate of communication with teachers. The present study focused on home related interactions.

Gender variances in cognitive and social skills of children are of interest to researchers. Research on gender in cognitive skills has revealed conflicting results.

Some found males to be better than female children (Abubakar, and Ogugua, 2011), while others found no difference between sexes (Wai and Saw, 2005) with respect to cognitive abilities. On social skills, boys were observed to display higher anti-social behaviours (Halpern, 2000) compared to girls.

1.2 Statement of the Problem

Children are becoming more deficient in many dimensions of cognitive and social skills that are required for developing individual competencies, societal development and productivity. This deficiency can be attributed to poor teaching practices during early childhood education where solid foundation is expected to be laid for these all important skills. Children's natural proclivity to be active and discover their world has been relegated. Teaching now excludes purposeful children interaction with their peers, thus denying them of derivable co-operational skills, but consist of the traditional textbook-driven instruction which is teacher-dominated, thereby, fostering rote-learning. Resources that are essential for active learning experiences are also scarce in many early childhood schools. Where resources are available, the poor level of exposure to the potential impact of such facilities on the part of teachers as well as educational regulators limits the benefits accruable to cognitive and social skills. In Nigeria, most research efforts at improving cognitive and social skills of pre-primary school children have largely been directed at the indoor classroom, with little empirical information on the effectiveness of school-based outdoor education activities. This is probably due to the non-recognition of outdoor education activities in schools curricula, as earlier mentioned. Previous indigenous studies on outdoor based education were carried out mainly in the primary school context, and focused largely on environmental education. Available studies at pre-primary school level were also mostly from foreign countries. Many of the studies have also examined either of two modes structured or unstructured outdoor activities, as they best support development of cognitive and social skills of pre-primary children. Parental involvement and gender differences as factors influencing development of cognitive or social skills are also yet to be researched exhaustively. At present, literature on the effect of these factors are only controversial. This study therefore, determined the effect of structured and unstructured school-based outdoor

education activities on cognitive and social skills of pre-primary school children. The moderating effects of parental involvement and gender on the pre-primary children's cognitive and social skills were also examined in the study.

1.3 Hypotheses

Seven hypotheses were formulated and will be tested at 0.05 level of significant in this study as follows.

H₀₁: There is no significant main effect of treatment on pre-primary school children's:

- i. Cognitive skills
- ii. Social skills

H₀₂: There is no significant main effect of parental involvement on pre-primary school children's:

- i. Cognitive skills
- ii. Social skills

H₀₃: There is no significant main effect of gender on pre-primary school children's:

- i. Cognitive skills
- ii. Social skills

H₀₄: There is no significant interaction effect of treatment and parental involvement on pre-primary school children's:

- i. Cognitive skills
- ii. Social skills

H₀₅: There is no significant interaction effect of treatment and gender on pre-primary school children's:

- i. Cognitive skills
- ii. Social skills

H₀₆: There is no significant interaction effect of parental involvement and gender on pre-primary school children's:

- i. Cognitive skills
- ii. Social skills

Ho7: There is no significant interaction effect of treatment, parental involvement and gender on pre-primary school children's:

- i. Cognitive skills
- ii. Social skills

1.4 Significance of the Study

This study has shown the effectiveness of school-based outdoor educational activities in promoting cognitive and social skills in pre-primary school children. Empirical evidence of the effectiveness that outdoor education activities contributes to the improvement of cognitive and social skills in pre-primary school children in Ibadan Oyo State, Nigeria were provided in this study. When the approach is adopted it would serve as an intervention needed to salvage poor cognitive and social skills of our children. This study has empowered pre-primary school children children's exploratory abilities to investigate and experiment through active play in the environment. This as a matter of fact has established further that they could acquire the fundamental skills and capacities that will enable them to function excellently in their environment. The present study revealed that Nigerian children are intelligent, capable, strong and creative when given the opportunity to explore their environment.

Participation in outdoor education activities allowed the pre-primary children to work collaboratively with their peers making them to appreciate the contribution of one another to achieving their goals. As a result, they were encouraged to have strong intention to behave in a socially acceptable manner and learn more about one another. The study has provided information that teachers should plan, organize, support and be intentional in building cognitive and social children learning in the outdoor. This study has provided guides to teachers on how to adequately engage children in active learning, exploring living and non-living objects of their environment in the outdoor environment, making it a conviction to utilize outdoor environment for teaching and learning. When teachers adopt this approach to teaching, they would be able to situate children's learning in the perspective of their culture and environment. This study has implications for assessment, planning and visibility of outdoor learning in the early

years which will be essentially useful for teachers and informative for school administrators and policy makers when making laws and regulation about children's learning environments. This study has also revealed the benefits and challenges of carrying out school-based outdoor education activities at the pre-primary level. The study has also provided empirical information that structured mode of outdoor education activities were most effective building cognitive and social skills of pre-primary school children. The study has also provided information on the moderating effect of parental involvement on cognitive and social skills of pre-primary school children.

1.5 Scope of the Study

The study determined the effects of school-based outdoor activities on the development of cognitive and social skills of pre-primary school children in the areas of attention functioning skills, problem solving skills, numerical skills, self-regulation, cooperation and responsibility skills. The moderating effects of parental involvement and gender, on the cognitive and social skills of children were also examined. The study involved pre-primary school children who are between 5 and 6 years old in three purposively selected pre- primary schools in Ibadan North, Ibadan North East and Ibadan North West Areas of Ibadan, Oyo State. The contents of activities carried out were selected from the One Year compulsory Pre-primary School Education Curriculum in Nigeria (NERDC, 2013) and was broken into weekly activities by the researcher, the activities covered include:

- 1) Expression and exploration: expression of self through arts and crafts, self-care and appreciation of the natural environment, relationship with peers, adult, and environment
- 2) Mental development: number quantity, numerals and counting, addition and Subtraction of numbers less than 20, classification and ordering of objects: recognition and construction of shapes of objects, and colour.

1.6 Operational Definitions of Terms:

School-based Outdoor Education Activities: These are activity-based teaching and learning which takes place within the school compound but outside the classroom. Children were involved in games, songs, exploration and experimenting with natural materials found in the immediate environment. The content of the activities were derived from the National pre-primary school education curriculum in Nigeria.

Outdoor learning activities: These are learning activities that actively involve children in exploration and playing with plants, water, sand, stones and other materials in the immediate environment outside the classroom.

Structured Outdoor activities: These are activities where teachers and children work together in the outdoor environment to achieve the objective of the lesson.

Unstructured Outdoor Activities: These are forms of activities where children freely interact in the outdoor environment with minimal intervention of the teacher.

Social skills: These are specific abilities or competencies required by children to self-regulate their behaviour and activities, cooperate with others in group activities, be responsible to self, others and properties as they engage in school-based outdoor education activities. These skills were measured with the use of Social Skills Assessment Scale (SSAS).

Cognitive skills: Children's abilities to demonstrate numeracy skills, solve problems, stay on task as they participate in activities. These skills were measured with the use of Cognitive Skills Assessment Scale (CSAS).

Natural materials: Materials that are readily present in the outdoor environment of the children which can be deployed during learning process. These materials included trees, plants, logs, soil, stone, water, soil, flowers, insects, fruits and seeds.

Parental involvement: This is parental engagement with their children in learning activities and interactions at home and in their local environment.

Pre-primary school children: These are children who are between 5 and 6 years of age attending pre-primary schools.

CHAPTER TWO

LITERATURE REVIEW

Relevant literature for this study was reviewed around major headings and sub-headings as follows.

2.1 Theoretical Framework

2.1.1. Jean Piaget Cognitive Constructivism Theory

Piaget cognitive theory states that children build their own knowledge through active interaction in the world around them. He emphasised that learning was grounded in real experience, through the creation of one logical structure after another. Piaget believed that children's mind are not blank to be packed with knowledge but that they rather create knowledge through interpretation of their experiences. Piaget equally stressed that the type of education provided for children should be such that will enhance their ability to develop deep understanding from their experiences and in their own ways and means (Piaget, 1960). He also concluded that children think differently from adult. That was why Piaget emphasised that teaching and learning for children should incorporate multiple perspectives and authentic activities in real-world environments where the knowledge acquired is expected to be applied. This will ensure that learners can relate what are learning to real life situations and be able to transfer the knowledge easily when need arise. Piaget cognitive theory and principles about learning is particularly relevant to unstructured outdoor educational activities in this study (USOEA). Children in the USOEA experienced active learning, they had direct experience in the environment, with a lot of materials to observe, touch, share, and manipulate. Moreover, the process of learning in the USOEA is such that enabled children to feel comfortable to experience learning in their own ways and means. The child controls the activities, deciding how to explore their outdoor environment without much intervention from the teacher. Thus, there was less emphasis on direct teaching of specific concepts, rather children learn as they engage in playful, meaningful and authentic activities. These kinds of experiences are believed to offer a vast array of chances for children to practice and build cognitive and social skills.

2.1.2 Vygotsky Social Constructivism Theory

The sociocultural theory was propounded by Vygotsky in 1978. It states that children learn and construct knowledge from social interaction within their environment. He believed that knowledge is not generated from within the individual but rather it is constructed through dealings with other people as well as objects in the environment. (Rogoff, 2003; Bredekamp, 2011). The sociocultural theory thus describes learning as a social process, situated within the environment of the child. Vygotsky suggested that a child's achievement varies between cases in which he tries to solve a problem alone and when being assisted by others. He regarded this difference as the "zone of proximal development." (ZPD). Vygotsky referred to this process of supporting as "scaffolding," which helps to bridge the difference between a child current level of performance and his/her potential for more complex performance. Vygotsky social constructivism emphasized that teachers should facilitate children's learning through planned involvements and interactions that places the child at the centre of activity, not the teacher or the concepts (Geng, Law and Niu, 2019). Teachers are also expected to assist students to actively participate in their learning, create significant links between past and new knowledge. Hence, constructivism advocates for learning that is purposeful, intentional and collaborative. However, this is contrary to what obtains in most conventional approaches to education, where learning is usually focused on separating the learners from all social engagements. The social constructivist theory is relevant to structured outdoor education activities in this study.

Structured outdoor education activities emphasises social interaction among the children, their teacher and the environment. During structured outdoor education activities, there will be opportunities for collaborative and discovery oriented learning. Cooperative learning tasks will be extensively utilised. Children will work in small groups to develop their own answer through interaction and reaching consensus. In the same vein, the teacher are expected to help the children beyond their zone of proximal development (ZPD) throughout the experiment by guiding them to carry out explorations outside the classroom, stimulating them to think about what they will be doing and asking questions that enable children to connect their experience to real life situations. In relation to the environment, the structured outdoor education activities in this study depend heavily on the usage of objects and materials in the immediate

environment of the child. Children will interact with natural materials such as sticks, stones, sand, plants, and shells in their environment during learning process.

2.2.1. Early Childhood Education

The early childhood period is generally referred to as the age starting from birth till about eight years of life. In Nigeria, it is usually considered as the period from between birth and 6 years of age. Nigeria National Policy on Education defined early childhood education as educational services rendered to children in school before the commencement of the primary school. This includes crèche, the nursery and kindergarten. According to Oduolowu, (2011), early childhood education is the branch of knowledge and an essential component of all family and programmes arranged for children from birth to the statutory age six. Likewise, Kostelnik, Soderman and Whiren, (2011) defined early childhood education as any group programme serving children right from birth up to year 8, designed to promote intellectual, language, social, physical development and learning of children. Similarly, Estes, (2004) described early childhood education as the total education that targets children's holistic development of children. Early childhood education therefore focuses on developing the child holistically and ensuring that solid foundation for optimal functioning of the child is laid.

It is a period when children need appropriate stimulation and experiences in order to grow and develop maximally. Children's experiences during this period are capable of having a substantial impact on learning and development, both positively and negatively. This explains why access to quality early childhood development and care for all children is one of the outcome targets of goal 4 of sustainable development goals. Evidence has shown that early childhood age is an important period, characterised with rapid development in the physical, cognitive and affective for children, (Bredenkamp, 2011; Essa, 2011). A growing literature suggests that early child care and education generates a higher rate of return on public investment than later stages of education, especially for disadvantage children (Heckman, Moon, Pinto, Savelyev and Yavitz, 2010). There is vast evidence that the quality of early childhood educational experiences lay the foundation for subsequent stages in life, in terms of better children's achievements in primary school and beyond, low dropout rate, as well as the development of socially adjusted behaviours (Raban, 2000; Bowman, 2001; Schweinhart *et al.*, 2005).

Good quality early education has also been found to build the foundation for capable workforce, a reliable community and a flourishing economy (Heckman and Mosso 2014). Moreover, findings from neuroscience research revealed that early childhood period constitutes the most critical time in brain development (Knudsen, 2004). However, appropriate stimulations are needed for the child's brain to develop maximally. Goswami, (2015) in a study concluded that cognitive development is hinged on neural enrichment. Early quality interactions of children in activities and play in a stimulating environment has been found to increase and strengthen the neural connections of the brain that is responsible for the child's ability for more complex learning and behaviour pattern throughout life (Tinajero and Mustard, 2011). It has also been discovered on the other hand, that the development and functioning of the brain can be compromised when children are exposed to an environment that is not appropriately stimulating (Perry, 2000; Shonkoff and Phillips, 2000).

The critical nature of nature of early childhood development therefore suggests that that any damage or deprivation at this early period is almost irreversible or almost very difficult to correct. The behaviour, values, attitudes, knowledge and skills acquired during early childhood years forms the foundation for future learning and development. That is why the early childhood period of life is increasingly being seen as a significant period for optimizing development across lifetime. Therefore it is imperative that early childhood education provides experiences to children that will ensure that strong foundations for competencies cherished by the society are laid.

2.2.2 The Concept of Outdoor Education

'Outdoor education' is a multi-dimensional construct which varies in meaning across culture and contexts (Bentsen *et al.*, 2010; Nakagawa and Payne, 2011). Outdoor education includes related fields such as adventure education, camping education, field work, natural history, and school-based learning in diverse subjects areas, (Thomas, Potter and Allison, 2009). Activities like mountain biking, rock climbing, sailing, canoeing, swimming and overseas expedition, field observation which takes place in a purpose-built outdoor education centre are regarded more as adventure education and environmental education. Some researchers have also focused on

outdoor education to be learning about the outdoors which is also called environmental education (Nicol, 2002a, 2002b). It should be emphasized that, outdoor education is not just about environmental studies but there are many other aspects such as academic and social and individual. This was why Richards, (1994) believed that it is not adequate to only expose young people to adventures or experiences outdoor, but that there was need to engage children in educational activities in the outdoor on regular basis in the school and community. Outdoor education as 'an approach provides opportunities for real experience in natural environment. Eaton, (1998) regarded Outdoor education as a method or process of teaching which utilised community, natural and human resources as means of curriculum enrichment . He further stressed that the focus of outdoor education was to develop “skills for lifetime learning, survival and functionality in social setting. This suggests that working outside emphasised real life experience, relationships, people and natural resources.

Some countries have given serious attention to capability of outdoor environment in promoting learning. In the Scandinavian context for example, outdoor education is an important pedagogy. The learning can take place in a prepared place in the school premises or at the close natural or cultural site (Szczepanski, 2008). In Spain, the significance of situating children’s learning in the milieu of their natural environment has been recognized (Rodriguez, 2002). Outdoor based education activities therefore compliments children’s natural curiosity and exuberance, making learning real and fun for children. They also provide avenue for children to experiment, discover and carry out research. Thus, participation in outdoor activities can boost children’s skills acquisition as they share knowledge, express feelings and make decisions.

Apart from these, the outdoor environment is also endowed with stimulating natural materials and phenomenon that can be used in various ways to provide concrete, real-life, meaningful and multi-sensory learning experiences for children (Szczepanski, 2008). For example, when children are in the outdoor, they can observe changes occurring in weather, season, water, air, animals and plants (Bilton, 2010). Such experience offers a unique opportunity for children to move between concrete and abstract worlds, and to transform their experience into knowledge (Stan, 2011). This quite differs from the more abstract classroom experience where children are

mere passive recipients of information. That was why Hubball and West, (2009) suggested outdoor as very effective to building life competence. Natural materials in outdoor environment are captivating to young children. For example, Maxwell, Mitchell and Evans, (2008) observed that introduction of natural materials into the outdoor play space did inspire a more robust range of skills development. Natural materials are unique and open ended in nature because they can be used in various ways. This characteristic of natural materials makes them valuable resources capable of providing experiences and events that can stimulate imagination and enhance skill development in children when skilfully utilized (Mirrahimi *et al.*, 2011).

Moreover, being outdoor provides opportunity and experiences for children to work freely with themselves and their teachers (Weinstein, Przybylski and Ryan, 2009). When children are in the outdoor, they have opportunity to express their feelings, work together on any issue that attract their interest and make their own decisions, thereby enhancing positive relationships, interactions and development of social skills (Ginsburg, Lee and Boyd, 2008; Scott, *et al* 2013; Sharpe, 2014). Children have also been found to provide varied opportunity to notice natural things in their environment more easily, this experience makes it possible for children to be sensitive and get closer to their natural environment, thereby developing positive attitude about it. In this study, outdoor education was considered as pedagogy where teaching/learning activities were carried out in the school ground and the focus will be on academically related activities using natural materials in the environment.

2.2.3 Cognitive Skills in Pre-Primary School Children

Cognitive skills refer to abilities to perform various mental activities. They are required to perform virtually every human action. According to UNESCO, (2015) cognitive skills are learning skills which include ability to concentrate, remember and to think critically. In the view of Welsh *et al.* (2010) cognitive skills include skills like memory, attention functioning, critical thinking, problem solving and proficiencies to read and communicate consciously. In line with these submissions, cognitive skills are individual mental skills that are required to learn efficiently. It therefore deals with mechanism of how we learn rather than actual knowledge acquired. According to Zelazo and Muller, (2010) cognitive skills include capacity to make meanings, patterns, relationships and to proffer solutions to problem. Cognitive skills are also

regarded as the ability to process sensory information, analyse, compare, understand cause effect, plan, prioritise, remember and solve problems (Essa, 2011). According to Cunha and Heckman, (2008), cognitive skills have a strong influence on education, labour market outcomes and employability skills. Cognitive skills of pre-primary children would empower them to appreciate and acts in the world around them effectively.

The early ages is recognized as key age for optimum enhancement of cognitive skills. Early development of cognitive skills in children has been recognised as basis for higher skills in the future (Anderson and Reidy, 2012). This observation is consistent with the estimation of Heckman, Moon, Pinto, Savelyev, and Yavitz, (2010), that the early years are critical ages for advancement in cognitive skills. In their own contribution, Knudsen, Heckman, Cameron, and Shonko, (2006), observed cognitive remediation strategies for disadvantaged adolescents was ineffective. In line with this submission, it would be easier to build cognitive skills at earlier ages than to pay costs for reducing the negative effects of poor environments on cognitive skills in adolescence. Knudsen, (2004) similarly observed that remarkable advances in cognitive skills occurs in the early years especially in the brain.

Early quality interactions of children in activities and play in a stimulating environment has been found to increase and strengthen the neural networks in the brain which is responsible for the child's ability to exercise cognitive skills throughout life (Tinajero and Mustard, 2011). During the early years the child's brain is more flexible and sensitive to environmental experiences. When the experiences are stimulating, the child is able to build efficient brain circuit, on the contrary, when the child is exposed to adverse early experiences, it can have lifelong damaging effects on the child's neural circuit which can affect their potential for learning, school achievement, and conduct through lifetime (Mustard, 2007). The early childhood period therefore provides a great of opportunity to dramatically shape the brain architecture of a child for improved cognitive functioning.

Goswani, (2015) noted that cognitive skills in children are heightened through quality experiences and interactions in stimulating activities in their environments. Developmental researchers have found that the development of pre-primary children's cognitive skill is enhanced by taking part in everyday activities, which allow them to gradually discover their world. According to (Berk, 2008) children build their

cognitive skills when they are engaged in multi-sensory activities that enable them to taste, touch, smelling, hear and move their body during play. In contribution of Bredekamp, (2011) pre-primary school children develop their cognitive skills when involved with stimulations that engage their senses. These activities help a child's brain advance and understand more complex thoughts and processes as they grow. According to (Majebi, 2017), most cognitive skills are learned and be improved with practices and right experiences. Pre-primary children learn successfully when information is provided in meaningful situations. They enjoy learning through real-life situations and materials.

Children in pre-primary school learn through first-hand experiences, by doing rather than in abstract. This understanding of the nature of children makes activities based learning potent opportunities for developing their cognitive skills. Pre-primary school children in the present study were provided opportunity to experience various kind of stimulating activities in their natural environments, this would enable them to practice and improve their cognitive skills. In this study, cognitive skills considered are numeracy, problem solving and attention functioning skills.

Numeracy skill is considered in this study as competency and disposition to make sense of numbers and to use it in daily activities. It is more than ability to solve basic arithmetic, but involves developing confidence with numbers and measure as well as its usage in every day's life experiences (Garcia-Retamero and Galesic, 2009). Numeracy is not only a subset of mathematics but also a life skill which covers and enhances all areas of learning. Numeracy skill plays crucial roles in the contemporary society, it is required for scientific and technological advancement (National Research Council, 2009), in health care, farming and personal financial planning. People with high level of numeracy skill are confident in social settings and perform better in economic activities (Garcia-Retamero, and Galesic, 2009). Numeracy skill has also been recognised as key factor in gaining an employment and retaining jobs. Every society therefore needs high numerate population to be functional and compete in the modern world.

The early childhood period is recognised as the critical time to build solid foundation for numerical competencies in children, just like a house is built on a strong foundation (Ginsburg, Lee and Boyd, 2008; Schoenfeld, and Stipek, 2011.) Children have natural desire to explore the world around them. This tendency to learn, experiment and explore the physical world, is immense during the earlier ages and

should be tapped to build strong numerical skills in children. Early exposure to quality numerical experiences will therefore help children to utilize their inherent skills and as such fuel their interest and confidence for learning more advanced mathematical concepts in later years. Research findings have also shown that early numerical skills show continuity in mathematics achievement over time (Aunola, Leskinen, Lerkkanen and Nurmi, 2004). Clements and Sarama, (2011) in a study found that children with difficulty in counting tend to have difficulties in mathematics in later life. Bodovski and Farkas, (2007) and Jordan, Kaplan, Locuniak and Ramineni, (2007) also reported that numerical skills at preschool predicted achievement test scores in elementary school mathematics' later elementary school mathematics' Similarly, early numeracy competencies have been found to enhance profound understanding complex mathematical problems (Clements and Sarama, 2011). These reports suggest that focusing on numeracy skills during early childhood could be an important avenue for improving achievements in mathematics in later years.

Attention functioning is another important aspect of cognitive skills. Anderson and Reidy, (2012) described attention functioning as one of the categories of executive functions. Attention functioning skill includes children's ability to direct attention to a specific stimulus, control impulses and ability to regulate their behaviour for a long period. This skill enables a child to stay on a task and complete it (Tramel, 2011). A child who cannot stay focused will have challenges with school activities and may not be able to follow instruction generally (Cowan, Elliott, Saults, Morey, Mattox, and Hismjatullina, 2005). Attention functioning is therefore required for children to engage in the advanced thinking processes. In the observation of Bierman, Nix, Greenberg, Blair, and Domitrovich, (2008) attention functioning is related to specific steps that are involved in learning to read as well as doing number work.

According to McClelland, Acock, Piccinin, Rhea and Stallings, (2013), parental reports on attention span-persistence in children of 4 years old have been found to predict 25 years as their age of college completion. Attention functioning is therefore an important cognitive skill that is highly required in learning.

Closely related to attention functioning is the problem solving skill. This skill involves learner's ability to analyze issues, understand problems and create potential solutions. Problem solving skill is not just about solving exercises from the textbooks,

but more of acquired ability to engage in real life problems that may not have clear procedure that should be followed in proffering solutions. Problem solving skill is demonstrated by increasing ability to apply knowledge to familiar and new situations, and to generate new ideas. According to Mayer and Wittrock, (2009), problem solving skill includes ability to reason, make decision, think critically and be creative. Problem solving skill cuts across all areas of life. Every day, each individual encounters difficulties that required solution. Problem solving is a critical survival skill that supports people to solve to their own problems with a sense of immense confidence (Hesse, Care, Buder, Sassenberg, and Griffin, 2015). Problem solving skills are required to succeed in many subject areas. For instance, problem solving skill offers a solid basis for mathematical activities and also helpful in conflicts management in relationships.

Problem solving skill is also needed to contribute effectively in various aspects of civil life. Likewise, many employers have been found to cherish the problem solving skill as being very important for job performance (Levy and Murnane, 2004; Robles, 2012). Problem solving involves use of logic and one's imagination to make sense of a situation and to arrive at an intelligent solution (Hesse, Care, Buder, Sassenberg, and Griffin, 2015). Problem solving skill is required to bring solutions to many local and global problems that threatens the well-being of the human race.

It is of importance to note that acquiring ability to solve problems is not automatic. Adequate opportunities should be provided to consciously develop it in children, since they are naturally curious to solve problems as they always want to find out how things work in the world (Bredenkamp, 2011). They learn by observing and experiencing the world. The poor performance in problem solving skills may not have been well pronounced if adequate problem solving activities or experiences were provided during early education. There is therefore the need to focus on building problem solving skills in children early, so as to ensure that a solid foundation for problem solving skill is built.

2.2.4 Social Skills in Pre-primary School children

Social skills refer to individual's ability to relate effectively with others in the society. Social skills deal mainly with behavioural skills that develop throughout life times. It is also the ability to act wisely and appropriately in human relationship. Mcwayne and Cheung, (2009) referred to social skills as the capability to begin and sustain satisfying reciprocal relationship with mates and adults. Advances in social skills will in no small measure add in various ways to children's learning success. Children who have secure relationships with adults and peers have been observed to demonstrate more advances in moral, and have good self-concept (Aksoy and Baran, (2010). In the view of Takahashi, *et al.*, (2015) social skills are acquired behaviours in the context of communal rules which allow individuals to interrelate acceptably in society. Social skills are also considered as the overall measure of the worth of communal behaviour of the individual (Pecjak, *et al.*, 2009). Social skills are therefore important for healthier interactions and relationship in all aspects of life.

A socially competent child will be able to interact confidently within their world, manage own feelings, carry out basic tasks independently and be considerate (Schoon, 2009). Advances in children's social skills will help to improve their adjustment to formal school setting as well as academic achievement (Ziv, 2013). Social skills have been recognized as important for success in cognitive skills. This is because social and cognitive skills have been observed to be interdependent and cannot be isolated from one another. A socially skilled child can easily achieve proficiency in other areas of development. Heckman and Rubenstein, (2001) observed that display of poor social skills as are related to poor low educational achievement, a variety of behavioural problems and criminal tendencies in adolescence. Daraee *et al.* (2016) itemized main forms of social skills to include communication, responsibility, cooperation, engagement, empathy and self-control. Social skills includes behaviours like taking turns, sharing, conversing with others using polite language among others. In the view of Stump, Ratliff, Wu, and Hawley (2009) social skills is a multidimensional construct which include social affirmation, positive self-concept and peer acceptance among others.

Daraee *et al.*, (2016) identified some crucial social skills to be promoted in children to include:

- Ability to follows direction

- Listening ability
- following classroom rules
- Ignoring peer distractions
- Ability to ask for Help
- Ability to take turns in conversations
- Ability to cooperate with other;
- Ability to controls temper in conflict situations
- Ability to acts responsibly with others and the environment
- Ability to show kindness to others
- Ability to understand feelings of others and take perspective
- Ability to start and uphold relationships;

Early childhood period has been recognized foundational for the development social skills in the later years. According to Cunha and Heckman, (2008), the levels social competence attained at any age depend on levels of those skills reached during the younger ages. This implied that the social skills acquired during the early years of the life have major long and short term influence over the life of the individual (Blair and Diamond, 2008). In the view of Gülay and Akman, (2009) social skills of children dictate the worth of life and enable their ability to cope in their environment. Focusing on enhancing the social skills especially during the early years can therefore be highly beneficial to the overall advancement of the individual and the society at large. Evidence has shown that the primary components of social skills are established in children when they are regularly exposed to stimulating, organized environments with abundant opportunities for interaction (Bredekamp, 2011). It is not enough to teach children how to interact in a socially acceptable way, but to also allow them to practice the skills during learning activities. To advance research concerning the advancement of social skills, this study gave attention to social skills of cooperation, responsibility and self-regulation of pre-primary school children.

Regulation of oneself is a highly important dimension of social skills. It has to do with the ability of the child to regulate or adapt his/her behaviour, emotion and thinking in line with situations. Accordingly, self-regulation is an inner mechanism which allows children or adults to engage in attentive, intentional and considerate behaviours. The skill of self-regulation is connected to all the domains of behaviour (Shonkoff and Phillips, 2000), and is a vital ability in becoming a proficient learner.

Studies have revealed that young children with appreciable level of self-regulation acquire new knowledge and progresses in their education (Blair and Diamond, 2008). Self -regulation is also a critical skill to creation and sustenance of positive relationships (OECD, 2004). The skill of self-regulation can therefore help children to organize their behaviour, get along with teachers and classmates, and listen to instruction as they participate in daily activities. Self-regulation has also been found to be to learning engagement in school (Maxwell, Mitchell and Evans, 2008).).

Study shows that self-regulation as a skill starts with brain architecture, emergent from the second year of life with life-long impacts on children's life chances ((Blair and Diamond, 2008). These findings imply that early childhood time is critical for initiating or boosting self-regulation in children. Evidence has shown that conscious practice is needed to learn ways of regulating and coordinating oneself, before the behaviour can be internalized (Blair and Diamond, 2008.). Unfortunately, development of self-regulation is rarely given much attention in our early childhood classrooms. Study has shown also that pre-schoolers in Nigeria are not provided with opportunity to take charge of their learning and be fully involved in activities that will enable them to take decisions on their own (Salami, Olaniyan, Bankole and Falola, 2016). Consequently, many of them exhibit poor self-regulation skills.

Ability of children to self-regulate their behaviour will equally enhance responsibility skill. Responsibility skill involves ability to care for self and others, to accept challenges and be dependable. It is also about owning up to what we say and do. Responsible people have been found to take charge of their life and do not give excuses for own actions or pass blame on others whenever things go wrong. They have ability to think things through with good judgment before actions are taken. Their behaviour encourages others to trust them. When everyone in the society acts responsibly, the society will be better. People with high level of responsibility skill are needed to move the society forward. They participate in civic activities and use public facilities with utmost care. They also care for their environment and take decisions that ensure that environment is protected from degradation.

Early childhood period is critical to build responsibility skills in children. The child needs to learn that being part of a family or community involves accepting responsibilities. For example, when children are given something to manage and have ownership over, it helps them to be responsible (Bredekamp, 2011). Responsibility skill is essential to building trust in relationship with the learners as they get to know

the needs of each child and interests through positive interaction and engagement in learning activities. Because of the importance of responsibility skill, it is one of the core set of social skills that children are expected to achieve (Steed and Shapland, 2020).

Cooperation is also one of the social skills of interest in this study. Cooperation is one of the most required skills, in all aspects of life. Cooperation is a skill that will be valuable throughout life and it is based on the principles of sharing, collaborating, negotiating, and working towards common objectives.

All learning in pre-primary schools should be interdependently among children. As children collaborate with others under supervised learning environments, they learn to understand the appropriate tactics for interpersonal relationships (Burger, 2013). Teachers therefore need to promote positive interactions among children. According to Bredekamp, (2011), the tone of positive interaction among children can be achieved through frequent engagement of children in cooperative experiences, where children can work together in small groups. Promoting cooperation skills in children therefore require that children not just learn as individual but in context of small or large group. As they do this, they confirm and elaborate their ideas together. Pre-primary school children are coming to social relationship outside of their home perhaps as first timers. The teachers therefore need to model and encourage social interaction that will help them to build and practice their social skills.

2.3 Empirical Review

2.3.1 Studies on Outdoor Education Activities

2.3.2 Structured Outdoor Education Activities and Cognitive Skills

Outdoor learning outside has been found to increase the ability of students to think creatively and improve their problem-solving skills. For instance, Vicki *et al.*, (2010) in a case study of skill development of children in an intentionally designed outdoor environment exposed preschool children between ages of 3-5 years to activities in the outdoor environment for nine months. It was reported that the children demonstrated problem solving skills as they explore the outdoor environment. Though these discoveries provide insight into the potential of outdoor environment in supporting children's problem solving skills, the study did not quantify the skills demonstrated. Likewise, the activities undertaken were not directed to school activities. Apart from this, a comparative study of children that participated in the

intentionally designed outdoor environment and those that did not could have yielded a more reliable confirmation of the effectiveness of outdoor learning in enhancing problem solving skills of children.

Similarly, Rickinson, Dillon, Teamey, Morris, Choi and Sanders, (2004) in a review of researches on outdoor, observed that outdoor adventure programs can clearly influence young people's problem solving skills, improved academic abilities, and values clarification. The context of the study consider in this review is different from that which is considered in this study. The review also showed that most of the study reviewed employed qualitative method while quantitative evidence linking learning in outdoor environment and problem solving skills is lacking. In another study by Holmes, (2007), it was observed that students who took part in outdoor educational activities proved an increased commitment with and eagerness for learning, improved academic achievement and enhanced language skills. These students were also reported to have demonstrated greater sense of pride and ownership in accomplishments and a variety of considerable increased critical thinking skills. While these findings uphold the fact that regular outdoor learning environment of the child was connected to improved cognitive functioning, the study based his evidence on qualitative evidence alone whereas a quantitative evidence would provide a robust confirmation of the effectiveness of outdoor learning in the natural environment in enhancing problem solving skills of students.

Similarly, Olatundun, (2008) examined the effect of outdoor educational activities on primary school children achievement and attitudes to environmental concepts. In the study, some environmental issues were exposed to children, the experimental group were taught at the outdoor where the problem exists while the other pupils were taught inside the classroom. The two groups were tested before and after the experiment, a significant difference was observed between outdoor and control group in their achievement and attitudes. While this finding supports the effectiveness of outdoor learning in enhancing achievement, the attention of the study was on environmental issues and not on cognitive and social skills. Apart from this, the study of Olatundun, (2008) involved primary school children and not pre-primary as focused in this present study.

There has also been a report of the effectiveness of outdoor learning in enhancing cognitive gains of older children from the secondary school. It has been found that students who attended an outdoor programme or take part in field work

(Hamilton-Ekeke, 2007) had greater cognitive gains in ecological concepts. While this study is significant, it involved students from higher classes and focused mainly on ecological concept. Apart from this, the study was carried out in a context that is different from that which is considered in this study.

Hamilton-Ekeke, (2007) exposed two sets of high school students to ecological concepts. A group was outdoor, and the other, in a classroom. The outcomes of the study indicated that students taught in the natural outdoor environment improved than the classroom group. Also, a museum outreach programme evaluated in Wales reported that the students were conscious of the world around them. It was also reported that the project allowed them to carry out pattern-seeking and observational activities.

Randler *et al.* (2005) in a study observed that students who between the age of 9-11 in a preservation action improved significantly on achievement test, expressed high curiosity, lower anger, anxiety and boredom compared with students who were taught using more conventional methods. Malone, (2008) observed that students aged 8-10 taught in a small area of forest near their school on how to identify plants came to know and care for the natural world in their immediate environment better than before. Nundy, (1999), on the influence of fieldwork with elementary school discovered that the pupils improved on their affective and cognitive outcomes. While this study revealed a number of cognitive gains for children as result of being exposed to outdoor learning in nature, the study was limited on some methodological ground. For instance Nundy did not employ quantitative methodology that could have shown cause effect relationship. Moreover, the study was limited to upper primary classes which are totally different from pre-primary children which are the focus in study. Apart from this, the context where the study took place is different from that which is considered in this study.

In another study, MacKenzie and White, (1982), the effect of fieldwork on level of retention among 8th and 9th grade students was examined. The students were grouped into three and were exposed to same learning program under different approaches as follows: a group concerned with active processing and excursion, another group concerned with traditional passive excursion and, a control that was not exposed to any fieldwork. Two tests were administered prior to formal instruction, the first on achievement of unit objectives while the other was formation of experiences and knowledge retention. The results revealed that students who had fieldwork

component of instruction performed a lot better compared with those who had not. Knowledge retention was also greater in the group which participated in active processing and excursion. However, this research lacked sufficient methodological detail, the descriptions of methodology suggests that the experiments may not have been adequately controlled. Apart from this, the level of children involved, and the context where the experiment was conducted is not with the present study.

Fägerstam, (2012) conducted a study on mathematics lessons for two groups of Year 7 classes of students, aged 13 - 14 years. One group was taught in the outdoor while the other were taught in the traditionally indoors work using text books. The students were assessed on arithmetic skills and self-regulating skills both at the beginning and after ten weeks of teaching with the same measure. The results revealed the students in the outdoor group improved significantly with regard to arithmetic and self-regulating skills above their counterparts in the traditional group. While this finding recommends that outdoor learning enhanced mathematics skills of children, the study involved students from higher classes and not pre-primary school children. Furthermore, the study took place outside of this country. Noorani *et al.*, (2010), in another study in Malaysia by students were found students cherish mathematics activities outdoors and appreciated the new environment.

Although, these findings provide empirical evidence on the effectiveness of outdoor learning in enhancing cognitive skills, most of the literatures were outside of Nigeria with variations in culture, economics, as well as other variables. This may reduce the generalizability of the study to the Nigerian context. Apart from this, most of the studies have been conducted in context different from that which is the emphasis of this study; there is a need to establish the effectiveness of outdoor learning within the school environment in enhancing problem solving skills in Nigeria context particularly in early childhood education. Moreover, few studies that have reported cognitive skills that children are developing in outdoor learning have done so in an subjective way, few research having been conducted to advance these skills through a quantitative in an experimental study. The current study therefore filled this gap.

2.3.3 Unstructured Outdoor Educational Activities and Cognitive skills

Contact with nature has been linked with better creativity and language competence. Cachelin, Paisly and Blanchard, (2007) highlighted series of benefits

available to children and teachers through participation in outdoor activities in the school yard. Specifically, it reported that the students performed better in reading, science, mathematics, social studies and showed greater motivation to study science (The National Environmental Education and Training Foundation, 2000).

Rahm, (2002) conducted an outdoor learning study using a community school ground. The students participated in activities in the garden. The findings of this study showed that the students developed deeper understanding of science about evolution, food cycle, evolution and management of environment. Likewise, Mabie and Baker, (1996) investigated the impact of two different types of first hand agricultural instructional strategies on the development of scientific process skills of 5th and 6th grade classes in inner-city, Los Angeles. In the study, the first group was involved in an in-class project work, second with activities in the school garden while the third was involved with traditional teaching. The results showed that the participants increased their knowledge base, while those involved with first-hand activities had higher scores in science processing, observational, communication skills compared with the group that was involved with the traditional teacher-oriented approach. The experiential group in the garden showed the highest improvement in scientific processing skills, closely followed by the short project while the control groups had the least.

Farmer *et al.* (2007) studied the influence of Parksasclassrooms. The study concentrated on the influence of non-native species and humans on the local biodiversity. 30 primary school participants were between 9 and 10 years take part in the study. Fifteen (15) out of the partakers were later interviewed at a year after the visit. The findings of the study showed that many of the participants recollected what they saw or heard and had developed a supposed love for their environment. Similarly, another report of empirical research on outdoor and experiential education in Canada revealed that participants had better engagement and eagerness towards learning, improved academic outcomes as well as improved critical thinking.

Similarly, the American Institute for Research has in 2005 observed that children who were at risk and were subjected to an outdoor education programme improved their performance and mastery of science concepts compared with other group who did not have the chance. While these findings are interesting, the setting in which the studies took place is different from that of this study. Apart from that, the study involved students from higher classes and they did not focus on cognitive skills.

Kern and Carpenter, (1986) carried out a study using two sections of a United States College laboratory course in Earth science. A section had primarily classroom activities and a laboratory manual as guide while field-based activities were used in the second. The two groups were observed at the termination of the study and findings of the study shows that while the two groups are the same on lower order learning (recall), the field based section demonstrated higher-order skills to a greater extent. While the findings of the study are valuable, the quantitative analysis focused more on the enthusiasm and engagement of the students rather than on an analysis of higher-order skills. In addition, the study involved older students from tertiary institution and took place in a context totally different from that of this study.

Various studies have observed that contact with the green outdoor environment have had positive effect, restoring children's ability to concentrate, improve attention, impulse control and as well, delayed gratification. (Faber and Kuo, 2009; Annerstedt and Währborg, 2011; Söderström, 2011). Taylor, Power and Rees, (2010) studied the impact of three types of outdoor environment as regarding attention of children who are between 7- to 12-years old that were diagnosed with Attention Deficit Hyperactivity Disorder (ADHD). During the study, the children were subjected to a 20 minutes guided-walk at three outdoor settings as follows: urban park, downtown area and, residential area, for three weeks. At the end of each guided walk, children were made to complete an attentiveness test and also answer several questions about their walk experience. Results of the study showed that children who walked through the park concentrated better than those of the downtown and/or residential settings.

Similarly, Faber and Kuo, (2009) studied on the influence of exposure to greens or the natural setting on Attention Deficit Hyperactivity Disorder (ADHD). The authors surveyed parents who had children between ages 5-18 years diagnosed with ADHD via internet. The study compared parental ratings of children behavioural symptoms that are related to ADHD after regular school and during weekend activities that were conducted either at indoor spaces, outdoor natural areas or in outdoor built areas. The findings of the study showed that the time spent in the outdoor natural areas had the greatest effect on ADHD symptom reduction according to parental response. Although, Faber and Kuo, (2009) created enough data to suggest that contact with nature helped children to exhibit sustained focus as they learnt, the study was limited to older children with attention problem and they did not explore

how outdoor learning increases pre-schooler's attention functioning during learning process in the school context. Apart from this, the study relied on parents inputs, a direct observation of the behaviour may have yielded a more reliable data.

In addition, a study was carried out in Sweden, involving two day nurseries, one an outdoor and the other in a traditional nursery classroom setting. Children's behaviour was observed during the course of a year. This study revealed that nursery school that took place outdoor demonstrated powers of concentration compared to the traditional nursery school. While this study is valuable, the study was conducted outside of the country and so the findings of the study cannot be generalised to our context because of cultural variation.

Dyment, (2005) carried out a study on parents, teachers and principals on the influence of green environments on curriculum delivery, academic attainment, teaching activities and behaviour of students. The study conducted series of in-depth interviews with 21 respondents from 5 different schools. His findings showed that greening initiatives increased student's enthusiasm and engagement in learning compared to teaching indoors. Many of the teacher respondents similarly stated they were more inspired to teach on green surroundings as compared to indoor teaching. While these findings are valuable, the study is limited on some methodological ground. The evidence from this study is centred on opinions expressed by teachers and principals, a direct observation of children and teachers in a prepared outdoor learning environment could have yielded a more reliable confirmation of the effectiveness of outside teaching in enhancing children enthusiasm and engagement in learning as well as teaching practices.

In addition, Wells and Evans, (2003) studied the impact of a natural window outlook on children attention functioning. The study involved black and white children in low income urban, who were 7 - 12 years who relocated from their city home to some types of green country home environments and thereafter were examined for effects of the exercise on their attention functioning. The study showed that attention level of children, whose home environment had higher level of greenness, had the highest post-move level of cognitive functioning. While this study may be valuable, it did not take into consideration some historical changes that may have influenced the findings of the study. For instance, such factors as change in family arrangement, children's wellbeing, parents' occupation and overall activity intensities could have prejudiced parent views of the children, resulting in under

reporting of symptoms. The children could have built better capacity to be focussed and to concentrate. More studies in this area would be necessary to strengthen the relationship concerning improved attention functioning and exposure to nature. In addition, just as many other studies were susceptible to the bias of self-selection, which showed that some of the parents could have preferred to live in a rural area and by such, possessed characteristics that accounted for the outcome of the study. Though, the scholars took cognisance of income, there are many other factors that could have affected the capacity of the parents to influence the lives of their wards.

Similarly, evidence has shown that environment-based programmes that utilise school surroundings and local communities as the framework for the curricula results in better performance with respect to mathematical abilities. In real-life situations, Dismore and Baily, (2005) and Moffet, (2011) have reported that the outdoors was valuable to children learning mathematics. These studies involved older children and were conducted in country having cultural values totally different from that of Nigeria. There is therefore need to research into the potential of outdoor environment with natural materials in enhancing cognitive functioning of pre-primary children in experimental study in the Nigerian context.

2.3.4 Structured Outdoor Educational Activities and Social Skill

In the study of Vick *et al.* (2010) on skill development in children in an intentional design classroom, children were exposed to outdoor activities in various learning areas in the school compound. The study adopted qualitative data gathering technique to document various skills that children exhibited as they participated in activities. The analysis of their result showed that children demonstrated cooperation skills as they interrelated, adults and natural materials in the outdoor compared with the classroom. The study observed that during play activities, children cooperated in working together. Among themselves, they asked questions, requested help and they took turns. They assisted others by modelling specific skills with mates'. Ideas, experiences, space and materials were shared in the natural environment without any conflict compared with the classroom experiences. While the findings of this study are insightful, the evidences provided are limited on some methodological ground. The study only employed qualitative method that do not provide avenue to compare the social skills of the children exposed to outdoor learning experiences with other

children who were not exposed. Moreover, the study took place outside of Nigeria. Similar findings has been reported where children were found to engage in social interactions, one with another, to work cooperatively (White and Stoecklin, 1998; Kellert, 2002; Burdette *et al.*, 2004; Thompson and Thompson, 2007; Malone, 2008; Maxwell *et al.*, 2008; Wilson, 2016).

Clements, (2004) surveyed mothers in a study and reported that 75% of them opined that outdoor play influenced their children's social skills positively. While Clements survey revealed interesting data, the study was limited on some methodological grounds. In the survey, respondents were sought online. The process of selection is likely to have left out potential respondents who had no wherewithal to access Internet services. Again, the method could have limited participants only towards the younger more highly educated families. The survey also seemed to have believed the responses and identities of the online respondents. The evidence of the influence of outdoor on social skills of children was also based on parents report, whereas, a direct observation of the behaviour of the children in the outdoor would have yielded a more reliable report. Rickinson and Sanders, (2005) found that students in secondary schools demonstrated the skills of collaboration in the outdoor environment.

Ballantyne, Anderson and Packer, (2010) found that students appreciated outdoor teaching and learning. Nundy, (2001) studied the social interaction of 10 to 11 years old students in field work. It was revealed that as students engaged in collaborative tasks, their perseverance, leadership qualities, reliability, motivation, initiative and co-operation skills were positively impacted. While these findings are insightful, the evaluation evidence provided in the study appeared quite weak. In addition, Thomas and Thompson, (2004) in a study of 10 – 11 year olds discovered that the outdoor enables reciprocal relationship among. It was reported that outdoor experiences influenced cooperation, decision making and effective communication.

Milton *et al.* (1995), in a study observed that there were improvements in social relations of primary school children following participation in field studies in Ecology. Various other studies have also explored the social and affective consequences of outdoor learning (Dismore and Bailey, 2005; O'Brien and Murray, 2007; Beames and Ross, 2010; Moffet, 2011). Mygind, (2005) in school-based case studies in some elementary schools, found that outdoor teaching favoured social relationships among students. Similarly, Thompson *et al.*, (2008) found that both the

use and access to outdoor spaces in the forest increases social interaction among children. A large amount of literature about the effects of the outdoors on the affective domain suggest that significant advantage is provided when students are taught in the outdoor environment where they can see, touch, smell and have opportunity to relate with one another. However, most of these research have not given sufficient attention to filling the gap that exist regarding the use of quantitative method through experimental studies with young children.

2.3.5 Unstructured Outdoor Educational Activities and Social Skills

Alexander *et al.*, (1995) in a Master Gardener Project of inner-city school in Texas found that participating students demonstrated increased responsibilities caring for living things and helping adults who serve as role models in their resident. These studies found that participants experienced transformative learning by developing community consciousness through a profound relationship with the plants and the horticulturists. In a survey conducted in about 91 schools in London conducted by learning through landscapes (Dyment, 2005), it was reported that instructors in surveyed schools observed an advancement in student's responsibility skills as a result of their involvement in outdoor work. Alexander *et al.* (1995) has shown that gardening in schools could help to develop increased concern towards living things. At the Dominican University, California, the influences of school cultivation in three different schools through qualitative studies was evaluated. It was established that in all the schools, students displayed encouraging attitude and responsibility toward their gardens.

Self-regulation is the skill that individuals required to manage themselves successfully and is considered as pre-requisite to relational skills. In a study of an intentionally designed outdoor environment by Vick *et al.*, (2010) it was observed that children developed self-regulation skills that included taking initiatives; making plans and choices as well as decisions; stating preferences and intentions, displaying the ability to care for others and self. These findings point to the fact that outdoor learning using natural environment is capable of enhancing self-regulation skills in children. However, the study made use of only qualitative approach without any quantitative evidence. Also, the study took place within a culture totally different from that of Nigeria. It is therefore important to study the influence of outdoor learning among pre-schoolers in Nigerian setting.

2.3.6 Parental Involvement and Children's Cognitive Skills

Parent involvement typically involves parents' behaviours and interactions with their children at home. Research has consistently shown that it may take different types including parenting at home fronts, parent-child conversation, setting up of safe and steady environment, high ambitions relating to personal achievement and good nationality, intellectual stimulation, good example of constructive social and educational values. Other forms of parental involvement include contact with schools to share information, involvement in school events, contribution in school governance and communication with teachers.

It has been discovered that values and attitudes could enhance academic achievement of children, ultimately motivating and encouraging persistence in challenging educational tasks. Home experiences are considered as one of the key contexts during early development in children. Within an ecological framework, the quality of the interaction that a child has at home is capable of influencing his/her development (Bronfenbrenner and Ceci, 1994). This type of interaction is referred to as proximal process (Bronfenbrenner and Ceci, 1994). Parental involvement is regarded as one of the microsystems in a youngster's life. This observation may also be related to educational natures of much behaviour such as assisting with home work and attending parents/teachers meetings. However, there other forms of experiences at home that could enhance the development of the child which are often not recognized in parental involvement studies. Such activities are considered to provide more enrichment at home that could influence kid's development.

Past research on parental involvement and its effects on the educational skills of children have revealed a mixed result. While some research found no significant association between parental involvement and academic achievement (Reynolds, 1992; White, Taylor and Moss, 1992; Okpala, Okpala and Smith, 2001; Fan and Chen, (2001), few have discovered negative association (Milne, Myers, Rosenthal and Ginsburg, 1986; Sui-Chu and Willms, 1996). Yet, positive association between parental involvement and academic achievement had been demonstrated frequently in some other studies.

2.3.7 Parental Involvement and Children's Social Skills

Parental involvement may enhance the growth of acceptable social behaviour across the home and the school. For a long time, growing studies have documented

the significance of parental involvement on the development of young children. However, past works have focused more on associations with cognitive development in children with fewer considerations to social areas. This suggests that parental involvement has been largely believed to be as the avenue mainly to promote academic achievement of children. However, according to El-Nokali, Bachman, and Votruba-Drzal, (2010), parental involvement is equally related to the development of social skills in children.

Jaiswal, (2017) in a study found that, within-child developments, parental involvement predicted reduction in behavioural problems and advances in social skills. Between-child developments however showed children with highly engaging parents having better social functioning and less behavioural problems. Studies have also revealed some benefits of parental involvement on the acquisition of social skills in children (Reynolds, 1989; McWayne *et al.*, 2004; Supple, Shaw, Hailstones and Hartman, 2004). In an instance, Fantuzzo *et al.*, (2004) reported fewer conduct problems among Head Start students due to enhanced parent involvement. The picture was found to be same during adolescence. Studies linking parental involvement to social abilities have been majorly from outside of Nigeria and this has limited the generalizability of the findings to our context

2.3.8 Gender and Cognitive Skills.

Studies have considered gender differences in cognitive skills from early childhood level. For example, Lavy and Schlosser, (2011) found differences in achievement based on gender. Apart from these, contradictory findings with regards to gender gaps in cognitive skills exist in spite of the spans of study. Child developmentalists' have found that girls often develop mathematical skills earlier compared with boys.

The girls have been observed to excel more in reading-related skills such as general verbal skill, speech production and vocabulary (Plante *et al.*, 2019). On the other hand, many scholars who observed young children on few math-related assessments have reported contrary results, claiming that males outperform females in areas such as visual and spatial skills (Lachance and Mazzocco, 2006). Males outperformed the females in most tests on spatial ability, including spatial perception and mental revolution in adolescence (Halpern, Wai and Saw 2005). Some have also argued that boys excelled more than girls as early as from age three in these skills

(Robinson, Abbott, Berninger, and Busse, 1996). Child developmentalists often contended that gender differences in math emerged during early childhood while sociologists believed that differences in gender deviates and deepens during high school years.

More research has found that males are better to females in math. The study of Makiki, Ngban and Ibu, (2009) found that males did better than the females in Junior Secondary mathematics examination. Eraikhuemem, (2009); Bassey, Joshua and Asim, (2010); Abubakar and Ogugua, (2011) also have found significant differences in mathematical abilities of students based on gender. On the other hand, Neiderle and Vesterlund, (2010) as well as Plante *et al.*, (2019) reported a contrary results which indicated that there was no gender difference with numeric skills. Inko-Tariah, (2014) examined the numeracy level of Junior Secondary students and found that males performed better than females in numeracy skills. A gender difference in cognitive skills of pre-primary school children in Nigeria is yet to be well documented.

2.3.9 Gender and Social Skills

Research has acknowledged gender variances in how boys and girls interacted with peers. Males are found to be more forceful compared to females during the basic and secondary education while girls tend to be more supportive (Burger, 2013). Boys tend to move together in larger groups. They usually engage in activities such as bodily play, risk-taking and group games. They delight in rivalry. Girls on the other hand engage in more supportive play and are more aware of other girls' intellectual and emotive states than boys. The implication of gender differences in behaviour and relationship imply that opportunities for group work and frequent interactions with peers is important in order to take advantage of boys' natural disposition to play in larger groups and girls' natural abilities to engage in supportive activities.

Studies have reported differences in classroom behaviour of children, boys predisposed to be more energetic in talking or inquiring. Boys also dominate much of group discussions thereby, ignoring ideas and requests of girls. Studies of Entwisle, Alexander, and Olson, (2005); Raffaelli, Crockett, and Shen, (2005) have equally confirmed a stronger tendency for boys to demonstrate externalizing behaviours The girls would less likely volunteer publicly or ask questions possibly for the fear of looking incompetent before their peers. However, Lovell, (2009) observed that the

girls' level of physical activity rises in the outdoor setting to intensities that are much more comparable with that of boys. Hence, some traditional relations between gender, education and play appears to disappear be broken down when children are made to learn in the outdoor setting, similar to the finding of Lovell, (2009) in the Forest School. The present study is also interested in the gender differences in the social skills of pre-primary school children.

2.4 Appraisal of Literature Reviewed

The literatures reviewed had shown that efforts are being made globally to making outdoor environment a valuable context for educational purposes at all levels. Literatures have shown that outdoor learning activities can be effective in enhancing broad range of social and cognitive outcomes especially, when incorporated into daily school programme. However, a range of methodological weaknesses have been observed in the literature reviewed, among such are poor conceptualization and adoption of majorly qualitative research design. This is why a growing number of scholars have called for investigations that seek to provide a more understanding of the effects of outdoor learning experience through experimental study. This is very important because a comparison between children taught using an outdoor based approach and children taught using a traditional classroom-based approach will be more beneficial in establishing the effectiveness of outdoor based learning experiences. More importantly, only few of researches reviewed have focused on outdoor learning at pre-primary level and all were conducted outside Nigeria. There is therefore a gap in literature of the effect of outdoor learning in the Nigerian context particularly, at the pre-primary level. Hence, this study therefore attempted to fill this gap.

CHAPTER THREE

METHODOLOGY

This chapter contains the methodologies used in the research which includes research design, variables in the study, and selection of participants, research instruments, research procedure and method of data analysis.

3.1 Research Design

The study adopted a pre-test and post-test control groups, quasi-experimental design. The design is schematically presented below:

E₁: O₁ X₁ O₂ - Experimental group one

E₂: O₃ X₂ O₄ - Experimental group two

C: O₅ X₃ O₆ -Control group

Where:

O₁, O₃, O₅ represents pre-test observation for both experimental and the control groups.

O₂, O₄, O₆ represents post-test observation for both experimental and the control groups

X₁ represents treatment 1; structured outdoor instructional strategy

X₂ represents treatment 2; unstructured outdoor instructional strategy

X₃ represents control group

The design also adopted a $3 \times 2 \times 2$ factorial matrix which consist of two treatment group as well as one control group, moderator variable of gender at two-level (male and female) and parental involvement at two-level (low and high) as shown in Table 3.1.

Table 3.1: 3×2×2 Factorial Matrix Design

Treatment	Parental involvement Status		Gender
Experimental Group 1	High	Low	Male
			Female
Experimental Group 2			Male
			Female
Control Group			Male
			Female

3.2 Variables in the Study

(a) Independent Variable

The independent variable is an instructional strategy, which was manipulated at three-level:

- (i) Structured School –Based Outdoor Educational (SSOEA)
- (ii) Unstructured School – Based Outdoor Education Activities (USOEA)
- (iii) Conventional Teaching (CT)

(b) Moderator Variables

The moderator variable that were examined in the study included:

- (i) Parental Involvement (low and high).
- (ii) Gender at two-level (male and female)

(c) Dependent Variables

The dependent variables in the study were:

- (a) Cognitive skills (Attention functioning, Problem solving, and Numeracy skills).
- (b) Social skills (Cooperation, Responsibility and, Self- regulation)

3.3 Selection of Participants

The population targeted for this study were pre-primary children in public schools in Ibadan, Oyo State. Purposive sampling and simple random techniques were used. Out of the eleven Local Government Areas in Ibadan, Oyo State, three (3) were randomly selected. The Local Government Areas were Ibadan North and Ibadan North East and Ibadan North West. Three public pre–primary schools were purposively selected for each of the three Local Government Area selected.

The criteria for selection were:

- i. The school must be fenced; this was to ensure the safety of the children.
- ii. Availability of large space for outdoor activities.
- iii. Presence of natural element such as trees, flowers, in the school compound.
- iv. There should be minimum of 15 children in a class.
- v. The school must be willing to participate.

From the three pre-primary schools selected, one intact class was randomly assigned to each of the experimental groups and the control group, respectively. All the pre-primary children in the selected classes were involved in the study. The class teachers of the selected schools and six research assistants who have background in early childhood education were used as facilitators in the experiment.

3.4 Research Instruments

The following instruments were used:

- i. Instructional Guide on Structured School – Based Outdoor Education Activities (IGSSBOEA)
- ii. Instructional guide on Unstructured School –Based Outdoor Education Activities(IGUSBOEA)
- iii. Instructional Guide on Conventional Teaching Strategy (IGCTS)
- iv. Preschool Children Social Skills Assessment Scale (PCSSA)
- v. Preschool Children Cognitive Skills Assessment Scale (PCGSAS)
- vi. Preschool Teacher's Outdoor Teaching Competence Scale (PTOTCS)

3.4.1 Instructional Guide on Structured School–Based Outdoor Education Activities (IGSSBOEA)

IGSSBOEA was designed by the researcher and was used to facilitate teaching in the experimental group one (1). The guide contained step by step procedure to follow in preparing the outdoor environment and list of materials that were used to teach each lesson. The weekly activities that were followed as children learnt in the outdoor environment were also described in this guide. Teaching in the structured school-based outdoor was activity based. The procedures that were followed in each activity were clearly described. The contents of activities carried out in this guide were selected from the One Year Pre-primary School Education Curriculum (NERDC, 2016). This is the curriculum recommended for administration of compulsory one year pre-primary education in Nigeria. The following theme and subthemes were covered in this guide.

1. Expression and exploration: Expression of self through arts and crafts, self-care and hygiene appreciation of the natural environment, relationship with peers, adult and environment.
2. Mental development: Number, quantity, numerals and counting:

- i. Counting of objects 1-20 in local language and in English
- ii. Number recognition
- iii. Addition of numbers less than 20
- iv. Subtraction of numbers less than 20
- v. Classification and ordering of objects: recognition of shapes of objects, colour and numbers.
- vi. Classification according to shapes sizes, and colours.
- vii. Identification and construction of shapes
- viii. Identification of solid shapes in the environment
- ix. Construction of shapes and objects.

Validity of IGSSBOEA

In order to be sure of the face and content validity of this guide, copies of it were given to some experts in Early Childhood Education, Social Sciences and the Institute of Education in the Faculty of Education, University of Ibadan, to determine the appropriateness of the activities, materials to be used during activities as well as the procedures to follow during the activities. Suggestions made were thereafter used in producing the final draft.

3.4.2 Instructional Guide on Unstructured School –Based Outdoor Education Activities (IGUSBOEA)

IGUSBOEA consisted of lesson plans that were used to facilitate teaching in the experimental group two (2). The teaching environment was outdoor environment of the school; natural materials constituted the major learning resources that were used in the study. Children were required to explore freely in their environment with minimal intervention from the teacher. The guide consisted of 8 weeks of teaching at two times in a week. Teachers and children's activities as well as materials required for the activities were described. The contents of activities that were carried out in this guide were similar to those covered in the experimental group one (1) and were selected from the One Year Pre-primary School Education Curriculum in Nigeria.

Validity of IGUSBOEA,

The guide was given to experts in Early Childhood Education, Social Sciences, and the Institute of Education in the Faculty of Education, University of

Ibadan, to determine the face and content validity of the guide. Their suggestions were used while producing the final draft.

3.4.2 Teachers Guide on Conventional Indoor Teaching (TGCIT)

This instrument showed the steps that were followed in the control group. The topics taught were the same with those covered in the experimental groups. Each lesson consisted of duration, topics, entry behaviour, behavioural objectives to be achieved, introduction, teaching procedure and evaluation. The guide was designed in line with strategies that are currently obtained in the classroom. Where teacher dominates the lesson, the children are more passive and have limited interaction with peers during teaching. The teachings were done in the classroom with the usual instructional aids. The guide was used to facilitate teaching in the control group.

Validity of TGCIT.

TGCIT was given to experts in Early Childhood Education, Social Sciences, and the Institute of Education in the Faculty of Education, University of Ibadan, as well as three pre-primary school teachers who possessed cognate experience in teaching at this level for corrections and suggestions. Their input on the procedure that was followed during lessons and the duration of the lessons were taken in to consideration to produce the final draft.

3.4.3 Preschool Teacher's Outdoor Teaching Performance Scale (PTOTPS)

PTOTPS was designed by the researcher to assess preschool teacher's competencies in facilitating children's learning in the outdoor environment. The instrument was designed by the researcher to examine teacher's abilities in organising learning environment, engaging children in various activities, scaffolding children learning, managing children's behaviour and collaborating with children during activities. The instrument was composed of 13 items assessing various ways by which preschool teachers demonstrated abilities in engaging children in the outdoor. The instrument was rated on a 5 point scale that ranged from 1 (never), 2 (rarely), 3 (sometime), 4 (often) and 5 (always). Lower scores on this scale indicate low level of outdoor teaching competence while higher scores indicate high level of outdoor teaching competence. To ensure the face and the content validity of this instrument, its copies were given to lecturers in Early Childhood Units for suggestions and

corrections. Their inputs were later used in the production of the final draft. The reliability of the instrument was tested using Scott Pi's inter-rater reliability method and a value of 0.85 was obtained.

3.4.4 Cognitive Skills Assessment (CSA)

Cognitive skills assessment scale is a task-based instrument that assessed the cognitive skills of pre-primary children in the dimension of attention functioning, numeracy and problem solving skills. Children were asked to perform various forms of tasks that required them to display cognitive skills in focus. CSASP consisted of three separate measures which were; attention functioning measure, problem solving measure and Numeracy measure. The attention functioning and problem solving measures were adapted from Peabody Research Institute (PRI), while the numeracy measure was designed by the researcher based on the key numeracy skills specified in the National curriculum for early childhood education in Nigeria. Detailed information on administration procedure, materials and scoring sheet for each of the tasks are included. The instrument was easily administered. Each of the measures are described below:

Attention Functioning Measure for Pre-Primary Children (AFMPC)

AFMPC is a task based measure designed to assess the attention functioning skills of pre-primary children. The measure was adopted from Peabody Research Institute (PRI). The task required the ability to hold two things in mind, and yet sustain focus. With this task, children are required to do opposite to what the experimenter instructs. The experimenter tells the child to touch his or her head (or their toes), but in the stead, the children would touch their toes (or their head as the case may be). The child had opportunity of four trials after which the real testing began and it had ten items. The child is expected to receive 2 points on each correct response, 1 point for any incorrect attempt but where self-correction occurred, and 0 point for an outright incorrect response. Details of this are in Appendix VI.

Problem Solving Measure (PSM)

PSM was adapted from Peabody Research Institute to assess problem solving skills of preschool children in the area of sorting and matching as identified as key

problem solving skills in the curriculum of early childhood education in Nigeria. The measure consisted of three parts which are colour, shape, card sorting and picture matching. In the sorting task, each child was required to sort the cards first according to colour and then, shape. The measure was adapted for the research. In the original version of the measure, the number of colours to be sorted was two (blue and red) but were increased from two to four (blue, yellow, red, and green) to include some colours that children loved to see. The shaped cards were also increased from just two (truck and star shapes) on a white background to five (circle, triangle, rectangle, square and star shapes). For the colour game, the original version had 4 cards having red star and 4 cards having blue truck. In this modified version, there were five cards with yellow, blue, red or green circles, triangles, rectangles, squares and star shapes on white backgrounds. The sorting box was also increased from two to four indicating the four major colours being sorted in the game. Each shape or colour well sorted was scored one (1), the maximum point obtainable for colour and shape game was 40 points. The script was also adjusted to reflect the changes accordingly.

The third part of problem solving measure was a picture matching task that was based on matching of similar objects. In the task, children were presented with a set of drawings and were asked to pick the figures which were the actual duplicates of a target drawing. The example below shows the task, with the target drawing placed on the top and the likely duplicates placed under it:



The task required that children should exercise attentiveness, reflexive processing, and sustain their focus. The measure consisted of sixteen drawings from which each child was expected to match to the target sample. The number of drawings was reduced to eight from sixteen to reduce the testing time. Each of the drawing well matched attracted two (2) points and maximum points obtainable for the matching game is sixteen (16). The details of the instrument can be found in appendix VI

Numeracy Skills Measure (NSM)

This measure consist of 7 separate early numeracy tasks which are verbal counting, cardinality, one-to-one counting, set comparison, number order, simple addition and shape recognition. It was designed by the researcher based on the skills that were identified as key numeracy skills in the National early childhood curriculum in Nigeria (NERDC, 2007). Some of the items of the tasks were similar to the types of items and skills that were tested on other standardized measures of early math assessments e.g. the Test of Early Mathematics Ability– 3rd Edition, Assessment in Early Mathematics (Clements and Sarama, 2011). One point was awarded for each correct response.

The tasks are described in detail in appendix XI

Validity and Reliability ofCSA

The instrument was made available to experts in early childhood education, Psychology and mathematics for scrutiny, correction and suggestions. Their corrections were carefully examined with the assistance of my Supervisor to ensure face and content validity before the final copy was drafted. CSASP was administered on 20 pre-primary school children outside the study area. The reliability of each of the measure in the instrument was determined using Test–retest method and the following

reliability coefficients were obtained for each of the measure: attention functioning measure 0.85, problem solving measure 0.81 and Numeracy Skills measure 0.81.

3.4.5 Social Skills Assessment Scale (SSAS)

SSAS was designed by the researcher to measure the social skills of pre-primary school children. The items on the instrument were derived from the list of expected social skills in the Early Childhood Development Standards for children aged 4 - 5 years in Nigeria and from literature. The instrument was divided in to two sections i.e. A, B. Section A elicited information regarding demographic data such as children’s age, gender, parents educational background and occupation, while the section B consisted of 32 items composed of the three dimensions of social skills investigated in the study which included Cooperation skills (15 items), self-regulation skills (12 items) and responsibility skills (5 items). SSAS instrument assessed pre-primary school children’s social skills along 4 points scale ranging from never (0), sometimes (1), often (2) to very often (3).The teacher rated each child on the extent to which the child displayed the skill. For example:

TABLE 3.2: Sample of Social Skills Assessment Scale (SSAS)

S/N	Cooperation skills	Never 0	Sometimes 1	Often 2	Very Often 3
1	Sensitive to right of others				

Validity and Reliability of SSAS

Consent was sought on the instrument from experts in early childhood education and psychology for inputs and correction, to ensure face and content and construct validity. The researcher’s supervisor also examined the instrument and made corrections before the final copy was produced. The approved copy was produced and copies were administered on twenty pre- primary school children who were outside of the selected area for the study. Two teachers rated each child simultaneously and inter-rater method was used to determine the reliability of the instrument following which 0.80 value was obtained.

3.5 Procedure for the Study.

The study lasted for twelve weeks.

Research Procedure

3.5.1 Preliminary activities

Visit to the Selected Schools:

The researcher visited the three selected schools having followed the criteria listed under the section for selection of participants in this chapter. The selected schools were contacted with letter of introduction from the Department of Early Childhood and Educational Foundations, University of Ibadan, for permission to use their schools for the study. The participating teachers were also contacted personally and briefed on the purpose of the research, the roles they were expected to play to ensure that the study was successfully carried out. The researcher explained to the teachers that they were to be fully involved in the teaching/learning activities and that the activities were to be carried out twice a week. They were also informed that they will be trained in their respective schools along with some research assistants that will work alongside them during the period of the experiment. The teachers asked questions about the study and their involvement. They equally suggested the best time of the day to carry out the activities. During the visit, letters were sent to parents of the children to obtain consent to involve their wards and also help provide information on their parental involvement in their children activities. This exercise lasted for one week.

3.5.2 Selection and Training of Participating Teachers and Research Assistants

The pre-primary teachers and research assistants were trained in their respective schools. During training sessions, participating teachers and research assistants were exposed to stages involved in carrying out activities peculiar to their respective groups. For instance, in the structured outdoor education activities group, the teachers and research assistants were intimated on the need to make the outdoor environment relevant to the teaching of the pre-primary school children. The researcher demonstrated to the teachers and research assistants on how to set up the outdoor environment, how to engage the children and manage children during outdoor learning activities, how to document skills displayed by the children as they engaged in activities. They were trained on how to administer Cognitive Skills Assessment.

(CSA) and Social Skills Assessment Scale (SSAS) instruments that were used in the study. Similarly, in the unstructured outdoor education activities group, the teachers and research assistants were trained on the how to organise the outdoor environment, how to ensure the safety of children while they freely explore the outdoor environment. In the conventional teaching group as well, the research assistants and participating teachers were taken through the teaching guide that have been prepared for them, relevant questions and suggestions were taken and discussed in the course of the training. Micro teaching was organised for the participating teachers to assess their competences in implementing the activities. PTOTCS instrument was used to assess the competencies of the teachers in facilitating learning of the children in the experimental groups. This training lasted for one week.

3.5.3 Administration of Pre-test

Pre-test was administered on all the pre-primary school children in both experimental and control groups by the researcher and research assistants, using the cognitive skills assessment scale for pre- primary children (CSA) and Preschool Children Social Skills Assessment Scale (SSAS).

3.5.4 Treatment Procedure

Treatment was carried out in both experimental (Structured Outdoor Education Activities and Unstructured Outdoor Education Activities) groups as well as control group (Conventional Teaching) for a period of eight weeks.

3.6.4.1 Experimental Group I (Structured Outdoor Educational Activities)

Children in this group were taught by adopting the following steps:

Step 1: The teacher prepared the outdoor learning area with various natural materials in line with the topic to be explored for the week.

Step II (Introduction): Teachers gathered the children in an area designated as outdoor to introduce the activities that the children had to undertake. The introduction included songs or rhymes and pictures about the topic in focus for the day.

Step III (Cooperative exploration and activities): The children were divided in groups to explore the outdoor environment of their school and engage in various activities relevant to the topic being treated.

Step IV: The teacher and research assistants moved around to be part of what the children did in each group. During this time, they asked the children open-ended questions that encouraged them to express their thoughts about the activities, think about their experiences and how it related to their daily life. They also ensured that all the children were involved in the activities and that they made use of their social skills while interacting with one another. The teacher and the research assistants offered assistance to the children whenever such was needed.

Step V (Review and reflection): The children gathered back at the large areas to report or talk about what they have done. The teacher moderated this stage by asking the children questions that stimulated them to think about their experiences and relate it to real life experiences.

Step VI: The teacher clarified issues and emphasised important learning points.

3.6.4.2 Experimental Group II (Unstructured Outdoor Educational Activities)

Children in this group were taught by adopting the following steps:

Step 1: The teacher prepared the outdoor learning environment with various natural materials in line with the content of the lesson.

Step II: Teachers gathered the children in a large area designated as outdoor to introduce the activities that children had to undertake. The introduction included songs relevant to the activities.

Step III: The children were asked to explore freely the outdoor environment and engaged in various activities provided in different learning areas prepared in the school compound as they wished.

Step IV: While the children were exploring, the research assistants observed and documented children's activities as they freely explored the outdoor environment.

Step V: The children gathered back at the large areas where they reported or talked about what they have done.

3.6.4.3 Control Group: Conventional Teaching:

Conventional Indoor Teaching Group

In the conventional teaching group, the teaching took place indoor using Whole class, teacher directed, text book –centred teaching.

The following procedure was followed during teaching:

Step I: The teacher introduced the lesson.

Step II: The teacher illustrated and explained the concept in focus with relevant teaching aids.

Step III: The teacher asked the children to repeat the concept after him or her.

Step IV: The teacher asked questions on the topic.

Step V: The teacher gave the children exercises to practice in their note books.

Step VI: The teacher summarized the lesson by correcting the children's mistakes.

Step VII: The teachers gave the children some homework.

3.6.5 Administration of the Post-test

Post-test administration was conducted at both experimental and control groups by the researcher and research assistants using the cognitive skills assessment scale for pre-schooler (CSA) and Preschool Children Social Skills Assessment Scale (SSAS) at end of the experiment. The post-test lasted for one week.

Table 3.3: Actions Plan Executed in the Study

Wk	Duration	Activities	Who is responsible	Where	Resources/ instrument needed
1	1 week	Visitation and selection of schools	Researcher	Selected schools	Consent form and Parental Involvement Questionnaire(PIQ)
2	1 week	Selection and training of teachers and research assistance.	Researcher	Selected schools	Outdoor teaching materials, training guides for both experimental and control groups CSASPC, and it materials its SSASPSC, PTOTCS
3	1 week	Pre-test	Researcher, participating teacher and research assistants	The three selected schools	CSASPC, and SSASPSC instrument
4-5	Two weeks	Teaching about living things in our environment plants		Teaching at both experimental and control	Living things in the outdoor environment for the experimental groups, visual aid for children in the control group, audio and video cameral
6		Number work recognition and counting.		The three selected schools	Natural materials, flash cards and number chats
7		Parts of plant (seed planting). Counting and number correspondence		The three selected schools	Plants seeds, planting materials, for experimental group. Photograph of plants seeds for the control group. Video and audio cameral and other writing materials
8		Teaching about colours in our environment. Number work		The selected schools	Natural materials with different colour, colour chats, water colour and crayon, white cloth and string for tie and dye
9		Teaching about sizes of objects. Number work and		The selected schools	Objects of different sizes in the environment
10		Teaching about non-living things in the environment. Number work.			Non-living objects in the environment. Chats
11		Teaching about shapes of objects. Number work			Non –living objects in the environment. Chats.
12	1 week	Post –test administration	Researcher and research assistants.	The three selected schools.	

3.6 Summary of the Procedure.

1. Preliminaries (1 week)
2. Selection and training of teachers /research assistants (1 week)
3. Pre-test administration (1week)
4. Treatment (8 weeks)
5. Post-test administration (1 week)

3.7. Analysis of Data

Data collected were analysed using descriptive as well as inferential statistics to test the hypotheses formulated. Analysis of covariance (ANCOVA) was used to test all the hypotheses using pre-test as covariates to analyse the data. All the hypotheses were tested at 0.05 level of significance ($P < 0.05$). Estimated marginal means (EMM) analysis was used to determine the magnitude of performance of the various groups. Bonferroni post-hoc test was used to determine the direction of the difference.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter shows the demographic information of the participants. It equally presents the results and discussion which are based on the hypotheses formulated to guide the study. Demographic data collected were analysed using frequency counts and percentages while they were further presented using bar charts. The seven hypotheses generated were tested at 0.05 level of significance. The results from the analysis of data are presented in Table 4.1 below.

Table 4.1 shows that the total number of pre-primary school children that participated in this study was 49. Out of these 49 children, 29 (59.2%) were male while the remaining 20 (40.8%) were female. The result implies that male children participated more in the study than female children. Figure 4.1 further presents the result in bar chart.

4.1 Demographic Information of Participants:

Table 4.1: Gender Distribution of Children

Gender	Frequency	Percentage
Male	29	59.2
Female	20	40.8
Total	49	100.0

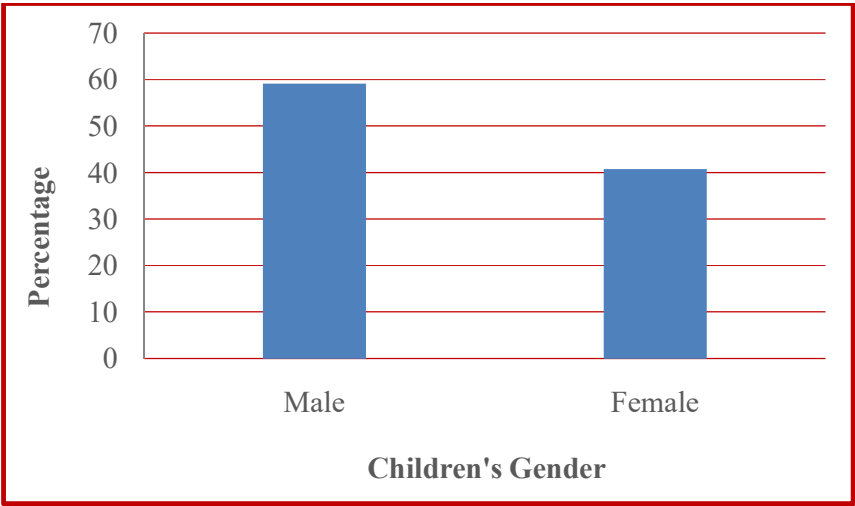


Figure 4.1: Bar Chart showing Gender Distribution of Children.

Table 4.2: Distribution of Children based on Level of their Parents' Involvement

Level of Parents' Involvement	Frequency	Percentage
Low	36	73.5
High	13	26.5
Total	49	100.0

Table 4.2 shows that 36 (73.5%) of the children had parents with low level of involvement while the others who constitute 13 (26.5%) had parents with high level of involvement. This result is an indication that majority of the parents of the children that participated in this study had low level of involvement in the activities that relate to their children cognitive and social skills. Figure 4.2 presents the result in bar chart

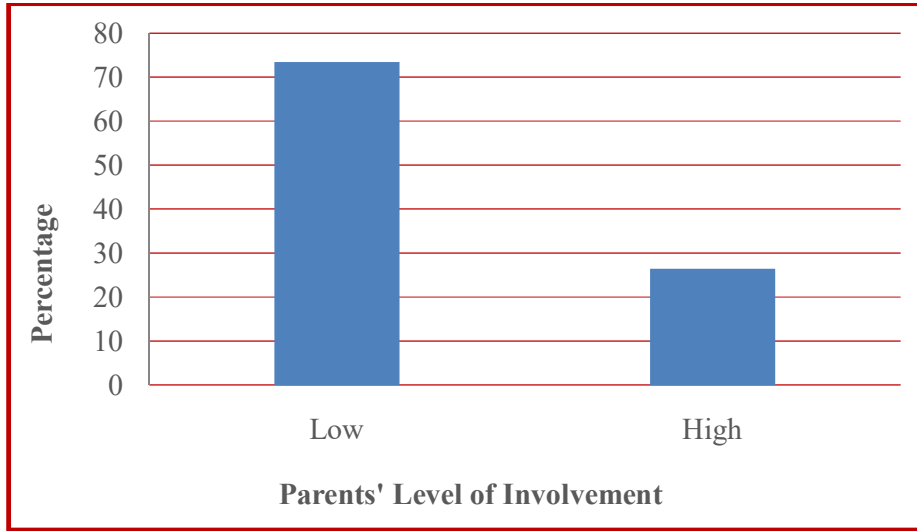


Figure 4.2: Bar Chart showing Distribution of Children by their Parents' Level of Involvement.

Table 4.3: Distribution of Children based on Treatment Groups

Treatment Group	Frequency	Percentage
Structured School-based Outdoor Education Activity (SSOEA) Group	16	32.7
Unstructured School-based Outdoor Education Activity (USOEA) Group	15	30.6
Conventional Method (CM)Group	18	36.7
Total	49	100.0

Table 4.3 shows that 16 (32.7%) of the children participated in Structured Outdoor Education Activity (SSOEA) group, 15 (30.6%) participated in Unstructured Outdoor Education Activity (USOEA) group while the remaining 18 (36.7%) were in Coventional Method (CM) group. This result is an indication that more children were in the CM group than each of the two experimental groups. The figure 4.3 further presents the result in bar chart.

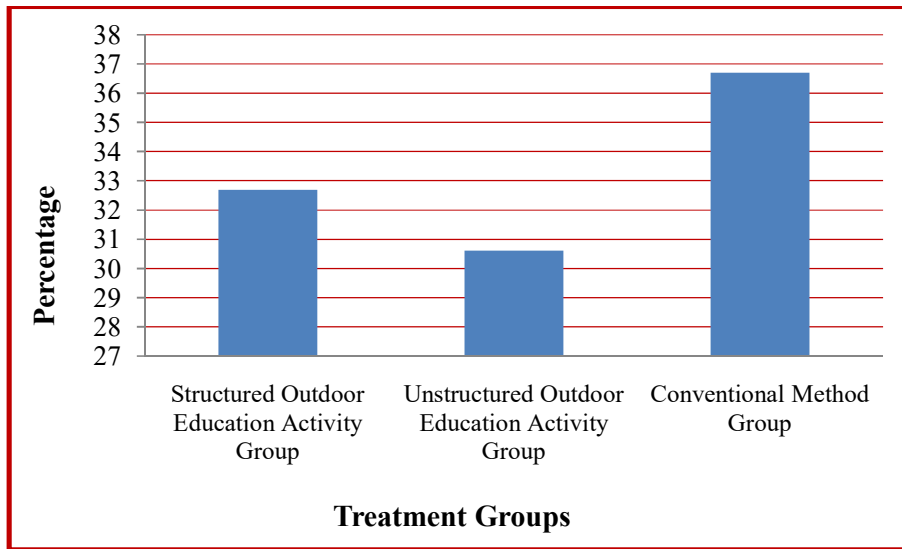


Figure 4.3: Bar Chart showing Distribution of Children by Treatment Groups

Table 4.4: Distribution of Children based on their Gender within Treatment Groups

Treatment Groups	Gender	Frequency	Percentage
Structured Outdoor	Male	8	50.0
Education Activity Group	Female	8	50.0
Total		16	100.0
Unstructured Outdoor	Male	9	60.0
Education Activity Group	Female	6	40.0
Total		15	100.0
Control Group	Male	12	66.7
	Female	6	33.3
Total		18	100.0

Table 4.4 shows the gender distribution of children within treatment groups. The table shows that 8 (50%) of the children in the Structured School-based Outdoor Education Activity (SSOEA) group were male while the female also constitute 8 (50%). In the Unstructured School-based Outdoor Educational Activities (USOEA) group, 9 (60%) of the children were male while the other 6 (40%) were female. Also, in Conventional Method (CM) group, 12 (66.7%) were male while the remaining 6 (33.3%) were female. The result from this table implies that both gender participated equally in the SSOEA group while more male children participated in USOEA and CM groups. Figure 4.4 further presents the result in bar chart.

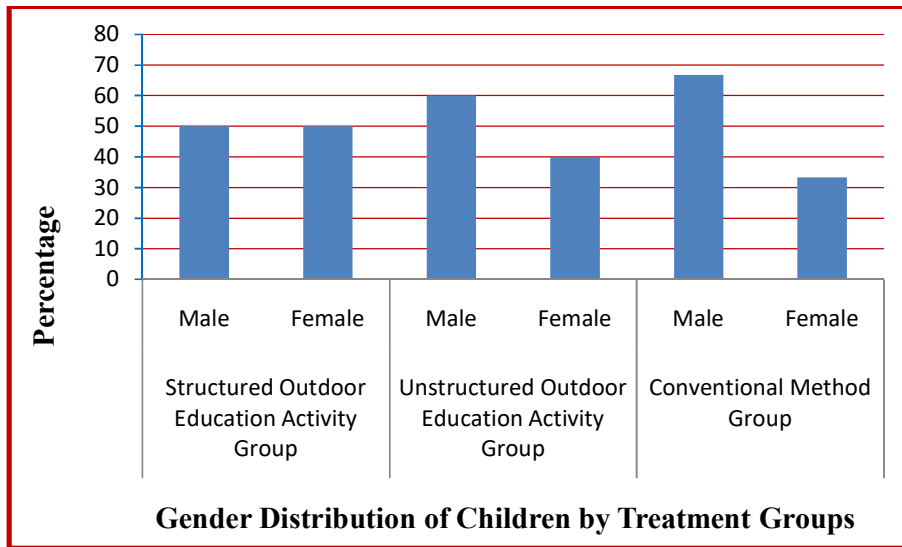


Figure 4.4: Bar Chart showing Gender Distribution of Children’s within Treatment Groups

Table 4.5: Distribution of Children based on their Parents' Level of Involvement within Treatment Groups

	Level of Parents' Involvement	Frequency	Percentage
Structured Outdoor Education Activity Group	Low	11	68.8
	High	5	31.2
Total		16	100.0
Unstructured Outdoor Education Activity Group	Low	12	80.0
	High	3	20.0
Total		15	100.0
Conventional Method Group	Low	13	72.2
	High	5	27.8
Total		18	100.0

Table 4.5 shows the children' distribution based on their parents' level of involvement within the treatment groups. The table shows that 11(68.8%) of the children in SSOEA group had parents with low level of involvement while the other 5 (31.2%) had parents with high level of involvement. In USOEAE group, 12 (80%) of the children had parents with low level of involvement while only 3 (20%) had parents with high level of parental involvement. Also, in CM group, 13 (72.2%) of the children had parents with low level of involvement while 5 (27.8%) had parents with high level of parental involvement. The result from this table is an indication that many of the children in all the groups had parents with low level of involvement. The figure 4.5 further presents the result in bar chart.

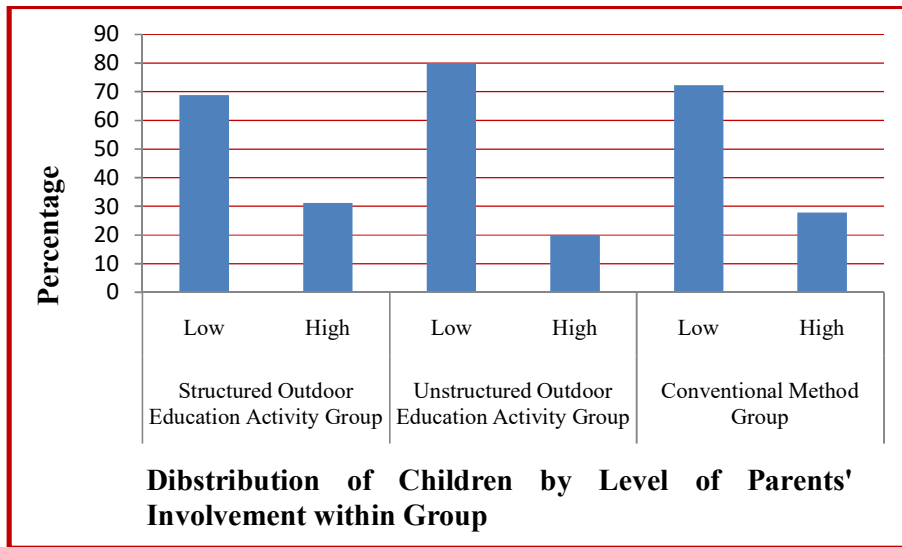


Figure 4.5: Bar Chart showing Distribution of Children based on their Parent's Level of Involvement within Treatment Groups.

4.2 Test of the Hypotheses

H01a: There is no significant main effect of treatments on pre-primary school children's cognitive skills.

Table 4.6: Analysis of Covariance (ANCOVA) of Cognitive skills by Treatment, Level of Parents' Involvement and Gender

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	11029.661 ^a	11	1002.696	29.672	.000	.898
Intercept	1512.377	1	1512.377	44.754	.000	.547
Pre_Cog_Skills	929.192	1	929.192	27.497	.000	.426
Treatment	8171.372	2	4085.686	120.903	.000	.867
PInvolment_level	3.527	1	3.527	.104	.748	.003
Gender	23.838	1	23.838	.705	.406	.019
Treatment * PInvolment_level	10.219	2	5.109	.151	.860	.008
Treatment * Gender	5.698	2	2.849	.084	.919	.005
PInvolment_level * Gender	.372	1	.372	.011	.917	.000
Treatment * PInvolment_level * Gender	52.842	1	52.842	1.564	.219	.041
Error	1250.339	37	33.793			
Total	175496.000	49				
Corrected Total	12280.000	48				

a. R Squared = .898 (Adjusted R Squared = .868)

Dependent Variable: Cognitive Skills

Table 4.6 shows that there is significant main effect of treatments on pre-primary school children's cognitive skills ($F_{(2, 37)} = 120.903$; $p < 0.05$, partial $\eta^2 = 0.867$). The treatment effect size is 87% (partial $\eta^2 \times 100$). This result means that there is significant difference in the post-cognitive skills mean score of the pre-primary school children due to the treatments. Thus, hypothesis 1a was rejected. In order to determine the mean difference across the groups, the Estimated Marginal Means of the treatment groups were carried out and the result is presented in Table 4.7

Table 4.7: Estimated Marginal Means of Post-cognitive Skills across the Groups

Variables	N	Mean	Std. Error
INTERCEPT			
Pre-Cognitive Skills	49	36.78	-
Post- Cognitive Skills	49	59.95	1.001
TREATMENTS			
Structured Outdoor Education Activity (SSOEA)	16	78.88	1.611
Unstructured Outdoor Education Activity (USOEA)	15	54.41	1.991
Conventional Method (CM)	18	42.09	1.416
PARENTS' LEVEL OF INVOLVEMENT			
Low	36	58.23	.994
High	13	62.01	1.854
GENDER			
	29	57.11	1.420
Male	20	62.87	1.415
Female			

Table 4.7 reveals that the pre-cognitive skills mean score (covariates) of the pre-primary school children appeared as 36.78 while it became 59.95 after treatment when the effect of covariates has been statistically controlled. The table shows further that the children exposed to SSOEA had the highest post-cognitive skills mean score ($\bar{x} = 78.88$), followed by those exposed to USOEAE ($\bar{x} = 54.41$) and then by those in CM group ($\bar{x} = 42.09$). This result implies that SSOEA is more potent than USOEAE and CM for improving cognitive skills of pre-primary school children. Likewise, USOEAE is more potent than conventional method. The order of the potency of the treatments can be represented as SSOEA>USOEAE>CM. Again, the table shows that the pre-primary school children with low level of parents' involvement had lower post-cognitive skills mean score ($\bar{x} = 58.23$) than their counterparts who have high level of parents' involvement ($\bar{x} = 62.01$) and the male children had lower post-cognitive skills mean score ($\bar{x} = 63.82$) than the female ($\bar{x} = 62.87$). The figure 4.6 further shows the result in bar chart.

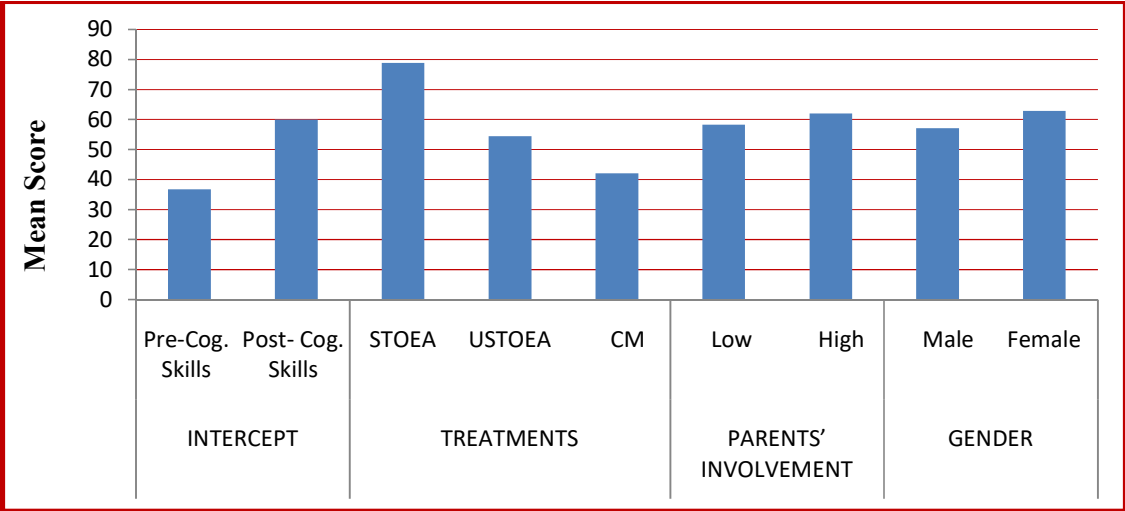


Figure 4.6: Bar Chart showing Estimated Marginal Means of Post-cognitive Skills Across Groups

In order to determine the source of the significant difference among the groups, post-hoc analysis was conducted using Bonferroni pairwise analysis. The result is shown in table 4.8:

Table 4.8: Bonferroni Post-hoc Analysis of Post-cognitive Skills by Treatment and Conventional Method Groups.

(I) Treatment	(J) Treatment	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
Structured Outdoor Education Activity	Unstructured Outdoor Education Group	24.472*	2.556	.000	18.062	30.881
	Conventional Method	36.785*	2.180	.000	31.318	42.252
Unstructured Outdoor Education Activity	Structured Outdoor Education Activity	-24.472*	2.556	.000	-30.881	-18.062
	Conventional Method	12.314*	2.449	.000	6.171	18.456
Conventional Method	Structured Outdoor Education Activity	-36.785*	2.180	.000	-42.252	-31.318
	Structured Outdoor Education Activity	-12.314*	2.449	.000	-18.456	-6.171

Table 4.8 showed the source of the significant difference among the groups. The table shows that the post-cognitive skills mean score of the pre-primary school children exposed to Structured Outdoor Education Activity was significantly different from that of their counterparts who were exposed to Unstructured Outdoor Education Activity and Conventional Method. Again, the table shows that the post-cognitive skills mean score of the pre-primary school children exposed to Unstructured Outdoor Education Activity was significantly different from that of the children exposed to Conventional Method. This means that the significant difference that is revealed by the ANCOVA result is as a result of the significant difference between the post-cognitive skills mean score of Structured Outdoor Education Activity and Unstructured Outdoor Education Activity groups, Structured Outdoor Education Activity and Conventional Method groups, Unstructured Outdoor Education Activity and Conventional Method groups. In other words, Structured Outdoor Education Activity and Unstructured Outdoor Education Activity groups were the main sources of the significant difference.

H01b: There is no significant main effect of treatments on pre-primary school children's social skills.

Table 4.9: Analysis of Covariance (ANCOVA) of Social skills by Treatment, Level of Parents' Involvement and Gender

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	9694.124 ^a	11	881.284	26.012	.000	.885
Intercept	2232.829	1	2232.829	65.905	.000	.640
Pre_Social Skills	68.979	1	68.979	2.036	.162	.052
Treatment	7340.078	2	3670.039	108.326	.000	.854
PInvolvement_level	43.858	1	43.858	1.295	.263	.034
Gender	105.408	1	105.408	3.111	.086	.078
Treatment * PInvolvement_level	85.079	2	42.539	1.256	.297	.064
Treatment * Gender	164.704	2	82.352	2.431	.102	.116
PInvolvement_level * Gender	82.833	1	82.833	2.445	.126	.062
Treatment * PInvolvement_level * Gender	41.244	1	41.244	1.217	.277	.032
Error	1253.550	37	33.880			
Total	51925.000	49				
Corrected Total	10947.673	48				

a. R Squared = .885 (Adjusted R Squared = .851)

Dependent Variable: Social Skills

Table 4.9 shows that there is significant main effect of treatments on pre-primary school children's social skills ($F_{(2,37)} = 108.326$; $p < 0.05$, partial $\eta^2 = 0.854$). The treatment effect size is 85% (partial $\eta^2 \times 100$). This result means that there is significant difference in the post-social skills mean score of the pre-primary school children due to the treatments. Thus, hypothesis 1b was rejected. In order to determine the mean difference across the groups, the Estimated Marginal Means of the treatment groups were carried out and the result is presented in Table 4.10

Table 4.10: Estimated Marginal Means of Post-social Skills across the Groups

Variables	N	Mean	Std. Error
INTERCEPT			
Pre-Social Skills	49	12.02	-
Post- Social Skills	49	31.81	1.003
TREATMENTS			
Structured Outdoor Education Activity (SSOEA)	16	47.89	1.602
Unstructured Outdoor Education Activity (USOEA)	15	28.97	1.996
Conventional Method (CM)	18	14.15	1.393
PARENTS' LEVEL OF INVOLVEMENT			
Low	36	29.21	1.012
High	13	34.93	1.885
GENDER			
	29	31.89	1.418
Male	20	31.71	1.404
Female			

Table 4.10 reveals that the pre-social skills mean score (covariates) of the pre-primary school children appeared as 12.02 while it became 31.81 after treatment when the effect of covariates has been statistically controlled. The table shows further that the children exposed to SSOEA had the highest post-social skills mean score ($\bar{x} = 47.89$), followed by those exposed to USOEAE ($\bar{x} = 28.97$) and then by those in CM group ($\bar{x} = 14.15$). This result implies that SSOEA is more potent than USOEAE and CM for improving social skills of pre-primary school children. Likewise, USOEAE is more potent than conventional method. The order of the potency of the treatments can be represented as SSOEA>USOEAE>CM. The table further shows that the pre-primary school children with low level of parents' involvement had lower post-social skills mean score ($\bar{x} = 29.21$) than their counterparts who have high level of parents' involvement ($\bar{x} = 34.93$) and the male children were just a little better in their post-social skills mean score ($\bar{x} = 31.89$) than their female counterparts ($\bar{x} = 31.71$). The figure 4.7 further shows the result in bar chart.

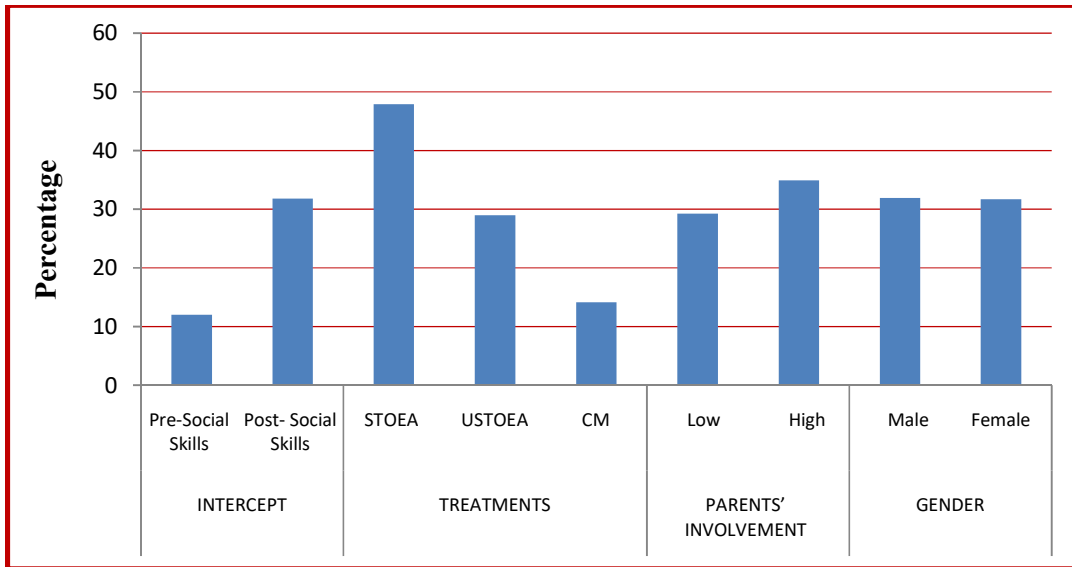


Figure 4.7: Bar Chart showing Estimated Marginal Means of Post-social Skills Across Groups.

In order to determine the source of the significant difference among the groups, post-hoc analysis was conducted using Bonferroni pairwise analysis. The result is shown in table 4.11

Table 4.11: Bonferroni Post-hoc Analysis of Post-social Skills by Treatment and Conventional Method Groups

(I) Treatment	(J) Treatment	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
Structured Outdoor Education Activity	Unstructured Outdoor Education Group	18.914*	2.566	.000	12.478	25.349
	Conventional Method	33.734*	2.112	.000	28.438	39.030
Unstructured Outdoor Education Activity	Structured Outdoor Education Activity	-18.914*	2.566	.000	-25.349	-12.478
	Conventional Method	14.820*	2.440	.000	8.700	20.940
Conventional Method	Structured Outdoor Education Activity	-33.734*	2.112	.000	-39.030	-28.438
	Structured Outdoor Education Activity	-12.314*	2.449	.000	-18.456	-6.171

Table 4.11 showed the source of the significant difference among the groups. The table shows that the post-social skills mean score of the pre-primary school children exposed to Structured Outdoor Education Activity was significantly different from that of their counterparts who were exposed to Unstructured Outdoor Education Activity and Conventional Method. Again, the table shows that the post-social skills mean score of the pre-primary school children exposed to Unstructured Outdoor Education Activity was significantly different that of the children exposed to Conventional Method. This means that the significant difference that is revealed by the ANCOVA result is based on the significant difference between the post-social skills mean score of Structured Outdoor Education Activity and Unstructured Outdoor Education Activity groups, Structured Outdoor Education Activity and Conventional Method groups, Unstructured Outdoor Education Activity and Conventional Method groups. In other words, Structured Outdoor Education Activity and Unstructured Outdoor Education Activity groups were the main sources of the significant difference.

Ho2a: There is no significant main effect of parents' level of involvement on pre-primary school children's cognitive skills.

Table 4.6 shows that there is no significant main effect of parents' level of involvement on pre-primary school children's cognitive skills ($F_{(1, 37)} = .104$; $p > 0.05$, partial $\eta^2 = 0.003$). The treatment effect size is 0.3% (partial $\eta^2 \times 100$). This means that there is no significant difference in the post-cognitive skills mean scores of the pre-primary school children by their parents' level of involvement. Hence, hypothesis 2a was not rejected.

Ho2b: There is no significant main effect of parents' level of involvement on pre-primary school children's social skills.

Table 4.9 shows that there is no significant main effect of parents' level of involvement on pre-primary school children's social skills ($F_{(1, 37)} = 1.295$; $p > 0.05$, partial $\eta^2 = 0.034$). The treatment effect size is 3.4% (partial $\eta^2 \times 100$). This means that there is no significant difference in the post-social skills' mean scores of the pre-primary school children by their parents' level of involvement. Hence, hypothesis 2b was not rejected.

Ho3a: There is no significant main effect of gender on pre-primary school children's cognitive skills.

Table 4.6 shows that there is no significant main effect of gender on pre-primary school children's cognitive skills ($F_{(1,37)} = .705$; $p > 0.05$, partial $\eta^2 = 0.019$). The treatment effect size is 2% (partial $\eta^2 \times 100$). This means that there is no significant difference in the post-cognitive skills' mean scores of the pre-primary school children by their gender. Hence, hypothesis 3a was not rejected.

Ho3b: There is no significant main effect of gender on pre-primary school children's social skills.

Table 4.9 shows that there is no significant main effect of gender on pre-primary school children's social skills ($F_{(1,37)} = 3.111$; $p > 0.05$, partial $\eta^2 = 0.078$). The treatment effect size is 8% (partial $\eta^2 \times 100$). This means that there is no significant difference in the post-social skills' mean scores of the pre-primary school children by their gender. Hence, hypothesis 3b was not rejected.

Ho4a: There is no significant interaction effect of treatments and parents' level of involvement on pre-primary school children's cognitive skills.

Table 4.6 shows that there is no significant interaction effect of treatments and parents' level of involvement on pre-primary school children's cognitive skills ($F_{(2,37)} = .151$; $p > 0.05$, partial $\eta^2 = 0.008$). The treatment effect size is 0.8% (partial $\eta^2 \times 100$). This means that the two way interaction of treatments and parents' level of involvement did not jointly account for the difference in the post-cognitive skills mean scores of the pre-primary school children. Hence, hypothesis 4a was not rejected.

Ho4b: There is no significant interaction effect of treatments and parents' level of involvement on pre-primary school children's social skills.

Table 4.9 shows that there is no significant interaction effect of treatments and parents' level of involvement on pre-primary school children's social skills ($F_{(2,37)} = 1.256$; $p > 0.05$, partial $\eta^2 = 0.064$). The treatment effect size is 6.4% (partial $\eta^2 \times 100$). This means that the two way interaction of treatments and parents' level of involvement did not jointly account for the difference in the post-social skills mean scores of the pre-primary school children. Hence, hypothesis 4b was not rejected.

Ho5a: There is no significant interaction effect of treatments and gender on pre-primary school children's cognitive skills.

Table 4.6 shows that there is no significant interaction effect of treatments and gender on pre-primary school children's cognitive skills ($F_{(2, 37)} = .084$; $p > 0.05$, partial $\eta^2 = 0.005$). The treatment effect size is 0.5% (partial $\eta^2 \times 100$). This means that the two way interaction of treatments and gender did not jointly account for the difference in the post-cognitive skills mean scores of the pre-primary school children. Hence, hypothesis 5a was not rejected.

Ho5b: There is no significant interaction effect of treatments and gender on pre-primary school children's social skills.

Table 4.9 shows that there is no significant interaction effect of treatments and gender on pre-primary school children's social skills ($F_{(2,37)} = 2.431$; $p > 0.05$, partial $\eta^2 = 0.116$). The treatment effect size is 12% (partial $\eta^2 \times 100$). This means that the two way interaction of treatments and gender did not jointly account for the difference in the post-social skills mean scores of the pre-primary school children. Hence, hypothesis 5b was not rejected.

Ho6a: There is no significant interaction effect of parents' level of involvement and gender on pre-primary school children's cognitive skills.

Table 4.6 shows that there is no significant interaction effect of parents' level of involvement and gender on pre-primary school children's cognitive skills ($F_{(1,37)} = .011$; $p > 0.05$, partial $\eta^2 = 0.000$). The treatment effect size is 0% (partial $\eta^2 \times 100$). This means that the two way interaction of parents' level of involvement and gender

did not jointly account for the difference in the post-cognitive skills mean scores of the pre-primary school children. Hence, hypothesis 6a was not rejected.

Ho6b: There is no significant interaction effect of parents' level of involvement and gender on pre-primary school children's social skills.

Table 4.9 shows that there is no significant interaction effect of parents' level of involvement and gender on pre-primary school children's social skills ($F_{(1,37)} = 2.445$; $p > 0.05$, partial $\eta^2 = 0.062$). The treatment effect size is 6.2% (partial $\eta^2 \times 100$). This means that the two way interaction of parents' level of involvement and gender did not jointly account for the difference in the post-social skills' mean scores of the pre-primary school children. Hence, hypothesis 6b was not rejected.

Ho7a: There is no significant interaction effect of treatment, parents' level of involvement and gender on pre-primary school children's cognitive skills.

Table 4.6 shows that there is no significant interaction effect of treatment, parents' level of involvement and gender on pre-primary school children's cognitive skills ($F_{(1,37)} = 1.564$; $p > 0.05$, partial $\eta^2 = 0.041$). The treatment effect size is 4% (partial $\eta^2 \times 100$). This means that the three way interaction of parents' level of involvement and gender did not jointly account for the difference in the post-cognitive skills mean scores of the pre-primary school children. Hence, hypothesis 7a was not rejected.

Ho7b: There is no significant interaction effect of treatment, parents' level of involvement and gender on pre-primary school children's social skills.

Table 4.9 shows that there is no significant interaction effect of treatment, parents' level of involvement and gender on pre-primary school children's social skills ($F_{(1,37)} = 1.217$; $p > 0.05$, partial $\eta^2 = 0.032$). The treatment effect size is 3.2% (partial $\eta^2 \times 100$). This means that the three way interaction of treatment, parents' level of involvement and gender did not jointly account for the difference in the post-social skills' mean scores of the pre-primary school children. Hence, hypothesis 7b was not rejected.

4.3 Discussion of Findings

4.3.1 Effects of treatments on pre-primary children cognitive skills

The first null hypothesis formulated in this study which stated that there is no significant main effect of treatments on pre-primary school children's cognitive skills was rejected. This is because the findings from this study showed that there was a significant main effect of treatment on pre-primary children's cognitive skills. Pre-primary children exposed to Structured School-Based Outdoor Educational Activity (SSOEA) demonstrated highest level of cognitive skills followed by children exposed to Unstructured Outdoor Education Activity (USOEA) while children taught with the conventional teaching (CT) had the least. The effect was further shown by the mean gain at post-test level which was shown to be 23.17. This implies that both structured and unstructured outdoor activities were more effective in developing the cognitive skills in pre-primary school children compared with the conventional teaching. This finding could be attributed to many reasons. This finding could be because children exposed to structured and unstructured outdoor activities had the opportunity to learn in the real world, the children learned outside the classroom where they had freedom and space to actively use their whole body to explore, examine, experiment, question, analyse and manipulate objects in their environment as displayed in Plates 4.1-4.6.



Plate 4.1
Children actively examining things in their environment



Plate 4.2
Children gathering things in their environment



Plate 4.3
Children actively exploring
their environment



Plate 4.4
Children identifying colour
and shape on flower



Plate 4.5
A child counting with stones



Plate 4.6
Children measuring sand
with spoon

Plates 4.1-4.6: Children engaged in multi-sensory activities during outdoor education

Children in the experimental groups interacted with varieties of stimulating materials that they were required to touch, observe, count, categorize, measure, experiment with and compare as shown in Plates 4.7-4.10. These experiences are believed to have helped to satisfy children's natural curiosity to discover their world and make meaning from their experiences. In addition, engaging opportunities provided could have increased the rate at which children were able to pick out and incorporate information that will facilitate the development of cognitive skills. Active engagement of children in stimulating activities could have also increased their interest in what they were doing and have helped them to stay longer on the activities, making learning to be interesting and full of fun. This is evident in Plates 4.7-4.9 where children

showed great enthusiasm with their body movement, facial expressions and earnestness while carrying out their activities.



Plate 4.7
Children displaying enthusiasm
about their learning



Plate 4.8
Children showing excitement as
they engage in outdoor activities



Plate 4.9
Joyful enthusiasm during
outdoor learning



Plate 4.10
Children displaying enthusiasm
while singing

Plates 4.7-4.10: Children displaying enthusiasm and excitement during Outdoor based learning

These experiences are believed to have accounted for the improvement in their cognitive skills. This finding gives credence to the finding of Jordet(2010), that outdoor context provided direct multi-sensory stimulation which helped to connect s

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everal areas of the brain that are beneficial to the development of cognitive skills.

Findings of the present study may also be connected to the fact that children had opportunities to make decisions and think creatively about what they were doing as displayed in Plates 4.11-4.15.



Plate 4.11

Children exhibiting thinking and concentration during activities.



Plate 4.12

Corresponding objects with figure.



Plate 4.13

Counting with seeds



Plate 4.14

Examining colours and shapes of leaves



Plate 4.15

Counting and matching numbers with objects

Plates 4.11-4.15: Children exhibiting thinking and concentration while learning with different materials.

Activities provided to children in the experimental groups were such that made it possible for them to think deeply about what they were doing. This experience is believed to have helped the children to connect what they were learning with their daily life experiences, making learning to be meaningful and beneficial. This view is in line with the finding of Noorani, *et al.* (2010) that outdoor environment provided a real-life experience for children. Similarly, effectiveness of the outdoor based activities may not be far from the fact that the activities provided tips into what

children were familiar with and already had prior experience of. For instance, most of the materials used during the experiment such as sticks, flowers, plant seeds, stones, shells and so on (Plates 4.11-4.15), are readily available in their environment and as such, they were not totally strange to them. This is likely to have helped the children in the experimental groups to participate fully in their learning and could have been responsible for the improvement in their cognitive skills. This explanation gives credence to the findings of Juniu (2006). that what learners bring to each learning task has a powerful impact on what is learned.

Improvement in cognitive skills may also be ascribed to the fact that the children in the experimental groups were opporteduned to learn the same concept from multiple perspectives as evident in Plates 4.16-4.20. The children in experimental group had opportunity to have a variety of experience around a single notion. One concept was approached from different angles. For instance, during counting activities, the children had the opportunity to count with stones, seeds and other materials available in the outdoor environment. The materials provided were used in various ways to stimulate imagination and encourage a broad perspective of what they were made to learn. These varieties of experiences offered or provided the basis for children to conceptualize, interpret, categorize and make meaningful ideas that sharpened their cognitive skills.



Plate 4.16
Counting with seeds.



Plate 4.17
Flower arrangement and corresponding with figure.



Plate 4.18
Identification of plane shapes carved from wood.



Plate 4.19
Children counting with the seeds

Plate 4.20
Children moulding with shell and sand

Plates 4.16-4.20: Children exposed to learning from multiple perspectives

The superiority of SSOEA towards developing of children cognitive skills in pre-primary schools further strengthened the importance of teachers' engagement in facilitating the development of cognitive skills of pre-primary school children. In the SSOEA group, the teacher created, and ensured that the activities were carried out successfully. Plates 4.21-4.27 displayed instances in which the teacher stimulated children's interest in what they were doing to encourage them sharpen their skills and maximize their experiences during activities.



Plate 4.21
Observing the environment with children



Plate 4.22
Guiding children during measuring and planting activities



Plate 4.23
Supporting the children during counting and matching activities



Plate 4.24
Exploring environment with the teacher



Plate 4.25
Modelling to the children during activities



Plate 4.26 Plate 4.27
Exploring plants' colours and shapes with children



Explaining concepts to the children

Plate 4.21-4.27 Joint exploration of the environment by the teacher and the children in the SSOEA

The teacher also assisted children to connect what they were learning to their previous experience, asked open ended questions that would help the children to think critically about what they were doing. The teacher equally offered timely intervention in terms of assistance and explanation when the children encountered difficulties during the process of learning. The children were therefore stimulated and helped within the zone of their proximal development. These could have greatly helped the children to stay focused on the activities and acquired relevant skills in the process. The finding of this study suggested that if teachers planned and exposed pre-primary children to outdoor activities and also played supportive roles by involving themselves in such activities, there would be improvement in the cognitive skills of the children. This is in line with the findings of Pinchover, (2017) that teacher-

interactions with children during learning activities are critical to the development of their cognitive competence.

The superiority of SSOEA in improving the cognitive skills of children in this study may not also be unconnected with the fact that social aspect of learning was fully recognised and enhanced during learning activities in the group. This is what constructivism called collaborative learning (Plates 4.28-4.34).



Plate 4.28

Children working in groups



Plate 4.29

Children sorting materials gathered from their environment



Plate 4.30

Children examining gathered plants



Plate 4.31

Children sorting in a group



Plate 4.32

Children explaining activities to one another



Plate 4.33

Children moulding together



Plate 4.34

Children asking questions among themselves

Plates 4.28-4.34: Children engaging in collaborative learning

A lot of social exchanges in the form of questioning, explaining, and modelling occurred among the children and their teachers during the learning process in the SSOEA. This opportunity ensured that both the teacher and the children had a shared

commitment to learning. This interaction may have also facilitated the improvement in cognitive skills of children in the study.

In the unstructured outdoor education activity group (USOEA), children were left to explore the outdoor environment as they wished, under this condition, a number of the children could have been uninterested in the activities or were distracted from the goals of the lesson as evident in Plates 4.1 and 4.3. Many of them may not know how to go on when they come across challenges in the course of their exploration in the outdoor environment. The children may not be able to coordinate their activities and as such are not able to maximize the opportunity to build their cognitive skills. Even though the children had the opportunity to have interacted meaningfully in the outdoor, they could not maximize the opportunity possibly because there was no support from the teacher, who is expected to be purposeful and intentional in helping the children to build cognitive skills. These may have accounted for why children in the USOEA group could not improve their cognitive skills compared with the children in the SSOEA group. Current finding of the present study corroborates the observation of Bredekamp, (2011) that teacher's competence in scaffolding learning experiences is critical to maximizing the benefits that children would derive from the outdoor experience. The finding also substantiates the view of Openshaw and Whittle, (1993) that children had so much to learn or gain from the wealth of knowledge of others. These authors believed therefore that many of such opportunities to learn could slip by when children are left to themselves in free play to develop their cognitive skills, and that extremely formless activities could have damaging effect on children.

The pre-primary school children in control group that were exposed to conventional teaching (CT) did not improve significantly on their cognitive skills unlike their peers in the experimental groups who were exposed to outdoor based education activities. The CT had the least mean score in this study ($\bar{x} = 42.09$). This finding cannot be unconnected with the fact that the children in the CT did not have opportunity for quality learning experience that should make them active and take charge of their learning. They passively received information from the teacher during lessons and as such could not muster sufficient initiative to be creative. Their learning was equally restricted to the classroom and as such did not have the freedom to engage their whole body in exploring their environment and think critically about

their experiences. This kind of setting may have limited children's interest and enthusiasm about what they were learning. This may have accounted for the inability of the children in the group to improve on their cognitive skills significantly, compared to their peers in the experimental groups. This experience is not different from the ones expressed in the studies of Ekine, (2010), Salami, (2015) and Majebi, (2017) that CT was not effective in the development of cognitive competence in children.

The finding of effectiveness of outdoor based education activities in promoting cognitive skills of pre-primary children is in line with the findings of Rivkin, (2000), Ouvry, (2003), Yildirim and Akamca, (2017) that outdoor education activities boosted cognitive development in children. The finding equally upholds the findings of Rickinson *et al.*, (2004) and, Maxwell, Mitchell and Evans, (2008) that outdoor learning was capable of improving the development of cognitive skills in children. Again, the finding of Holmes, (2007) further strengthened the effectiveness of outdoor educational activities in developing cognitive skills by his report that students who participated in structured outdoor education activities showed greater cognitive gains and improvement in their academic performance. This finding also corroborated the report of Vicki *et al.*, (2010.) that preschool children between ages of 3-5 years who participated in an intentionally designed outdoor environment demonstrated problem solving skills as they explored the outdoor environment.

Similarly, Dismore and Baily, (2005), Moffet, (2011) and Fägerstam, (2012) found that students taught mathematics lessons outdoors performed better compared with those who were traditionally taught indoors using lecturing and independent work from text books. Similarly, Nundy, (1999) discovered that outdoor learning had positive influence on the long-term memory of individuals owing to the memorable nature of the fieldwork setting. Current finding of this study also agreed with the observation of Rickinson *et al.*, (2004), Öhman, (2011) that co-operative activities in biology improved student's performance for a long time. The finding of this study supports observation of Barlow, (2015) that pupils who were not doing so well in the normal classroom setting demonstrated critical thinking skills in the outdoor environment. The findings of this study are also similar to the finding of Moore and Wong, (1997) that students taught in the outdoor environment performed better in science, reading, mathematics, and social studies, and showed heightened motivation towards the study of science compared to those taught through the CT. Hamilton-

Ekeke, (2007) similarly found that secondary school students taught some ecological concepts outdoor performed better than students taught in the classroom only. The findings of this study also corroborates the studies of Prokop, Tuncer and Kvasnicak, (2007); Hamilton-Ekeke, (2007) as stated earlier, which found that children engaged in field work, improved on their cognitive competencies than those that did not. The findings of this study equally support that of Malone, (2008) who found students exposed to writing skills in the outdoor environment performed better than others that were taught in the classroom. Similarly, the findings of this study corroborated the report of Rahm, (2002) and, Cachelin, Paisly and Blanchard, (2007) that students demonstrated a higher cognitive gain from structured outdoor learning programmes than was observed under classroom learning. The findings of this study equally upholds the submission of the American Institute for Research of 2005 that children who were at risk but were subjected to outdoor education programme on residential basis improved their cognitive gains compared with those who did not have same outdoor experience.

Again, the finding of this study agrees with earlier reports that interactions with green spaces had positive influences in restoring the ability of children to concentrate, improve attention, impulse control and delay gratification (Kaplan, 1995; Faber and Kuo, 2009; Annerstedt and Währborg, 2011; Söderström, 2011).

4.3.2 Effects of Treatment on Pre-primary School Children's Social Skills

The null hypothesis that there is no significant main effect of treatment on pre-primary school children was rejected. The hypothesis was rejected because there was significant main effect of treatment on the primary school children's social skills. Pre-primary children exposed to Structured Outdoor Education Activities (SSOEA) demonstrated highest level of social skills followed by children exposed to Unstructured Outdoor Education Activities (USOEA) while children taught with the conventional teaching strategy (CT) had the least. The effect was further shown by the mean gain of 19.89 at post-test level. This implies that both structured and unstructured outdoor activities were more effective in the development of social skills in pre-primary school children than the conventional strategy (CT). These findings may not be unconnected with the fact that the children in the experimental groups learned in an environment that gave them the opportunity to interact freely and relate with one another, sharing knowledge, and expressing feelings as shown for example

in Plates 4.38-4.40. This experience is believed to have facilitated their ability to practice and build their social skills.



Plate 4.35 Plate 4.36
Children engage in sand play together



Explaining concepts among themselves



Plate 4.37 Plate 4.38
Children cooperating with one another



Plates 4.35-4.38: Children interacting closely

The superiority of SSOEA to the improvement of social skills in pre-primary children in this study may be due to the fact that the children were exposed to stimulating environment that provided a lot of avenue that fostered interaction between the children and their teacher. In the SSOEA, the children carried out activities with cooperation. Children worked in groups and their activities were organized in a manner that the children needed one another to accomplish it.



Plate 4.39 Children taking leadership roles during activities skills and bonding
Plate 4.40 Children showing relationship

Plates 4.39-4.40: Children enjoying relationship

This experience encouraged the children to share materials and ideas, take turns, respect and tolerate one another, listening to one another, helping and learning from one another, regulate their behaviour, take responsibilities and cooperate with one another, as they combined their efforts to complete the learning task. Interdependence and bonding were also emphasised. This experience would have helped the children to understand the importance of one another to individual as well as corporate to achieve. This experience made high demand on the children to practice and sharpen their social skills and may have been responsible for the improvement in their social skills. This position corroborated the report of Kellert, (2002); Malone, (2008); Burdette *et al.* (2004); Thompson and Thompson, (2007), Wilson, (2007) and Maxwell *et al.* (2008) that quality social interaction of children with one another during learning activities enhances the development of their social skills. This finding also substantiated the view of Vick *et al.* (2010) that collaborative activities helped children to recognise and utilize individual’s abilities and attributes to achieve their goals.

Furthermore, the finding in this study could be as a result of the fact that in the STOE A group, the teachers were deeply involved with the children during the activities. The teachers did not only emphasize the social skills the children required to work together but also demonstrated acceptable social skills to the children. The teachers also commended good behaviour and corrected promptly any anti-social behaviour that the children exhibited during learning activities. The children were able to try out social behaviour regularly. These experiences are thought to have helped the

children improve on their social skills. Unlike in the USOEA group where children were left to freely interact among themselves without much guidance from their teachers as it occurred in the SSOEA group. This implies that the children may not be able to sufficiently maximize the opportunity to build their social skills if they are not properly guided.

Likewise, in the CT group in which learning took place in the classroom in which a teacher centred whole-group instruction was used, opportunity for quality interaction among the children and their teacher was rarely possible. The children in this group worked as individuals and concentrated on their workbook as well as the teacher's instruction. The lack of quality interaction is likely to have affected their ability to improve on their social skills. This finding corroborates that of Oduolowu, (2002) and Majebi, (2017) that conventional strategy is effective in developing social skills of children.

These current findings of the effectiveness of outdoor learning activities in supporting the development of social skills of pre-primary school children upholds the findings of Beames and Ross, (2010) and Moffet, (2011) that outdoor learning enhanced social skills development in children. Mikkelsen and Christensen, (2009) found that working outside encouraged companionship among children. The present finding is also in line with the finding of Tremblay *et al.* (2015) that outdoor play enhanced the development of healthy inter-personal skills and socialization with peers. Their finding further revealed that collaborative tasks as engaged in by students usually have positive influence on co-operation skills, reliability, initiative, leadership qualities, motivation and perseverance. The finding of this study equally agreed with O'Brien and Murray, (2007) and Waite, (2011) that outdoor experiences enhances many dimensions of social skills of children including cooperation, effective communication and self-regulation.

Similarly, the reports of Thomas and Thompson, (2004); Mygind, (2005); Jordet, (2010) affirmed the current finding that outdoor teaching facilitated social skills of students. Present findings also lends credence to the claim of Jones and Bouffard, (2012) which found that children developed social skills while giving help, talking, negotiating and cooperating with the others in the outdoor environment. Current findings of the study also affirmed the findings of Vick *et al.*, (2010) that an intentionally designed outdoor environment promoted social skills of children. Similarly, findings of this study corroborates the findings of Rickinson and Sanders,

(2005) who found that outdoor learning increased self-confidence, decision-making and collaborative skills of students. The finding of this study upholds the results of several authors who have emphasized that outdoor teaching promoted social relationship (Dismore and Baily, 2005; O'Brien and Murray, 2007; Moffet, 2011, Waite, 2011). The results of this study agree with Mygind 2005 that outdoor environment teaching enhance development of social skills of children.

4.3.3 Main Effect of Parental Involvement On Pre-Primary Children's Cognitive Skills

The current finding was that of no significant main effect of parental involvement on pre-primary children's cognitive skills. This means that there was no significant difference in the post-cognitive skills' mean scores of the pre-primary school children by their parents' level of involvement. This finding may not be unconnected with the fact that many of the children who took part in the study had parents with low level of parental involvement. This finding further confirmed the findings of other scholars such as Oduoluwu and Leigh, (2013) and Unnachukwu, (2015) who found that parents, especially mothers in Nigeria were too busy and unavailable to provide their children with high-quality child care in the recent times. Tight work schedules and other responsibilities make only a minimal time available to parents to provide support in one way or the other and these may have been responsible for the observation. Many Nigerian parents especially mothers spend longer hours each day at work, giving them little time to be sufficiently involved in the upbringing of their children. It is also not unlikely that even when the parents are available, many of them may have little understanding of how to effectively engage their children to stimulate activities that could stir up the development of their cognitive skills. The extended family system that could have been a support where other family members would be highly involved in the upbringing of children has unfortunately also faded away.

The view above is in line with the findings of Adelodun, (2013) and UNICEF, (2013) that many Nigerian children are deprived of quality parental involvement and this experience may have created a vacuum in the developmental trajectory of the children. This finding of this study further consolidate the need to provide quality early childhood education to make up for any deficiencies in the parental care that children may experience. The finding that parental involvement do not significantly influence the pre-primary children's cognitive skills corroborate the findings of

Reynolds, (1992); White, Taylor and Moss, (1992); Okpala, Okpala and Smith, (2001) which found that there were no significant associations between academic achievement of children and parental involvement. The current finding is however at variance with the finding of Jaiswal,(2017) who found positive association between academic performance and parental involvement. It is not unlikely that the difference between the finding of the current study and that of Jaiswal, (2017) could be due to the population of the children involved. This further suggests a difference in the level of parental involvement of the children that participated in both studies.

4.3.4 Main Effect of Parental Involvement on Social Skills

It was revealed in the current study that there was no significant main effect of parental involvement on pre-primary children's social skills. The implication of this is that the difference in the post social skills' mean score of pre-primary children with either high or low parental involvement was not statistically significant. This finding may be ascribed to the fact that majority of the students who took part in the study had parents who had low involvement in their activities. Again, this is a reflection of poor quality of parental interaction that scholars have reported in Nigeria. Many parents are getting occupied with work, oftentimes, many leave home very early and return very late in the night. Even when they are available, television and mobile phones have been observed to interfere with the quality of time available to interact with the children. The level of parental engagement of children in quality interaction at home is gradually declining (Adelodun, 2013; UNICEF, 2013). A further consideration of the results however showed a difference of 5.72 in the mean score of social skills of the pre-primary school children with low level of parents' involvement compared with those with high level of involvement. Although, the result was not significant, it suggests that parents have a crucial role to play in the development of social skills of their children especially, at the early childhood stage. When children experience quality stimulation at home as well as at school, the development of their social skills will be maximized. The finding of poor parental involvement has contributed to the increasing need for commitment to providing quality early childhood care education for Nigerian children in order to make up for any deficiency that they may experience at home. When parents involve their children in home related activities such as establishing behavioural boundaries, modelling good behaviour, playing with them, exploring the environment together, all of these can contribute to

improvement in social skills. The present finding is however contrary to the report of El-Nokali, Bachman and Votruba-Drzal, (2010) which found significant positive associations between average parent involvement and social skills development. Similarly, the finding of this study was not in agreement with the reports of Reynolds, (1989); Rimm-Kaufman, Pianta, Cox and Bradley, (2003); McWayne *et al.* (2004) and, Supplee, Shaw, Hailstones and Hartman, (2004) which found that children with more highly involved parents showed enhanced social functioning and fewer behavioural problems. The finding also negated the report of Fantuzzo *et al.* (2004) which found that lower conduct problems in Head Start students was associated with good parental involvement. The finding of this study also contradict the finding of Gurbuz and Kiran-Esen, (2018) who found positive relationship between parental interaction especially mothers and the development of social skills such as responsibility, cooperation, self-control and other pro social skills of children.

4.3.5 Main Effect of Gender on Cognitive Skills of Pre-Primary Children

The result showed that there was no significant difference in the post-cognitive skills' mean scores of the pre-primary school children by their gender. This suggests that there was no difference in the cognitive skills of both male and female pre-primary children. The finding may be explained by the fact that when outdoor learning is skillfully implemented, it presents a leverage for both male and female pre-primary children to practice and build their cognitive skills. All the children in the outdoor based teaching had similar opportunity to actively explore the environment and to make meaning out of the experience. They all sang songs relevant to the activities undertaken, experimented with natural materials and reported their findings. This experience increased the opportunity for both male and female children to express themselves fully thereby, enhancing their confidence to discover their world and build their cognitive skills in the process. The present finding corroborates the result of Lovell, (2009) that girls' level of physical activity is comparable to their male counterparts in the outdoor environment. Therefore, some of the more traditional associations between cognitive skills of pre-primary children and gender appeared to be neutralized at the outdoors.

This finding also substantiated the findings of Wai and Saw, (2005) that there were no differences between females and males regarding their cognitive abilities.

The present finding also upholds previous findings of Neiderle and Vesterlund, (2010) and, Plante *et al.*, (2019) that there were no more gender differences in the numeric skills of children. The finding is however at variance with the findings of Eraikhuemem, (2009); Bassey, Joshua and Asim, (2010) and, Abubakar and Ogugua, (2011) who found significant differences in mathematical ability of students based on gender. The finding of this study also negates the findings of Makiki, Ngban and Ibu, (2009); Inko-Tariah, (2014) when they analysed Students' Performance in Junior Secondary Mathematics Examination and found that males performed better than females students. The finding did not also agree with the finding of Ekine, (2010) who found that female primary pupils performed better in primary science than their male counterparts.

4.3.6 Main Effect of Gender on Social Skills of Pre-Primary Children

The finding of this study indicated that there was no significant main effect of gender on pre-primary school children's social skills. This implies that the difference in post social skills mean score of male and female pre-primary children was not statistically significant. This again confirmed that outdoor based activities are capable of breaking gender barrier of children in terms of social skills. In the outdoor based activities, both male and female children had the opportunity to interact freely with their peers and teachers, share their experiences and bear their view on any issue they came across. This experience was believed to have provided equal opportunity for both male and female pre-primary children to practice and build their social skills. The finding that there was no significant main effect of gender on social skills of pre-primary children agreed with the findings of Christoph *et al.*, (2017) that no gender difference existed in social skills of children under outdoor learning.

4.3.7 2-Way Interaction Effect of Parents' Level of Involvement and Gender on Pre-Primary School Children Cognitive and Social Skills

The finding of this study showed that there was no significant interaction effect of treatment of gender and parental involvement on pre-primary children cognitive and social skills. This implies that parental involvement of pre-primary school children as well as their gender did not jointly influence the level of their cognitive and social skills. This finding suggests that the treatment, that is, Outdoor Based Education

Activities was highly effective in the acquisition of cognitive and social skills by pre-primary school children.

The finding also buttressed the fact that quality early childhood education has the advantage of making up for any deficiency or deprivation that children may have experienced. This view is in line with that of Burger, (2013) that quality early childhood is a good way to ensure equal opportunity for all children to develop maximally, regardless of parental background.

4.3.8 2-Way Interaction Effect of Treatments and Parental Involvement on Pre-Primary Children's Cognitive and Social Skills.

It was clear in this study that there was no significant interaction effect of treatment and parents' level of involvement on pre-primary school children's cognitive and social skills. This implies that the treatment (school based outdoor education activities) and parental involvement did not jointly influence pre-primary school children's cognitive and social skills. These findings again implies that the main effect that the experiment had on pre-primary school children's cognitive and social skills was as a result of the treatment alone. This implies that school based outdoor education activities was highly effective for improving cognitive and social skills of the children. This may not be far from the fact that the treatment made learning highly stimulating, engaging, active, interactive, collaborating, and interesting to the children. These experiences are capable of making learning beneficial to all categories of children regardless of their gender or level of parental care. Again, this finding further confirmed that quality early childhood care education is helpful to all children regardless of any deprivation they may have experienced.

4.3.9 2-Way Interaction Effect of Treatments and Gender on Pre-Primary School Children's Cognitive and Social Skills.

The result showed that treatment and gender did not jointly account for improvement in cognitive and social skills of pre-primary school children. This finding again confirmed that the main effect that the experiment had on the pre-primary children cognitive and social skills was majorly due to the treatment alone and not because of their gender. This further showed that school based outdoor education activities was highly efficacious in promoting cognitive and social skills of pre-primary children. This may not be far from the fact that the treatment provided learning in an active and

interesting way, making learning real and engaging to the children. All these could have accounted for the potency of outdoor based education activities in the development of cognitive and social skills in the pre-primary children. This finding further corroborates the findings of Christoph *et al.*, (2017) that outdoor learning is beneficial to all children regardless of gender.

4.3.10 3- Way Interaction Effect of Treatments, Parental Involvement and Gender on Pre-Primary School Children's Cognitive and Social Skills.

This study showed that there was no significant interaction effect of treatments, parental involvement and gender on cognitive and social skills of pre-primary school children. This implies that treatments, parental involvement and gender did not jointly account for the pre-primary school children's cognitive and social skills. This further confirmed that the treatment was very effective in improving the cognitive and social skills of the pre-primary school children.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter provides the summaries of the study. The chapter similarly presents the conclusion of the study based on the findings that were generated from the hypotheses that were formulated. In addition, the chapter contains the recommendations, limitations to the study, suggestions for further studies as well as contribution of the study to knowledge.

5.1 Summary

This study determined the impact of school-based outdoor education activities on pre-primary school children's cognitive and social skills. The moderating effects of parental involvement and gender were examined on the pre-primary school children. The study was hinged on the Cognitive theory of Piaget and the Social Constructivist theory propounded by Vygotsky. Pretest-posttest control group quasi-experimental design was adopted in the study.

Forty-nine pre-primary school children in intact classes from three purposively selected pre-primary schools in Ibadan metropolis participated in the study. Two-response instruments were used to collect data. Percentage, mean, standard deviation and Analysis of covariance were used to analyse the data collected.

The following are the summary of findings from the study:

- There is a significant main effect of treatments on pre-primary school children's cognitive and social skills.
- There is no significant main effect of parents' level of involvement and gender on pre-primary school children's cognitive and social skills.
- There is no significant main effect of gender on pre-primary school children's cognitive and social skills.
- There is no significant two-way interaction effect of treatment and parents' level of involvement on pre-primary school children's cognitive and social skills.
- There is no significant two-way interaction effect of treatment and gender on pre-primary school children's cognitive and social skills.

- There is no significant two-way interaction effect of parents' level of involvement and gender on pre-primary school children's cognitive and social skills.
- There is no significant three-way interaction effect of treatment, parents' level of involvement and gender on pre-primary school children's social skills.

5.2 Conclusion

Structured outdoor education activities strategy was most effective at improving cognitive and social skills in pre-primary school children. It enabled children to be active, creative and learn with fun. It can be concluded from the study that pre-primary school children that were exposed to structured outdoor education activities where learning experiences were activity oriented, interactive and fun filled, using natural materials in the environment as the major learning resources which was well facilitated by the teacher, improved significantly better on cognitive and social skills compared with pre-primary children exposed to unstructured outdoor activities that were slightly guided by the teacher. Likewise, the pre-primary children exposed to unstructured outdoor education activities improved on their cognitive and social skills better than those taught in the conventional way. It can be concluded therefore that adoption of outdoor based education activities could be helpful in reducing the poor status of cognitive and social skills of our school age children. It has also been established that parental involvement and gender are not strong factors that can hinder their acquisition of cognitive and social skills when outdoor based education activities are adopted.

5.3 Recommendations:

Based on findings, the following recommendations were made:

1. Pre-primary school teachers should adopt school-based outdoor education activities to enhance the development of cognitive and social skills of pre-primary school children. Outdoor teaching should be well supported and facilitated by the teachers.
2. All pre-service Early Childhood Education teachers at the Colleges of Education as well as the University should be exposed to outdoor education, so as to understand how to plan, execute and manage children in the outdoor

environment. This can be done by incorporating outdoor based teaching to methodology courses taught in the Colleges of Education and Universities.

3. The outdoor environment of the pre-primary school children should be equipped with natural elements in the immediate environment of the children to ensure children needs and interests are met.
4. Government should provide regulations that will make it compulsory for all pre-primary schools in Nigeria to have spacious outdoor environment that is fenced, equipped and planned in order to meet children's needs.
5. Teachers should make available to children materials in the immediate environment for outdoor activities to be carried out effectively in pre-primary schools.
6. Social aspects of learning should be recognized and maximized during learning activities.
7. Outdoor education activity based teachers' guides should be written, produced and made available to teachers in pre-primary schools in Nigeria.
8. Workshops and seminars should be organised to train teachers on how to engage children in outdoor education activities.
9. Parent training interventions should be organised to assist parents on how they can engage their children in stimulating activities that could enhance cognitive and social skills development in children and to stimulate parents to model social skills to their children.

5.4 Contribution to Knowledge:

School-based outdoor education activities were effective in promoting the development of cognitive and social skills in pre-primary school children. This study has also shown that structured outdoor education activities were more potent for the development of cognitive and social skills of pre-primary children. The study has shown that outdoor environment was a good context for teaching and learning in pre-primary schools. The study has also established that quality early childhood education was capable of ameliorating the effect of poor parental involvement. The study also established that both male and female children can improve on their cognitive and social skills using school-based outdoor education activities.

This study has also provided ideas on how natural materials in the immediate environment can be utilised to provide stimulating and fun-filled learning experiences for pre-primary school children. A lesson guide for teachers to implement outdoor based education activities was also developed in the study.

5.5 Limitations to the Study:

The study was limited to pre-primary school children in Ibadan, Oyo State, Nigeria. Apart from this, the following factors also constituted constraints to the study:

- i. Some of the materials used during the experiment were damaged by unknown people after closing time in the schools.
- ii. Older children from other classes often loved to come around during activities and this caused distraction for the children used in the study.
- iii. Some of the teachers complained that the outdoor teaching was tasking and highly demanding in terms of time and resources.
- iv. Some of the teachers also complained that during the course of the study, they had serious challenges in keeping the children within the classroom as most of the children always wanted to stay outside for the rest of the day.
- v. Weather condition sometimes also disturbed the timing of the activities.

5.6 Suggestions for Further Studies:

Based on the findings of this study, the following suggestions were made for further studies:

- i. This study was conducted using only public pre-primary schools. Further studies may be extended to private –primary schools.
- ii. The study should be duplicated in other Local Government Areas of Oyo State and other States in Nigeria.
- iii. The study may be extended to children at primary and secondary levels.
- iv. Other dimensions of child development apart from the ones examined in this study such as physical development, literacy, emotional, may as well be looked into.

- v. Longitudinal study using the same strategy may be used to examine whether the improvement would last for a longer time.
- vi. Other moderator variables such as school type, school location and home language that were not used in this study which could also influence pre-primary children cognitive and social skills may be examined.

REFERENCES

- Abubakar, R. B. and Ogugua, D. 2011. Age, and gender as predictors of academic achievement of College mathematics and science studies. *Proceedings of the 2011 International Conference on Teaching, Learning and Change*. International Association for Teaching and Learning.
- Adeleke, M. A. 2007. Strategic improvement of mathematical problem-solving performance of Secondary school students using procedural and conceptual learning strategies. *Educational Research and Review*, 2 (9): 259-263.
- Adelodun, G. A. 2013. Parental involvement as a determinant of academic Performance of gifted underachieving students in Akinyele Local Government Area of Oyo State. *Journal of Education and Practice*, 4 (17): 144-148.
- Adeyuya, A. O. and Famuyiwa, O. 2007. Attention deficit hyperactivity disorder among Nigerian Primary school children: prevalence and comorbid conditions. *European Child Adolescent Psychiatry*, 16 (1): 10-15.
- Adeyemo S. A. 2010. Students' ability level and their competence in problem-solving task in Physics. *International Journal of Educational Research and Technology*, 1 (1): 35-47.
- Akinbote, R. O. 2006. Childhood education in traditional African societies. ECE 103. National Open University, Lagos, Nigeria.
- Akinsola, M. K. and Awofala, A. O. A. 2008. Effects of problem context and Reasoning complexity on Mathematics problem solving achievement and transfer of Secondary School students. *European Journal of Scientific Research*, 20 (3): 641-651.
- Akpan, M. U., Ojinnaka, N. C. and Ekanem, E. 2010. Behavioural problems among school children in Nigeria. *South African Journal of Psychiatry*, 16 (2): 1-12
- Aksoy, P. and Baran, G. 2010. Review of studies aimed at bringing social skills for children in preschool period. *Procedia- Social and Behavioural Sciences*, 9: 663-669.
- Alexander, J., North, M. W. and Hendren, D. 1995. Master gardening classroom garden project: An evaluation of the benefits to children. *Children Environment*, 12 (2): 256-263.
- Ali, A. A., Dada, I. T., Isiaka, G. A. and Salmon, S. A. 2014. Types, causes and management of indiscipline acts among Secondary School students in Shomolu Local Government Area of Lagos State. *Journal of Studies in Social Sciences*, 8 (2): 254-287.

- Alisinanoglu, F., Ozbey, S. and Kecisioglu, O. S. 2012. Impact of social skills and problem solving behaviour training programme on children attending preschool. *Academic Research International*, 2 (2): 321-330.
- Almlund, M., Duckworth, A., Heckman, J. J. and Kautz, T. 2011. Personality psychology and economics. In Hanushek, E. A., Machin, S. and Woßmann, L. (Eds.), *Handbook of the Economics of Education*, Amsterdam: Elsevier. 4: 1-181.
- Amali, I. O. O., Bello, M. and Okafor, I. P. 2012. An assessment of pre-primary school programme activities in Kwara State, Nigeria. *European Scientific Journal*, 8 (8): 18-25.
- Anderson, P. and Reidy, N. 2012. Assessing executive function in preschoolers. *Neuropsychology Review*, 22 (4): 345-360.
- Annerstedt, M. and Währborg, P. 2011. Nature-assisted therapy: Systematic review of controlled and observational studies. *Scandinavian Journal of Public Health*, 39: 371-388.
- Aremu, A. S. 1998. Effects of card and geoboard game-based instructional strategies on primary school pupils' achievement in practical geometry. Unpublished PhD Thesis. Dept. of Teacher Education. University of Ibadan.
- Aubrey, C. and Ward, K. 2013. Early years practitioners views on early personal, social and emotional development. *Emotional and Behavioural Difficulties*, 18 (4): 435-447.
- Aunola, K., Leskinen, E., Lerkkanen, M. and Nurmi, J. 2004. Developmental dynamics of math performance from preschool to grade 2. *Journal of Educational Psychology*, 96: 699-713.
- Ballantyne, R., Anderson, D. and Packer, J. 2010. Exploring the impact of integrated field work reflective and meta-cognitive experiences on student environmental learning outcomes. *Australian Journal of Environmental Education*, 26:47-64.
- Barlow, G. 2015. The essential benefits of outdoor education. *International School*, 17 (3): 53-55.
- Bassey, S. W., Joshua, M. T. and Asim, A. E. 2010. Gender differences and mathematical achievement of rural senior secondary school students in cross river state of Nigeria. *Proceedings of Epis TEME 3*. Retrieved September 16, 2013, from <http://cvs.knowledge.org>
- Beames, S. and Ross, H. 2010. Journeys outside the classroom. *Journal of Adventure Education and Outdoor Learning*, 10 (2):95-109.
- Bentsen, P., SØdergaard, J. F., Mygind, E. and Barfoed, R. T. 2010. The extent and dissemination of udeskole in Danish schools. *Urban Forestry and Urban Greening*, 9 (3):235-243.

- Berk, L. E. 2008. Child development. Eighth edition. Pearson Education Inc. USA.
- Bernier, A., Carlson, S. M, and Whipple, N. 2010. From external regulation to self-regulation: Early parenting precursors of young children functioning. *Child Development, 81 (1): 326-339.*
- Bierman, K. L., Nix, R. L., Greenberg, M. T., Blair, C. and Domitrovich, C. E. 2008. Executive functions and school readiness intervention: Impact, moderation, and mediation in the Head Start REDI program. *Development and Psychopathology, 20 (3): 821-843.*
- Bilton, H. 2010. Outdoor learning in the early years: Management and innovation, 3rd edition. Abingdon, UK, Routledge.
- Blair, C. and Diamond, A. 2008. Biological processes in prevention and intervention: the promotion of self –regulation as a means of preventing school failure. *Development and Psychopathology, 20: 899-911.*
- Bodovski, K. and Farkas, G. 2007. Mathematics growth in early elementary school: The roles of beginning knowledge, student engagement, and instruction. *Elementary School Journal, 108: 115-130.*
- Bowman, B. T. 2001. Eager to learn. Educating our pre-schoolers. National Research Council. National Academy Press, Washington, DC, USA.
- Bredenkamp, S. 2011. Effective practices in early childhood education: building a foundation. USA. Pearson Education Inc.
- Bronfenbrenner, U. and Ceci, S. J. 1994. Nature-nurture re-conceptualized in developmental perspective: a Bio-ecological Model. *Psychological Review, 101 (4): 568–586.*
- Burdette, H., Whitaker, R. and Daniels, R. 2004. Parental report of outdoor playtime as a measure of physical activity in preschool-aged children. *Archives of Pediatric and Adolescent Medicine, 158: 353-357.*
- Burger, K. 2013. Early childhood care education and equality of opportunity: theoretical and empirical perspectives and challenges. Springer Science and Media.
- Cachelin, A., Paisly, K. and Blanchard, A. 2007. Using the significant life experience framework to inform program evaluation: the nature conservancy’s wings and water wetlands education program. *The Journal of Environmental Education, 40 (2): 2-14.*
- Christoph, B., Gabriele, L., Sarah, S., Ulrich, D. and Filip, M. 2017. Effects of Regular Classes in Outdoor Education Settings: A Systematic Review on Students’ Learning, Social and Health Dimensions. *International Journal of Environmental Research and Public Health, 14 (5): 485.*

- Civelek, P. 2016. *Açık alan etkinlikleriyle desteklenmiş okul öncesi eğitimin öğrencilerin bilimsel süreç becerilerine etkisi* [The effects of early childhood education supported by outdoor activities on students' scientific process skills]. M.Ed Dissertation. İzmir, Turkey: Dokuz Eylül Üniversitesi, Eğitim Bilimleri Enstitüsü.
- Clements, D. H. and Sarama, J. 2011. Early childhood mathematics intervention. *Science*, 333: 968-970.
- Clements, R. 2004. An investigation of the status of out-door play. *Conte Childhood*, 5 (1): 68-80.
- Cooper, A. 2015. Nature and the outdoor learning environment: The forgotten resource in early childhood education. *International Journal of Early Childhood Environmental Education*, 3 (1): 85–97. Retrieved May 10th 2016 from <http://files.eric.ed.gov/fulltext/EJ1108430.pdf>.
- Cowan, N., Elliott, E. M., Sauls, S. J., Morey, C. C., Mattox, S. and Hismjatullina, A. 2005. On the capacity of attention: Its estimation and its role in working memory and cognitive aptitudes. *Cognitive Psychology*.51 (1): 42–100.
- Cunha, F. and Heckman, J. J. 2008. Formulating, identifying and estimating the technology of cognitive and non-cognitive skill formation. *Journal of Human Resources*, 43 (4): 738-782.
- Cunha, F., Heckman, J. J., Lochner, L. J. and Masterov, D. V. 2006. 'Interpreting the evidence on Life Cycle Skill Formation.' In: Handbook of the Economics of Education. Hanushek, E. A. and Welch, F. (eds.) Amsterdam: North-Holland. Pp: 697-812.
- Cutter-Mackenzie, A. and Edwards, S. 2013. Toward a model of early childhood environmental education: Foregrounding, developing and connecting knowledge through play-based learning. *The Journal of Environmental Education*, 44 (3): 195-213.
- Daraee, M., Salehi, K. and Fakhr, M. 2016. Comparison of social skills between students in ordinary and talented schools. Proceedings of 7th International Conference on Education and Educational Psychology, <http://dx.doi.org/10.15405/epsbs.2016.11.52>
- Deming, D. J. 2017. The growing importance of social skills in labour market. *The Quarterly Journal of Economics*, 132 (4): 1593-1640.
- Diamond, A., Barnett, W. S., Thomas, J. and Munro, S. 2007. Preschool program improves cognitive control. *Science*, 318 (5855):1387–1388.
- Dismore, H. and Baily, R. 2005. If only: outdoor and adventurous activities and generalised academic development. *Journal of Adventure Education and Outdoor Learning*, 5(1): 9-29.

- Dyment, J. 2005. Green school grounds as sites for outdoor learning: barriers and opportunities. *International Research in Geographical and Environmental Education*, 14(1): 28-45.
- Eaton, D. 1998. Cognitive and affective learning in outdoor education. Doctoral dissertation. Department of Curriculum, Teaching and Learning. University of Toronto.
- Egbochukwu, E. O. and Abikwi, M. I. 2007. Prevalence of attention deficit/hyperactive disorder (ADHD) among primary school pupils of Benin metropolis, Nigeria. *Journal of Human Ecology*, 22 (4): 317-322.
- Ekine, A. O. 2010. Impact of video tape instructional strategy on pupils' interest and achievement in primary science in selected private schools in Ibadan. Unpublished Ph.D Thesis, Department of Teacher Education, University of Ibadan. i + 186pp.
- El Nokali, N. E., Bachman, H. J. and Votruba-Drzal, E. 2010. Parent Involvement and Children's Academic and Social Development in Elementary School. *Child Development*, 81 (3): 988–1005.
- Entwisle, D. R., Alexander, K. L. and Olson, L. S. 2005. "First Grade and Educational Attainment by Age 22: A New Story." *American Journal of Sociology*, 110: 1458–1502.
- Eraikhuemem, L. 2009. The influence of gender and school location on students' academic achievement in senior secondary school mathematics. *Ife Journal of Theory and Research in Education*, 7 (2): 99-112.
- Ertaş, H., Şen, A. İ. and Parmasızoğlu, A. 2011. *Okul dışı bilimsel etkinliklerin 9. sınıf öğrencilerinin enerji konusunu günlük hayatla ilişkilendirme düzeyine etkisi* [The effects of out-of school scientific activities on 9th grade students' relating the unit of energy to daily life]. *Necatibey Eğitim Fakültesi Elektronik Fen ve Matematik Eğitimi Dergisi*. *Faculty of Education Electronic Journal of Science and Mathematics Education*, 5 (2): 178–198.
- Essa, E. L. 2011. Introduction to Early Childhood Education. 4th edition. Chifton Park. N.Y: Delmar Learning.
- Estes, L. S. 2004. Essentials of Child Care and Early Education. New York. Pearson.
- Evans, G. W., Wells, N. M., Chan, H. Y. E. and Saltzman, H. 2000. Housing quality and mental health. *Journal of Consulting and Clinical Psychology*, 68: 526-530.
- Faber T. A., and Kuo, F. 2009. Children with attention disorder deficits concentrate better after a walk in the park. *Journal of Attention Disorder*, 12 (5): 402-409.
- Fägerstam, E. 2012. Space and place: Perspectives of outdoor teaching and learning. PhD Thesis. Linköping, Sweden: Linköping University. Retrieved 15th April,

2014.from <http://liu.divaportal.org/smash/get/diva2:551531/FULLTEXT01.pdf>.

- Fägerstam, E 2014. High school teachers' experience of the educational potential of outdoor teaching and learning. *Journal of Adventure Education and Outdoor Learning*, 14 (1): 56–81.
- Fan, X. and Chen, M. 2001. "Parental Involvement and Students' Academic Achievement: A Meta-Analysis." *Educational Psychology Review*, 13: 1–22.
- Fantuzzo, J., McWayne, C. and Perry, M. A.2004. Multiple dimensions of family involvement and their relations to behavioural and learning competencies for urban, low-income children. *School Psychology Review*, 33: 467–480.
- Farkas, G. 2003. "Cognitive Skills and Noncognitive Traits and Behaviors in Stratification Processes." *Annual Review of Sociology*, 29: 541–562.
- Farmer, J., Knapp, D. and Benton, G. M. 2007. An elementary school environmental education field trip: Long term effects on ecological and environmental knowledge and attitude development. *The Journal of Environmental Education*, 38 (3): 33-42.
- Geng, S., Law, K. M. Y. and Niu, B. 2019. Investigating self-directed learning and technology readiness in blending learning environment. *International Journal of Education Technology in Higher Education*, 16: 17.
- Garcia-Retamero, R. and Galesic, M. 2009. Communicating treatment risk reduction to people with low numeracy skills: a cross-cultural comparison. *American Journal of Public Health*, 99(12): 2196-2202.
- Ginsburg, H. P. Lee, J. S. and Boyd, J. S. 2008. Mathematics Education for Young Children: What It Is and How to Promote It. Social Policy Report: *Giving Child and Youth Development Knowledge Away*, 22: 1-23.
- Goswami, U. 2015. Children's Cognitive Development and Learning. York: Cambridge. Primary Review Trust.
- Gülay, H, and Akman, B. 2009. Social skills in preschool period; PEGEM-A Publishing: Ankara, Turkey.
- Gurbuz, E. and Kiran-Esen, B. 2018. Research of social skills of children who attend to kindergarten according to the attitudes of their mothers. *Journal of Education and Training Studies*, 6 (3): 95.
- Halpern, D. F. 2000. Sex Differences in Cognitive Abilities. Mahwah, NJ: Lawrence Erlbaum Associates.
- Halpern, D., Wai, J. and Saw, A. 2005. A psychobiosocial model: why females are sometimes greater than and sometimes less than males in math achievement.

- In: Gallagher, A. and Kaufman, J. (Eds.). *Gender Difference in Mathematic*, pp: 48–72. New York: Cambridge University Press.
- Hamilton-Ekeke, J. T. 2007. Relative effectiveness of expository and field trip methods of teaching on pupil achievement in ecology. *International Journal of Science Education*, 29 (15): 1869-1889.
- Hanushek, E. A. and Woessmann, L. 2008. The role of cognitive skills in economic development. *Journal of Economic Literature*, 46 (3):607-668.
- Heckman, J. J. and Rubenstein. Y. 2001. “The Importance of Noncognitive Skills: Lessons from the GED Testing Program.” *American Economic Review*, 91: 145–149.
- Heckman, J., Moon, S., Pinto, R., Savelyev, P. and Yavitz, A. 2010. The rate of return to the High Scope Perry Preschool Program. *Journal of Public Economics*, 114-128.
- Heckman, J. J. and Mosso, S. 2014. The economics of human development and social mobility. *Annu. Rev. Econ* 6 (1): 689-733.
- Hesse, F., Care, E., Buder, J., Sassenberg, K. and Griffin, P. 2015. A framework for teachable collaborative problem solving skills. In: *Assessment and teaching of 21st century skills* pp. 37-56. Springer. Netherlands.
- Holmes, R. 2007. *Reconnecting children through outdoor education*. Toronto, ON: Council of Outdoor Educators of Ontario.
- Hubball, H. and West, D. 2009. Learning-centered Planning Strategies in Outdoor Education Programs: Enhancing Participation and Self-Directed Learning. *Strategies*, 23 (1): 25-27.
- Hyde, J., Fennema, E. and Lamoh, S. 1990. Gender differences in mathematics performance: a meta-analysis. *Psychological Bulletin*, 107: 139–155.
- Inko-Tariah, D. C. 2014. Assessment of Literacy and Numeracy Levels of Junior School Students in Rivers State of Nigeria. *Journal of Education and Practice*, 5:5-19. Retrieved from on 20th of June 2015 from www.iiste.org
- Jaiswal, S. K. 2017. Role of parental involvement and some strategies that promote parental involvement. *Journal of International Academic Research for Multidisciplinary*, 5 (2): 91-95.
- Jordan, N., Kaplan, D., Locuniak, M. and Ramineni, C. 2007. Predicting first-grade math achievement from developmental number sense trajectories. *Learning Disabilities Research and Practice*, 22: 36-46.
- Jones, S. M. and Bouffard, S. 2012. Social and emotional learning in schools: From programs to strategies. *Social Policy Report. Society for Research in Child Development*, 26: 4-8.

- Jordet, A. 2010. *Klasserommet utenfor. Tilpasset opplæring i et utvidet læringsrom*. [The classroom outdoors. Education in an extended context]. Latvia: Cappelen Damm AS. Jordet, A. (n.d.). *Uteskole - en del av skolens utvidede læringsrom*. [Outdoor school – the extended learning environment]. Retrieved 16 December, 2011 from, URL=<<http://www.udeskole.dk/site/teorilaering/790/>>.
- Juniu, S. 2006. Use of technology for constructivist learning in a performance assessment class. *Measurement in Physical Education and Exercise Science*, 10 (1): 67-79.
- Kaplan, S. 1995. The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology*, 15:169- 182.
- Kellert, S. 2002. Experiencing nature: affective, cognitive, and evaluative development in children In Eds. MIT Press, Cambridge, MA.
- Knudsen, E. I. 2004. Sensitive periods in the development of the brain and behavior. *Journal of Cognitive Neuroscience*, 16: 1412-1425.
- Knudsen, E. I., Heckman, J. J., Cameron, J. L. and Shonkoff, J. P. 2006. Economic, Neurobiological and Behavioural Perspectives on Building America's Future Workforce. National Bureau of Economic Research Working Paper No.12298.
- Kostelnik, M. J., Soderman, A. K. and Whiren, A. P. 2011. Developmentally appropriate curriculum: best practices in early childhood education. 4th ed. New Jersey: Pearson Education Inc.
- Kuo, F. E. and Taylor, A. F. 2004. A potential natural treatment for ADHD: Evidence from a national study. *American Journal of Public Health*, 94 (9): 1580-1586.
- Kurumeh, M. S. and Imoko, B. I. 2008. Universal basic education: a way forward for the development primary school pupils in mathematics education. ABACUS. *Journal of the Mathematics Association of Nigeria*, 33 (1): 49-56.
- Lachance, J. A. and Mazzocco, M. M. M. 2006. A longitudinal analysis of sex differences in math and spatial skills in primary school age children. *Learning and Individual Differences*, 16 (3): 195-216.
- Lavy, V. and Schlosser, A. 2011. Mechanisms and impacts of gender peer effects at school. *American Economic Journal: Applied Economics*, 3 (2): 1-33.
- Lawani, I. A. 2012. Playground equipment in Nigeria preschools: issues challenges and prospects. *Journal of Early of Childhood Education of Nigeria*, 2: 84-93.
- Leahey, E. and Guo, G. 2001. Gender differences in mathematical trajectories. *Social Forces*, 80: 713–732.

- Levy, F. and Murnane, R. J. 2004. The new division of labour: How computers are changing the next job market. Princeton University Press. Retrieved 30 June, 2017 from <https://press.princeton.edu>.
- Lovell, R. 2009. An evaluation of physical activity at forest school. PhD Thesis. The University of Edinburgh. i + 398pp.
- Mabie, R. and Baker, M. 1996. A comparison of experiential instructional strategies upon the science process skills of urban elementary students. *Journal of Agricultural Education*, 37: 1-7.
- Mackenzie, A. A. and White, R. T. 1982. Fieldwork in geography and long-term memory structures. *American Educational Research Journal*, 19 (4): 623-632.
- Mcwayne, C. M. and Cheung, K. 2009. A picture of strength: Preschool competencies mediate the effects of early behaviour problems on later academic and social adjustment for Head Start children. *Journal of Applied Developmental Psychology*, 30 (3): 273-285.
- Majebi, O. I. 2017. Impact of culturally-based instructional strategy on pre-primary school children's social and cognitive competences in Oyo State, Nigeria. Ph.D Thesis. Department of Teacher Education, University of Ibadan. i + 286pp.
- Makiki, A. E., Ngban, A. and Ibu, J. E. 2009. Analysis of student's performance in Junior Secondary School Mathematics examination in Bayelsa state.
- Malone, K. 2008. The bubble-wrap generation: children growing up in walled gardens. *Environmental Education Research*, 13 (4):513-527.
- Maxwell, L. E., Mitchell, M. R. and Evans, G. W. 2008. Effects of play equipment and loose parts on preschool children's outdoor play behaviour: An observational study and design intervention. *Children, Youth and Environments*, 18 (2): 36-63.
- Mayer, R. and Wittrock, M. 2009. Problem solving. The Gale Groups Retrieved on 30th June, 2017 from www.education.com/reference/article/problem-solving.
- McClelland, M. M., Acock, A. C., Piccinin, A., Rhea, S. A. and Stallings, M. C. 2013. Relations between Preschool Attention Span-Persistence and Age 25 Educational Outcomes. *Early Childhood Research Q*, 28 (2): 314-324.
- Moffet, P. 2011. Outdoor mathematics trails: an evaluation of one training partnership. *Education 3-13: International Journal of Primary, Elementary and Early Year Education*, 39 (3):277-287.
- Mustard, J. F. 2007. Experienced-based brain development: Scientific underpinnings of the importance of early child development in a global world. In: (Young, M. E.) *Early Child Development: From Measurement to Action*. Washington, DC, The World Bank, 35-64.

- Mygind, E. 2005. *Udeundervisning i folkeskolen*. [Outdoor teaching in compulsory school]. Copenhagen: Museum Tusulanums Forlag.
- Nakagawa, Y. and Payne, P. 2011. Experiencing beach in Australia: Study abroad student's perspective. *Australian Journal of Environmental Education*, 27 (1): 94-108.
- National Research Council, 2009. Mathematics learning in early childhood: Paths toward excellence and equity. Washington, DC: The National Academies Press. Retrieved on 30th June, 2017 from <https://doi.org/10.17226/12519>
- Ndukuba, A. C., Odinka, P. C., Muomah, J. T., Obindo, O. O. and Omigbodun, A.O. 2007. ADHD among rural South Eastern Nigeria primary school children: prevalence and psychosocial factors. *Journal of Attention Disorders*, 21 (10): 865-871.
- Nigeria Education Data Survey (NEDS), 2015. National Reports: National Population Commission Abuja, Nigeria.
- Neiderle, M. and Vesterlund, V. 2010. Explaining the gender gap in mathematics test scores: The role of competition. *Journal of Economic Perspectives*, 24 (2): 129-144.
- Nigerian Educational Research and Development Council (NERDC), 2013. One year pre-primary school education curriculum.
- Nicol, R. 2002a. Outdoor education: research topic or universal value? Part one. *Journal of Adventure Education and Outdoor Learning*, 2 (1): 29-41.
- Nicol, R. 2002b. Outdoor education: research topic or universal value? Part two. *Journal of Adventure Education and Outdoor Learning*, 2 (2): 85-99.
- Noorani, M. S. M., Ismail, E. S., Salleh, A. R., Rampley, A. S., Mamat, N. J. Z., Muda, N. Hashim, I. and Majid, N. 2010. Exposing the fun side on mathematics via mathematics camp. *Procedia Social and Behavioral Sciences*, 8: 338-343.
- Nundy, S. 1999. The fieldwork effect: the role and impact of fieldwork in the upper primary school. *International Research in Geographical and Environmental Research*, 8 (2):190-198.
- O'Brien, L. and Murray, R. 2007. Forest school and its impacts on young children: Case studies in Britain. *Urban Forestry and Urban Greening*, 6: 249-265.
- Odinko M. N. 2016. Meeting the needs of the whole child through effective early childhood education and evaluation. *Journal of Early Childhood Association of Nigeria*, 5 (1&2): 19-40.

- Oduolowu, E. A. 1998. The relative effectiveness of open classroom and conventional strategies on pupils' acquisition of the basic literacy and numeracy skills. Unpublished Ph.D. Thesis. Department of Teacher Education, University of Ibadan. i + 140pp.
- Oduolowu, E. and Leigh, R. F. (2013). Parenting practices as predictors of bullying behaviour among pupils in selected Primary schools in Ibadan, Nigeria. *African Journal of Educational Research*, 17: 1-8.
- Oduolowu, E. A. and Leigh, R. F. 2015. Availability and Utilization of Outdoor Learning Facilities in Nursery Schools in Ibadan North Local Government Area of Oyo State. *Journal of Early Childhood and Primary Education*, 4: 29-35.
- Öhman, J. 2011. *Den nyttiga utevistelsen? Forskningsperspektiv på naturkontaktens betydelse för barns hälsa och miljöengagemang*. [Outdoor activities. Research-based perspectives on children's health and environmental concern] Bromma: Swedish Environmental Protection Agency.
- Olatundun, S. A. 2008. Impact of Outdoor Educational activities on pupils' environmental knowledge and attitude in selected primary schools in Ibadan, Nigeria. PhD Thesis. Department of Teacher Education, University of Ibadan.
- Olowe, P. K., Kutelu, B. O. and Majebi, O. I. 2014. Teaching social ethics in early childhood classrooms: a panacea for promoting peaceful Nigerian society. *International Journal of Humanities and Social Science*, 4. (6).263-268.
- Openshaw, P. and Whittle, P. 1993. Ecological field teaching: how can it be made more effective? *Journal of Biological Education*, 27 (1): 58-67.
- Ouvry, M. 2003. Exercising muscles and minds: outdoor play and the early year's curriculum (London, National Early Years Network).
- Oyinloye, G. O. and Popoola, A. A. 2013. Activating Junior Secondary School Students Prior Knowledge for the Development of Vocabulary. Concepts and Mathematics through Instructional Strategies. *International Journal of Education and Literacy Studies*, 1 (2): 1-7.
- Öztürk, Ş. 2009. *Okulda eğitimle bütünleştirilmiş mekan dışı eğitim* [Outdoor education integrated with the education at school]. *Milli Eğitim Dergisi. The Journal of National Education*, 181: 131-144.
- Plante, I., O'keele, P. A., Aronson, J., Frechette-Simard, C. and Goulet, M. 2019. The interest gap: How gender stereotype endorsement about abilities predicts academic interests. *Social Psychology of Education*, 22 (1): 227-245.
- Pinchover, S. 2017. The relation between teachers and children playfulness: A pilot study. *Frontiers of Psychology*, 8:2214.
- Popoola, A. A. 2008. Sustaining children's interest in mathematics via interactive activities. *The Social Sciences*, 3 (2): 66-72.

- Quigley, C., Pongsanon, K. and Akerson, V. L. 2011. If we teach them, they can learn: Young students views of nature of science during an informal Science education program. *Journal of Science Teacher Education*, 22 (2): 129–149.
- Raffaelli, M., Crockett, L. J. and Shen, Y. L. 2005. “Developmental Stability and Change in Self-Regulation from Childhood to Adolescence.” *The Journal of Genetic Psychology*, 166: 54–76.
- Randler, C., Ilg, A. and Kern, J. 2005. Cognitive and Emotional Evaluation of an Amphibian Conservation Program for Elementary School Students. *The Journal of Environmental Education*, 37 (1): 43-52.
- Reynolds, A. J. 1992. Comparing measures of parental involvement and their effects on academic achievements. *Early Childhood Research Quarterly*, 7: 441–462.
- Rickinson, M. and Sanders, D. 2005. Secondary school student’s participation in school grounds improvement: emerging findings from a study in England. *Canadian Journal of Environmental Education*, 10: 256-272.
- Rickinson, M. and Dillon, J., Teamy, K., Morris, M., Choi, M-Y., Sanders, D., and Benefield, P. 2004. *A review of research on outdoor learning*. Shrewsbury, UK: Field Studies Council/National Foundation for Educational Research
- Rimm-Kaufman, S. E., Pianta, R. C., Cox, M. J. and Bradley, R. H. 2003. Teacher-rated family involvement and children's social and academic outcomes in kindergarten. *Early Education and Development*, 14: 179–198.
- Rivkin, M. 2000. Outdoor experiences for young children. Educational Resources Information Center. (ERIC digest ED448013 2000-12-00). Retrieved on 9 July, 2018 from <http://www.eric.ed.gov>
- Robinson, N., Abbott, R., Berninger, V. and Busse, J. 1996. The structure of abilities in math-precocious young children. *Journal of Educational Psychology*, 88: 341–352.
- Robles, M. M. 2012. Executive perceptions of the top 10 soft skills needed in today’s workplace. *Business Communication Quarterly*, 75 (4): 453-465.
- Rogoff, B. 2003. *The cultural nature of human development*. Oxford University Press, New York, USA.
- Salami, I. A. 2014. Effects of activity-based strategies on primary school mathematics lesson plan and delivery skills among pre-service teachers in South-Western Nigeria. Unpublished Ph.D Thesis. Department of Teacher Education, University of Ibadan.
- Salami, I. A. 2015. University to community pilot preschool programme: The effect on learning environment, teachers’ attitude and children's holistic development. *African Educational Research Journal*, 3 (1): 55-62.

- Salami, I. A., Olaniyan, A. O., Bankole, O. T. and Falola, O. I. 2016. Preschool Education Practices in Nigeria: what obtains in public and private schools in Ibadan metropolis. In: Akinsola, M. K., Moronkola, O. M., Ademokoya, J. A. and Salami, I. A, (Eds). Revitalization of Nigeria Educational System for Relevance and Development. Faculty of education, University of Ibadan: 431-445.
- Schoenfeld, A. H. and Stipek, D. 2011. Math matters: children's mathematical journeys start early. Report of the Pathways for Supporting Early Mathematics Learning Conference. Berkeley, CA
- Schoon, I. 2009. Measuring social competence. Working paper series of the Council for Social and Economic Data (RatSWD) No. 58. Retrieved on 20th May, 2018 from www.ratswd.de/download/RatSWD_WP_2009/RatSWD_WP_58.pdf
- Schweinhart, L. J., Montie, J., Xiang, Z., Barnett, W. S., Belfield, C. R. and Nores, M. 2005. Lifetime effects: The High Scope Perry Preschool study through age 40. Monographs of the High Scope Educational Research Foundation, 14. Ypsilanti, MI: High Scope Press.
- Scott, G., Boyd, M. and Colquhoun, D. 2013. Changing spaces, changing relationships: The positive impact of learning out of doors. *Australian Journal of Outdoor Education*, 17: 47-53.
- Shonkoff, J. P. and Phillips, D. A. 2000. From Neurons to Neighbourhoods: The science of early child development, National Academy Press, Washington, DC.
- Söderström, M. 2011. *Medicinska perspektiv på barns naturkontakt*. [Medical perspectives on children's contact with nature]. In: Eds.
- Science Teacher Association of Nigeria- STAN, 2000. Communique issues at the end of the 12th session of the mathematics panel work shop; Issues on Mathematics Education: 110-11
- Stankov, L. and Lee, J. 2014. Quest for the best non -cognitive predictor of academic achievement. *Educational Psychology: International Journal of Experimental Educational Psychology*, 34 (1): 1-8.
- Steed, E. A. and Shapland, D. 2020. Adapting social emotional multi-tiered systems of supports for kindergarten classrooms. *Early Childhood Education Journal*, 48 (2): 135-146.
- Stirling, P. E. 2011. An investigation of unstructured play in nature and its effect on children self-efficacy. Ph.D Thesis. Department of Social Work. University of Pennsylvania. i + 105 pp.
- Stump K.N., Ratliff, J.M., Wu, Y.P., and Hawley P.H. 2009. Theories of social competence from the Top-Down to the Bottom-Up: A case for considering

foundational human needs. Chapter 2, Social Behavior and Skills in Children. Matson, J. L. (ed.) Springer Science Business Media. Retrieved from www.springer.com/cda/content/...downloadaddocument/9781441902337-c1.pdf?

- Sui-Chu, E. H. and Willms, J. D. 1996. Effects of parental involvement on eighth-grade achievement. *Sociology of Education*, 69: 126–141.
- Szczepanski, A. 2008. *Handlingsburen kunskap. Lärares uppfattningar om landskapet som lärandemiljö*. [Knowledge through action. Teachers' perceptions of the landscape as a learning environment]. Licentiatedissertation. Department of Behavioural Studies and Learning/Department of Culture and Communication. Linköping: Linköping University.
- Talay İ., Aslan, F. and Belkayalı, N. 2010. *Okul öncesi eğitim kurumlarında doğa dostu ve çocuk katılımı temelli dış mekan tasarım yaklaşımları bir proje önerisi* [Nature friendly and child participation based outdoor design approaches in preschool institutions: A project proposal]. *Kastamonu Eğitim Dergisi*. *Kastamonu Education Journal*, 18 (1): 317–322.
- Taylor, C., Power, S. and Rees, G. 2010. Out-of-school learning: the uneven distribution of school provision and local authority support. *British Educational Research Journal*, 36 (6):1017-1036.
- Thomas, G., Potter, T. and Allison, P. 2009. A tale of three journals: A study of papers published in AJOE, JAEOL and JEE between 1998 and 2007. *Australian Journal of Outdoor Education*, 13 (1): 16-29.
- Thompson, J. E. and Thompson, R. A. 2007. Natural connections: Children, nature and social-emotional development. Retrieved on 20th of March, 2018 from [http://www child care exchange.com](http://www.childcareexchange.com).
- Thompson, C. W., Aspinall, P. and Montarzino, A. 2008. “The childhood factor - Adult visits to green places and the significance of childhood experience.” *Environment and behavior*, 40 (1): 111-143.
- Tinajero, A. and Mustard, F. 2011. Cuba and Early Human Development – The Brain and Human Development. Report prepared for the Bernard van Leer Foundation.
- Tramel, A. 2011. The importance of developing listening skills and attention in children. Retrieved on 30th January, 2018 from <http://www.livestrong.com/article/507882>.
- Tremblay, M., Gray, C., Babcock, S., Barnes, J., Bradstreet, C. and Carr, D. 2015. Position Statement on Active Outdoor Play. *International Journal of Environmental Research and Public Health*, 12 (6): 475-505.

- Türkmen, H. 2010. İnfomal (*sınıf-dışı*) fen bilgisi eğitime tarihsel bakış ve eğitimimize entegrasyonu [Historical overview of informal (non-class) science education and integration into our education]. *Çukurova Üniversitesi Eğitim Fakültesi Dergisi. Çukurova University Journal of Faculty of Education*, 39 (3): 46-59.
- UNDP, 2015. “Human Development Index”. Retrieved on 23rd September, 2019 from <http://hdr.undp.org/en/content/human-developmentindex-hdi>
- UNESCO, 2015. Education and skills for inclusive and sustainable development beyond Thematic Think Piece.
- UNICEF, 2010a. The Children Left Behind: A league table of inequality in child well-being in the world’s rich countries, Innocenti Report Card 9. Florence: UNICEF Innocenti Research Centre.
- Vygotsky, L. 1978. Mind in society: The development of higher psychological processes. Cambridge, Mass: Harvard University Press.
- Waite, S. 2011. Teaching and learning outside the classroom: personal values, alternative pedagogies and standards. *Education 3-13:International Journal of Primary, Elementary and Early Years Education*, 39 (1):65-82.
- Weinberger, C. J. 2014. The increasing complementarity between cognitive and social skills. *Review of Economics and Statistics*, 96 (4): 849-867.
- Weinstein, N., Przybylski, A. K. and Ryan, R. M. 2009. Can nature make us more caring? Effects of immersion in nature on intrinsic aspirations and generosity. *Personality and Social Psychology Bulletin*, 35 (10): 1315–1329.
- Welsh, J. A. Nix, R. L., Blair, C., Bierman, K. L. and Nelson, K. E. 2010. The development of cognitive skills and gains in academic school readiness for children from low-income families. *Journal of Educational Psychology*, 102:1. 43.
- Wells, N. and Evans, G. 2003. Nearby nature: A buffer of life stress among rural children. *Environment and Behaviour*, 35 (3):311-330.
- White, R. and Stoecklin, L. 1998. Children’s Outdoor Play and Learning Environments: Returning to nature. *Early Childhood News*, 10 (2): 24-30.
- Wilson, R. A. 2016. Learning is in Bloom: Cultivating Outdoor Exploration. Lewisville, NC: Gryphon House, Inc.
- World Bank, 2008. A Review of the Costs and Financing of Public Education in Nigeria. Report No. 42418-NG.
- World Bank, 2015. Nigeria: Skills for competitiveness and employability Report No. 96420-NG.

- Yayla, C. S. and Ülker, P. 2014. *Okul öncesi dönem çocuklarında çevre eğitimi neden önemlidir?* [Why environmental education is important in preschool children?]. In: Ogelman, H. G. (ed). *Çocuk ve çevre. Küçük çocuklar ve çevre eğitimi el kitabı* [Child and environment. The handbook of young children and environmental education]. Ankara, Turkey.
- Yildirim, G. and Akamica, G. O. 2017. The effect of outdoor learning activities on the development of preschool children. *South African Journal of Education*, 37 (2): 89-95.

APPENDICES

APPENDIX I

**INSTRUCTIONAL GUIDE ON STRUCTURED SCHOOL-BASED OUTDOOR
ACTIVITIES
(IGSSEO).**

**A Stimulus Instructional Guide for Doctoral Research Work in Early Childhood
Education Unit, Department of Teacher Education, Faculty of Education,
University of Ibadan**

**DEVELOPED BY
LEIGH RASIDAT FUNMILOLA**

**UNDER THE SUPERVISION OF
PROFESSOR ESTHER A. ODULOWU
JUNE, 2017**

INTRODUCTION

This guide consists of lesson plans that was used to facilitate the experimental group in this study. The teaching environment will be outdoor environment of the school; natural materials will constitute the major learning resources that will be used. The procedure for teaching and learning in this guide will be activity based so as to ensure that children actively participate in their learning. It is also collaborative and discovery oriented as children will be required to work together in small groups to construct knowledge, sing songs, play games and integrate experiences. The guide consists of 8 weeks of teaching at two times in a week. Teachers and children's activities as well as materials required for the activities are described.

The contents of activities to be carried out in this guide were selected from the One Year Pre-primary School Education Curriculum (NERDC, 2016). This is the curriculum recommended for administration of compulsory one year pre-primary education in Nigeria. The following theme and subtheme were covered in this guide.

Theme

1) Expression and exploration: expression of self through arts and crafts, self-care and hygiene appreciation of the natural environment, relationship with peers, adult, environment

Exploration and discovery: Exploration, experimentation, manipulation and interaction with environment and Engaged in problem solving activities.

2) Mental development: number quantity, numerals and counting

(Counting of objects 1-20 in local language and in English)

Rhythmic counting

Number recognition

Writing of numbers (1-10) in Arabic

Addition of numbers less than 20

Subtraction of numbers less than 20

Classification and ordering of objects: recognition of shapes of objects, colour, numbers

Classification according to shapes sizes, and colours.

Identification and construction of shapes

Identification of solid shapes in the environment

Identification of plane shapes in the environment

Construction of shapes and objects.

Express views on issues around him or her

Express self through creative activities like moulding drawing tracing and so on.

WEEKLY ACTIVITIES

WEEK1

DAY 1

Date: ----- **Period:**-----

Duration: **Class:**

Entry behaviour: Children must have seen living things in their environment before

Topic: Living things in our environment

Learning Environment: Outdoor Learning area

Resources

Living things such as plants, insects, animals, human being in the environment.

Behavioural Objectives: By the end of the lesson, children should be able to:

- Identify some living and things in their environment
- Explore them
- Sort them according to categories
- Count them
- work with others in group activities

Targeted Skills

Counting,

Observing,

Identification

Classifying,

Cooperation

Presentation procedure

Large group Activities

Introduction (10minutes)

Gather the children in a circle and ask them if they are living or non-living thing.

Ask them if animals are living or non-living things or not.

Asks the children to share what they know about living things in their environment

Ask the children to mention some of the things they need to survive. Write "food," "water," "shelter," and "air" on the board place outside. Explain to students that today they will be learning about living things

Then, sing about living things

Small Group activities (30 minutes)

Establish a list of rules to follow while exploring the outdoor environment.

Divide the children in to smaller group to identify living things in their environment while the children are exploring outdoor, the teacher watches and documents how children are interacting with living things in their environment and one another. The children will also describe what they found and count some of the living things they have identified in their environment.

Independent Working Time (15 minutes)

Now, place two tray on the ground label one as living, and the other as non –living. Place various living and non-living objects in baskets, each child will come to the baskets and sort objects in either the living or the non-living category. For example, give students a banana, a truck, and a plant and ask which one is alive. Asks the children to draw an example of living thing on a paper.

Assessment

Children will be assessed on their performance in the sorting activity.

Review and Closing (10 minutes)

Each children will be called at random to name some living thing in their environment

WEEK TWO

DAY 2

Date: ----- **Period:**-----

Duration: ----- **Class:**

Entry behaviour: children have seen plants in their environment before

Topic: Living things in our environment

Sub –topic: Exploring plants

Behavioural Objectives: By the end of this lesson, the children should be able to:

Share their experiences about plants

Mention uses of plants (food, clothing, shelter and aesthetic)

Identify parts of plants

Categorize plants according to colours and shape

Create art work with plants.

Play game with plants leaves

Concept to discuss

- Size
- Number
- Colour
- Texture
- Shape
- What plants need to grow

Target Skills

- Observation
- Problem solving
- Numeracy
- Attention functioning
- Co-operation
- Responsibility

Introduction (10 minutes)

Gather children in a large area and Show a picture of plants that shows different parts including roots, a stem, a flower, and ask the children to identify the name of the object in the picture.

Allow the children to share their experience. Then tell the children that they will be learning about plants. Once children have share their experience points to the roots, stem, flower, and leaves of the plants in the picture.

Small group activities

Divide the children into groups and asks them to walk around and collect different types of plant in the environment once the children returned, asks them to identify some of the plants they have gathered in their environment. Ask prompting question like *what do the roots do? How do the roots help keep a plant alive? What purpose do leaves serve? What does the stem do? What do flowers do?*

- Explain the function of each plant parts to the children one after the other.
- Tell children that **roots** hold the plant into the soil. They take in water and minerals to help the plant stay alive.
- Define the **stem** as the part that carries water from the roots to the other parts of the plant.
- Explain that the **flower** helps the plant reproduce, making seeds that will grow into new plants.
- Tell your class that **leaves** take in the air and light that a plant needs to live.
- Call the attention of the children to the differences that exist among different plants have leaves that are different shapes size and colours.

Remind the children plants need sun, water, soil, and air to live

Independent activity

Asks each child to make a leave print on the card board.

Review and closing

Asks children to identify parts of plants

Mention usefulness of plants.

Bring plant seed from home.

WEEK THREE

Day 1

Topic: exploring plant seeds

Entry behaviour: children are familiar with plant

Behavioural Objectives: By the end of the lesson, the children should be able to:

- Be aware that some plants grow from seeds
- Identify different kinds of seeds
- Categorise plants seeds, follow direction and match seeds according to colour, shapes and sizes
- Be aware that some plants' seed are edible
- Verbally describe the texture of different kinds of plant Seeds.
- Use plant Seeds |to create art works

Preparation

Before the lesson begins, the teacher should

- (1) Get varieties of plants seeds in different containers, the children can also bring seeds from home.
- (2) Set small area where children could explore the plant seed and make art works.

Presentation

Large Group Activities

The teacher welcomed the children and tells them that they will be exploring plants seed. Children will be asked to identify the names and uses of the plant seeds provided on the table Children will share their experiences about plants seed. The teacher will point the attention of the children to the fact that plants seeds can serves as food for animals and human being, also that plants seed vary in size, some are big while some are small.

Small Group Activities

Divide the children in to Small group and ask them to explore different kinds of plant seeds available. Have the Children sort according to colour, size, and shape. The children will count number of seeds in each category.

Assessment

The will be asked to name some of the plants seeds provided.

Children will be observed and graded during sorting of plants seeds according categories

WEEK 3

Day 2

TOPIC: Number Recognition 1-10

Behavioural Objectives: By the end of the lesson children will be able to:

Recognise number ONE –TEN (1-10)

Count objects in their environment

Participate in whole and group activities

Count objects in their environment.

Sing songs about number.

Introduction (10 minutes)

Let children come together in a large circle. Asks them if they know a number.

Call them at random to share the number they know. This is to determine their prior knowledge. Note the numbers that children share and let them

Sing number song in Yoruba

Eni bi eni

Eeji bi eji

Small-Group Activities

The children will go round in small groups to count objects in their school's compound.

Assessment

Raise cards with different number on it and call children at random for children to identify.

Asks children to count out ten objects from a basket full of different objects.

Week 4**Day 1**

Topic: Numbers in our environment

Learning Objectives

By the end of the lesson children will be able to:

- Recognise numbers one to five (1-5)
- Use object to represent figure 1-5
- Interact among themselves.
- Trace figure 1-5 in the sand and their books.
- Have experiences in how numbers are used in their environment, counting, ordering correct orientation of numbers 1-5.

Small group activities

Divide the children into small group and give each group a basket to collect any materials they can find in their environment. Thereafter, the children will count these materials and order them in to groups according number. For example how many leave did you have?

How many sticks have you got?

Independent activities

The teacher will raise a pre- drawn numerals from 1-5 on the card board and call each child to identify the number. Each child should have a piece of pre-drawn numerals on paper and glue. Each child will put the correct amount of items next to each number. Each child should have at least 15.

This how the children's work should look like. Each star represents objects like seeds, leaves, flower, stones, fruits or sticks.

1 *

2 **

3 ***

4 ****

5 *****

Review

Assessment (10 minutes)

Give each child randomly some objects to count as loud as possible.

Review and Closing (10 minutes)

Let the children count off- hand 1 to 10 in each group.

Week four

Day 2

Topic:living things in our environment

Sub- topic: Planting of Seed

Entry Behaviour: the children are familiar with plants seeds.

Learning Environment: Outdoor Learning area

Preparation

Before the lesson commences, the teacher provides sand box (square or rectangular filled with loamy soil) for each child of the children

- Empty bottle container for each of the children to plant
- Provide maize and vegetable seeds for each group and individual.

Behavioural objectives: By the end of the lesson, the children should be able to:

- Discover that seeds of plants grow in the soil
- Plant seeds in the soil

- Take care of the seed planted (watering, weeding)
- Observe and hypothesis on how long it will take for the seeds to terminate into plants
- Observe on a daily basis changes in the plants' growth.

Target Skills

- Observation
- Problem solving
- Numeracy
- Attention functioning
- Co-operation
- Responsibility
- Scientific

Materials: plants seed like maize, beans, melon

Activity Procedure

Introduction: the teacher gathers the children and sing planting song

- The teacher demonstrates how seeds are planted.
- Each child will plant vegetable and maize and take care of it.
- The children will compare the growth of the two plants
- When the plants begin to grow; each day, cut a paper of the Length of the plants over a period of time, compare the length of the strip
- Observe and record the day-by-day growth of two seeds; compare the way they are similar and the way they are different.

WEEK FOUR

DAY 2

Date: ----- **Period:**-----

Duration: ----- **Class:**

Topic : Exploring colours in the Environment

Entry Behaviour: children are familiar with objects in their Environment

Learning Environment: Outdoor Learning area

Materials: Fruits of various colours, plants, flower of various shades of colour, baskets of different colour, Colour chips, cardboard/ construction colouring pen or crayon and plain sheets.

Lesson Objectives: By the end of the lesson, children should be able to:

- Name colours in their environment
- Identify objects in the outdoor with various colour
- Observe that colour has shades
- Sort objects by colour
- Use colour to create art.
- Count objects with different colour
- Interact with others

Targeted Skills: counting, observing, identifying, classifying, cooperation, responsibility and relationship.

Preparation

In advance, the teacher will survey the school premises to know what colours are available and add the missing ones.

Large group activities

- Gather children in a circle and place objects of different colour on the floor and asks children what they can noticed about the objects.
- Points children's attention to the fact that objects can be described with colour. To make children to recognise that many items can have the same colour e.g. red (tomatoes, red clothing, and other materials. Green: plants, vegetables, fruits and so on Yellow: lime, sun, yellow butterfly, yellow corn
- To make children to be aware that a single items may have various colour. For example Trees may have leaves of many colour
- Children sing song about colour of different objects in their environment.

Small group activities

Divide the children into groups to search and gather objects in their school compound with different colour when they returned to large area, pour their objects on the table and sort according to colours and sizes, they should also count and compare number

of items found for each colour. Go round while the children are matching each item with appropriate colour to ensure that the children are matching correctly.

Independent activities.

Each child will be guided to glue objects of different colour to create a colour collage.

Review and closing

The children will be called at random to name colours of items that were collected.

WEEK FIVE

DAY 2

Topic: experimenting with colour

Learning objectives: By the end of the lesson the children should be able to:

Identify primary colour

Be aware that primary colour can be combined to form another colour

Mix colour to produce another colour

Aware that colour come in different shades

Large Group Activities

Make children to know that when two or more colours are combined, the colour changed and a new one is made or the shade of the original will be different. Make children to understand that secondary colours (green, orange, and purple) are made by combining the primary colours (red, yellow, and blue). Sing colour combination colour

When you mix red and yellow you get orange,

When you mix red and blue you get purple,

When you mix yellow and blue get green.

Small group activities

- Divide the children into groups and provide containers and food colouring. Instructs the children to fill about five different containers half way. With the assistance of the teacher the children should add different drops of food colouring in to the different container so that children can see how the colour can be changed from light to dark. The children will also make pattern on cloth.
- Cut out old white cloth in to square or rectangle in form of “scaves”. Let children pull up part of the cloth and tie string around small sections of the scave and then deep into bowls of dye and hung to dry.

Independent activities

- The children will count objects with different colour.
- Sing number and colour song adapted from Adapted from Jean Warren

WEEK SIX

DAY 1

Topic: Exploring things in the environment.

Sub-topic: Exploring sizes of objects

Objectives: by the end of this lesson children should be able to:

- Children should be able to compare items in their environment in terms of their size
- Name objects in the environment that come with different sizes (trees, seeds, buildings, cars). Uses the phrases “larger” than and “smaller” than to describe objects in their environment.
- see that the same item can come in different sizes
- To provide opportunity for thinking and problem solving
- Work together to explore objects of different sizes in their environment.
- Sort objects according to size

Large group activities

- Place same objects of different sizes such as sticks, carton, and fruits before the children in large area and asks them to tell you what they have observed about the objects.

- Asks question like did you notice any difference between the items? Have children see and understand that even though many of them are about the same age, they are still of different sizes (have them respond to the question. “Are you all the same size?” make the children to understand that objects come in different sizes. Some are big or large while some are small. Some are tall while some are short.
- Sing songs on sizes

Small group activities

Divide the children in to smaller groups and asks them to go round their school compound to compare different objects in their environment in terms of their sizes.

Independent work.

Give different objects to each child to sort according to size.

Review and closing.

Call children at random to compare objects in terms of sizes.

WEEK SIX

Day 2

Topic: Exploring things in the environment.

Sub-topic: Exploring sizes of objects

Objectives: by the end of this lesson children should be able to:

- Sorts object according to size
- Count objects with different sizes
- Create art work with objects of different sizes
- Work together with others to explore objects with different sizes in their environment.

Large Group Activities

The children will sing songs on sizes. The teacher explains to the children that they will have more opportunity to explore objects with various sizes.

Small group activities

Art – collages after dividing the children into smaller groups, have them use two or three different items (such as pieces of straws, feathers, leaves, sticks of different sizes) pasting them on the pieces of card board. Children are required to paste the

objects according to size from smallest to biggest. Provide shapes of different of the same colour but different sizes for children to sort according to sizes.

Independent activity

Asks each child to count the number of objects in each of the sizes pasted in the shape collage.

Week Seven

Day 1

Topic: Exploring Shape of Objects in Our Environment

Objectives: by the end of this lesson the children should be able to:

- Recognise that most things around them have shape
- To search for and name shapes of objects in the environment.
- Identify geometric shapes like circle, square, triangle and rectangle.
- To recognise that different objects may have similar shapes

Whole- group activities (10 minutes)

Introduction of the Circle, Square and Triangle shape.

Place objects with different shapes on the table for children to see. Give each child the opportunity to name the shape and tell what else has the same shape. For example “what else has the same shape as this table”. Show familiar objects and pass them round so that each child has one. Then talk about geometric shapes like circle, square, triangle and rectangle.

Group activities (shape walk) (15minutes)

- Place all the children in a small groups, with a teacher leading each group. During a 15 –minute walk around the school compound they will search for shape they have learned about.
- Ask questions such as “what do you see that is the same shape as circle? Can find something that is the same as the square?”
- Children will gather small objects like leaves, rocks, pop-bottles and others.
- .Children will sing shape Songs as they walk round their school compound

Day 2

Topic: Shapes of Objects in our Environment

Lesson objectives: by the end of the lesson the children should be able to:

- Appreciate that different objects may have similar shape
- Classify objects according to shape
- Count objects with different shapes
- Interact with others during activities
- Cooperate with others during activities

WEEK EIGHT

Day 1

Lesson Objectives

- To provide the children with experience of making their own circle, square and triangle shapes.
- To have experience that shapes may have different colours
- To provide opportunity to count objects with various shape.

Large Group Activities

Shape identification: circulate containers of objects to be identified by shape, tell the children to identify the shape of the objects. Place objects of the same shapes in a similar container so that children can feel and see the various shapes.

Small Group activities

After dividing the children into smaller group cut various shapes geometric and objects asks the children to classify or sort the items according to shapes (all the square together, circles together).

Individual activities

Give each child either a square or rectangular paper and challenge the child to fold in to different shape. The children will cut out shapes and paint them with any colour of their choice.

Review and closing

The teacher raise different geometric shapes up and calls children at random to identify the shape

Day 2

Topic: Exploring Geometric Shape

Lesson objectives:

To reinforce children's ability to construct geometric shape

To provide opportunity for children to collaborate with one another in creative activity

Engage in arts and crafts activities.

To provide experiences in tracing shapes with sand

Group activities

Each group will be given a sticks of different sizes to construct geometric shapes and glue it to the card board and paint them with any colour of their choice to make shape album. Each group will also be given a scissors and a piece of construction paper on which circle, square and triangle shapes have been drawn. The children will cut out the shapes, glue it to the card board and paint them with any colour of their choice to make shape album.

Independent activities

Tracing: Each child will be asked to use sticks to draw geometric shapes in the sand as well joining the sticks to form shapes album

Review and closing

The teacher will go round each group and asks children to talk about their shape album

WEEK NINE

DAY1

Exploring Sand

Date: ----- **Period**-----

Duration: ----- **Class:**

Entry behaviour: The children have touched sand before

Topic: Non- living things in our environment

Sub- topic: Exploring Sand

Learning Environment: Outdoor Learning area

Preparation

The teacher will set up sand area where each of the groups can work upon. In the sand area there will be a sand box that will be filled with clean sand and various containers of different sizes and shape. The number of sand tray be provided will depend on the number of groups available. Each group should have their own sand tray and containers to work with.

Below is an example of sand area and some materials to be used in exploring sand

Measuring container

Skills: counting painting, describing, measuring and moulding, cooperation, attention functioning.

Materials

- Sand
- Containers
- Spoons
- Paint and brushes

Behavioural Objectives: By the end of the lesson, the children should be able to:

- verbally describe the texture of sand,
- measure sand from one container to another,
- Use the concept of more, less, bigger, smaller to describe their experiences.

Introduction

Large group activities

- Gather the children in circle. Arouse the children's curiosity about the topic by asking questions such as: Have you touched sand before? Where can we find sand? What can we use sand for? For building purpose.
- Points children's attention to fact that all building around them has a component of sand including their classrooms. Have children tell you more on the uses of soil answer such as some animals live in the soil, plants also grows in the soil are expected from the children.

Small group activities

- Divide the children into smaller groups to explore sand that has been provided in the sand area.
- Provide containers of various sizes and spoons for children to measure from one container to the other.
- Asks the children to count how many quantity of the smaller container will fill the bigger one. How many small containers can fill the big one? Which of the container take less of sand? Which of the container take more.

Independent activities

The children will paint with sand.

Review and summary

Day 2

Exploring sand

Objective

- mould with sand, and learn shapes such as circle, cylinder, star
- conduct experiment that demonstrate that sand has weight
- Trace figures 1-10 in the sand.
- Use heavy and light in describing their experiences

Large group activities

Gather children in a circle and sing song about sand tell children that they will continue their exploration on sand.

Small group activities.

- Divide the children into smaller group to work in the sand.
- Give each group two small buckets of the same size and number it. Asks the children to fill one of the buckets with sand and the leave the other one empty.
- Asks the children to carry the empty bucket and then the ones that is filled with sand fill with sand. Asks the children to tell you the difference they have noticed between the two buckets.

Independent activities.

Each child will make shapes with of various shapes. When the each is working the teacher goes round to ask the child to identify the shape he/she has made with sand.

Summary and Review: The teacher summarizes the children's experiences.

Asks them what shape have you made with sand today?

How does sand feels in your hand when you touch it?

When you carry the empty buckets how does it feel in your hand?

WEEK TEN**Day one**

Topic: non-living things in our environment

Subtopic: Exploring Rocks

Date: ----- **Period:**-----

Duration: ----- **Class:** pre-primary

Entry behaviour: The children have seen rocks before

Learning Environment: Outdoor Learning area

Sample of ways rocks is used in mathematics activities.

Objective: by the end of the lesson the children should be able to:

- Explore rocks in their environment
- Sort rocks according to shape, colour and size
- Create art work with rocks
- Play number game with rocks

- Use rocks in counting activities

Large Group Activities (10 minutes)

- The teacher gathers the children in a circle.
- Place rocks of various shapes and sizes colour on the floor and asks the children if they have seen something like this before, where can we find it? Is it a living thing or non-living thing? What can we use it for? Recite a rhyme about rock.

Small Group Activities

- The teacher divides the children into smaller groups and asks them to walk around their school compound to collect rocks.
- Thereafter the children play number game with rocks.
- Ask the children to spread out far enough from one another so that children will not collide while running to their numbers!
- Spread rocks inscribe with figure 1 -10 boldly written so they can be seen from a distance on the floor or pavement.
- Then assign each child a number. Explain to the children that you will shout out a number randomly, when each child hears his/her number he/she quickly run to search for the rock that matches his/ her number and bring to the teacher. Repeat the instructions and model how the children will go about the game. The activity continues until no each child has pick their number.

Topic: exploring rocks

DAY 2

Sub topic: simple addition and subtraction with objects with rocks

Objective: by the end of this lesson the children will be able to:

- Use rocks to learn numbers
- Carry out simple addition and subtraction less than 20 with rocks
- Collaborate with others to carry out activities with rocks

Have children gather and explain the concept of adding objects together. Here are three rocks and what will you have if you add three more? For example numeral five on the one side and then make it balanced the numeral 5 on the other side using real objects.

Group activities

- Divide the children in to groups to go round in their environment and pick rocks. When the children return teacher in that group asks such questions as “take six rocks” take another four, count together how many rocks to you have now. Children will be guided to count rocks and take away some and count the remaining.

Independent activities

Each child will do simple addition and subtraction with stone.

APPENDIX II

**INSTRUCTIONAL GUIDE ON UNSTRUCTURED SCHOOL-BASED
OUTDOOR ACTIVITIES
(IGSSEO).**

**A Stimulus Instructional Guide for Doctoral Research Work in Early Childhood
Education Unit, Department of Teacher Education, Faculty of Education,
University of Ibadan**

**DEVELOPED BY
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**UNDER THE SUPERVISION OF
PROFESSOR ESTHER A. ODULOWU
JUNE, 2017**

INTRODUCTION

This guide consists of lesson plans that was used to facilitate the experimental group two (2) in this study. The teaching environment will be both indoor and outdoor environment of the school; natural materials will constitute the major learning materials that will be used. The procedure for teaching and learning in this guide will be activity based so as to ensure that children actively participate in their learning. It is also discovery oriented as children will be required to explore freely in their environment. The guide consists of 8 weeks of teaching at two times in a week. Teachers and children's activities as well as materials required for the activities are described.

The contents of activities to be carried out in this guide were selected from the One Year Pre-primary School Education Curriculum (NERDC, 2016). This is the curriculum recommended for administration of compulsory one year pre-primary education in Nigeria. The following theme and subtheme were covered in this guide.

Theme

1) Expression and exploration: expression of self through arts and crafts, self-care and appreciation of the natural environment, relationship with peers, adult, and environment

2) Mental development: number quantity, numerals and counting,

(Counting of objects 1-20 in local language and in English)

Rhythmic counting

Number recognition

Writing of numbers (1-10) in Arabic

Addition of numbers less than 20

Subtraction of numbers less than 20

Classification and ordering of objects: recognition of shapes of objects, colour, numbers

Classification according to shapes sizes, and colours.

Identification and construction of shapes

Identification of solid shapes in the environment

Construction of shapes and objects.

WEEKLY ACTIVITIES

WEEK ONE

DAY 1

Date: ----- **Period:**-----

Duration: Class:

Entry behaviour: Children must have seen living things in their environment before

Topic: Living things in our environment

Learning Environment: Outdoor Learning area

Resources

Living things such as plants, animals, insects, human being in the environment

Behavioural Objectives: By the end of the lesson, children should be able to:

- Identify some living and things in their environment
- Explore them
- Count them

Presentation procedure

Introduction (10minutes)

Gather the children outside and asks them to share what they know about living things in their environment.

Free exploration (30minutes)

Asks children to look around the environment and explore living and non-living things as they like.

Assessment

Each child will be called at random to name some living thing in their environment

Asks the children to draw objects on a paper that are living.

Review and Closing (*10 minutes*)

Each children will be called at random to name some living thing in their environment

WEEK ONE

DAY 2

Date: ----- **Period:**-----

Duration: ----- **Class:**

Entry behaviour: children have seen plants in their environment before

Topic: Living things in our environment

Sub –topic: Exploring plants

Behavioural Objectives: By the end of this lesson, the children should be able to:

Share their experiences about plants

Mention uses of plants (food, clothing, shelter and aesthetic)

Identify parts of plants

Categorize plants according to colours and shape

Create art work with plants.

Introduction (*10 minutes*)

Gather children in the classroom and show picture of plants that shows different parts including roots, a stem, and a flower. Then tell the children that they will be exploring plants in their environment. (10minutes)

Take the children outside to freely explore different kinds of plants available in their school premises (30minutes)

Assessment

Asks each child to make a leave print on the card board.

Review and closing

Asks children to identify parts of plants

Mention usefulness of plants.

Bring plant seed from home.

WEEK TWO

Day 1

Topic: exploring plant seeds

Entry behaviour: children are familiar with plant

Behavioural Objectives: By the end of the lesson, the children should be able to:

- Be aware that some plants grow from seeds
- Identify different kinds of seeds
- Categorise plants seeds, follow direction and match seeds according to colour, shapes and sizes
- Be aware that some plants' seed are edible
- Verbally describe the texture of different kinds of plant Seeds.
- Use plant Seeds to create art works

Preparation

Before the lesson begins, the teacher should

- (1) Get varieties of plants seeds in different containers, the children can also bring seeds from home.
- (2) Set small area outside where children could explore the plant seed and make art works.

Presentation procedure

The teacher welcomed the children and tells them that they will be exploring plants seed. Children will be asked to go outside and explore different kinds of plant seeds available in their school premises as they like. (30minutes)

Assessment

The will be asked to name some of the plants seeds provided.

Children will be observed and graded during sorting of plants seeds according categories

WEEK TWO

Day 2

TOPIC: Number Recognition 1-10

Behavioural Objectives: By the end of the lesson children should be able to:

Recognise number ONE –TEN (1-10)

Count objects in their environment up to ten

Introduction (*10 minutes*)

Have the children come together in a large circle.

Randomly call children to share the number they know to ascertain their previous knowledge.

The children will go round to explore number in their school's compound as they like.

Assessment

Raise cards with different number on it and call children at random for children to identify.

Asks children to count out ten objects from a basket full of different objects.

WEEK THREE

Day 1

Topic: Numbers in our environment

Behavioural Objectives

By the end of the lesson children should be able to:

- Categorise of numbers ten to fifteen
- Use object to represent figure 10-15.
- Have experiences in how numbers are used in their environment, counting, ordering correct orientation of numbers 10-15.

Presentation procedure

Introduction (10minutes)

Gather children and tell them will be exploring more on numbers

Thereafter, the children will be asked to go outside and freely count materials in the environment as they wants. (30minutes)

Assessment

The teacher will raise a pre- drawn numerals from 1-5 on the card board and call each child to identify the number. Each child should have a piece of pre-drawn numerals on paper and glue. Each child will put the correct amount of items next to each number. Each child should have at least 15.

Below is an example how the students' work should look like. Each asterisk represents objects like seeds, leaves, flower, stones, fruits or sticks.

1 *

2 **

3 ***

4 ****

5 *****

Review and Closing (*10 minutes*)

WEEK THREE

Day 2

Topic:living things in our environment

Sub- topic: Planting of Seed

Entry Behaviour: the children are familiar with plants seeds.

Learning Environment: Outdoor Learning area

Preparation

Before the lesson commences, the teacher provides sand box (square or rectangular filled with loamy soil) for each child of the children

- Empty bottle container for each of the children to plant
- Provide maize and vegetable seeds for each group and individual.

Behavioural objectives: By the end of the lesson, the children should be able to:

- Discover that seeds of plants grow in the soil
- Plant seeds in the soil
- Take care of the seed planted (watering, weeding)
- Observe and hypothesis on how long it will take for the seeds to terminate into plants
- Observe on a daily basis changes in the plants' growth.

Materials: plants seed like maize, beans, melon

Activity Procedure

Introduction: the teacher gathers the children and sing planting song

- The teacher demonstrates how seeds are planted.
- Each child will plant vegetable and maize and take care of it.
- The children will compare the growth of the two plants
- When the plants begin to grow; each day, cut a paper of the Length of the plants over a period of time, compare the length of the strip
- Observe and record the day-by-day growth of two seeds; compare the way they are similar and the way they are different.

WEEK FOUR

DAY 1

Date: ----- **Period:**-----

Duration: ----- **Class:**

Topic: Exploring colours in the Environment

Entry Behaviour: children are familiar with objects in their Environment

Learning Environment: Outdoor Learning area

Materials: Fruits of various colours, plants, flower of various shades of colour, baskets of different colour, Colour chips, cardboard/ construction colouring pen or crayon and plain sheets.

Lesson Objectives: By the end of the lesson, children should be able to:

- Name colours in their environment
- Identify objects in the outdoor with various colour
- Observe that colour has shades
- Sort objects by colour
- Use colour to create art.
- Count objects with different colour
- Interact with others

Preparation

In advance, the teacher will survey the school premises to know what colours are available and add the missing ones.

Introduction

Gather children in a circle and place objects of different colour on the floor and asks children what they can noticed about the objects. (10minutes)

Free exploration (30 minutes)

Asks the children to go out and play with different colours in their school compound

Review and closing

The children will be called at random to name colours of items that were collected.

WEEK FOUR

DAY 2

Topic: experimenting with colour

Learning objectives: By the end of the lesson the children should be able to:

Identify primary colour

Be aware that primary colour can be combined to form another colour

Mix colour to produce another colour

Aware that colour come in different shades

Presentation procedure

Introduction

Gather children and tell that when two or more colours are combined, the colour changed and a new one is made or the shade of the original will be different. Make children to understand that secondary colours (green, orange, and purple) are made by combining the primary colours (red, yellow, and blue). Sing colour combination colour

When you mix red and yellow you get orange,

When you mix red and blue you get purple,

When you mix yellow and blue you get green.

Free exploration

Asks children go to the colouring table provided outside and mix different colour as they like

Assessment.

The children will identify colours they form from combination of different colour.

WEEK FIVE

DAY 1

Topic: Exploring things in the environment.

Sub-topic: Exploring sizes of objects

Objectives: by the end of this lesson children should be able to:

- Children should be able to identify objects in their environment that are larger and those that are smaller when comparing.
- Name objects in the environment that come with different sizes (trees, seeds, buildings, cars). Uses the phrases “larger” than and “smaller” than to describe objects in their environment.
- see that the same item can come in different sizes
- To provide opportunity for thinking and problem solving
- Work together to explore objects of different sizes in their environment.
- Sort objects according to size

Preparation

In advance, the teacher will survey the school premises and provide objects with different.

Introduction

Place same objects of different sizes such as sticks, carton, and fruits before the children in the classroom asks them to tell you what they have observed about the objects.

Asks question like did you notice any difference between the items? Have children see and understand that even though many of them are about the same

age, they are still of different sizes (have them respond to the question. “Are you all the same size?”) make the children to understand that objects come in different sizes. Some are big or large while some are small. Some are tall while some are short.

Free exploration

Asks the children to go round their school compound to compare different objects in their environment in terms of their sizes.

Review and closing.

Call children at random to compare objects in terms of sizes.

WEEK FIVE

Day 2

Topic: Exploring things in the environment.

Sub-topic: Exploring sizes of objects

Objectives: by the end of this lesson children should be able to:

- Sorts object according to size
- Count objects with different sizes
- Create art work with objects of different sizes

Introduction

The teacher explains to the children that they will have more opportunity to explore objects with various sizes.

Asks children to use two or three different items (such as pieces of straws, feathers, leaves, sticks of different sizes) to make shape collage. Children are required to paste the objects according to size from smallest to biggest.

Provide shapes of different of the same colour but different sizes for children to sort according to sizes.

Asks each child to count the number of objects in each of the sizes pasted in the shape collage.

WEEK SIX

Day 1

Topic: Exploring Shape of Objects in Our Environment

Objectives: by the end of this lesson the children should be able to:

- Recognise that most things around them have shape
- To search for and name shapes of objects in the environment.
- Identify geometric shapes like circle, square, triangle and rectangle.
- To recognise that different objects may have similar shapes

Introduction of the Circle, Square and Triangle shape.

Place objects with different shapes on the table for children to see. Give each child the opportunity to name the shape and tell what else has the same shape.

- Asks children to round their school compound to explore different shape they have learned about. (30minutes)

Assessment and review

Call each child at random to identify different shape

Day 2

Topic: Shapes of Objects in our Environment

Lesson objectives: by the end of the lesson the children should be able to:

- Appreciate that different objects may have similar shape
- Classify objects according to shape
- Count objects with different shapes
- Interact with others during activities

WEEK SEVEN

Day 1

Lesson Objectives

- To provide the children with experience of making their own circle, square and triangle shapes.
- To have experience that shapes may have different colours
- To provide opportunity to count objects with various shape.

Introduction

Tell the children they will be exploring more on different shapes

Distribute containers of objects to be identified by shape.

Place objects of the same shapes in a similar container so that children can feel and see the various shapes.

Review and closing

The teacher raise different geometric shapes up and calls children at random to identify the shape

Day 2

Topic: Exploring Geometric Shape

Behavioural objectives: by the end of this lesson the children should be able to:

To reinforce children's ability to construct geometric shape

To provide opportunity for children to engage in creative activity

Engage in arts and crafts activities.

Provide a sticks of different sizes to construct geometric shapes and glue it to the card board and paint them with any colour of their choice to make shape album.

Review and closing

The teacher will go round each group and asks children to talk about their shape album

WEEK EIGHT

DAY 1

Exploring Sand

Date: ----- **Period:**-----

Duration: ----- **Class:**

Entry behaviour: The children have touched sand before

Topic: Non- living things in our environment

Sub- topic: Exploring Sand

Learning Environment: Outdoor Learning area

Preparation

The teacher will set up sand area where each of the groups can work upon. In the sand area there will be a sand box that will be filled with clean sand and various containers of different sizes and shape.

Materials

- Sand
- Containers
- Spoons
- Paint and brushes

Behavioural Objectives: By the end of the lesson, the children should be able to:

- verbally describe the texture of sand,
- measure sand from one container to another,
- Use the concept of more, less, bigger, smaller to describe their experiences.

Introduction

- Gather the children in circle. Arouse the children's curiosity about the topic by asking questions such as: Have you touched sand before? Where can we find sand? What can we use sand for? For building purpose.
- Points children's attention to fact that all building around them has a component of sand including their classrooms. Have children tell you more on the uses of soil answer such as some animals live in the soil, plants also grows in the soil are expected from the children.

Free exploration

- Asks the children to explore sand that has been provided in the sand area freely

Assessment

Asks the children to count how many quantity of the smaller container will fill the bigger one. How many small containers can fill the big one? Which of the container take less of sand? Which of the container take more.

Review and summary

Day 2

Exploring sand

Objective

- mould with sand, and learn shapes such as circle, cylinder, star
- conduct experiment that demonstrate that sand has weight
- Trace figures 1-10 in the sand.
- Use heavy and light in describing their experiences

Large group activities

Gather children in a circle and sing song about sand tell children that they will continue their exploration on sand. Each child will be asked to make shapes with sand.

Summary and Review: The teacher summarizes the children's experiences.

Asks them what shape have you made with sand today?

How does sand feels in your hand when you touch it?

When you carry the empty buckets how does it feel in your hand?

WEEK NINE

Day 1

Topic: non-living things in our environment

Subtopic: Exploring Rocks

Date: ----- **Period:**-----

Duration: ----- **Class:** pre-primary

Entry behaviour: The children have seen rocks before

Learning Environment: Outdoor Learning area

Objective: by the end of the lesson the children should be able to:

- **Explore rocks in their environment**
- Sort rocks according to shape, colour and size
- Create art work with rocks
- Play number game with rocks
- Use rocks in counting activities

Large Group Activities (10 minutes)

- The teacher gathers the children in a circle.
- Place rocks of various shapes and sizes colour on the floor and asks the children if they have seen something like this before, where can we find it? Is it a living thing or non-living thing? What can we use it for? Recite a rhyme about rock.

Free exploration

- The teacher asks the children to walk around their school compound to collect rocks.
- Thereafter the children play number game with rocks.

Assessment

- Ask the children to spread out far enough from one another so that children will not collide while running to their numbers!
- Call children at random to identify figures inscribe on the rock.

DAY 2

Sub topic: Simple addition and subtraction with objects with rocks

Objective: by the end of this lesson the children should be able to:

- Use rocks to learn numbers
- Carry out simple addition and subtraction less than 20 with rocks

Have children gather and explain the concept of adding objects together. Here are three rocks and what will you have if you add three more? For example numeral five on the one side and then make it balanced the numeral 5 on the other side using real objects.

Asks the children to pick rocks and use to do simple addition and subtraction freely on their own.

Independent activities

Each child will do simple addition and subtraction with stone.

APPENDIX III

TEACHERS GUIDE ON CONVENTIONAL INDOOR TEACHING (TGCIT).

WEEK ONE

Date: ----- **Period:**-----

Duration: 40 minutes **Class:**

Entry behaviour: Children must have seen living in their environment before

Topic: Living things in our environment

Learning Environment: indoor

Entry behaviour: the children must have seen some of the living things in their environment.

Behavioural objective: by the end of this lesson, the children should be able to:
mention the name of some living things in their environment

Identify the first letter of each of the living things shown to them.

Introduction: the teacher introduces the lesson by showing some pictures of living objects in their environment.

Instructional materials: pictures of various living objects.

Presentation procedure

Step1: The teacher mentions some examples of living objects such as butterfly, cat, dog, goat, in their environment to the children and asks them to repeat after him or her.

Step II: the teacher writes the name of the following living objects on the chalk board and underline the first letter of each objects.

A--Alligator

B----Butterfly

C—Cat

D—Dog,

E—Elephant

F—Flower

G---- Goat

Step III: the teacher asks the children to read A-G

Evaluation

The teacher asks following questions from the students:

Mention four examples of living things in our environment

Is dog a living thing? Yes or No

Is flower a living thing?

___ is for Goat.

___ is for elephant.

Summary and conclusion: the teacher summarizes the lesson by correcting student's mistakes.

Assignment

The teacher gives a picture of a dog to each child to colour with brown or black.

WEEK TWO

Date: ----- **Period:**-----

Duration: 40 minutes **Class:**

Topic: colours in our environment

Learning Environment: indoor

Entry behaviour: Children must have seen colours in their environment before

Behavioural objectives: by the end of this lesson, the children should be able to:

Mention names of colours in the environment

Identify colour in their environment.

Demonstrates that objects can have different colour

Use object with different colour to do addition

Introduction

The teacher introduces the lesson with a chat showing different colour.

Presentation procedure

The teacher mentions the name of some colour and show the children objects with that colour .

(yellow, green blue, red)

The teacher draws some objects on the chalk board and colour it with (red, green, yellow and blue and asks children to identify the colour.

The teacher asks the children to draw a circle in their drawing book and colour it.

Evaluation

Mention three colour that you know

What is the colour of your school uniform?

What is the colour of the sky?

Summmary and conclusion

The teachers summarises the lesson by correcting children's mistake and emphasize the major colour discussed.

Assignment

Draw a ball and colour it with blue.

Week Three

Date: ----- **Period**-----

Duration: 40 minutes **Class:**

Topic: plants in our environment

Learning Environment: indoor

Entry behaviour: Children must have seen plants in their environment before

Behavioural Objectives: by the end of this lesson, the children should be able to :

Identify plants as a living thing

Mention some uses of plant

Identify part of plants

Introduction: the teacher introduces the lesson by showing a chat that contain some type of plants

Presentation

Step I: the teacher explains to the children that plants are living things and they found every in our environment.

Step II: the teacher mentions some example of plants to the children. For example maize, rice, fruits, vegetables, beans and so on.

Step III: the teacher explain with the aid of a diagram that plants have different parts which are leaf, stem and roots.

Step IV: the teacher mention some uses of plants to the children. For example plants serve as food for human beings and animals.

Plants are used to provide shelter,
Plants are used as medicine and so on

Evaluation

Are plants living things? Yes or no

Mention two uses of plants

Mention two parts of plants.

Summary and conclusion

The teacher summarizes the lesson by correcting children's mistake and reemphasize the major points discussed.

Assignment

Make a leaf print in your drawing book.

WEEK FOUR

Date: ----- **Period:**-----

Duration: 40 minutes **Class:**

Topic: plants in our environment

Sub-topic: plant seed

Learning Environment: indoor

Entry behaviour: Children must have seen plants seed in their environment before

Behavioural Objectives:by the end of this lesson, the children should be able to :

Identify that plants have seed

Identify and mention some plants seeds

Mention uses of plants seed

Entry Behaviour: children are familiar with some plants seed.

Introduction

The teacher introduces the lesson by showing pictures of various plant seeds to the children

Presentation procedure

Step I: The teacher explains to the children that some plants grow seeds.

Step II: The teacher points to chat containing various type of plants seed for children to identify their names, colour and shape

Step III: The teacher explains to the children that some plants seeds are source of food for human being and animals. Example of plants seed are cocoa, groundnut, maize, melon, wheat and so on

Evaluation

Mention three examples of plants seeds and their colour

Some plants seeds serve as food. Yes or No

Assignment

Draw and colour a maize seed.

WEEK FIVE

Date: ----- **Period**-----

Duration: 40 minutes **Class:**

Topic: plants in our environment

Sub –topic: growing plants

Learning Environment: indoor

Entry behaviour: Children must have seen plants in their environment environment before **Behavioural Objectives:** by the end of this lesson, the children should be able to:

Appreciate that plants are grown in the soil

Mention some materials that plants needs to grow.

Entry Behaviour: The children must have seen a farmer growing crops in their environment

Introduction

The teacher introduces the lesson by showing picture of a farmer cultivating plants in the soil.

Presentation procedure

Step I: the teacher explains to the children that plants are grown in the soil. He/she illustrates with a chat showing a farmer planting crops in the soil.

Step II: the children explains to the children that when gown in the soil some materials are needed to for plants to grow. For example, plant’s needs, nutrient, in form of food, which are usually present in the soil. Plants also need water, sunlight, and air to grow well.

Evaluation

Where do we grow crops?

Mention three things that plants need to grow.

Summary and conclusion.

WEEK SIX

Date: ----- **Period:**-----

Duration: 40 minutes **Class:**

Topic: understanding non-living things in our environment.

Sub- topic: rocks in our environment

Learning Environment: indoor

Entry Behaviour: Children must have seen rocks or stones in their environment before.

Behavioural Objectives: By the end of this lesson, the children should be able to:

Identify that rock is an example of non- living things in our environment.

Identify that rocks are various size and colour

Mention some uses of rocks

Do simple addition with stones

Introduction

The teacher introduces the lesson with pictures of different types of rocks

Presentation procedure

Step I: The teacher explains to the children rocks is an example of non –living objects in our environment. He or she also describes the texture of rocks

Step II: The teacher with aid of chat shows to the children rocks of various sizes and colour.

Step III: The teacher mentions some uses of rocks to children. For example rocks are used for building houses, road construction and for counting.

Step IV: The teacher gives children some quantity of rocks and asks them to count.

Evaluation

Is rock a non-living objects? Yes or NO

Mention two uses of rocks.

Match the number of rocks drawn on the board with appropriate figures.

Summary and Conclusion

WEEK SEVEN

Date: ----- Period-----

Duration: 40 minutes Class:

Topic: understanding non-living things in our environment.

Sub- topic: water in our environment

Learning Environment: indoor

Entry behaviour: Children must have seen water in their environment before.

Sing a song about water

Mention some uses of water

Demonstrate that water falls from the sky in form of rain

Identify that water can be found in river, wells, lakes, and ocean.

The teacher introduces the lesson with a picture of where water can be found.

Presentation procedure.

Step I: the teacher explains the concept of water to children.

Step II: the teacher explains that water usually falls from the sky in form of rain.

Step III: the teacher shows the children pictures of large body of water such as ocean, lake, sea, river, and explain to them that all of them contain a large body of water.

Step IV: the teacher mentions some uses of water. Water is used for drinking, bathing, cooking, washing, and so on.

Evaluation

Where does water comes from?

Mention four places where large body of water can be found

Mention three uses of water.

Summary and Conclusion.

The teacher summarizes the lesson by correcting student's mistakes.

WEEK EIGHT

Date: ----- **Period**-----

Duration: 40 minutes **Class:**

Topic: understanding non-living things in our environment.

Sub- topic: reaction of objects inside water

Learning Environment: indoor

Entry behaviour: Children must have seen rocks or stones in their environment before.

Behavioural objectives: by the end of this lesson, the children should be able to:

Identify objects that floats in water

Identify objects that dissolve in water

Identify objects that sink inside water

Introduction

The teacher asks the children if they have observed some characteristic of object when dropped inside water.

Presentation procedure

Step I: The teacher explains to the children when certain objects are dropped inside water they stay on the water. These kind of objects are called floating objects.

Step I: the teacher explains that when some objects are dipped inside water they will disappear or dissolve inside water and give children examples of objects that dissolves inside water.

Step III: The teacher explains to the children that some objects sinks inside water and give examples of such objects

Evaluation

Mention two objects that can float on water.

Can salt disappear inside water?

When a stone is put inside water, will stay on the surface of the water or under it.

APPENDIX IV

Teacher's Outdoor Teaching Competence Scale (TOTCS)

	V.Good	Good	Average	Poor	V.Poor	
Enable children to solve problem without prevailing early	5	4	3	2	5	
Attentiveness to children/their plans/discoveries. Asking children questions, particularly open questions (inspiring children to think and solve problems. put what they know into words)						
Collaborate with children during activities						
Flexibility and willingness to adjustment plans and lengthens activities						
Encourage children to collaborate						
Record children's achievements accurately						
Demonstrate good values to children						
Respond to children Promptly						
Demonstrate appropriate language use						
Affirms and praise children adequately						
promote group interaction						

APPENDIX V
DEPARTMENT OF EARLY CHILDHOOD AND EDUCATIONAL
FOUNDATIONS

Social Skills Assessment Scale for pre-schoolers (SSASP)

This scale is designed to gather information about social skills of pre-primary children. The teacher is required to objectively assess children on the extent to which each child exhibits the behaviour.

SECTION A

DEMOGRAPHIC INFORMATION

Name of school: _____

Children's Age: _____

Children's gender: _____

Parents occupation: _____

Parents' Educational level:

Primary six /less

Ordinary level/SSCE

Diploma

Degree

Postgraduate

Section B

Kindly assess how much each child exhibits the following social skills following. The following are the criteria for rating:

0= Never- the child never displays this skill

1= Sometimes - the child seldom shows this skill but may demonstrate it on a very rare occasions.

2= often- the children displays this skill to a large extent.

3= most often -the child consistently displays the skills

Social Skills Assessment Scale for pre-schoolers (SSASP)

S/N	Cooperation skills	Never 0	Sometimes 1	Often 2	Very Often 3
1	Sensitive to right of others				
2	Respect others views				
3	take turns appropriately during activities				
4	Follow orders in group activities				
5	Assist others when need be				
6	Makes request appropriately				
7	Starts conversation when it is necessary to do so				
8	Discuss around specific activities that they are undertaking				
9	Makes varieties of comments related to the activities they are undertaking				
10	Waits to interject when have something to say				
11	Asks for help appropriately				
12	Demonstrates willingness to be helpful to accomplish a common goal				
13	Apologies for wrong doing				
	Self-regulation				
14	Demonstrates ability to make plans				
15	Able to make choice				
16	Follows directions				
17	Demonstrates initiative when engaged in activities				
18	Disregards others or situations when				

	it is appropriate to do so				
19	Accepts not being first at a game				
20	Accept being turned down without becoming angry				
21	Understand the feelings of others				
22	Accepts unexpected changes				
23	Accept faults without becoming angry				
	Responsibility skills				
24	Takes good care of self				
25	Be accountable for property				
26	Handles things with care				
27	Shows evidence of responsibility towards others				
28	Use self-help skills				
29	Accepts responsibility for his/her own mistakes and decisions				
30	Accepts consequences for his/her behaviour				

APPENDIX VI
COGNITIVE SKILLS ASSESSMENT SCALE FOR
PRESCHOOLERS.(CSABP)

Cognitive skills assessment battery measure for preschool is a task based instrument that assess the cognitive skills of pre-primary children in the dimension of attention functioning, numeracy and problem solving skills. Attention functioning skills will be measured using Head Toes Knees Shoulder (HTKS) measure adopted from Peabody research institute (PRI). Problem solving measure will be measured using Card Sorting Activity (CSA) and Picture Matching Activity (PMA) and were also adapted from Peabody research institute cognitive measures of skills for pre-schoolers. Numeracy skills will be assessed with Numeracy Assessment Scale for Pre-schoolers (NASP). Detailed information on the guidelines for administering the instrument, materials and scoring procedure for all the measures are included in this instrument.

Procedures for Administering the Instrument:

Each portion should be administered in line with the script.

Scoring should be done immediately the child complete each item.

Only offer commendation or response when the script allows.

Allow a little break between each measure

Dodge giving motions that could divulge the solution to an item

Attention Functioning Measure (AFM)

Head Toes Knees Shoulder Game (HTKS)

(1)Description of the Instrument.

In this measure children are requested to do the opposite of what the tester says. The examiner will ask the child to touch s/he head (or s/he toes), but instead of following the command, s/he ought to do the opposite and touch their toes (or their head). If child pass the head/toes part of the task, they proceed to knees and shoulders commands.**AFM Script**

The examiner will sit down while the child stand about 2 feet from him/ her during the test.

Copy Training:

Let's play a game. This game has two sections. First, I want you to imitate what I do. Touch your head.

Let the child perform the command

Correct! Now touch your toes.

allow for the child to perform the action.

Nice!

Reiterate the two directives with gestures again, or until the child mimics you properly.

Touch your head.

Touch your toes.

At this instant, lets the opposite of what I say. When I say to touch your head, *instead* of touching your head, you will touch your toes and vice versa. So will do the opposite of what.

A1. What do you do if I say “touch your head”?

Circle child’s response on the record form.

If s/he pauses or replies incorrectly, say:

Remember, when I say to touch your head, you touch your toes, so you are doing the opposite of what I say. Let’s do it again. Repeat A1 again.

If s/he responds correctly, say **that’s good** and proceed to A2:

A2. What do you do if I say “touch your toes”?

If s/he wavers or answers incorrectly, say:

Remember, when I say to touch your toes, you touch your head, so you are doing the opposite of what I say. Let’s try again. Repeat A2 again.

If s/he responds correctly, say and proceed to B2:

That’s very correct.

<p>***If child responds incorrectly a second time, repeat the reminder once more, then move on to the next question. Count only 1 retraining per training/practice item</p>
--

If the child cannot do the task after the third explanation, administer the 10 test items anyway with no further retraining.

B1. Touch your head

B2. **Touch your toes**

B3. **Touch your head**

B4. **Touch your toes**

1. Touch your head

2. Touch your toes

3. Touch your toes

4. Touch your head

5. Touch your toes

6. Touch your head

7. Touch your head

8. Touch your toes

9. Touch your head

10. Touch your toes

Total Points (Items A-10): _____

Number of Self Correct (1) responses (Items A-10): _____

HTKS Scoring

Each item is coded as follows (Ponitz et al., 2008):

0 = Incorrect response

1 = any motion to incorrect response, but self-corrected to end with correct response

2 = Correct response

Problem Solving Measure

Card Sorting Activities (CSA)

Description of the Instrument

CSA is a task based instrument in which children are required to sort card according to the colour and then according to shape. The instrument was adapted from Peabody research institute to assess problem solving skills of preschool children in the area

sorting and matching as identified in the programme of per-primary education in Nigeria. The researcher adapted this measure to suit the purpose of this study. The type of pictures on the card was changed to shapes the number of colours to be sorted were also increased from two (blue and red) to four (blue, yellow, red, and green) to include some colour that children love to see. The script was also adjusted to reflect the changes accordingly. Children Details of this measure are in appendix

CSA Materials

Boxes: four boxes constructed with card board of 5 different colour (yellow, blue, red, green and white) with hole cut into the top. Boxes measure 5 1/2" in length, 4" in height, and 4 1/2" in depth. Hole on top.

Colour Sorting Task: For the colour game there are 4 cards with pictures of different shapes on a white background for each of the colour 4 tested (yellow, blue, green and red).

Shape Sorting Task: For the shape game there are 4 cards with a square shape, 4 cards with triangle, 4 cards with circle, 4 cards with star shape and 4 cards with rectangle shape. Each card measures 3 7/8" by 4" and is laminated.

Materials: 4 sorting boxes, 20 (4 each for the 5 shapes being tested) 20 cards for colour game.

Place 4 boxes on the table approximately 8" from child's edge of table and 4" apart. Make sure they are angled the same way. Place the yellow and blue box to your left and red and green box to your right

CSA Script.

Here are cards with red, blue, green and yellow objects. Let's play card game. In this colour game you will search for all the cards with blue object and drop them in the blue box, all the yellow objects go to the yellow box, red objects go to red box and green objects go the green here (pointing to the boxes)

Rule Check

Where will all the yellow cards go? Repeat the rule for all the colour.

If Accurate: that's good.

If Incorrect: *Uh oh. Recall, that in the colour game, all the yellow cards go to the yellow box here, all the green here; and all the blue one here red ones go here. (Point to appropriate boxes. Repeat question and reminder 1 more time, and move on.*

Let's try this game

Do not say "okay" in response to sort. Say, "Let's do one more one," "Let's try it again," etc.

Point to boxes by touching the top with a finger.

Do not show the card until the rule statement is complete.

Place the cards in the tray and asks the child to pick each of the colours and drop it in the appropriate box.). When the child is done count the number of cards appropriately placed in each of the boxes. Award 1 mark for each of the colour appropriately sorted.

Colour Sort Record Form

Colour	Points obtainable	Points obtained
Yellow	4	
Blue	4	
Red	4	
Green	4	

Total points obtainable 16

Total point obtained

Card Sorting –: Shape game

Let's play another game. In this game, you will put all the cards with the same shape in each of the boxes all of the stars will be in the same, all the circles will be in the same box, all the triangle will be the same box, all the square will be in the same box and all the stars will be in the same box.

Rule Check

Can you tell me the type of cards that will be together in the same box?

If Right: that's good.

If Incorrect: Uh oh. Recollect, in the shape game, all the cards with the same shape will be in the same box. (Point to the right boxes. Repeat question and reminder 1 more and move on.

CSARecord Form

Total Color (1-16): _____

Total Shape (1-20): _____

Picture Matching Activity (PMA)

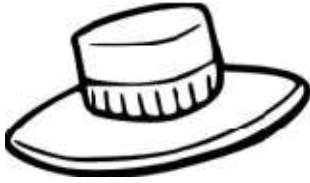
Description of the Instrument

This task based on the Matching similar objects. The instrument was originally designed by Test (Kagan, 1965) and was adapted in this study to assess problem solving skills of preschool children in the dimension of matching. In this task children are children are offered with a range of pictures sketches and asked to find the picture that is an exact replica of the selected item. The task requires that children exercise attentiveness, and reflexive processing, Pictures are organised such when book is open, the target image is on top and the range of options are the bottom. Each set of items are divided by a set of blank sheets, so that when the page is opened, no item is showed. **Full sheets of all pictures are included in the Appendix**

PMA Script

This a new game. Let's see how to play this game. Open book to first practice item (Hat).

Practice items:



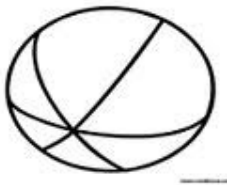
Proceed with the next item (Ball) While on the blank page between items say: **O.k. when I turn the page, point to the picture down here** (indicate) **that is exactly the same as the one you will see up here** (point). **Ready?**

Turn the page and ask: **Which one down here is just like this one? Can you point to it the first time?**

If the child points to the correct choice say: **Correct. Let's do that every time. Always point to one down here that is just like the one up here.** (turn to blank page)

If the child points to the incorrect choice, say: **No, that's not exactly the same as the one up here, because it is** (describe the discrepancy). **Now point to the one that is exactly like this one up here**

Test items:



Proceed with the next item (Ball) While on the blank page between items say: **O.k. when I turn the page, point to the picture down here** (indicate) **that is exactly the same as the one you will see up here** (point). **Ready?**

Turn the page and ask: **Which one down here is just like this one? Can you point to it the first time?**

If the child points to the correct choice say: **Very good. Let's do that every time. Always point to one down here that is just exactly like the one up here.** (Turn to blank page)

If the child points to the incorrect choice, say: **No, that's not exactly the same as the one up here, because it is** (describe the differences). **Now point to the one that is just like this one up here.**

Ok, let's go on to the next one. Remember, only one is exactly the same as the one up here. Can you find it the first time?

PMA Scoring

Each piece is scored based on the number of picture matched correctly. Each picture well matched attracts two points. When the child's response is incorrect, the child gets 0 points for that image item. The total number of points obtained is summed up to get total score. The maximum points obtainable for this task is 16 points

PMA Scoring Form

<i>Stimulus</i>	<i>Correct</i> 2 (point)	<i>Incorrect</i> (1)
1. Hat (practice)		
2. Ball		
3. Cat		
4. Candle		
5. pail		
6. Umbrella		
7. Kite		
8. Rocket		

TOTAL NUMBER OF POINTS OBTAINED -----

Full sheets of all pictures are included in the Appendix

NUMERACY SKILLS ASSESSMENT FOR PRESCHOOLERS (NSAP)

This instrument consist of 7 diverse early numeracy tasks, which are oral counting, one-to-one counting, cardinality, number identification, set comparison, simple addition, and shape recognition. It was designed by the researcher based on the

dimension of skills that have been recognised as important numeracy skills in the national programme for pre-primary schools in Nigeria (NERDC, 2007). The measure was also patterned according to skills examined on other common measure of early numeracy skills such as *Test of Early Mathematics Ability – 3rd Edition* Mathematical Skills and Knowledge in Preschool (Polignano and Hojnoski 2012) and Preschool Numeracy Scales (Purpura and Lonigan, 2015).

Description of the measure

Oral Count (OC) Task

Materials: Let’s Count the Dots Book, writing materials and scoring form.

Instruction: Administer the task in sitting position while the child stands close to you. Strictly follow the procedure in this script.

Task script

Let’s count some numbers. **Count numbers 1 to 10 as loud as possible.** Listen attentively to child as s/he counts from number 1-10. Say very well! If the child is able to count up to ten without skipping any number. Asks the child if s/he can count from 10 to 30. Listen to child as s/he counts to ensure that the child did not skip any number. say excellent and move to the next item on the measure. If the child is not able, move to the next measure.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30

One –to- one counting (OOC)

Children were shown sets of dots and asked to count

Materials: Let’s Count the Dots Book, writing materials and scoring form.

Instructions:

After completing the oral counting, tell the child that “lets count some dots”!

Open to the first page of dot book and asks the child “can you count these dots” point to each one as you count.” These dots here are many can we know their number? So now let’s count.

Practice

The first page of the dot book has just one dot, if the child is able to count correctly say correct! Can we count some more? “let’s count these dots as well”. After two trial proceed with test and present dots having 4, 9, 12, and 15 for children to count.

The child receives 1 point for each set of dots counted correctly,

If they do not (skip a dot, skip a number, double count a dot, double count a number, etc.) if they cannot they receive zero points.

Cardinality

As the child complete each set of dots presented, asks **how many dot are present in all. If the child precisely say the last number he counted, mark correct for cardinality, if the child stats counting all over mark incorrect. Repeat for each set of dots present for one-to –one counting.**

Number identification

Bring out cards containing numbers 1-10 for children to identify one after the other.

Let’s identify some numbers. Can you identify this number?

Now raise card one after the other, face the child and say “**what number is this**”? If the child is able to identify at least two out of the ten presented s/he receives 1 point, if able to identify 4 number s/he receives 2 points, the scoring follows the same other

The maximum point from this task is 5points

Subset counting (SC)

MATERIALS

Trays, smooth stones and writing materials

Rule check

Put back the stone counted out after each count in to the tray.

Avoid gesture that could revealed the answer.

Place twenty pieces of smooth inside a tray.

Place the empty tray beside the ones has stones.

Face the child and say “**let’s count out some of these stones**”

“Can you count out 4 out of these stones in the tray”?

Watch as the child counts as s/he counts. If the child is able to count correctly. Given commendation.

Can we count out some more stones from this tray? Now count out 7 stones out of the tray. Return the counted stones back to the tray.

Repeat the procedure for 9, 10, and 15 stones. For each item well counted give one point. The total point for this section is 5 points.

Quantity Comparism (QC)

Materials

Dots book and writing materials

Let’s play some more game!

I will show some dots I want you to look at it very well and tell which of the two has more dots.

Open to page containing 7 and 8 dots in the dot book. Now say

“Look at these two set of dots, tell me which of the two has more dots”

Watch the child as s/he unravels the set with more dots.

Can you do more? Show the child set of dots consisted 10 and 11 and asks the child which is more.

Repeat the procedure for set containing 13 and 14

Each of the set well compared attracts 1 point

Number Combination (NC)

Okay let now put some stones together. Tell the child that in this new game we want to put some stones together and lets how many we will have. **Now take out two stone from the tray and puts in the empty one. Take out another four and add to the ones you have before. Then count it together how many stones do we have all together.** If the child is able to add correctly give commendation, and move on. If the child is unable to put together the numbers encourage him to try again. **Now let’s put together some more number.** Repeat for 2and 5, 6 and 3. Each set well combined Attracts 1 point

NUMERACY SKILLS SCORING SHEET

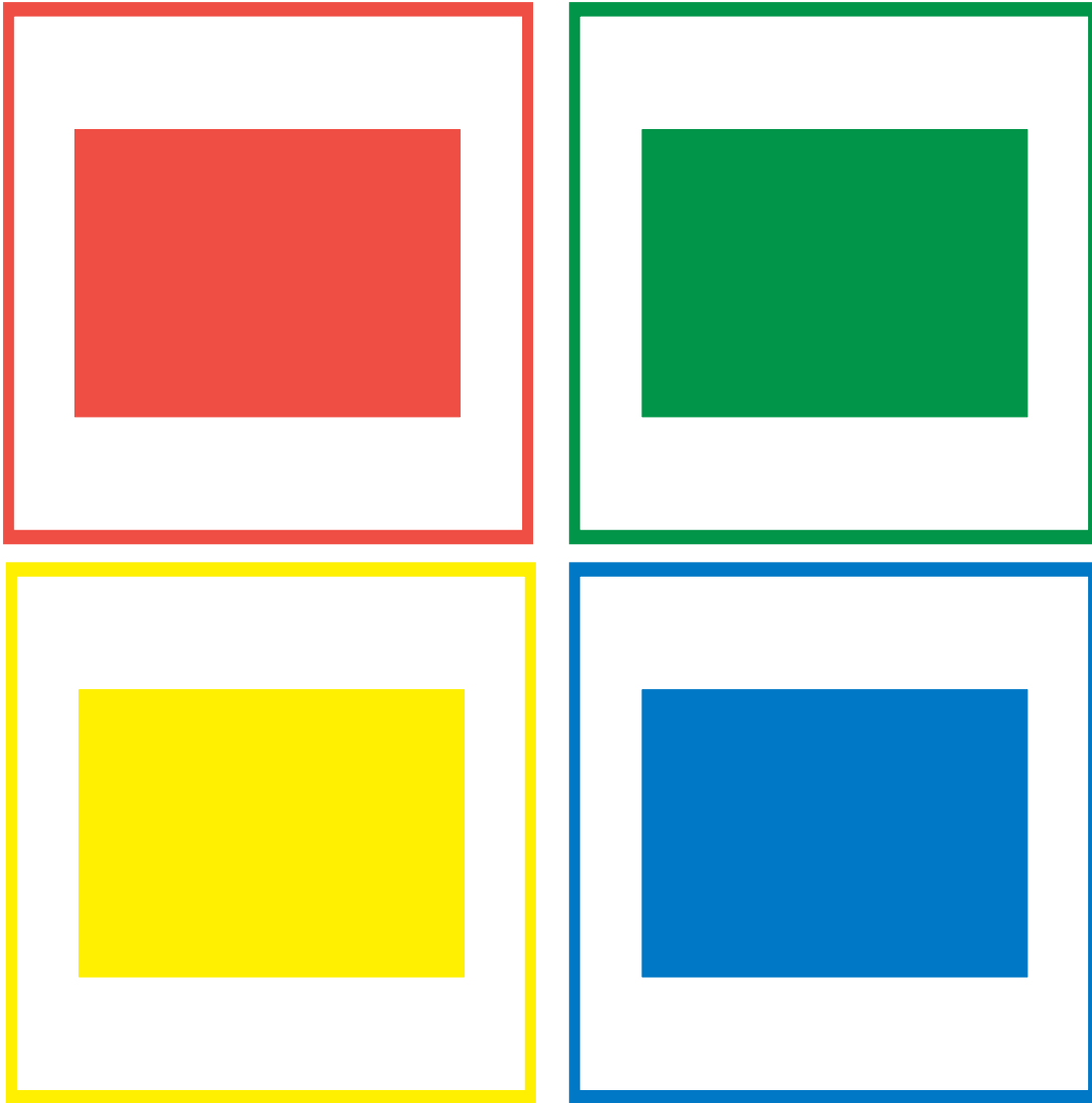
SKILLS	SETS	POINTS OBTANABLE	POINTS SCORED
Oral counting	1-30	5	
One –to- one	5	5	

counting			
Cardinality	5	5	
Number recognition	1-10	5	
Subsets counting	5	5	
Number combination	5	5	
Shape recognition	5	5	

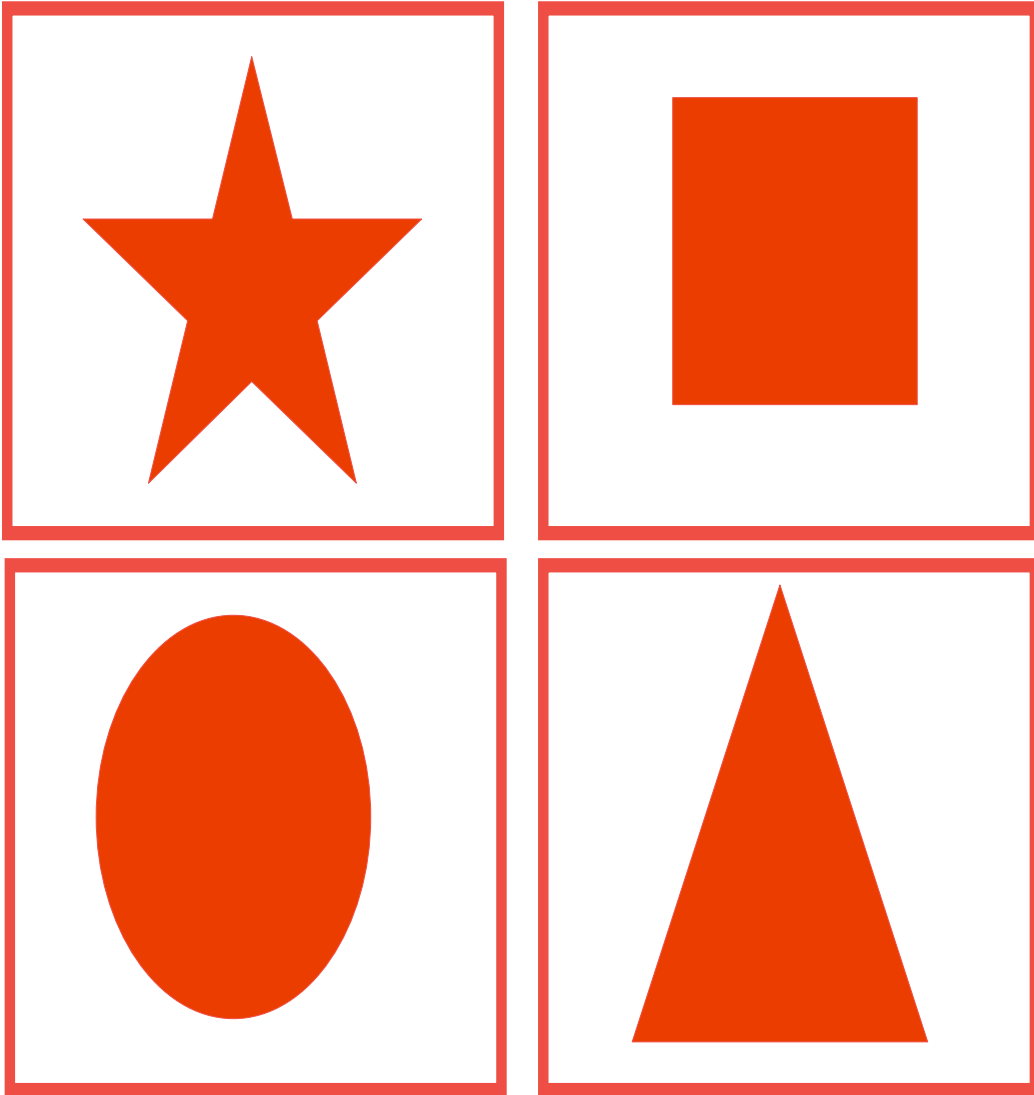
Total points obtained -----

Total point obtainable-----

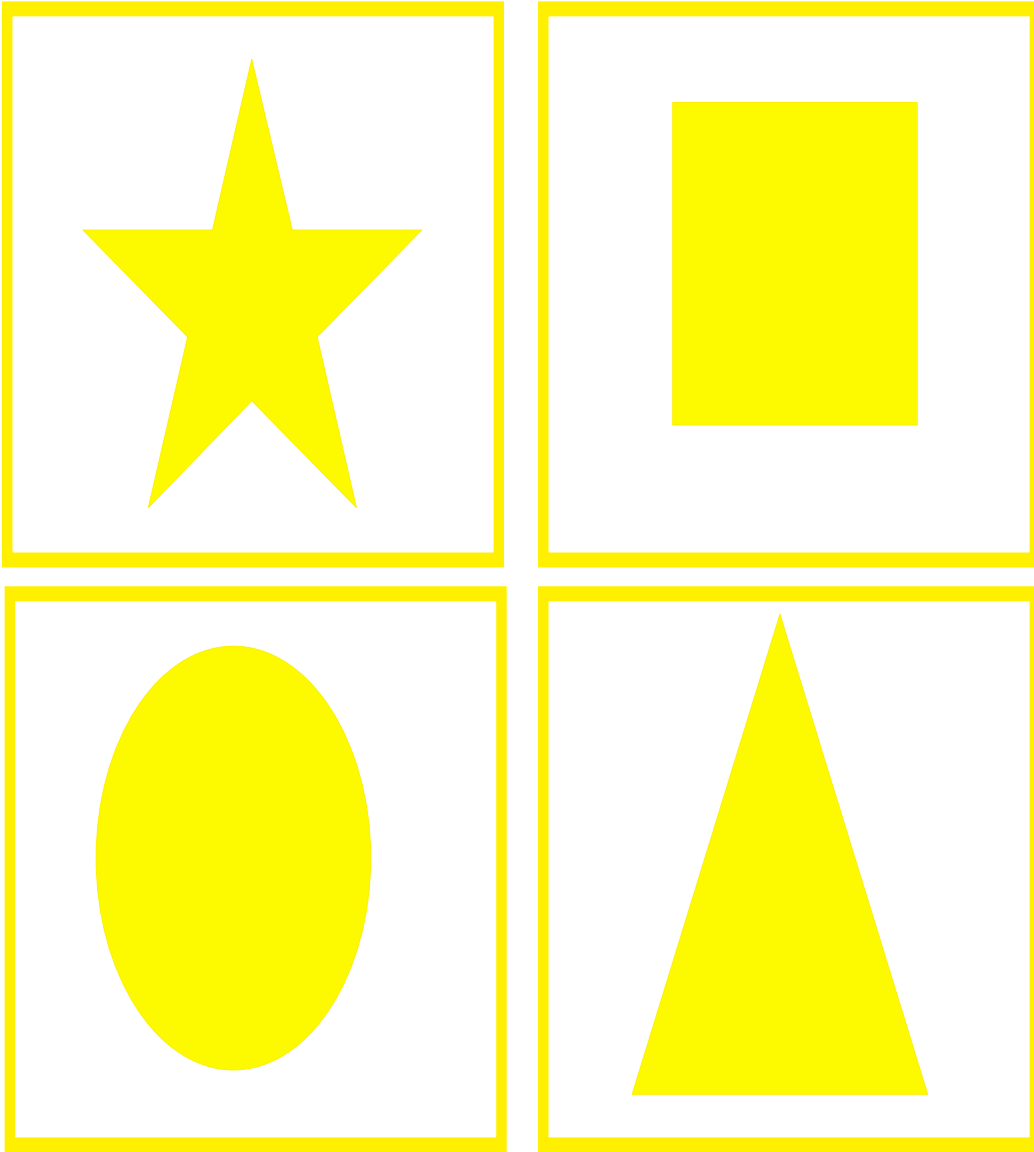
APPENDIX VII



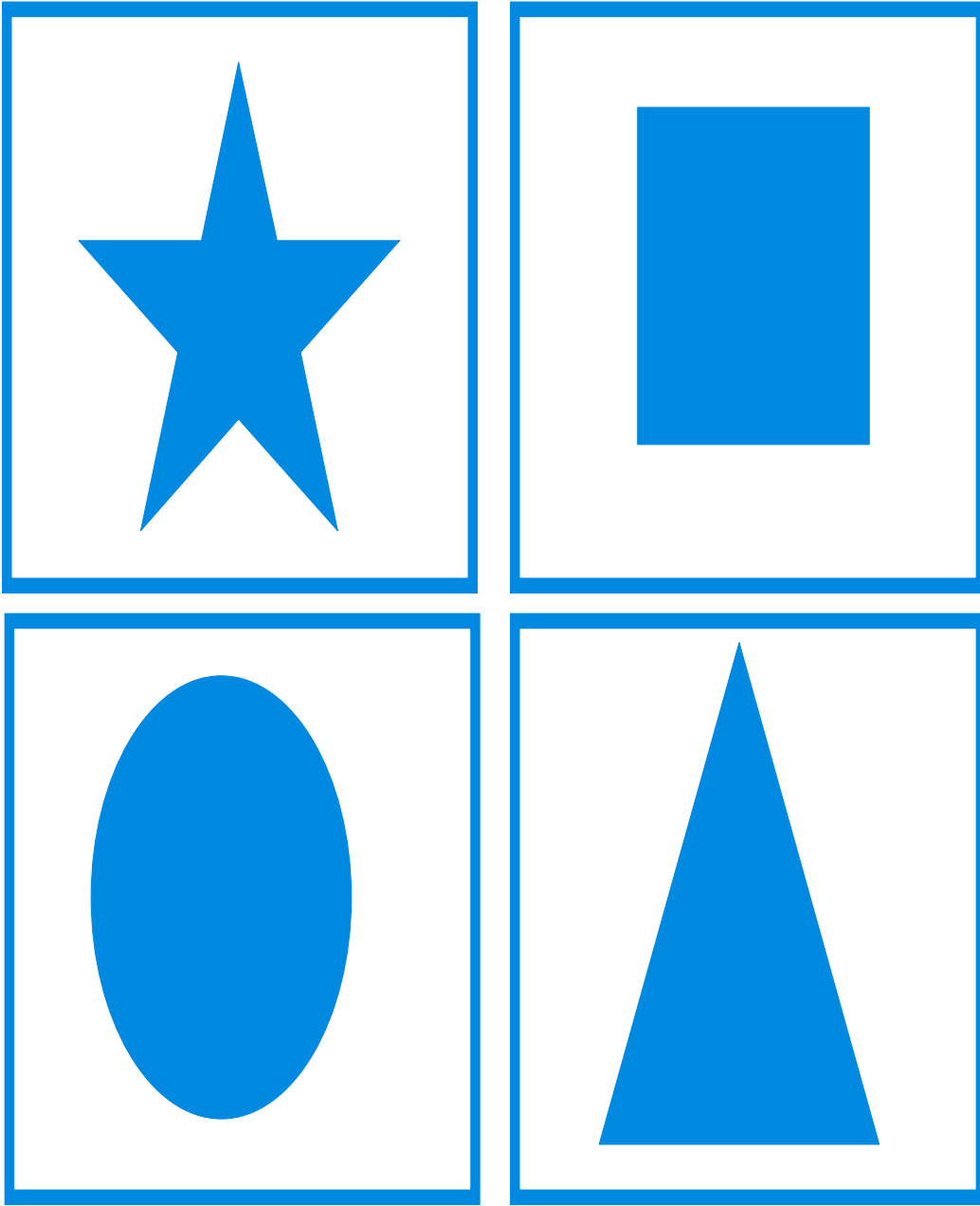
Rectangle shape used for identification and sorting.



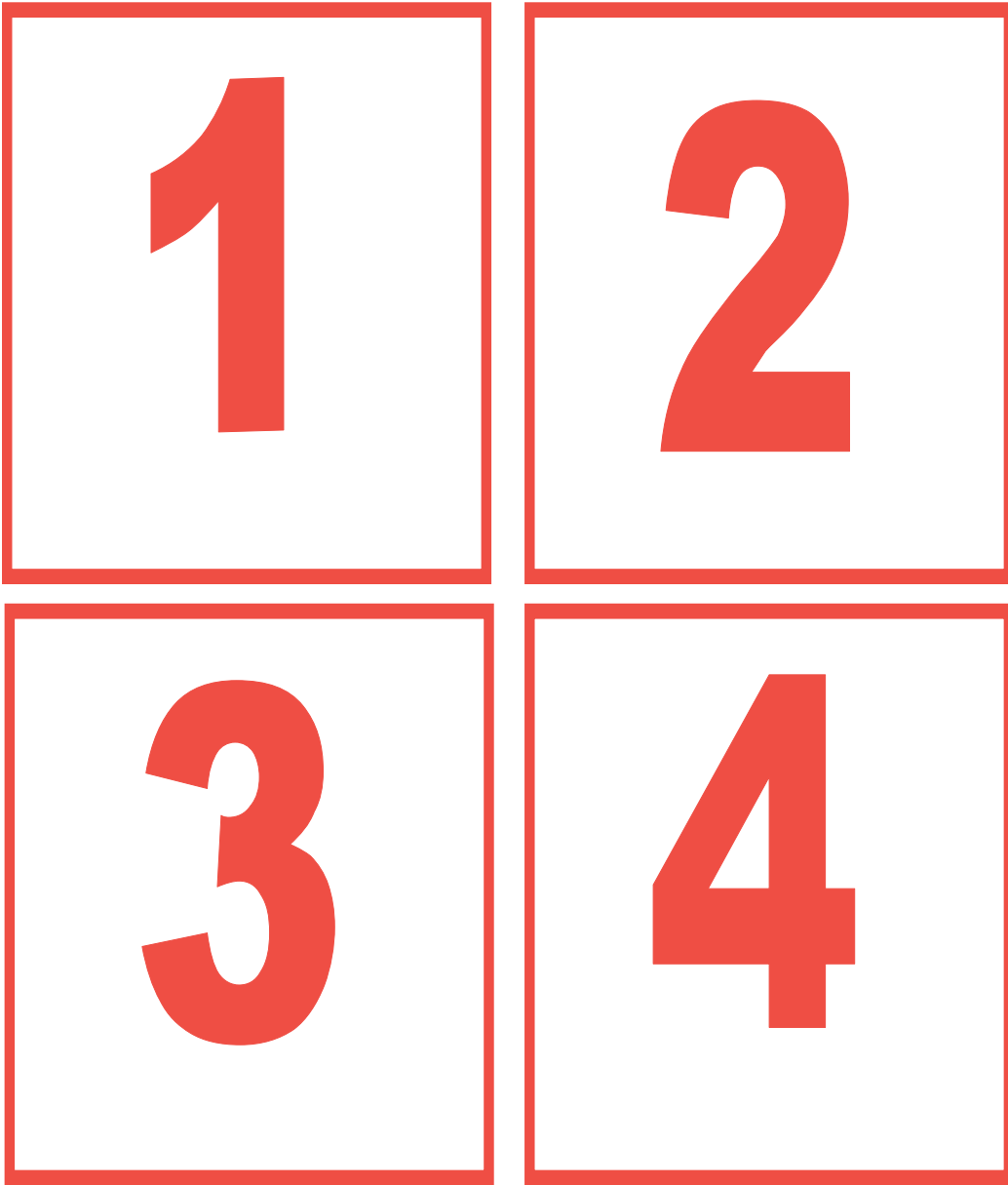
Red colour shapes used for identification and sorting.



Yellow colour shapes used for identification and sorting.

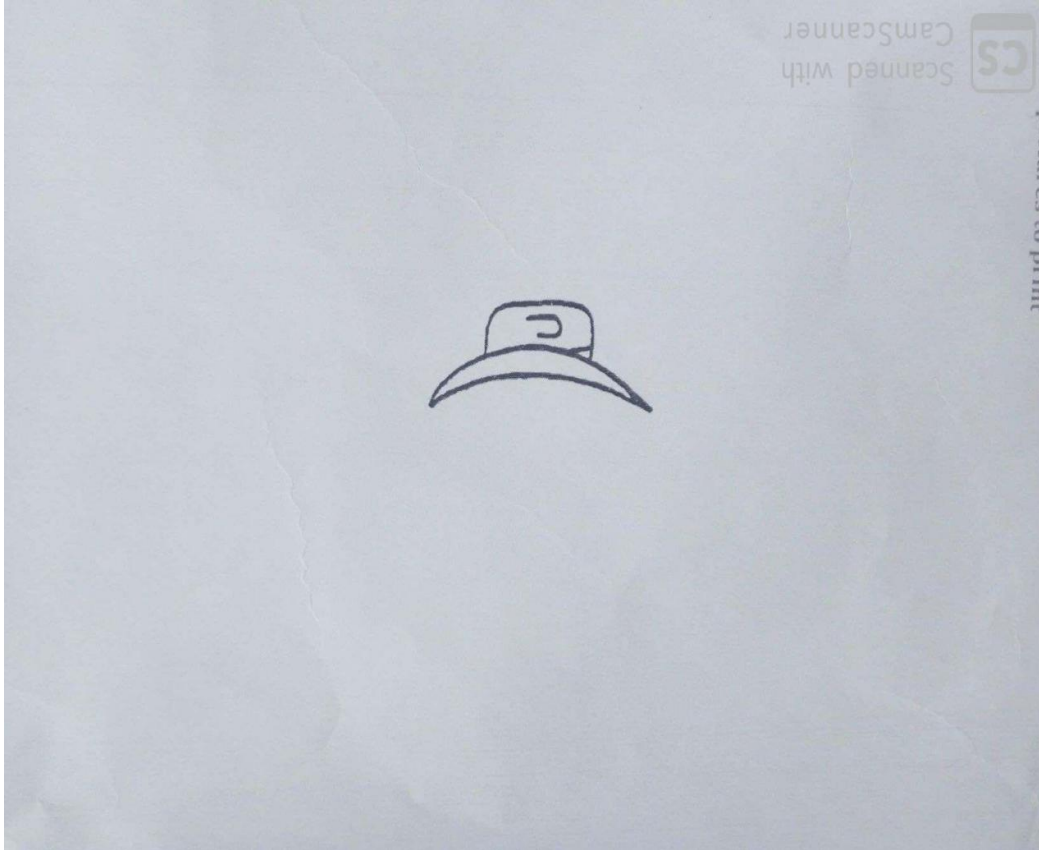


Blue colour shapes used for identification and sorting.

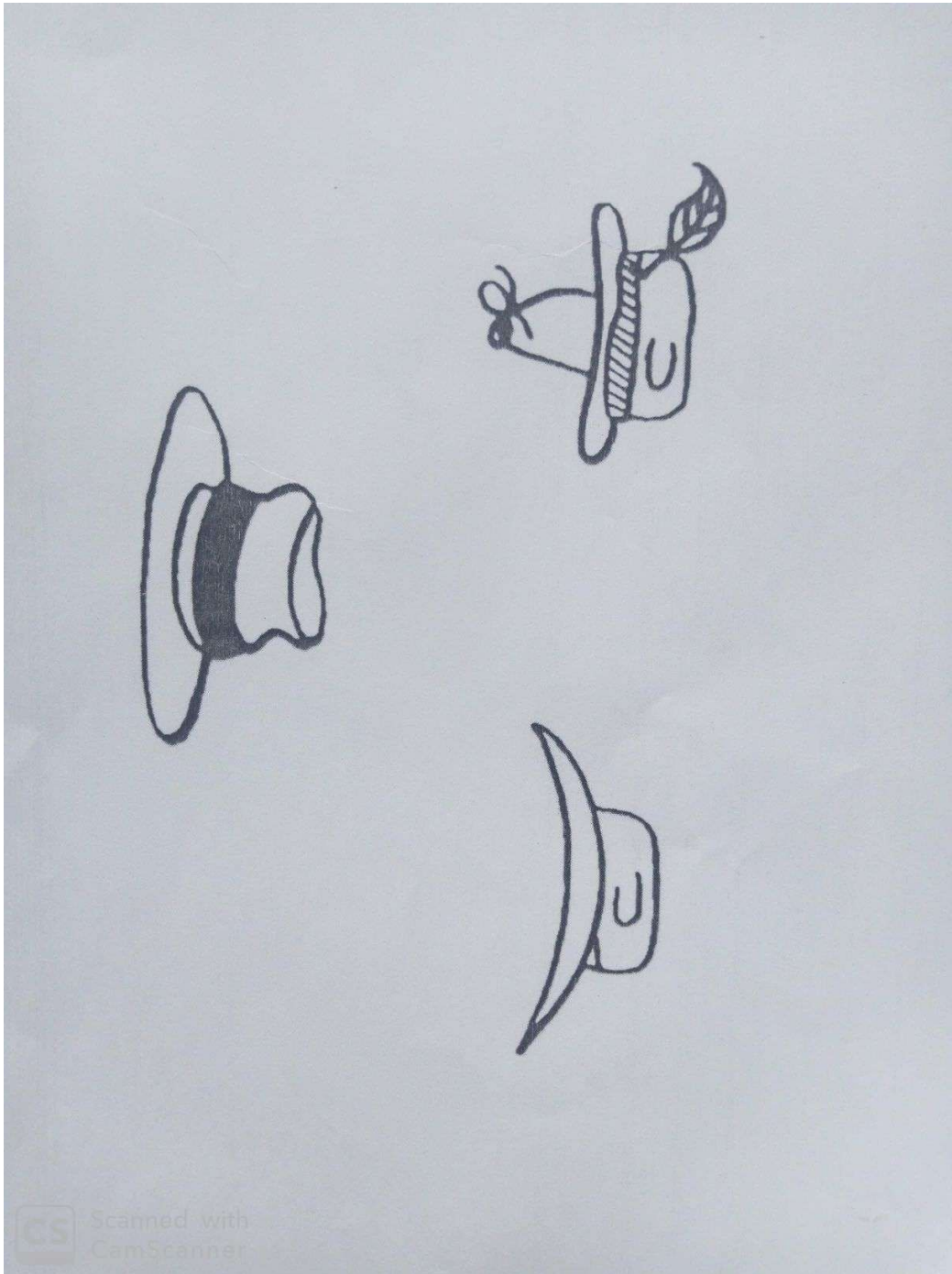


Sample of Number cards used for numerical activities.

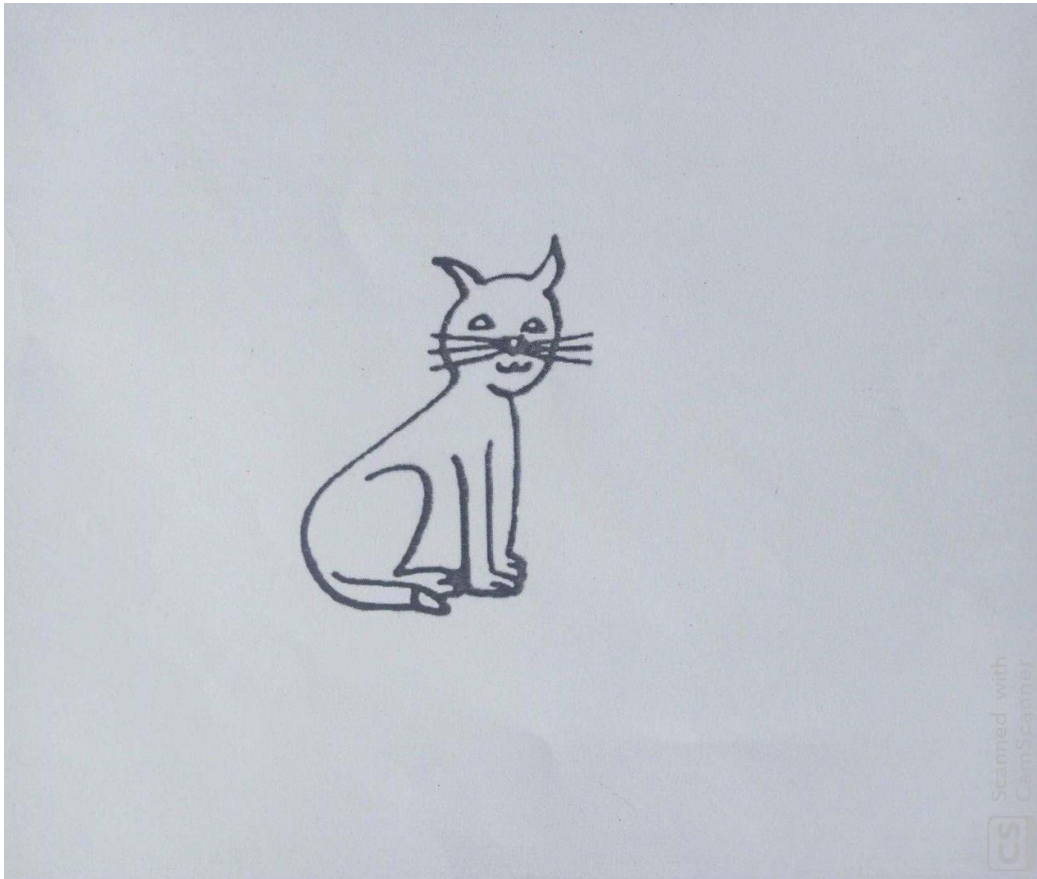
APPENDIX VIII



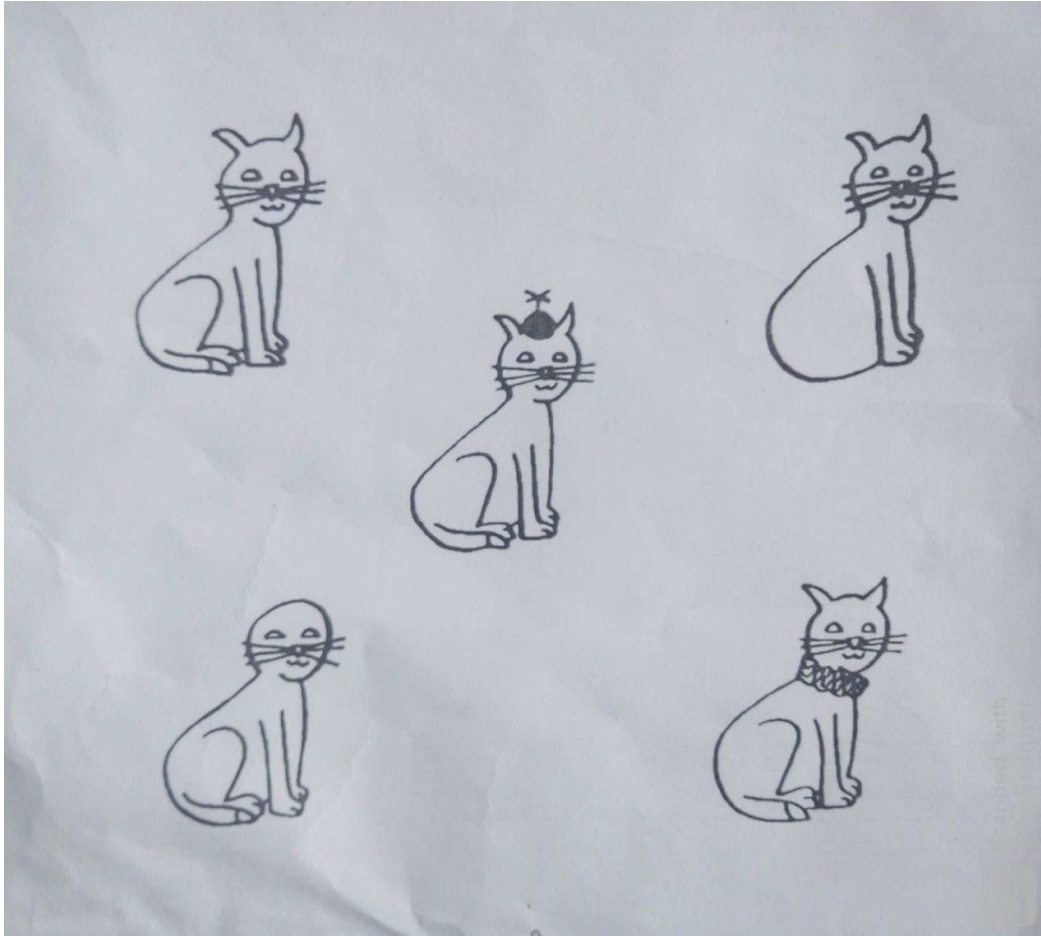
Picture sketches for matching task: Hat



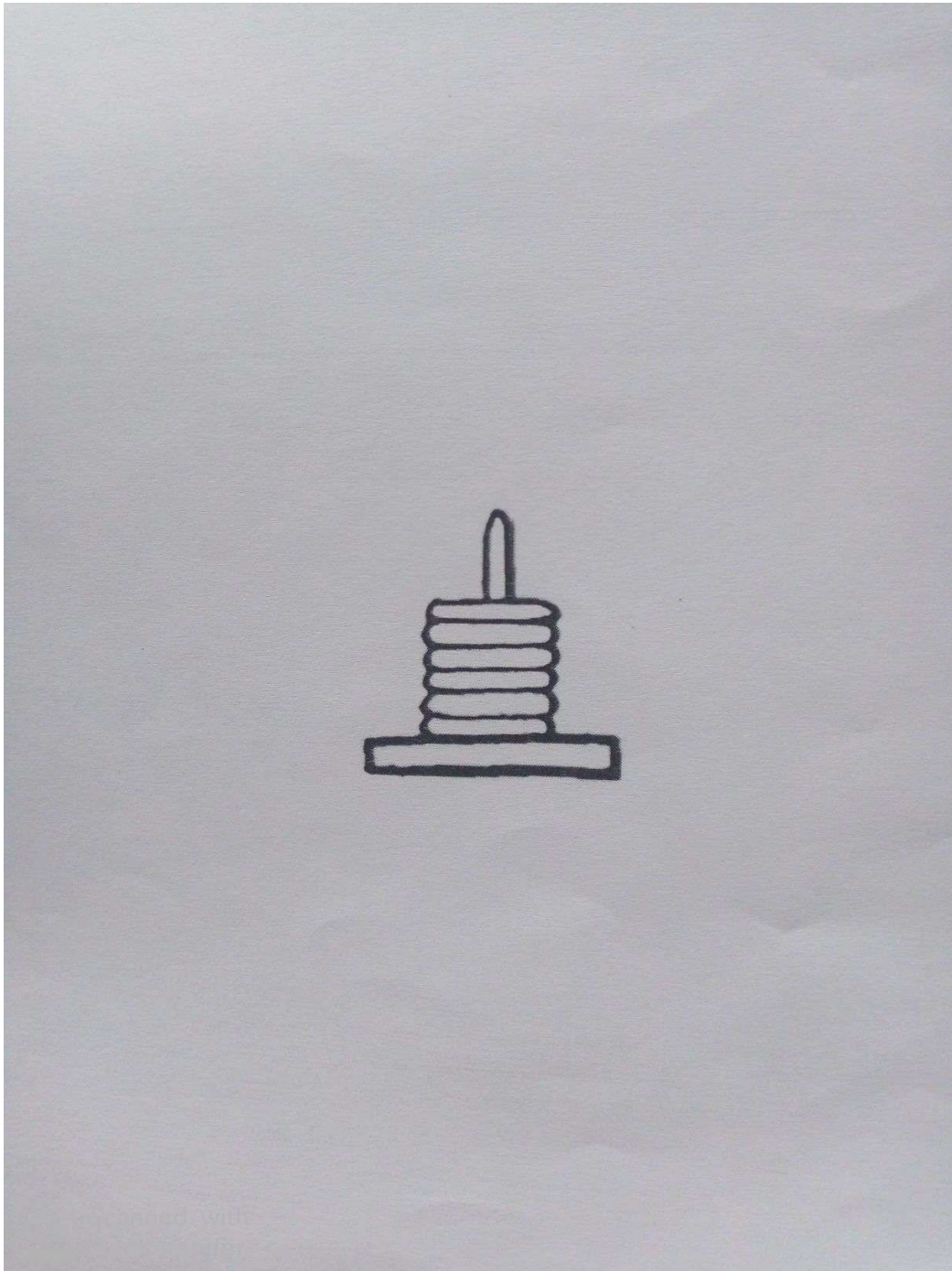
Picture sketches for matching task: Hats



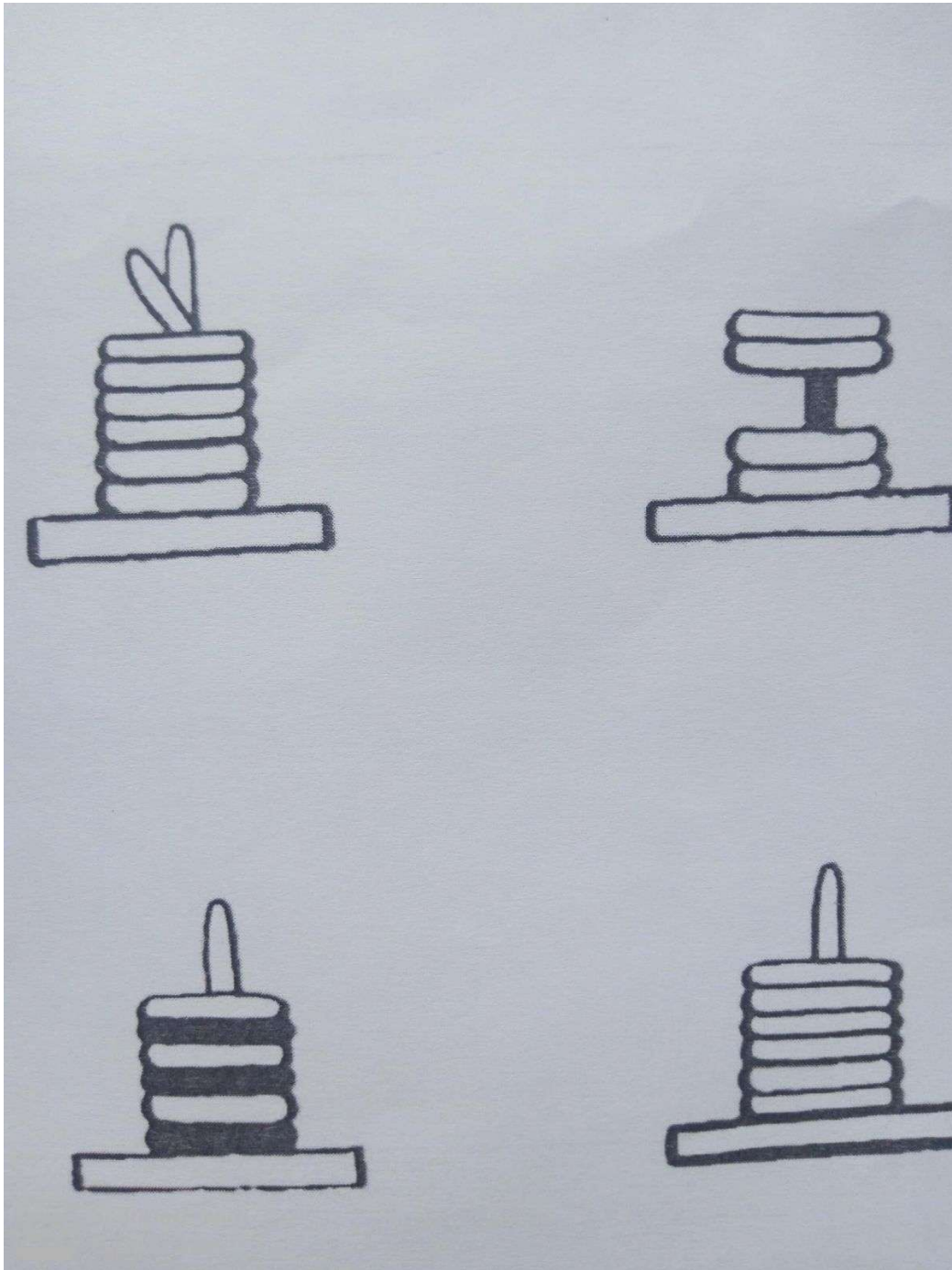
Picture sketches for matching task: Cat



Picture sketches for matching task: Cats



Picture sketches for matching task: Candle



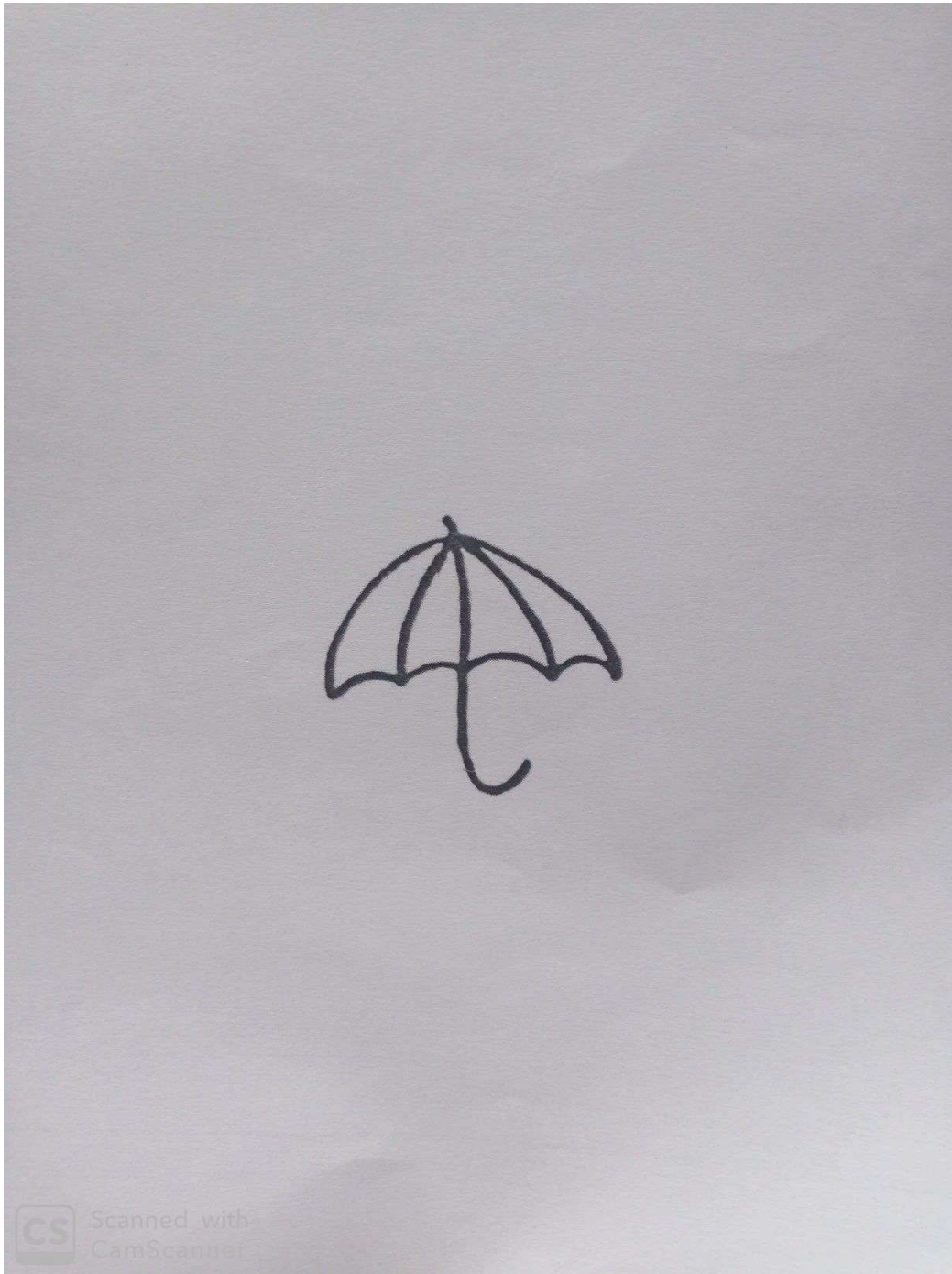
Picture sketches for matching task: Candles



Picture sketches for matching task: Pail



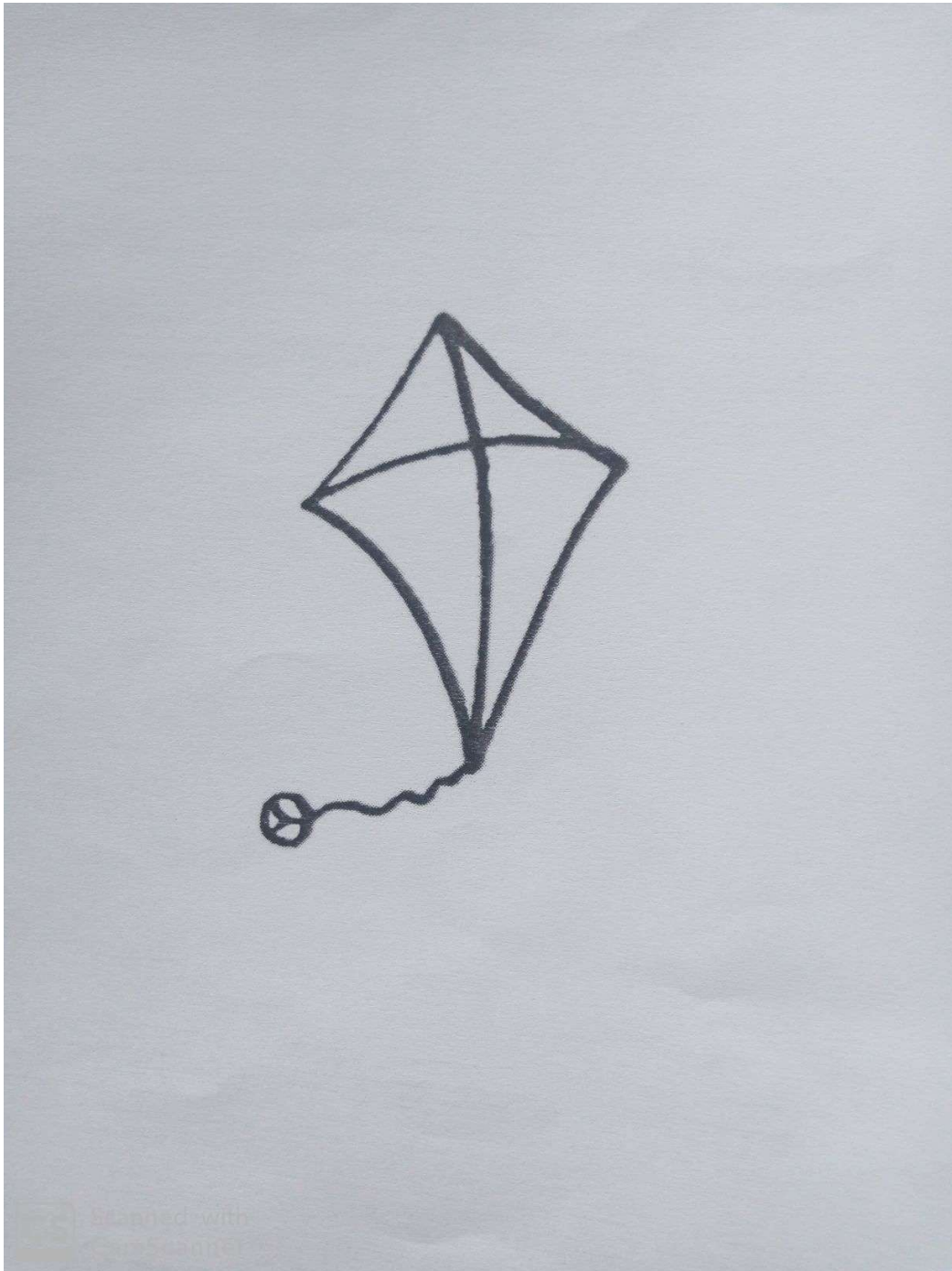
Picture sketches for matching task: Pails



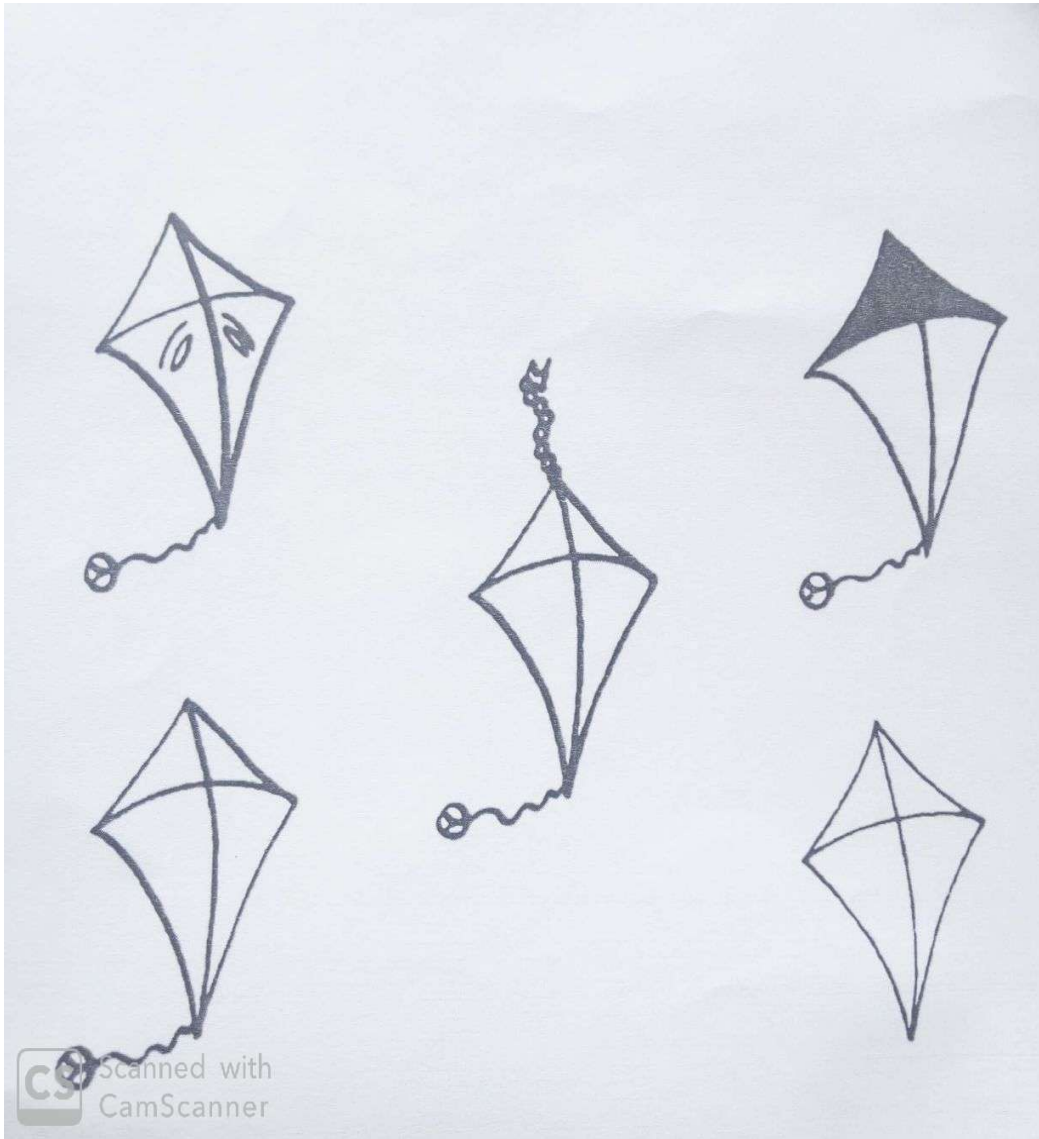
Picture sketches for matching task: Umbrella



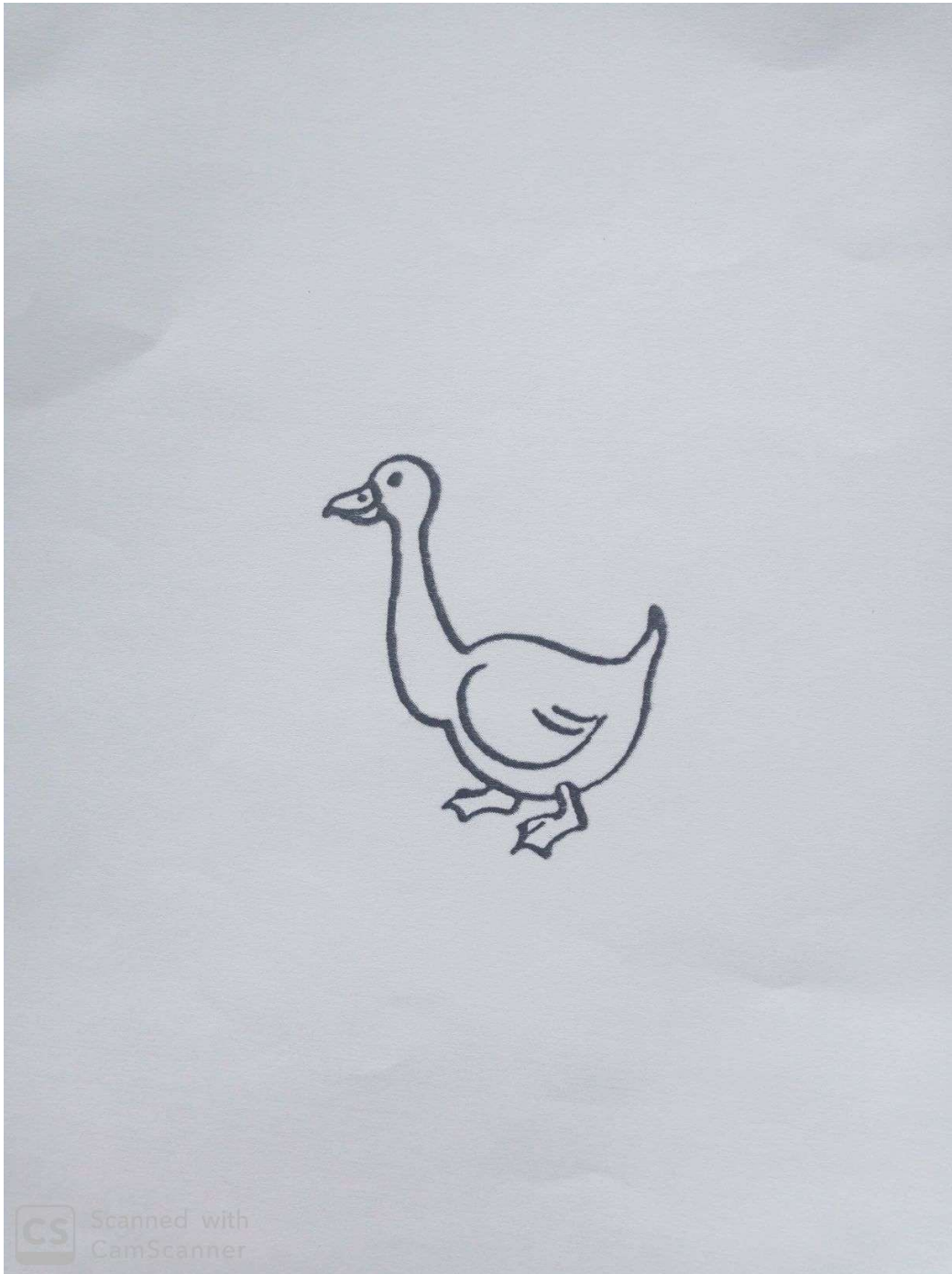
Picture sketches for matching task: Umbrellas



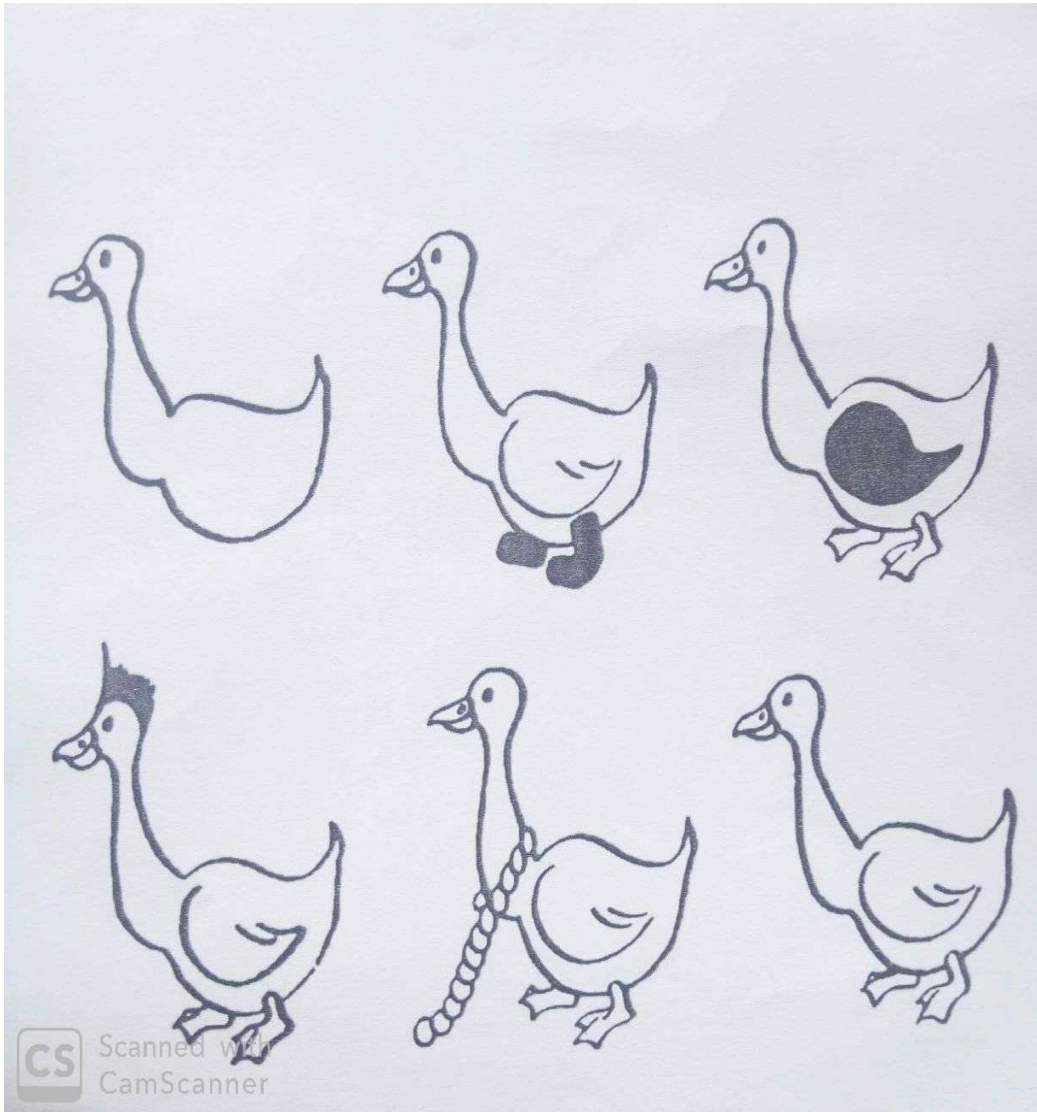
Picture sketches for matching task: Kite



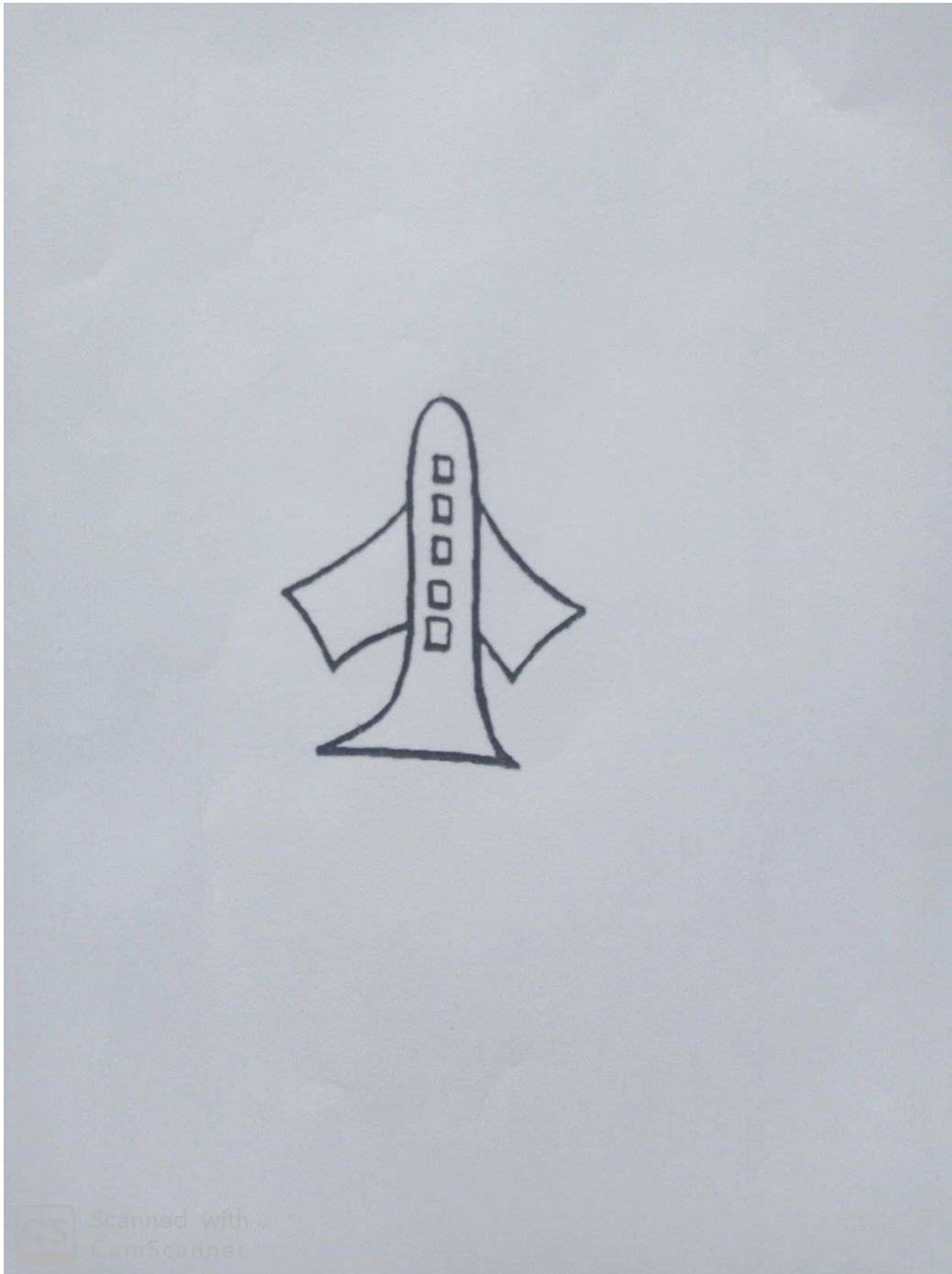
Picture sketches for matching task: Kites



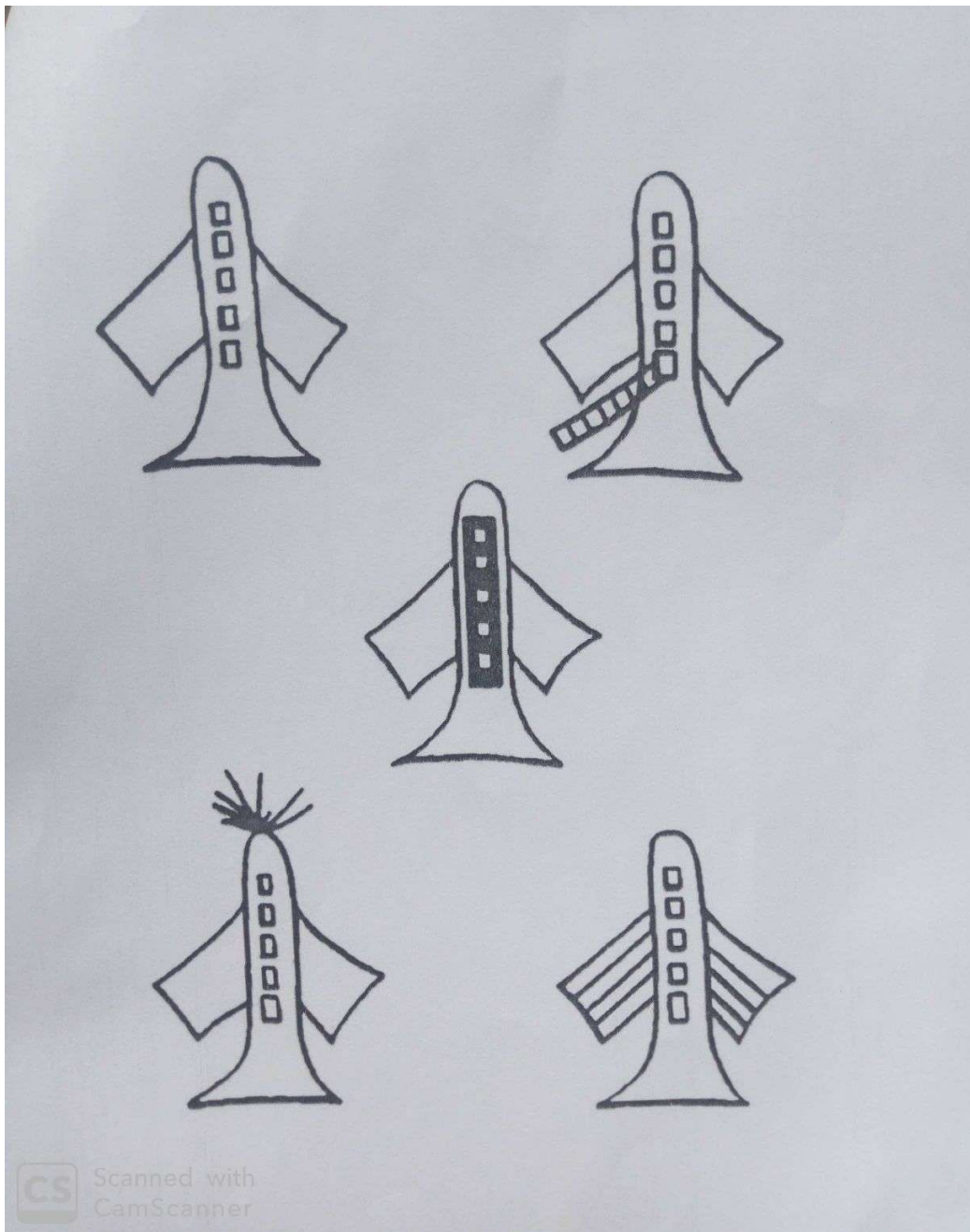
Picture sketches for matching task: Duck



Picture sketches for matching task: Ducks

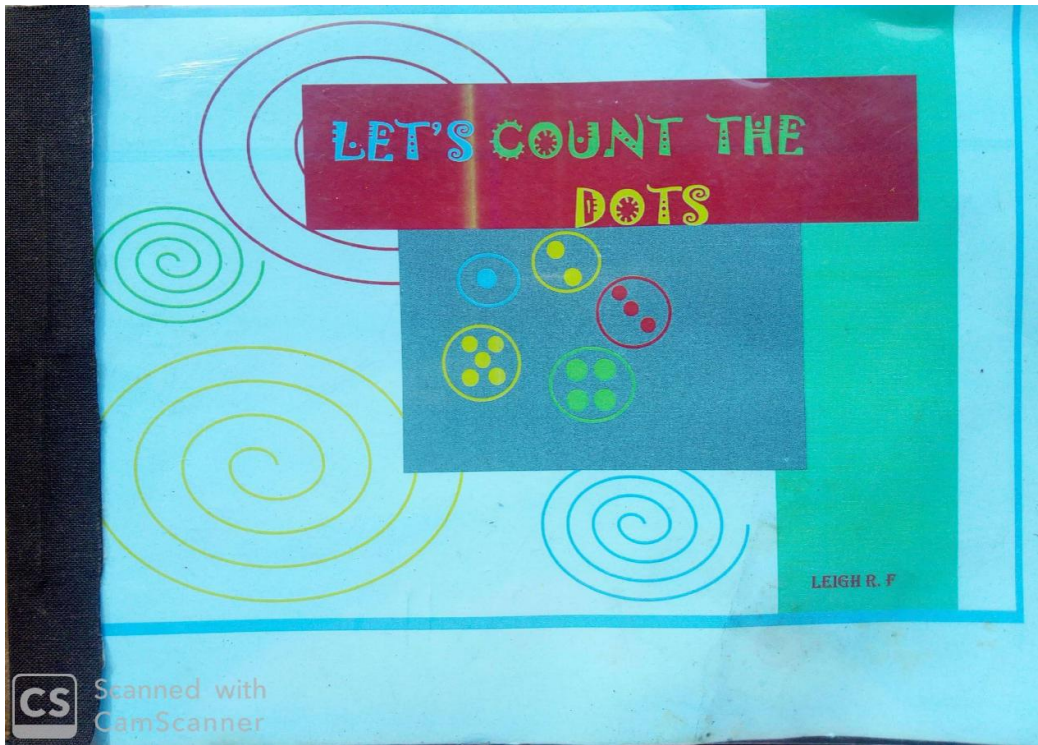


Picture sketches for matching task: Rocket

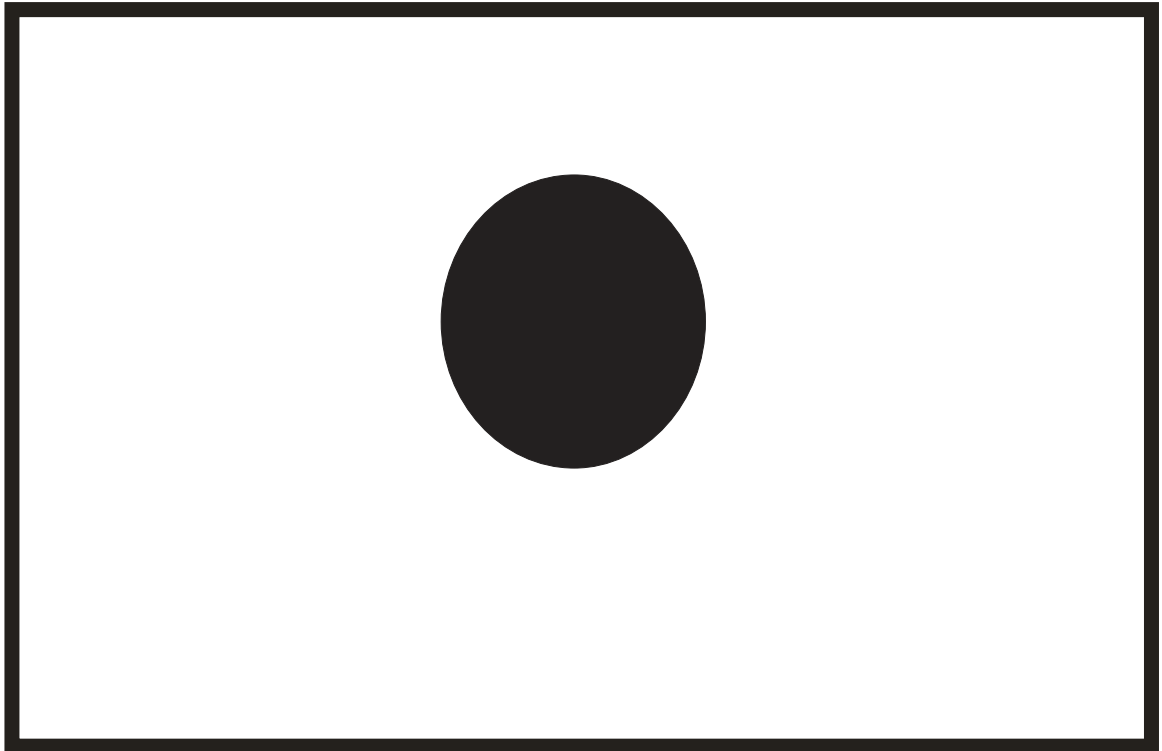
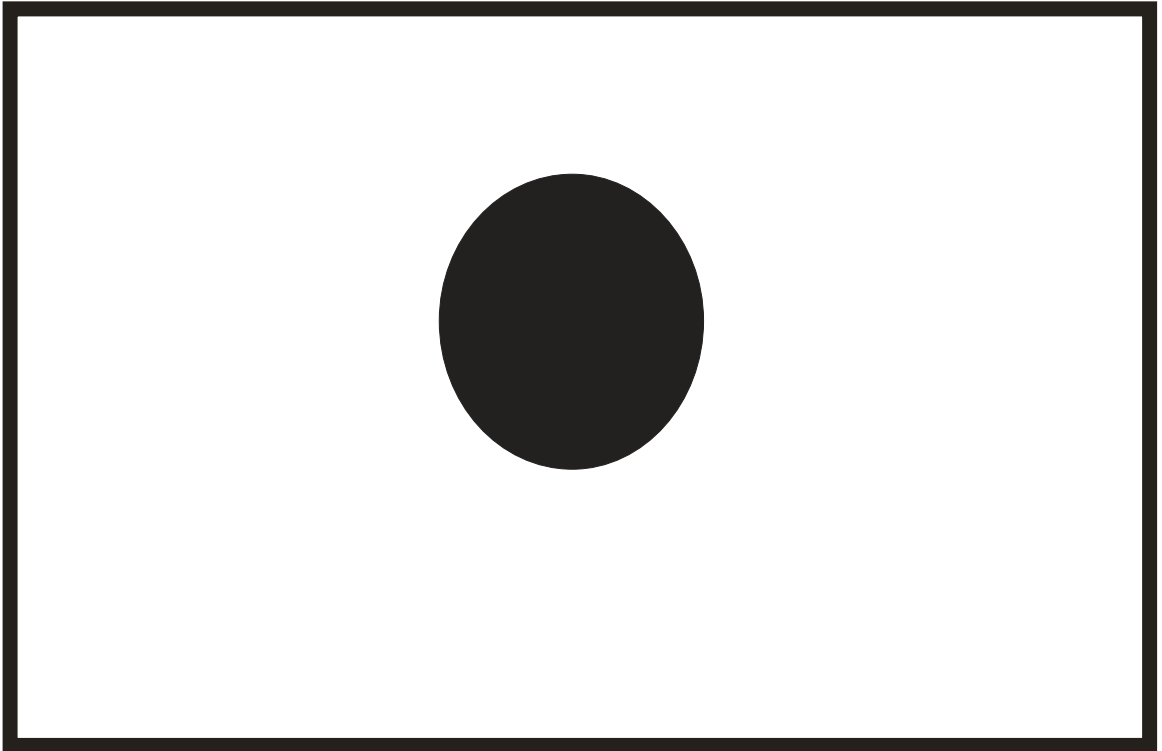


Picture sketches for matching task: Rockets

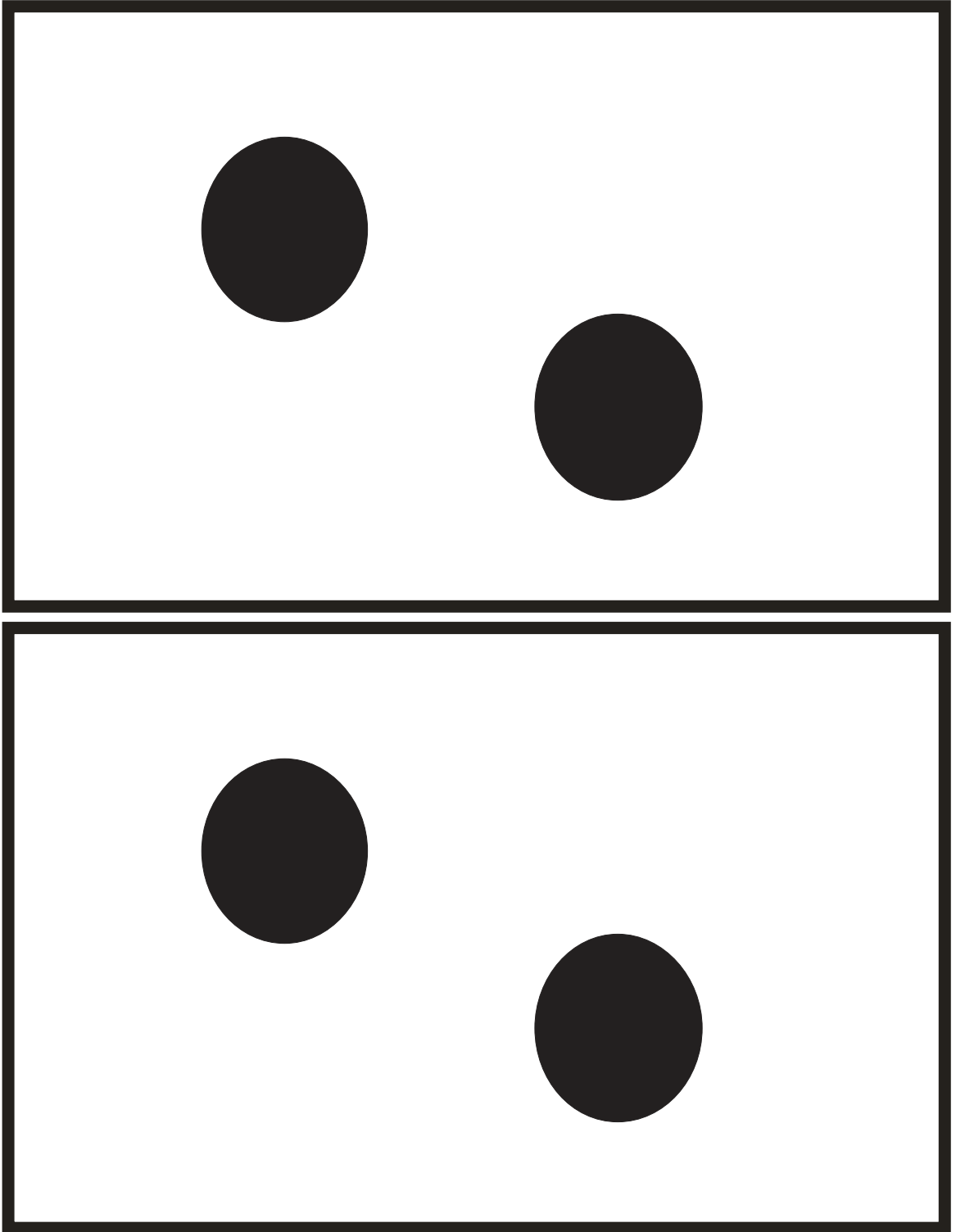
APPENDIX IX



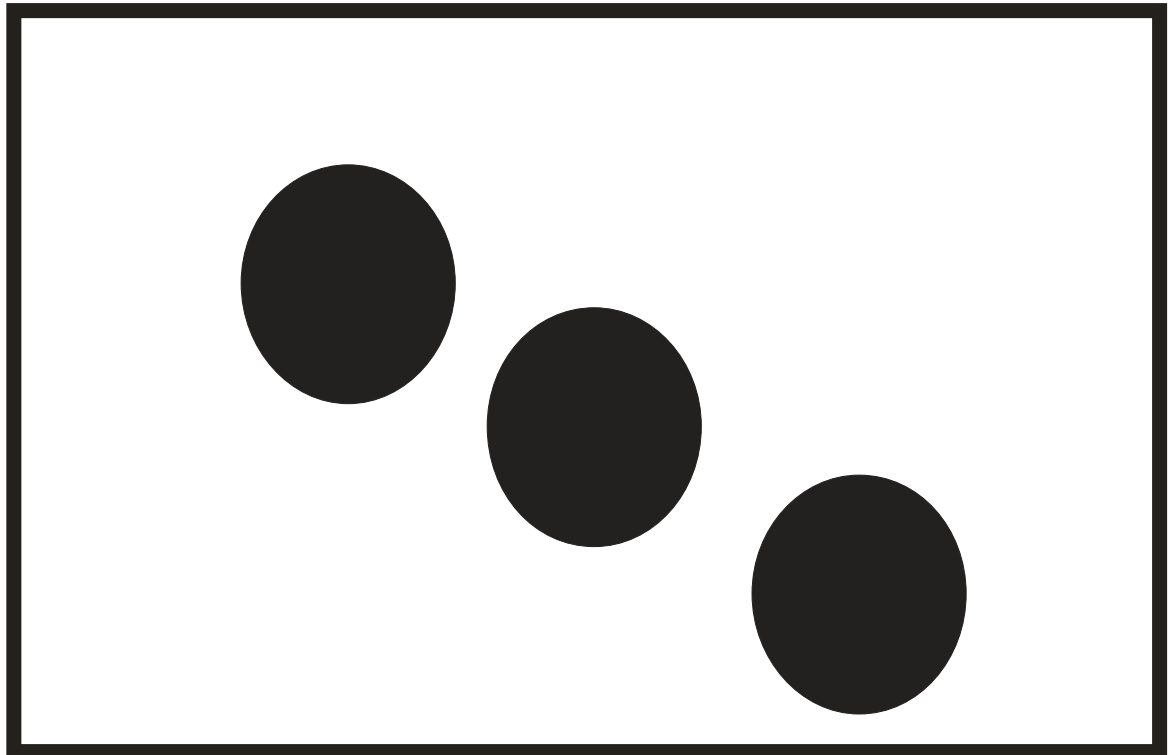
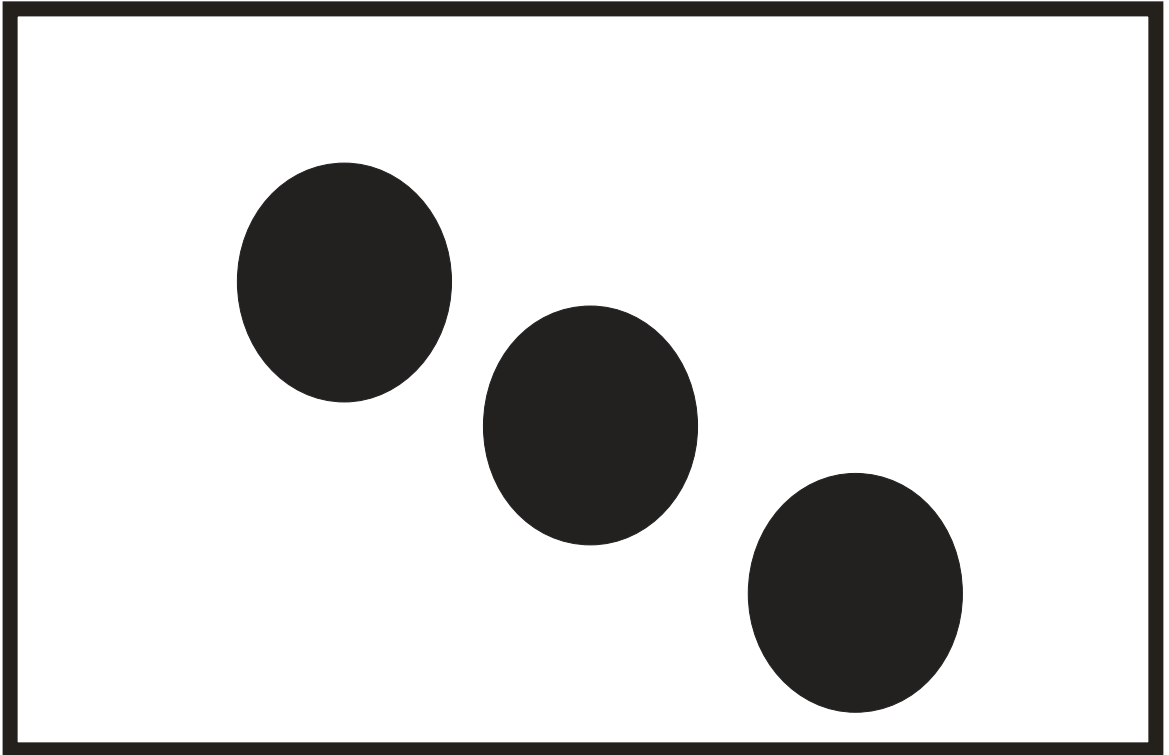
Dots book



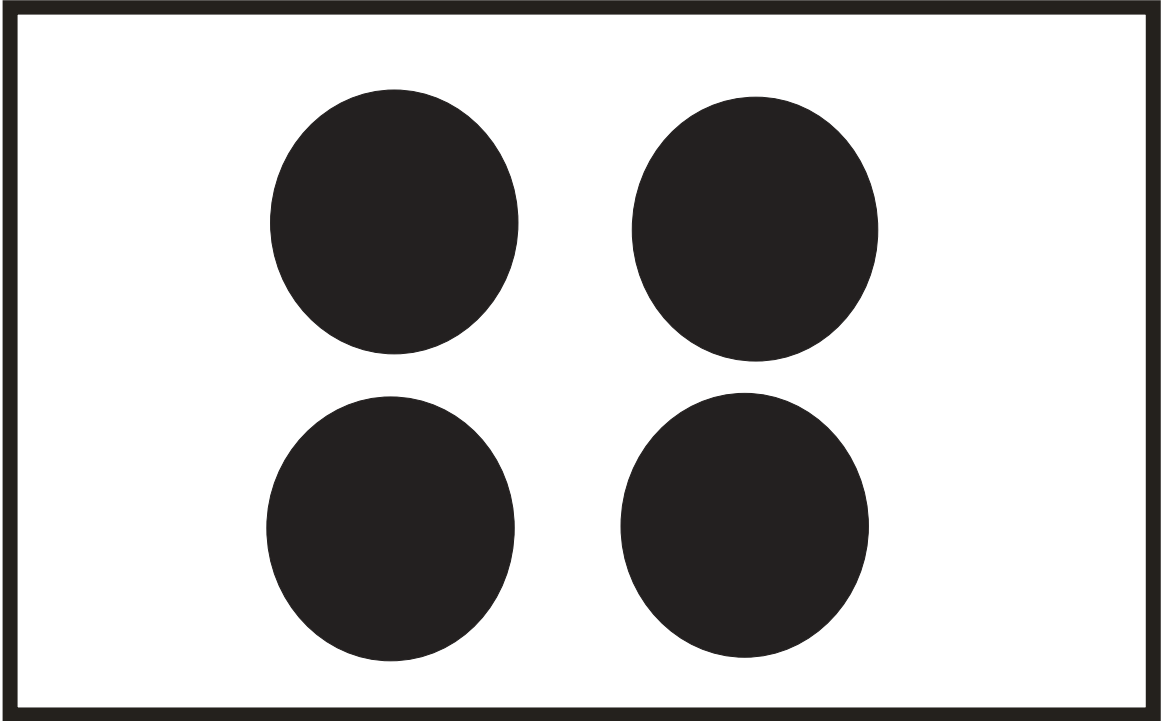
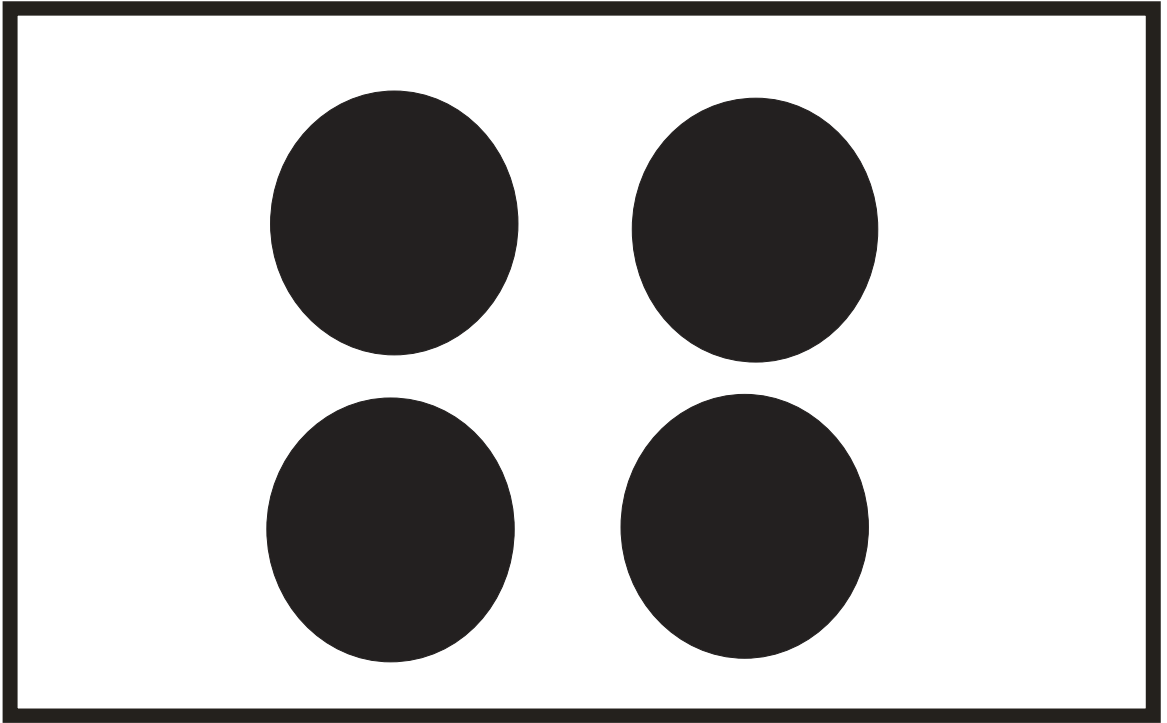
Dots book: Page 1

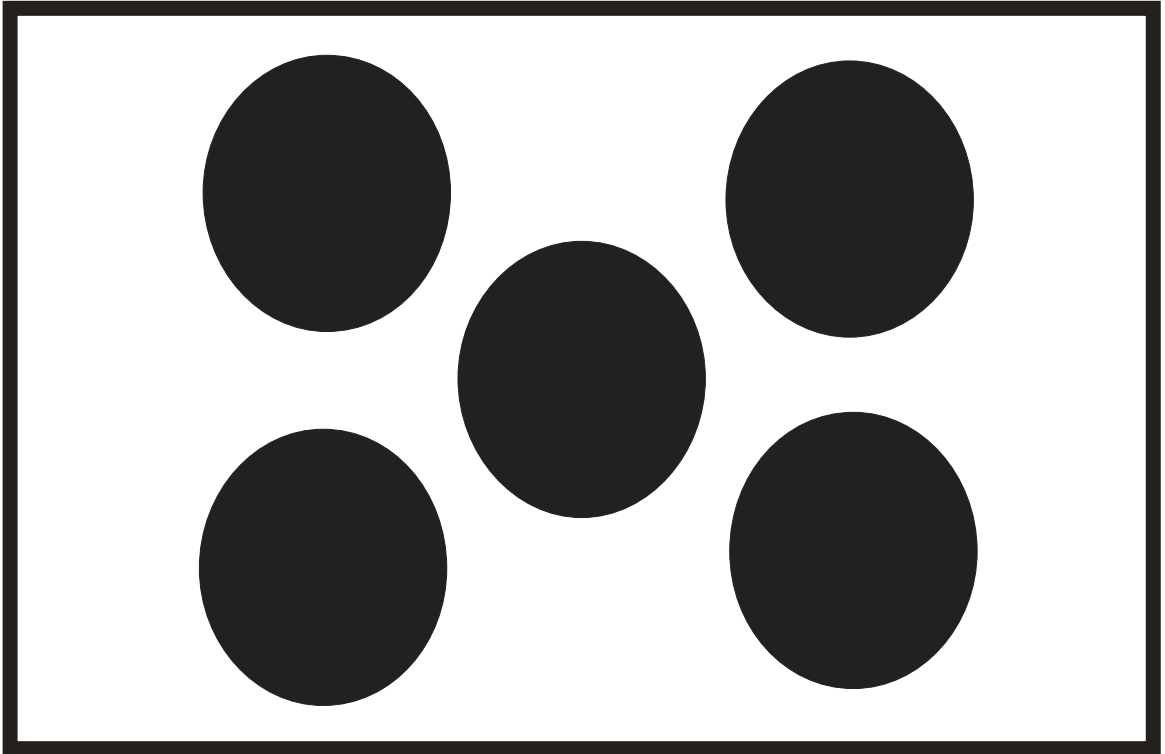
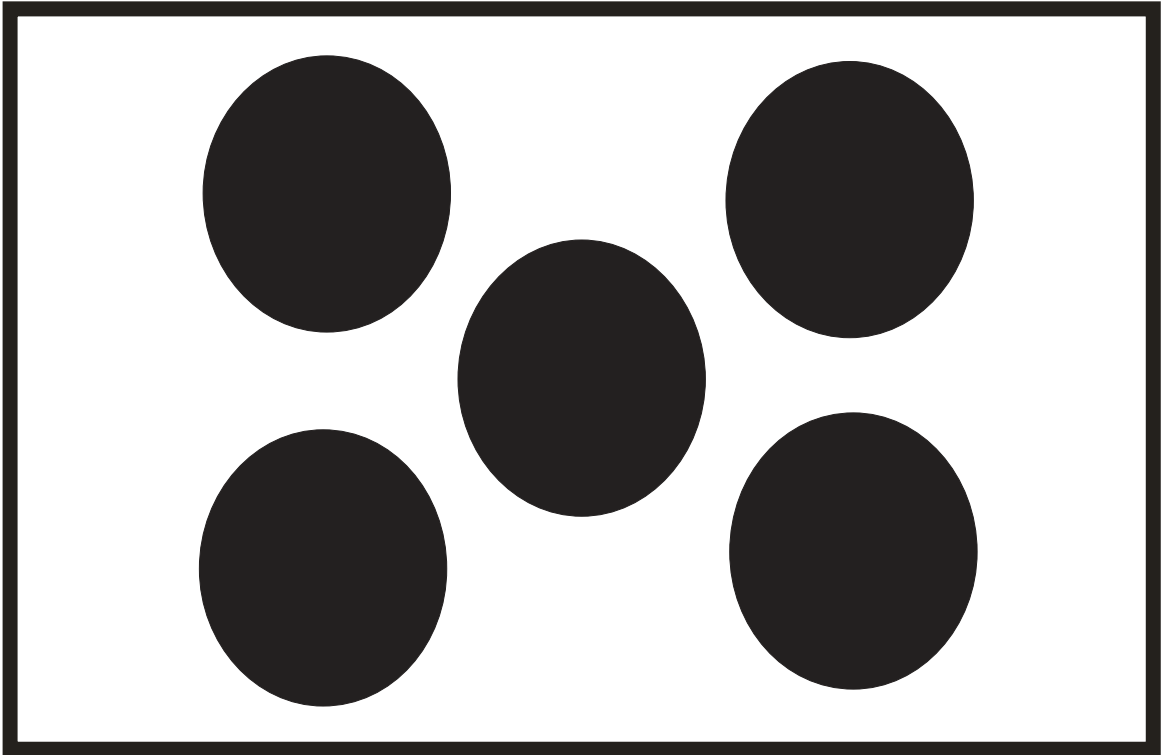


Dots book: Page 2

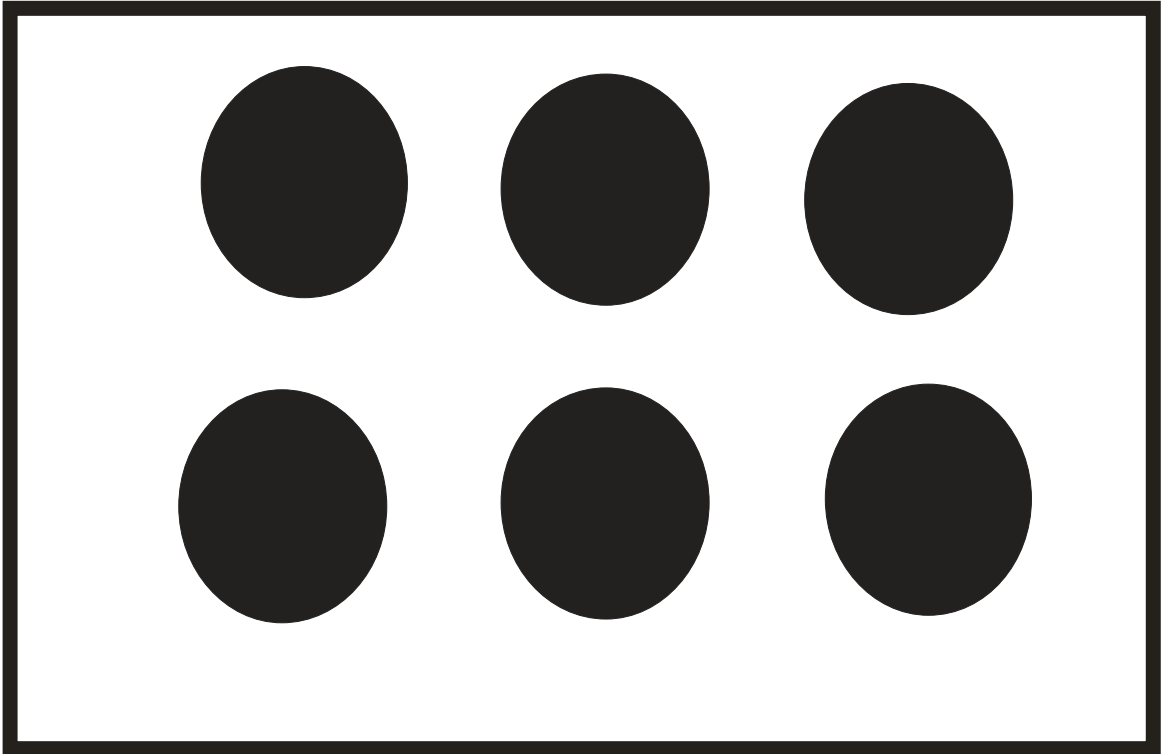
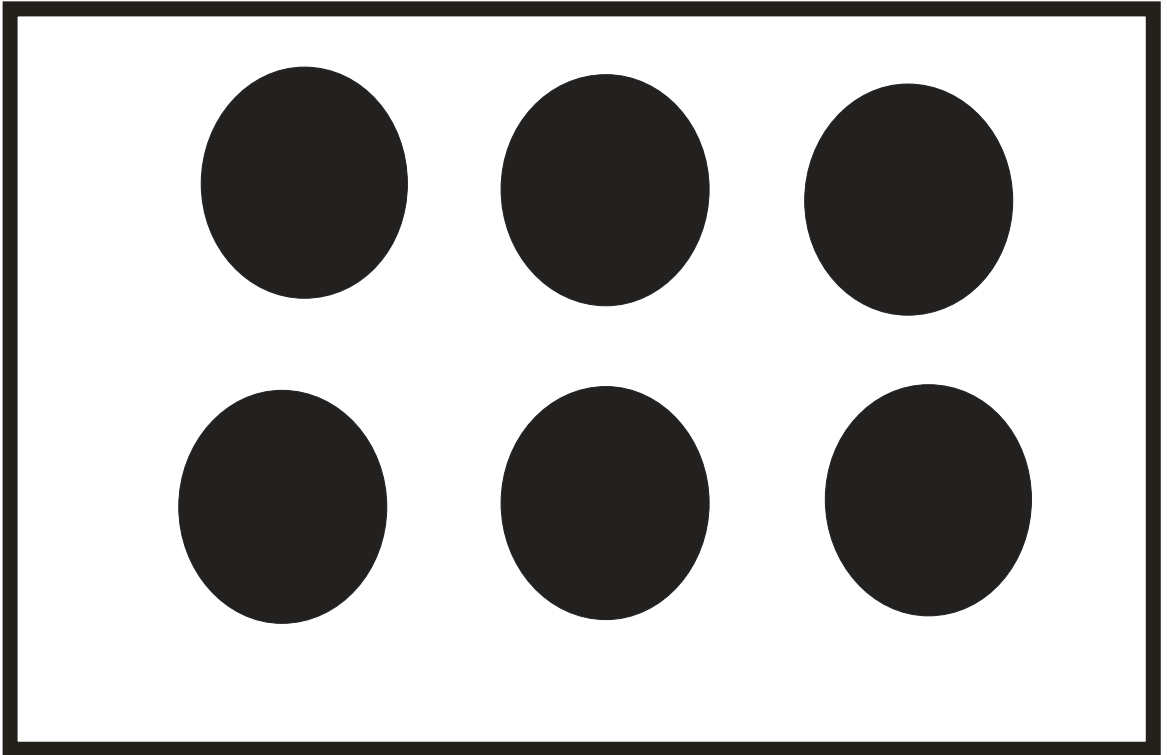


Dots book: Page 3

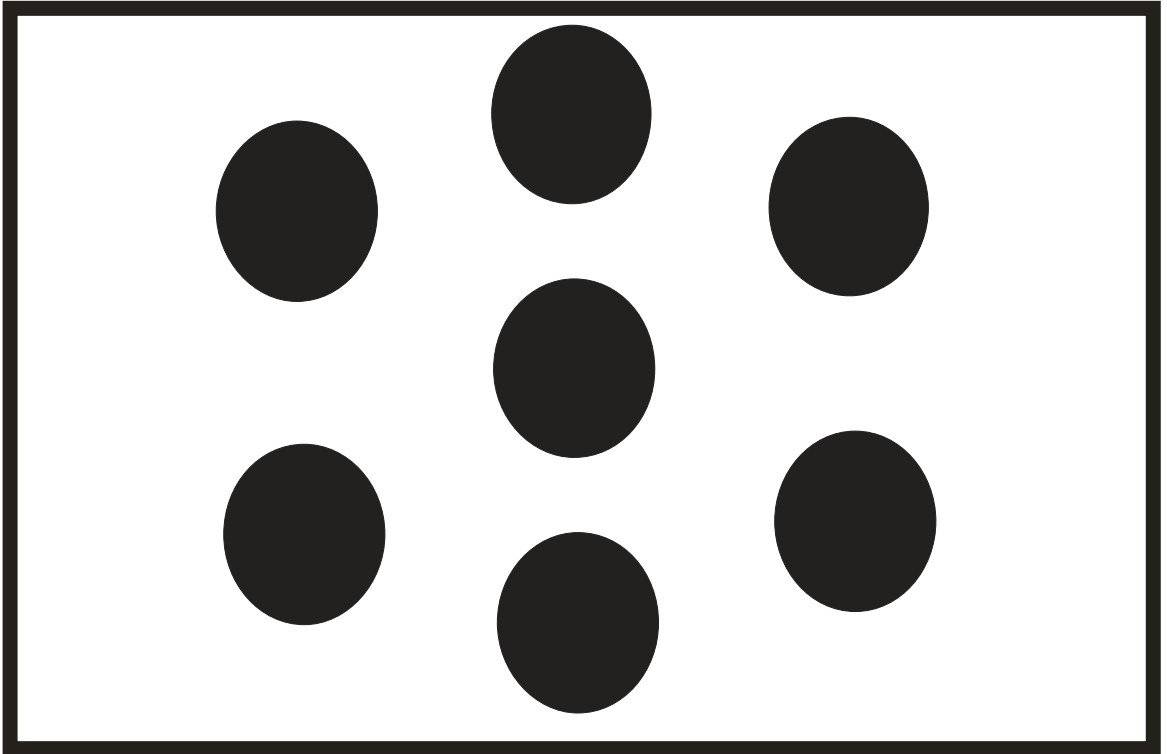
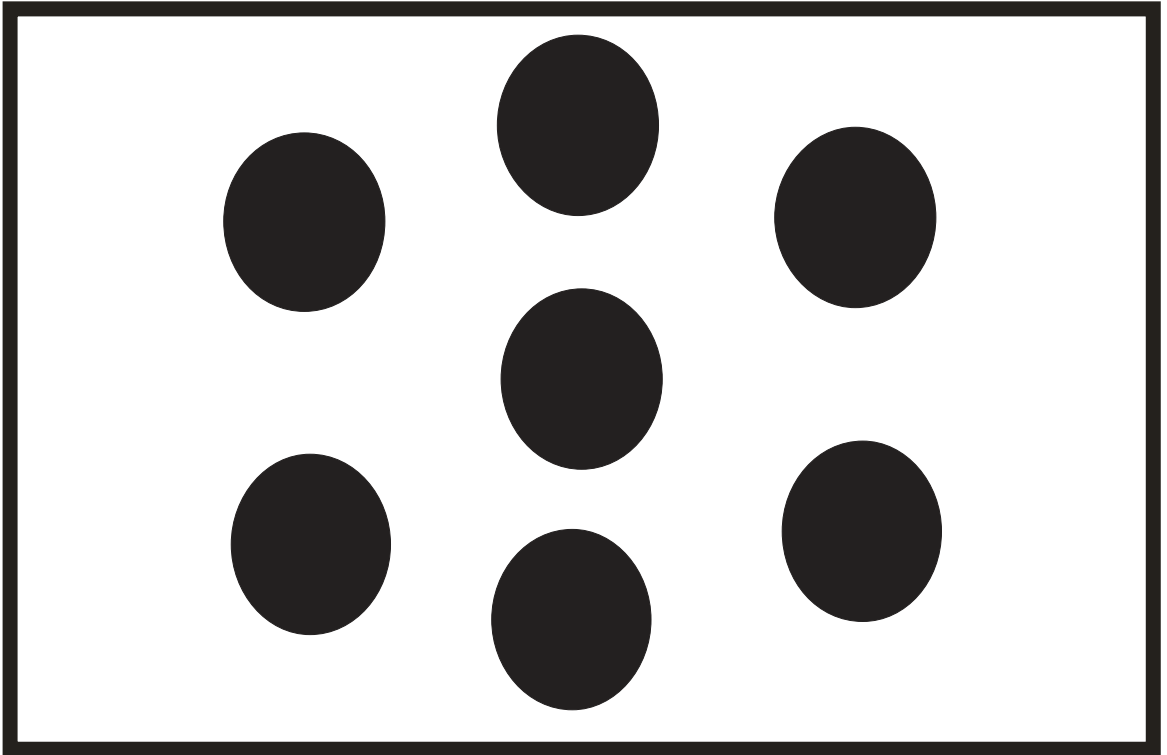




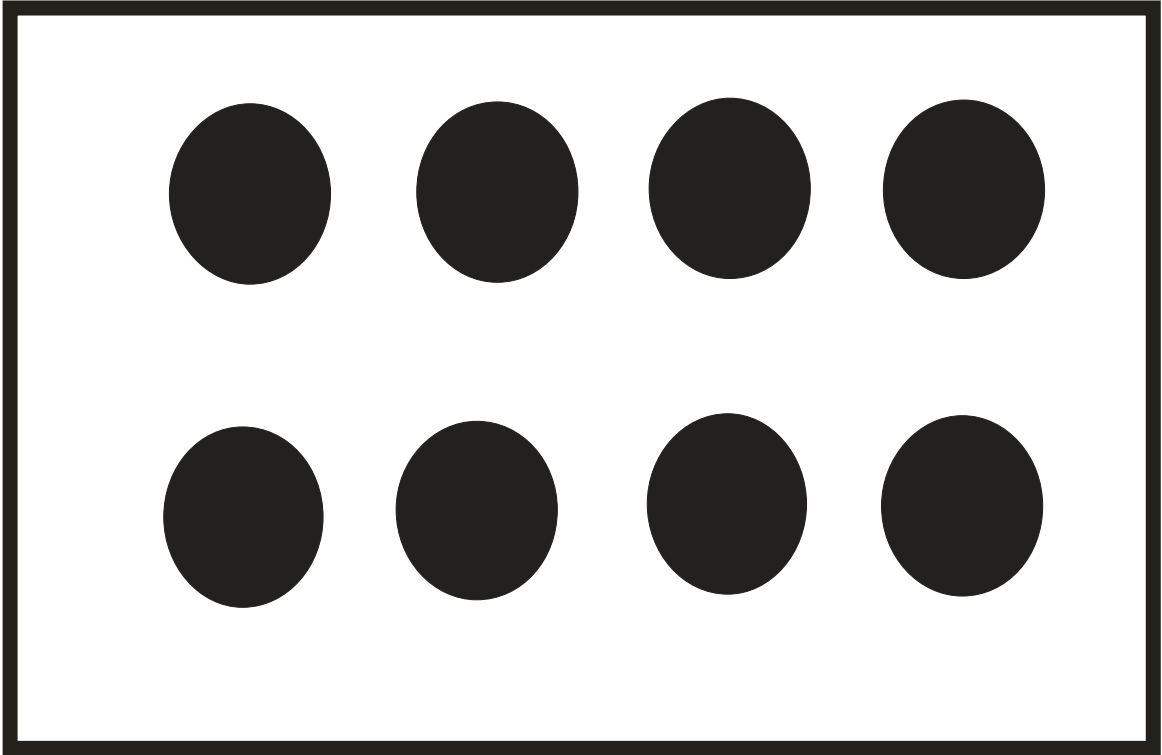
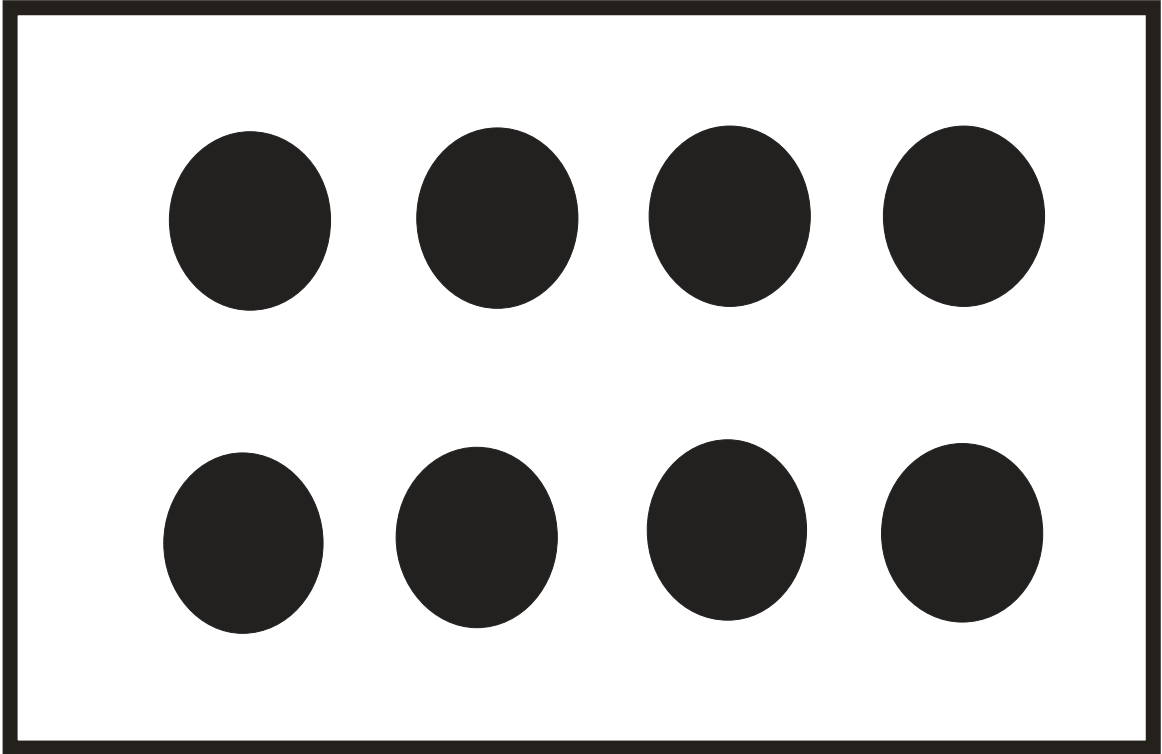
Dots book: Page 5



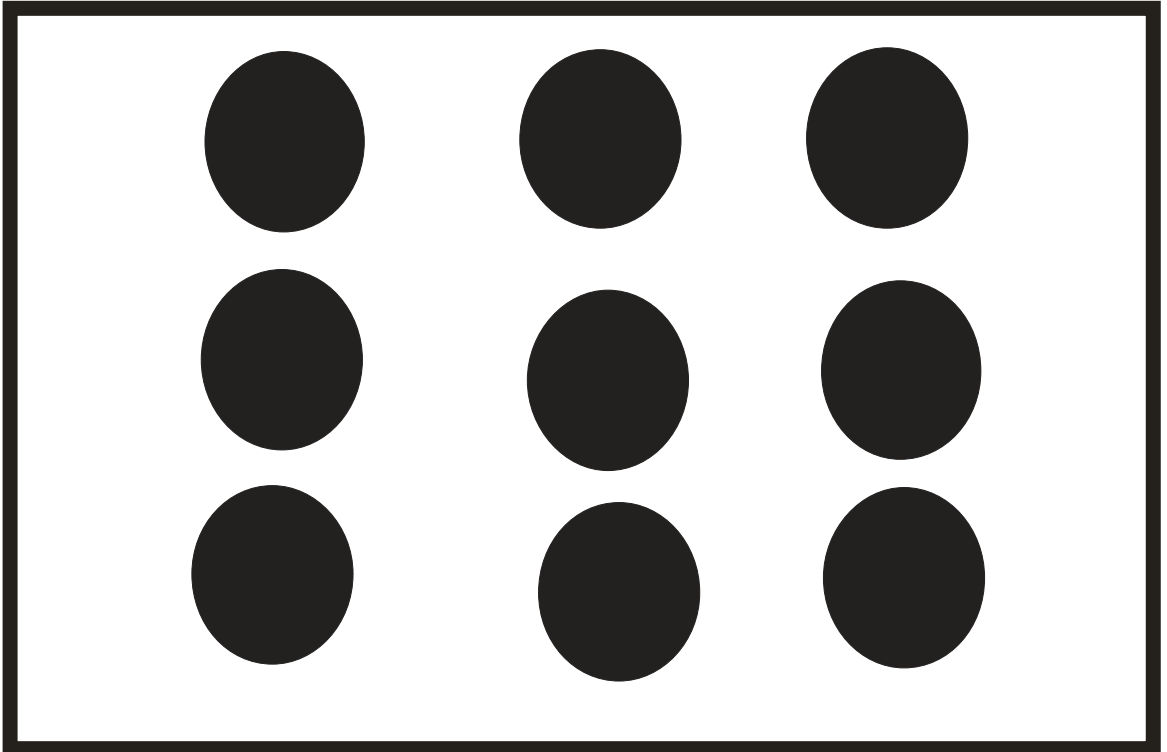
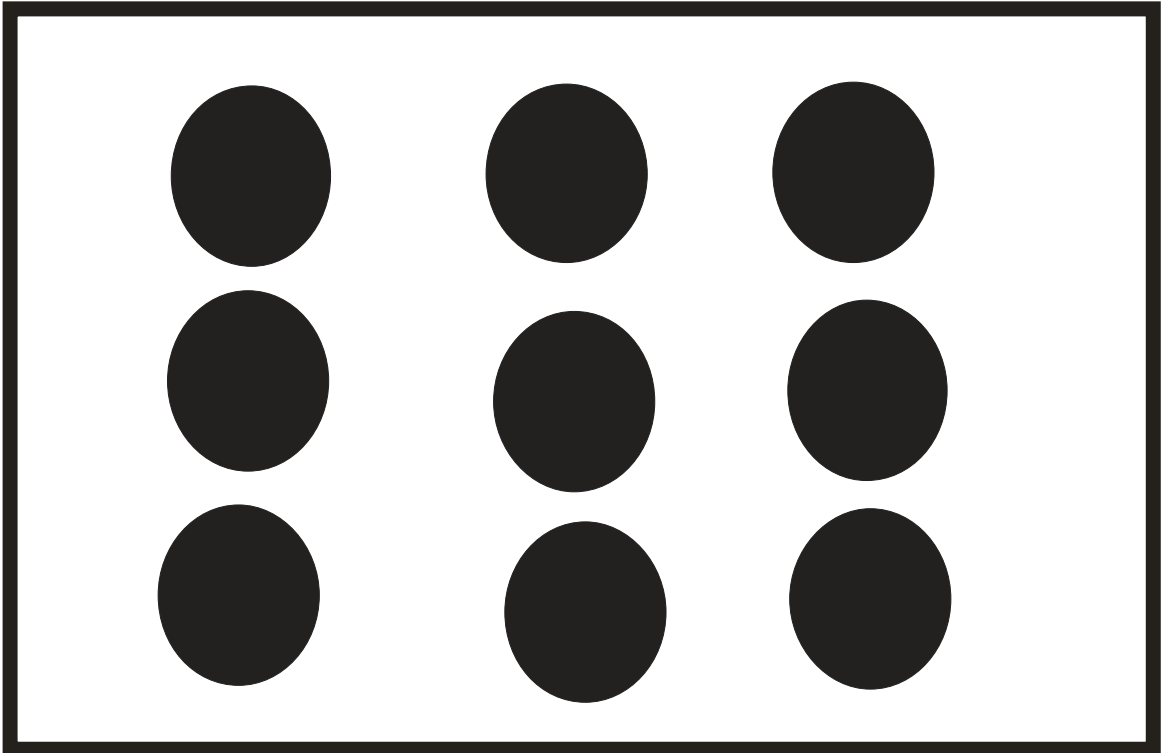
Dots book: Page 6

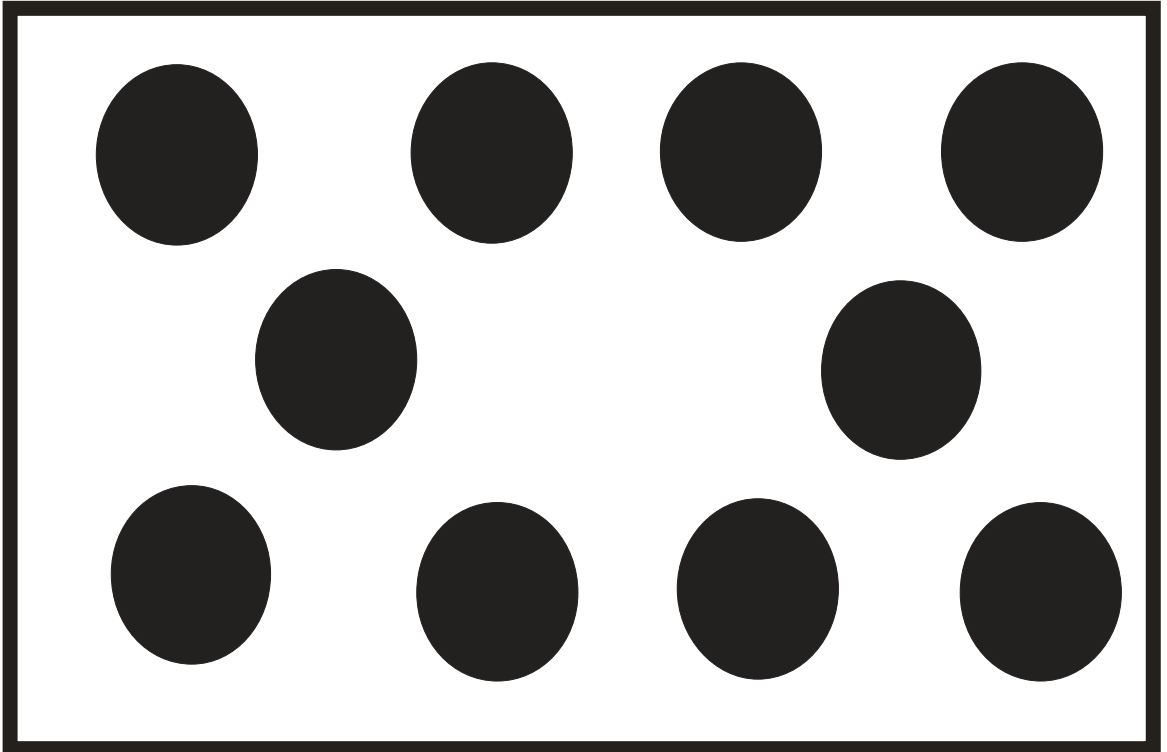
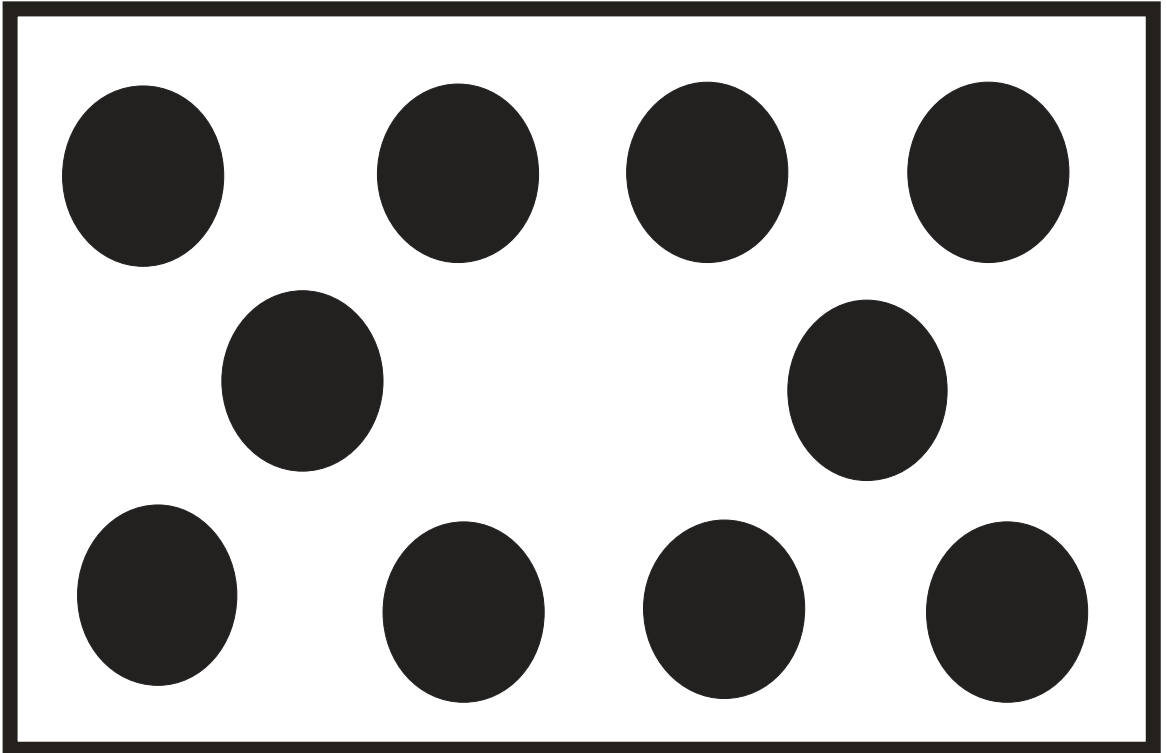


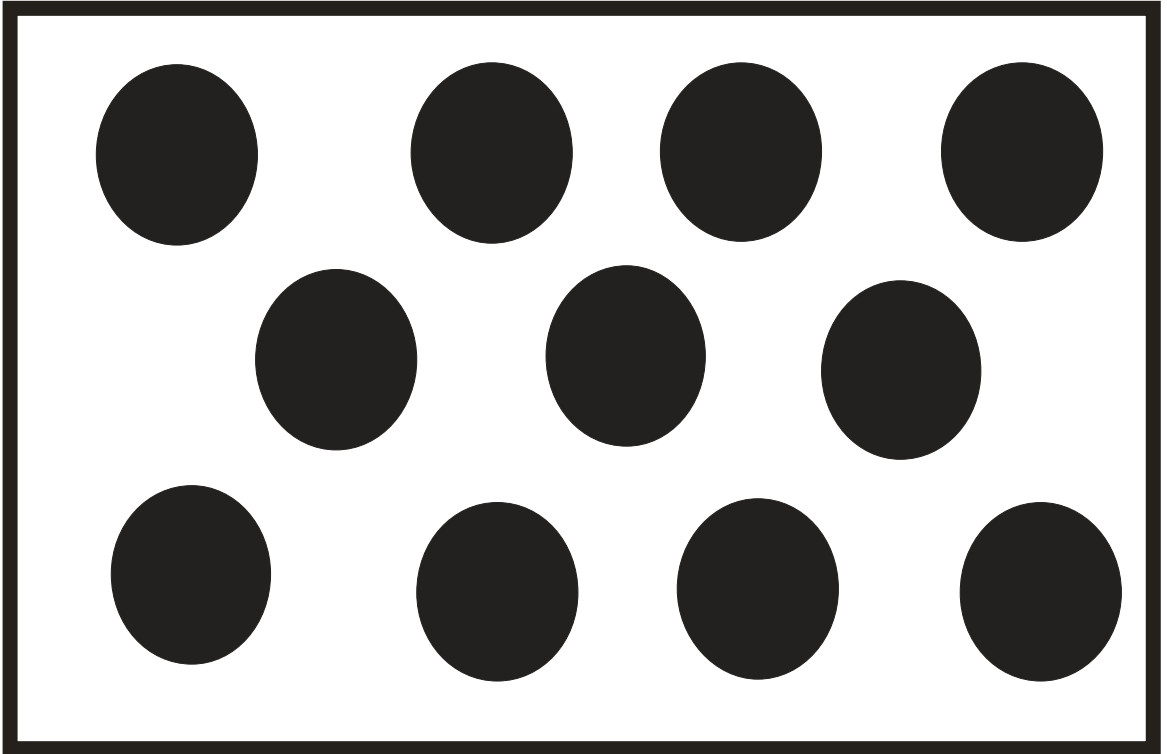
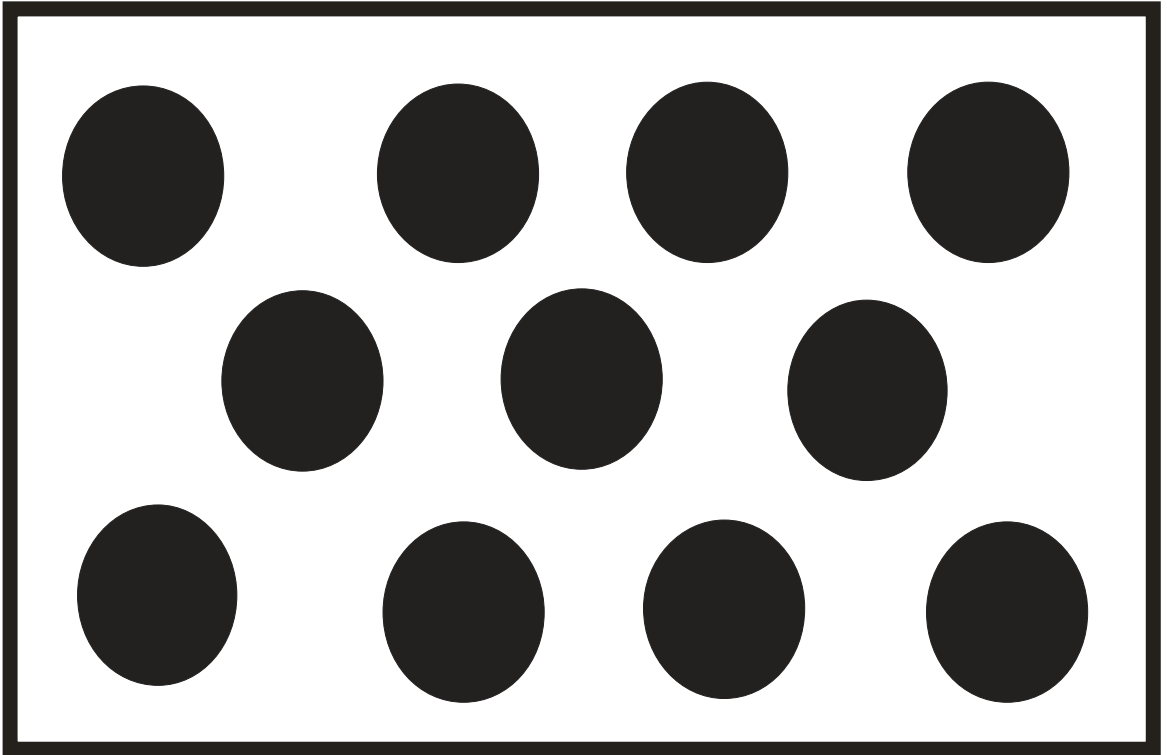
Dots book: Page 7



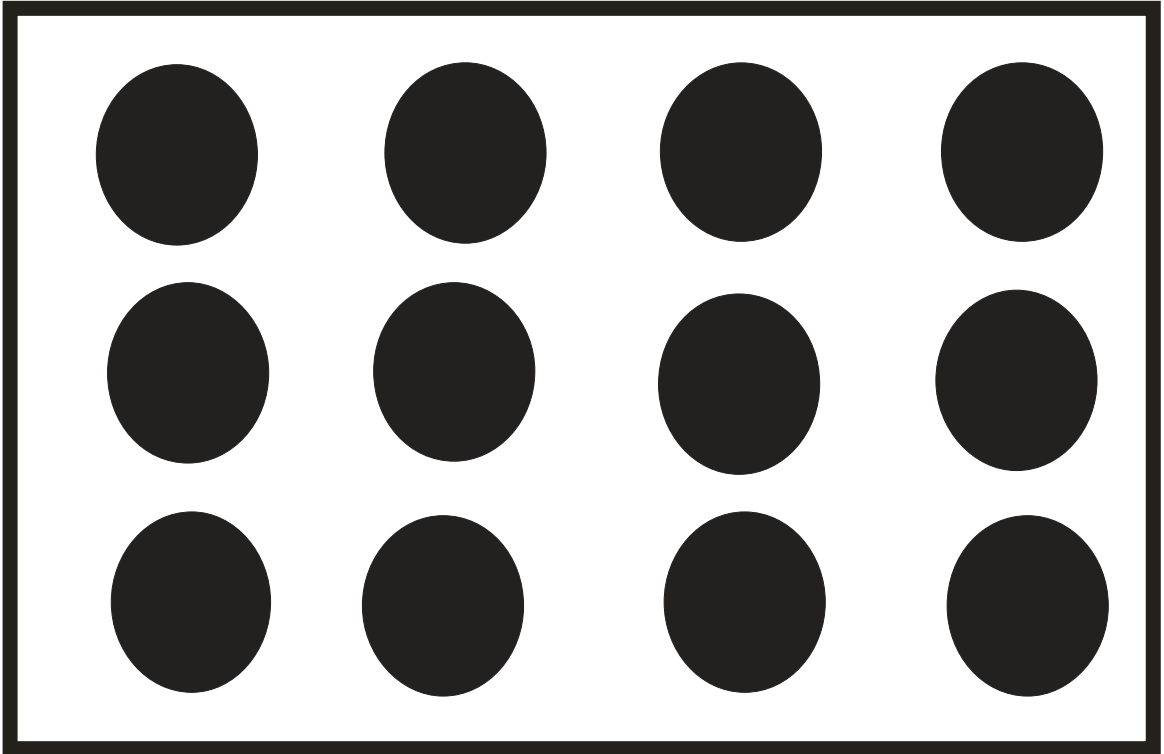
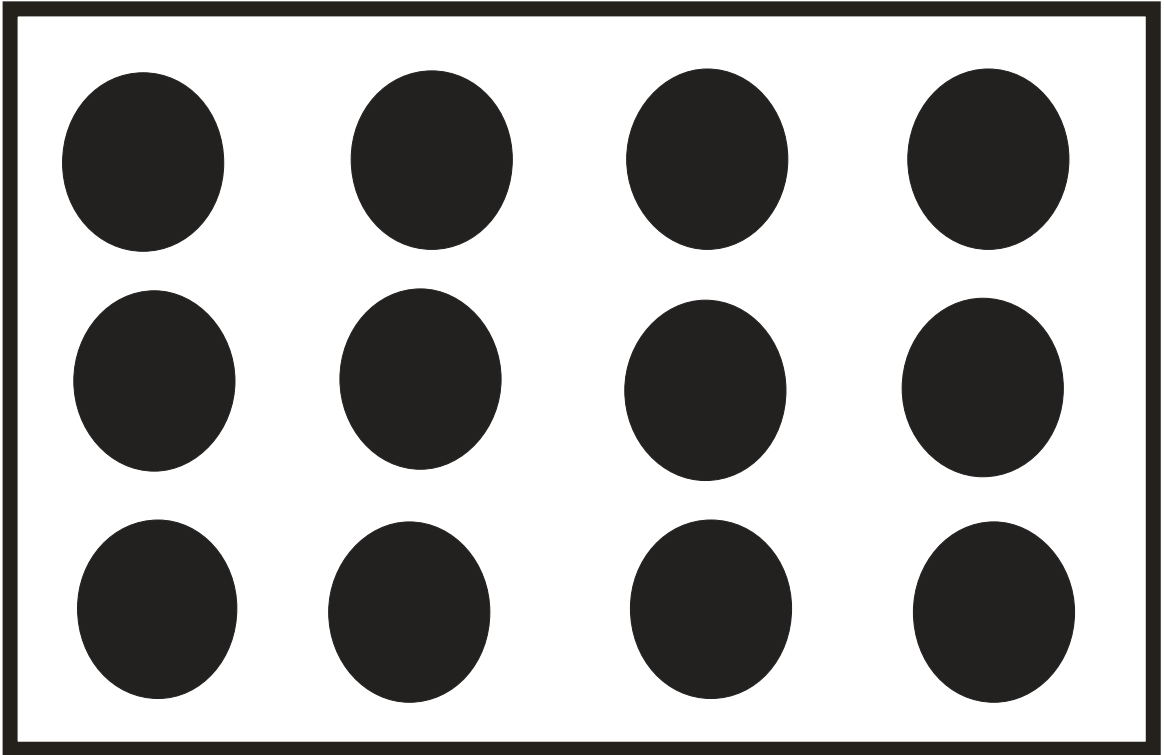
Dots book: Page 8



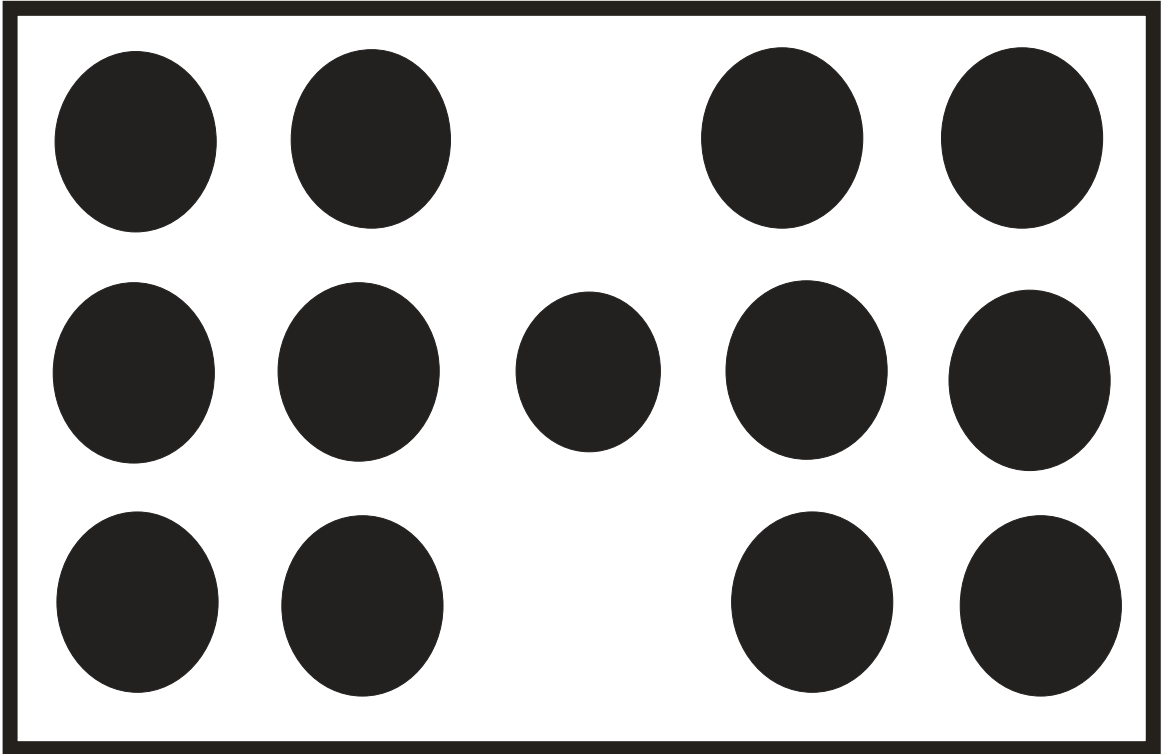
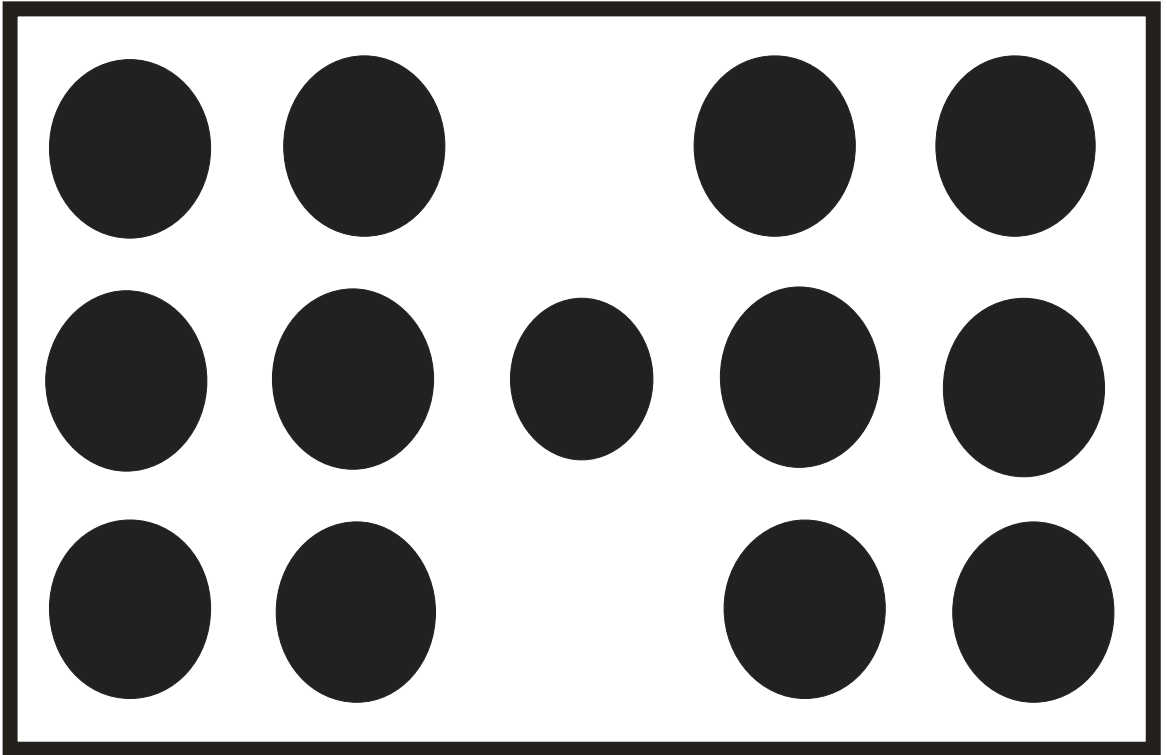


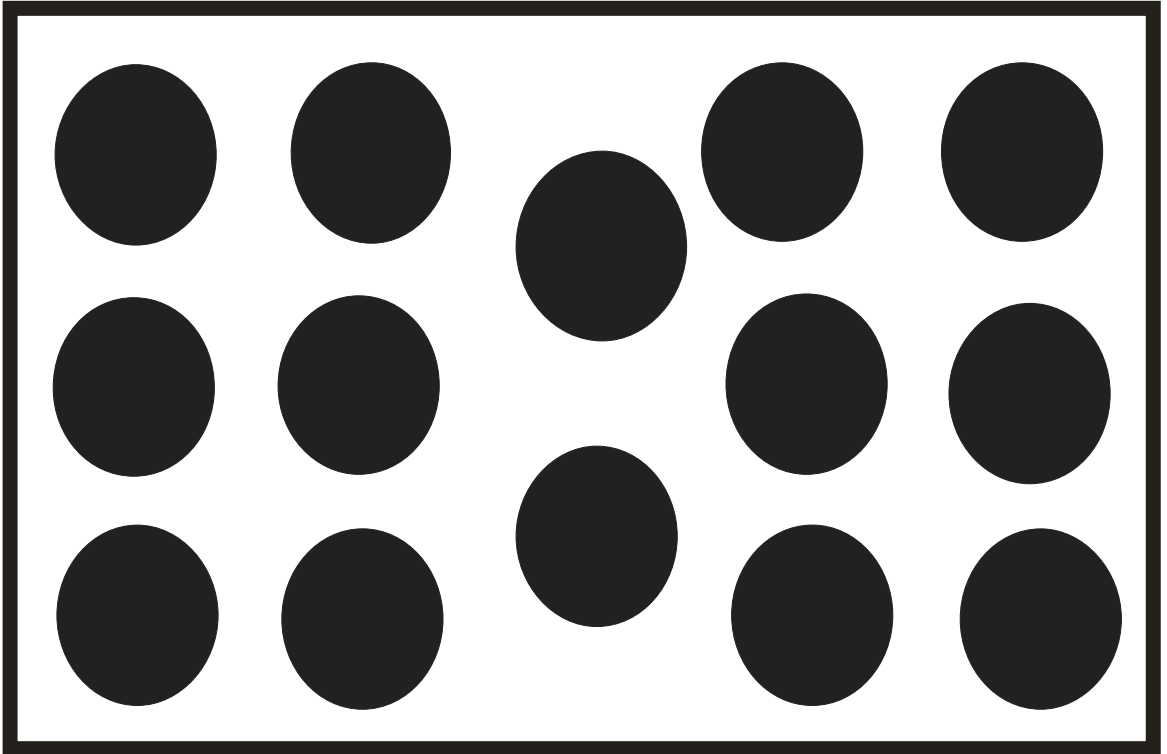
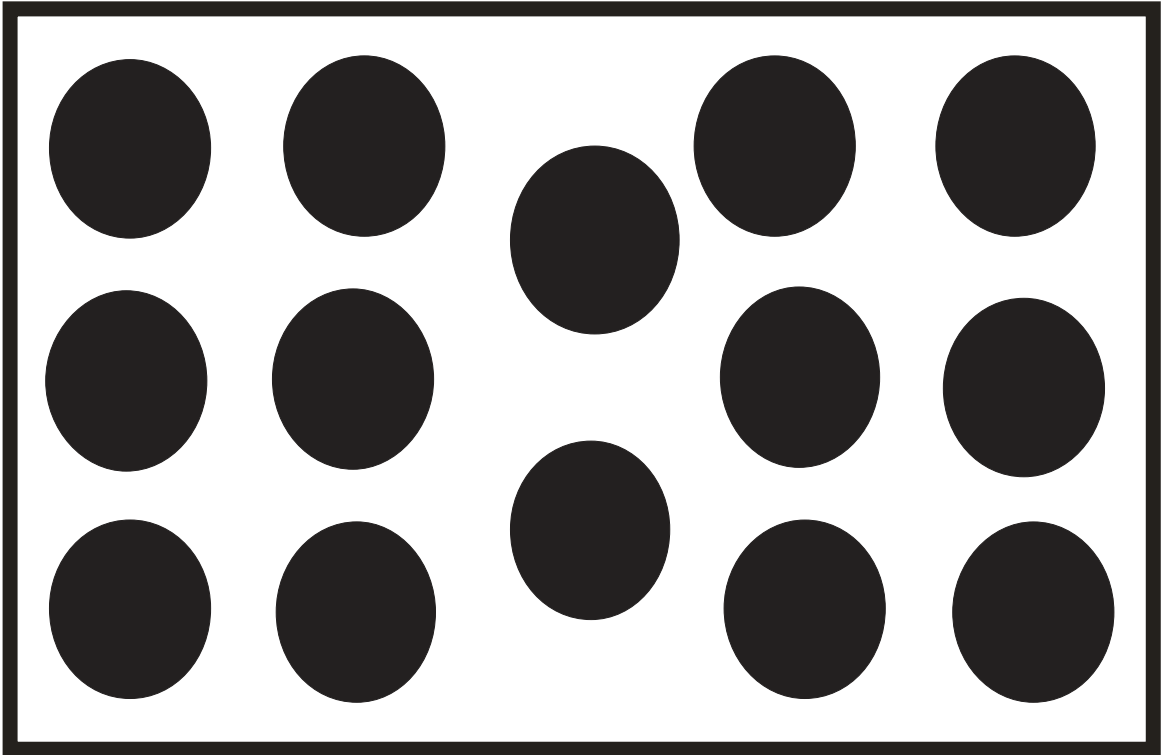


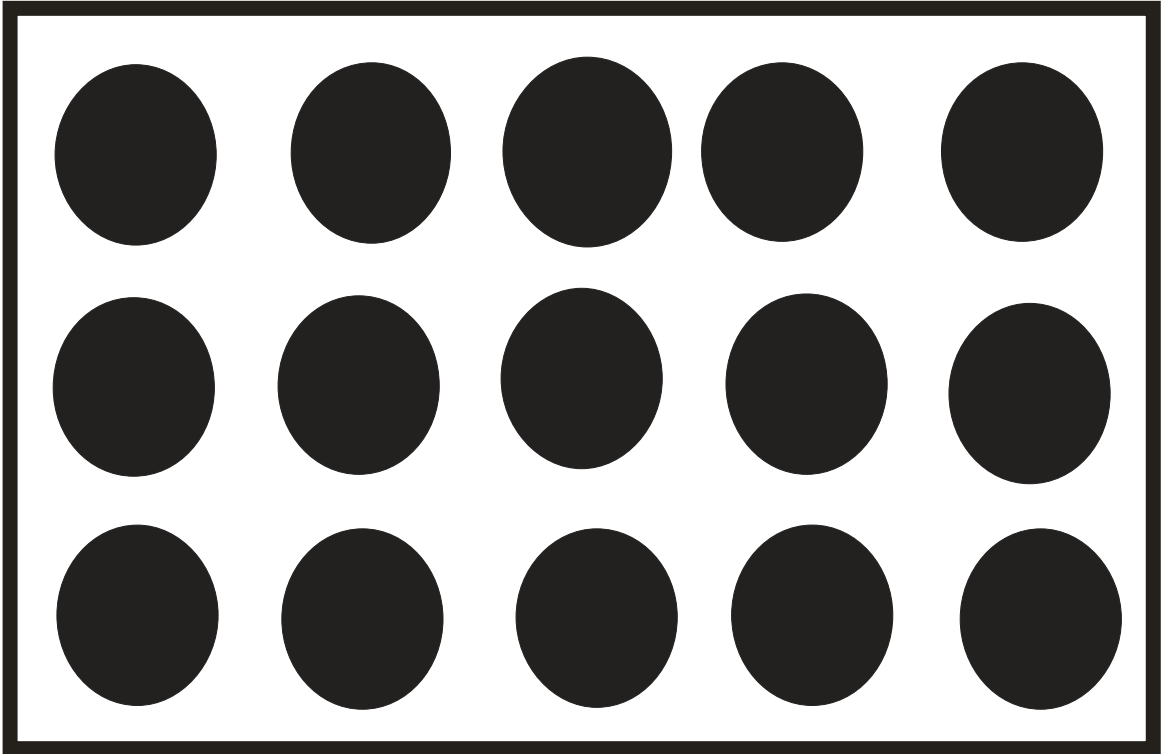
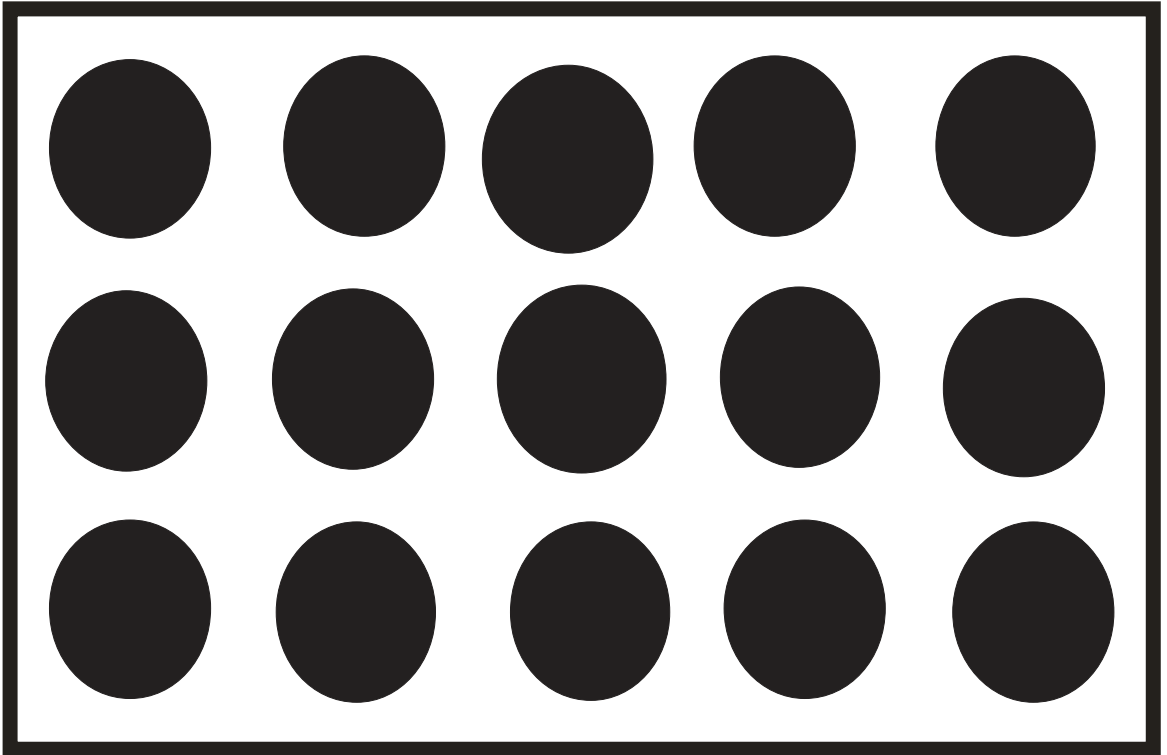
Dots book: Page 11

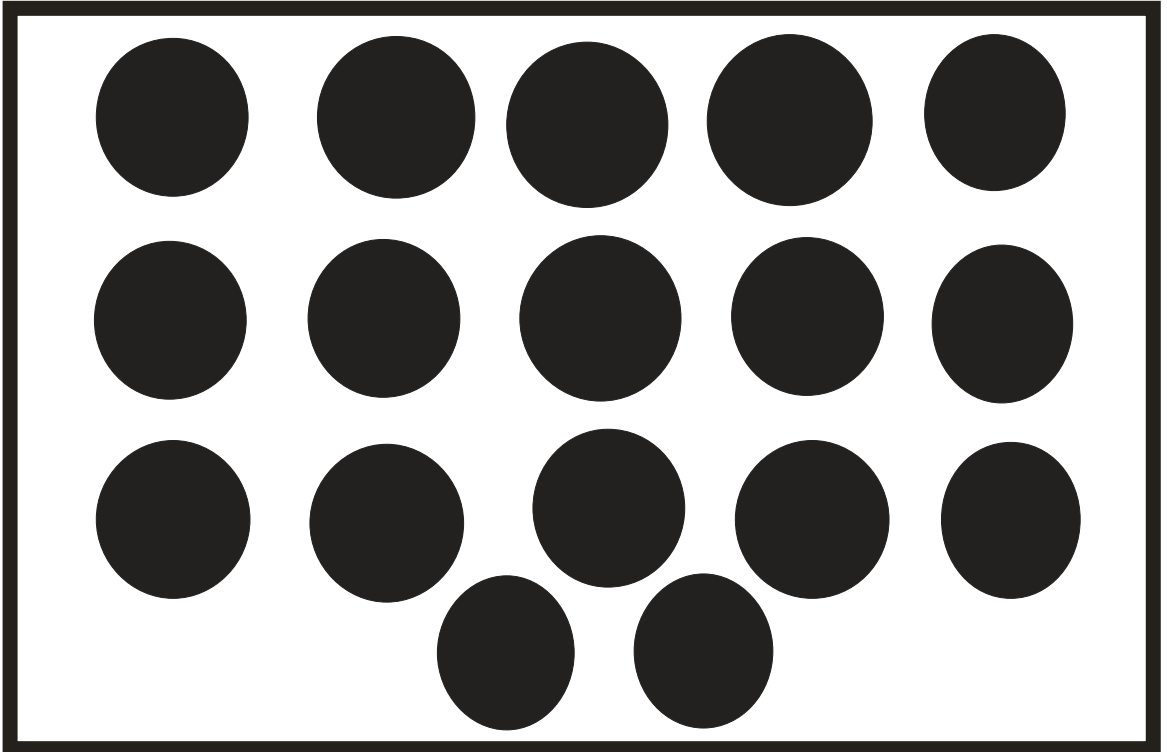
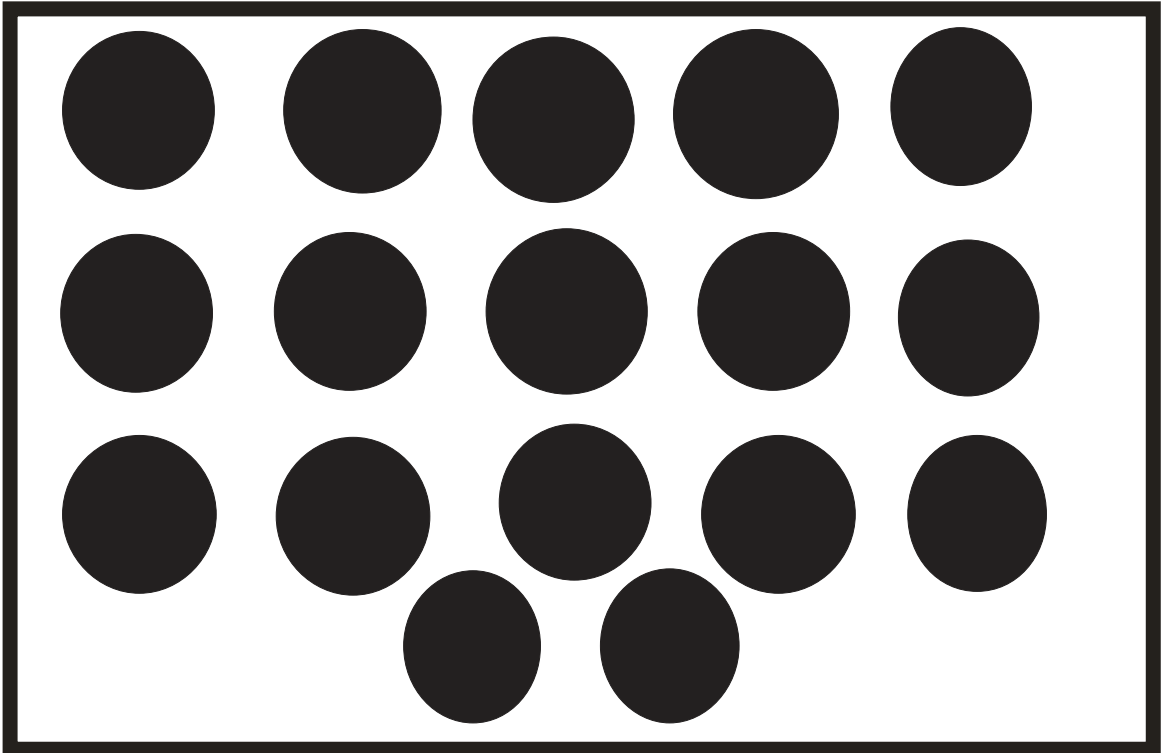


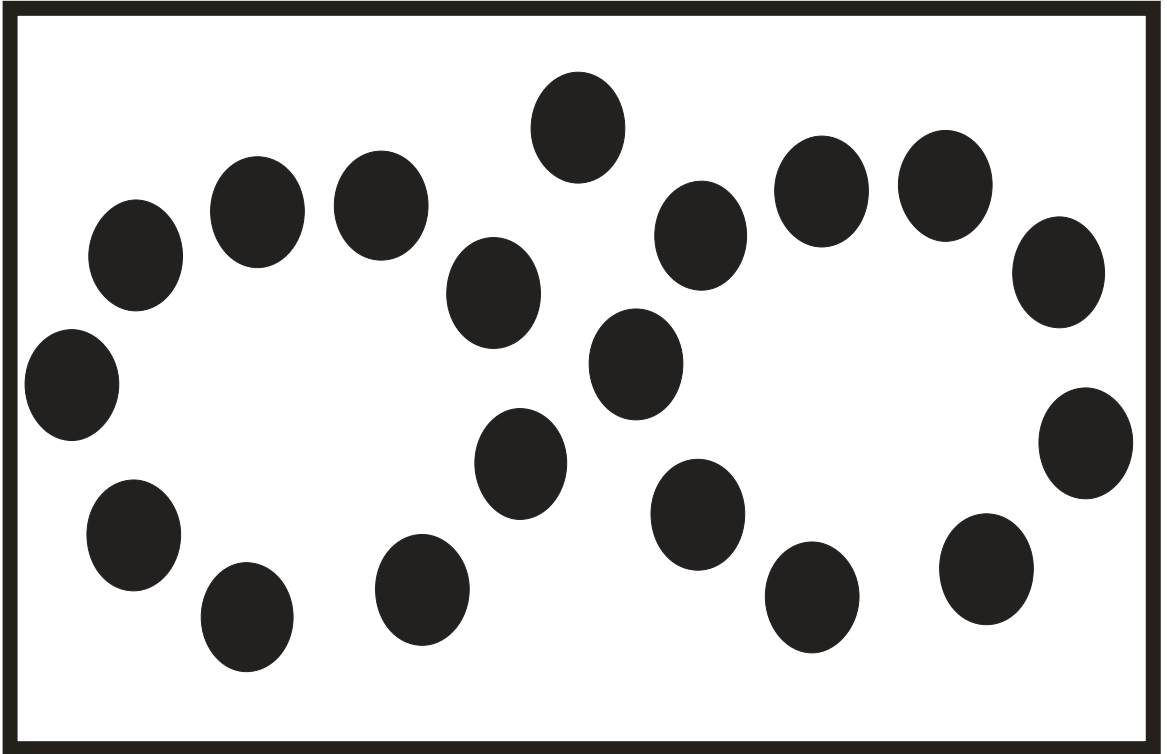
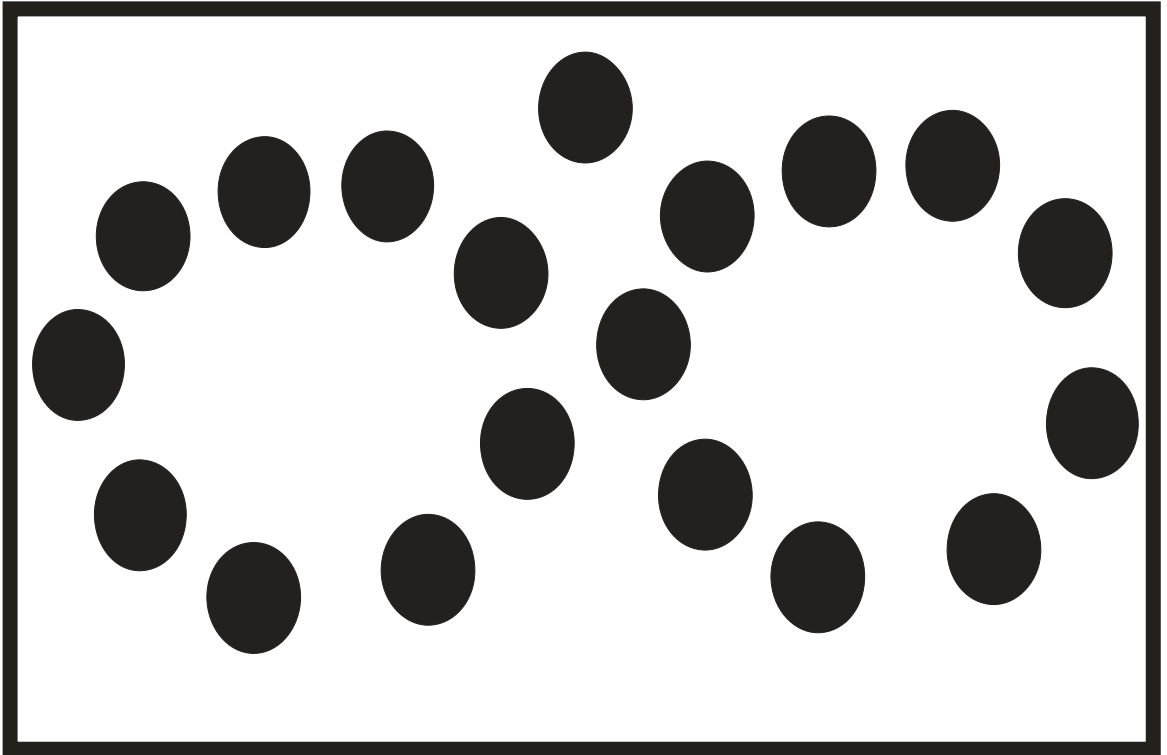
Dots book: Page 12

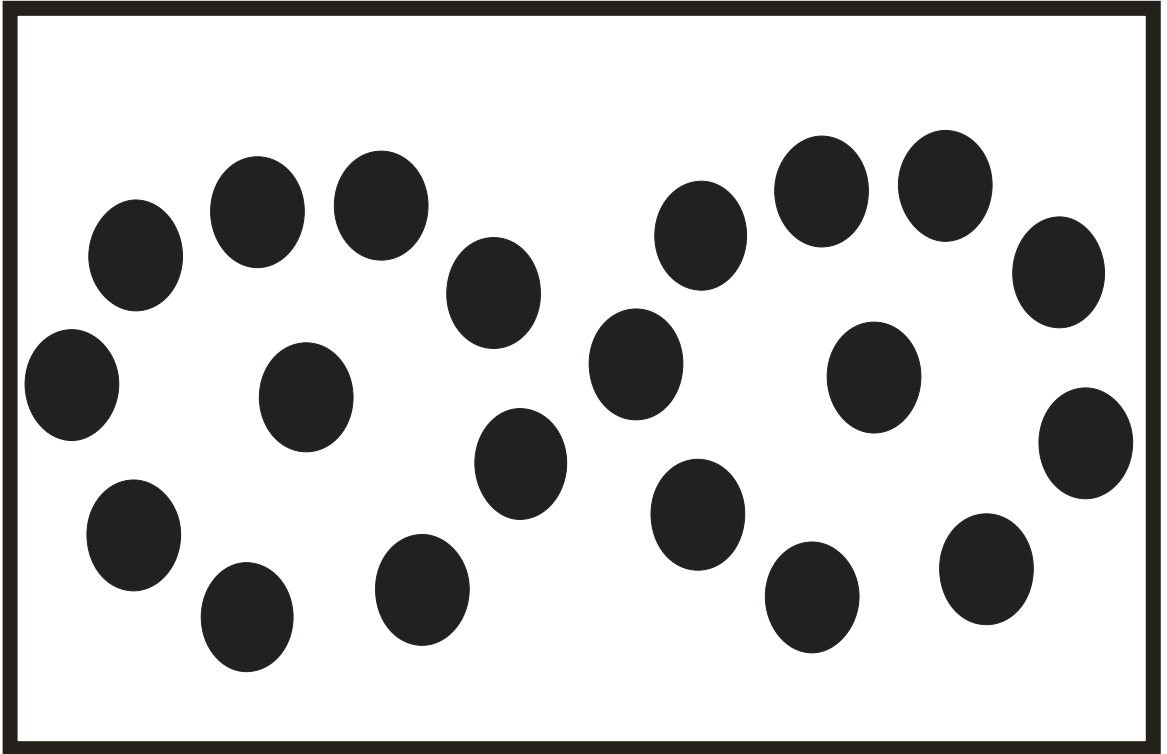
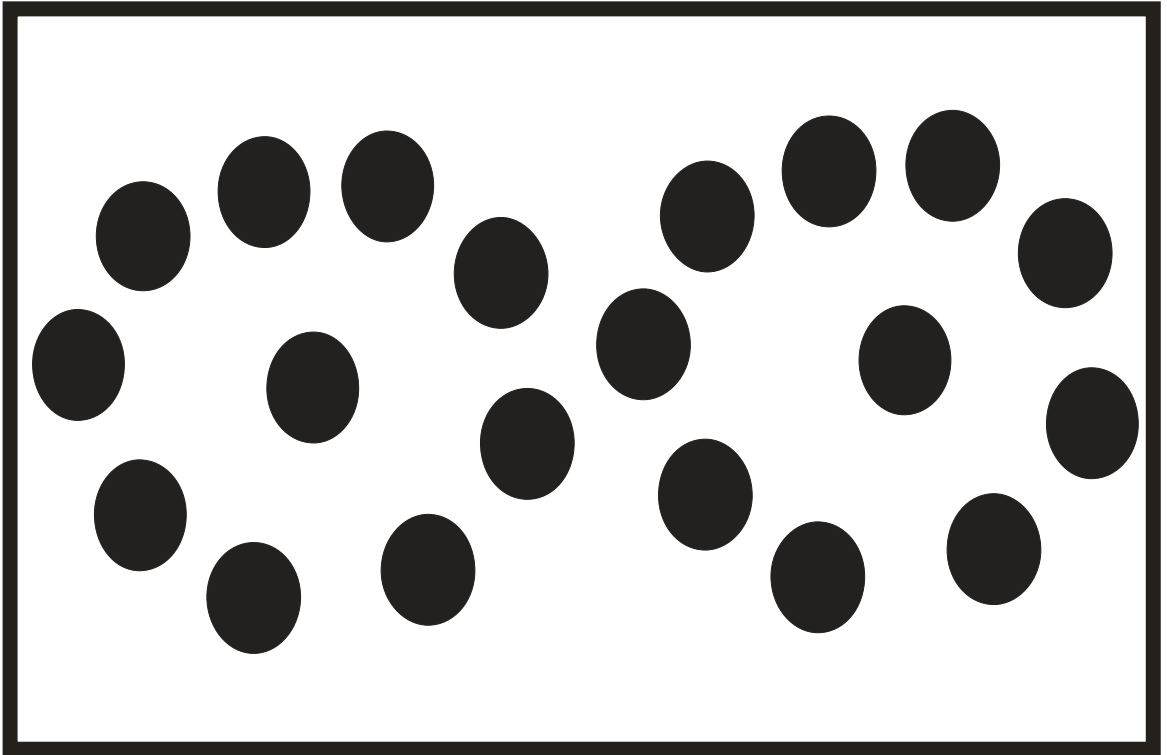












Dots book: Page 20

APPENDIX X
PARENTAL INVOLVEMENT QUESTIONNAIRE (PIQ)

SECTION A

This inventory is designed to retrieve information from the respondents. There is no right or wrong answer to any of the items. You are required to respond to the item as it is true of you and your child.

DEMOGRAPHIC INFORMATION

Relationship with the child:

Father Mother

Guardian

Educational level:

Primary six /less

Ordinary level/SSCE

Diploma

Degree

Postgraduate

Marital status:

Single

Married

Separated/Widowed/Divorced

SECTION B

Kindly rate how much each of the following statements is/are true of you and your child by ticking the appropriate number on the scale below. The following are possible responses:

1= Never

2= Hardly ever

3= Sometimes

4= Frequently

5= Always

S/N	Statement	Never (1)	Hardly ever (2)	Sometimes (3)	Frequently (4)	Always (5)
1	I allow my child to play in the neighbourhood.					
2	I allow my child to play with local things like mud, leaves, insect, and sticks in the environment.					
3	My child talks freely with me about his play activities in the neighbourhood.					
4	I encourage my child to participate in cultural activities in the community.					
5	I take my child round the community to learn about things around.					

S/N	Statement	Never (1)	Hardly ever (2)	Sometimes (3)	Frequently (4)	Always (5)
	I explain to my child things that will come across on the way during visits to interesting places in the community.					
7	I take my child to visit interesting places in the community such as zoo, botanical garden, river, mountains, farms and so on.					
8	I engage my child in math-related activities					
9	I engage my child in counting objects in the environment.					
10	I engage my child in playing with shapes of objects in the environment.					

11	I engage my child in playing with numbers.					
12	I engage my child in simple addition of objects in the environment.					
13	I encourage my child to solve simple problems on his/her own.					
14	I encourage my child to play freely with peers In the neighbourhood.					
15	I encourage my child to say sorry when he/she has done something wrong to others.					
16	I encourage my child to take care of his/her things.					

APPENDIX XI
DEPARTMENT OF EARLY CHILDHOOD AND EDUCATIONAL
FONDATIONS, FACULTY OF EDUCATION UNIVERSITY OF IBADAN,
IBADAN.

PARENTAL CONSENT FORM FOR CHILD'S RESEARCH
PARTICIPATION.

Study Title: TWO MODES OF SCHOOL-BASED OUTDOOR EDUCATION
ACTIVITIES AND LEARNING OUTCOMES IN COGNITIVE AND SOCIAL
SKILLS OF PRE-PRIMARY SCHOOL CHILDREN IN IBADAN, NIGERIA.

Researcher's Information

Name: Leigh,R.F **Phone:** 08030786585 **E-mail:** racleighf@gmail.com

Introduction

I am a postgraduate (Ph.D) student of the Department of Early Childhood and Educational Foundations, University of Ibadan. I am conducting a research to improve cognitive and social skills of pre-primary school children. Your child is being asked to take part in this research study. This form has important information about the reason for doing this study, what we will ask your child to do, and the way we would like to use information about your child if you choose to allow your child to participate in the study.

Purpose of the research

This study seeks to find ways to improve cognitive and social skills of pre-primary school children through active participation in outdoor activities in their school compound. I strongly believe that allowing your child to participate in this will afford him or her the opportunity to explore, investigate and experiment through active play in the environment. These experiences will help him or her to develop deep understanding of things around him or her. Participation in this study will also enable him or her to acquire and practice appreciated socially acceptable behaviours as he or she interacts with peers in group activities. Allowing your child to participate in this study therefore, would as a matter of fact enable him or her develop the

fundamental skills and capacities that will allow him or her to function effectively in the environment. Thereby laying a solid foundations for productivity and proper functioning in the society.

Type of Research Intervention

Your child will be taught in the outdoor environment of their school. During the period of teaching in the outdoor environment children will participate in various activities related to their school work twice a week. Lesson for each day will last for about 90 minutes. During teaching and learning the children will be asked to carryout learning activities together with their peers and teachers. When the children are in the outdoor environment they will interact with living and non-living materials in their environment. They will be required to experiment explore, observe, record and describe their findings either verbally or through creative arts. The children will work in group and independently.

The children's cognitive and social skills will be assessed before and after the experiment. During the assessment children will be asked to respond to verbal instructions as well as practical activities. Each child will be asked during the period of teaching in the outdoor environment, children will participate in various activities related to their school work twice a week. Lesson for each day will last for about 90 minutes. During the period of teaching in the outdoor environment children will participate in various activities related to their school work twice a week. Lesson for each day will last for about 90 minutes. Each child will be asked to count objects, recognise figure, correspond figure to objects, identify shapes and colour objects, do simple addition and subtraction, observe similarities and differences in objects. Participation in the assessment should take about 45 minutes. The teachers will also assess each child's social skills before and after the teaching or the experiment.

We would like to video record [or audio tape] your child reactions and actions as he/she performs activities during the experiment, to make sure that we remember accurately all the information and to allow us have a clearer picture of what happened during the experiment. The researchers will keep these tapes personally and will be used for the purpose of research alone.

Please note that “Audio/Video recording is required for participation in this study”. (If you do not wish your child to be recorded, it is not possible for your child to be in this study”).

You will also be required to supply information on your level of involvement of your child in some activities in the home. The questionnaire that assesses your involvement of your child in some activities in the home will be sent to you through your child to complete, if you will allow your child to participate in the study.

Risks

To the best of our knowledge, the things your child would be doing in this study have no more risk of harm than the risks of everyday life. Your child may feel emotional or upset when answering some of the questions.

- Your child can tell the interviewer at any time if he/she wants to take a break or stop the interview.
- Your child may be uncomfortable with some of the questions and topics we will ask about. If your child is uncomfortable, they are free to not answer or skip to the next question.

Benefit to your child

The possible benefits to your child from this study include that your child will have opportunity to be involved in learning activities that are practical oriented, multi-sensory, fun filled, and highly engaging. Your child’s participation in this study will enhance the development of his/her cognitive and social skills

Confidentiality

The researcher will not share information about your child to anyone outside of the research team. The information that will be collected from this research project will only be used for the research purpose. Results of this study may be used in reports, publications and presentations. The final report of this study will also be kept in the library of the University of Ibadan. The real names of children that will be involved in this study will be not be used in the final report of this study.

Financial Information

Participation in this study will involve no cost to you or your child. Your child will not be paid for participating in this study. However materials that will facilitates the experiment will be provided by the researcher.

Right to Refuse or Withdraw

Participation in this study is voluntary. Your child may withdraw from this study at any time -- you and your child will not be penalized in any way or lose any sort of benefits for deciding to stop participation. If you and your child decide not to be in this study, this will not affect the relationship you and your child have with your child's school in any way. Your child's grades will not be affected if you choose not to let your child be in this study. If your child decides to withdraw from this study, the researchers will ask if the information already collected from your child can be used.

Who to Contact

If you have any questions about the researcher or the research, you can contact the researcher's supervisor:

Name: Professor Esther Oduolowu

Address: Department of Early Childhood and Educational Foundations, University of Ibadan, Ibadan.

Phone: 08023250915.

Parental Permission for Child's Participation in Research

I have read this form and the research study has been explained to me. I have been given the opportunity to ask questions and my questions have been answered. If I have additional questions, I have been told whom to contact. I give permission for my child to participate in the research study described above and will receive a copy of this Parental Permission form after I sign it.

Optional Study Elements

Consent to Quote from Interview

I may wish to quote from the interview with your child either in the presentations or articles resulting from this work. A pseudonym (fake name) will be used in order to protect your child's identity.

Initial one of the following to indicate your choice:

_____ (initial) I agree to...

_____ (initial) I do not agree to...

Consent to Audio/ Video Record activities of your child

Initial one of the following to indicate your choice:

_____ (initial) I agree to...

_____ (initial) I do not agree to

Parent/Legal Guardian's Name: _____

Signature: _____

Date: _____

Name of Researcher: _____

Signature of Researcher: _____

Date: _____

APPENDIX XII



Training session for Research Assistants and Teachers 1



Training session for Research Assistants and Teachers 2

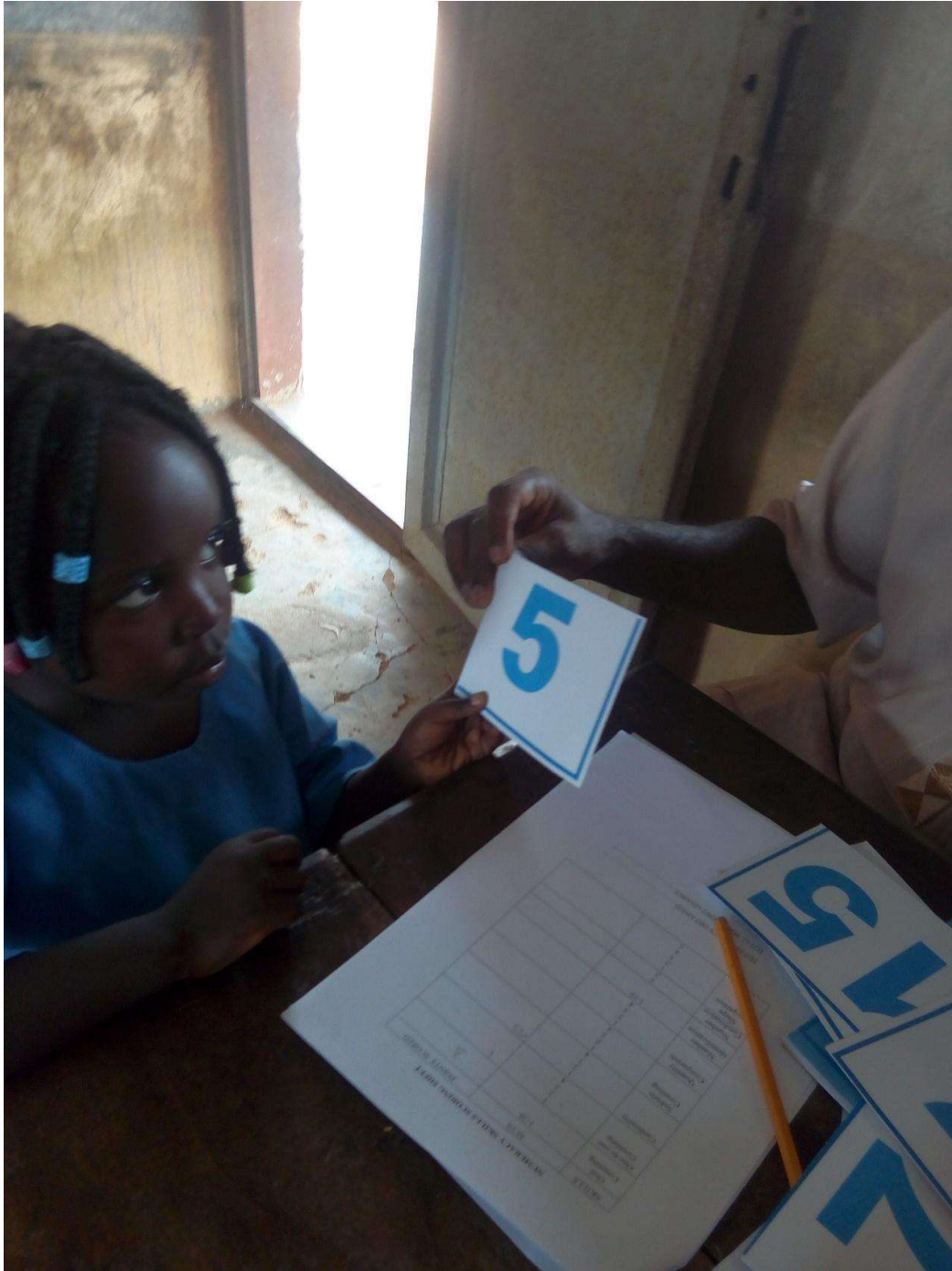








Sample of testing Children 4



Sample of testing Children 5

