DEVELOPMENT OF INTERVENTIONAL PACKAGES FOR FOSTERING COGNITIVE DEVELOPMENT OF PRESCHOOL CHILDREN

Thesis submitted in partial fulfillment for the Degree of Doctor of Philosophy in Education

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JUNE 2017

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This is to certify that the work incorporated in this thesis entitled **"Development of Interventional Packages For Fostering Cognitive Development of Preschool Children"** is the bonafied research work carried out by **Lalhlimpuii** under my supervision and the same has not been submitted previously for any degree.

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DECLARATION

I, Lalhlimpuii, hereby declare that the thesis/subject matter of Thesis entitled "Development of Interventional Packages for Fostering Cognitive Development of Preschool Children", is a record of work done by me, that the content of this Thesis did not form basis of the award of any previous degree to me, or to the best of my knowledge, to anybody else; and that the Thesis has not been submitted by me for any research degree in any other University/Institute.

This is being submitted to the Mizoram University, Aizawl for the award of Doctor of Philosophy in Education.

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ACKNOWLEDGMENT

Foremost, I thank Our God Almighty for His Grace and guidance.

I gratefully acknowledge my profound gratitude and indebtedness to my supervisor Prof. Lalhmasai Chuaungo, Professor, Department of Education and Dean, School of Education and Humanities, Mizoram University, Aizawl, Mizoram for her ceaseless support, able guidance, her keen qualitative insight and her enthusiasm of my Ph.D study and research. I am immensely thankful to her for her empathy and her understanding of my shortcomings and limitations. If it were not for her, this thesis would not have come to fruition.

I express my most sincere thanks to the faculties of the department, Prof. R.P. Vadhera, Prof. B.B. Mishra, Dr. H. Malsawmi and Dr Lalbiakdiki Hnamte, Department of Education, Mizoram Universityfor generously extending their expertise and cooperation in the conduct of my research.

I also specially thank Dr. E. Kanagaraj, faculty, Department of Social Work and Dr. James L.T. Thanga, for their invaluable cooperation; their expertise have not only helped in bringing this thesis see its current form, but has given me confidence to understand the technical parts of my research.

I offer my thanks to the authorities of the National Centre for Educational Research and Training (NCERT), National University of Educational Planning and Administration (NUEPA), Jawaharlal Nehru University (JNU), for allowing me to use and access their library resources.

I am thankful to the preschool children and workers of Dawrpui Anganwadi Centre, for agreeing to be my subjects; Tendercare Preschool children, teachers and their Principal, and the parents of my subjects for their cooperation in providing me with the needed data required for the investigation.

Last but not least, I express my special thanks and sincere gratitude to my husband, Raymond, for his encouragement and unrelenting belief in me; thank you for always believing I could do it. My inspirations, my daughters Serena and Sarah, for their unconditional love; I cannot imagine having to go through this research journey without you; this is the product of the time that was robbed from you. My family, for your unending prayers and support. I further acknowledge my relatives and friends who have not been named here but have inspired me to complete this work.

Finally, as many are aware, conducting research can be financially constraining. Thus, I would like to acknowledge the Mizoram University for helping to fund my research. The provided funds were quite helpful and made the cost of my research much more feasible.

(LALHLIMPUII)

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CHAPTER – I

INTRODUCTION

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INTRODUCTION

1.1.0: Prologue

Cognition is the mental act or process by which knowledge is acquired. It is the psychological result of perception, learning and reasoning. Cognitive process refers to all the processes by which sensory inputs are reduced, transformed, elaborated, stored, recovered and used, which may be influenced by biological, environmental, social and motivational factors. It represents a group of processes by which the organisms obtain knowledge of various objects of their environment and make use of this knowledge to achieve solutions to their problems, which range from simple perceptual to the more complex thinking and reasoning processes. Fischer (1980) explains cognitive development as a series of skill structures called levels together with a set of transformation rules that relate these levels to each other. The levels designate skills of gradually increasing complexity, with a specific skill at one level built directly from specific skills at the preceding level. The transformation rules specify the particular developmental steps by which a skill moves gradually from one level to the next. Cognitive processes are like the muscles of the mind. Cognitive development refers to advances in mental processes associated with perception, memory, reasoning, problem-solving, language-learning and other aspects of brain development that occur with increasing age (Rao, 2014). Cognitive development therefore is the development of mental skills like knowing, reasoning, memorizing, imagining, language acquisition and thinking.

1.2.0: Cognitive Development: Importance of its Study

The study of cognitive development is concerned with describing and understanding the ways in which children's intellectual abilities and their

knowledge of the world change throughout the course of development. Through actions and interactions, experience and understanding, a child starts gaining knowledge and thus forms concepts about the physical and social world. Conceptualization in the early years of life is the outcome of experiences related to daily life. Free play also makes an important contribution to development. The speed with which a child learns indicates a child's progress in cognitive development. The more opportunities they get, the more they learn and in contrary, children with less opportunities have limited experiences and have inadequate concepts. The study of cognitive development is essential to ensure that a child's mind is not only filled with meaningless perception but with meaningful cognition.

In today's competitive era, academic success is the cornerstone of personal development. However studies indicate that the early years are the most receptive years of a child's life. The first years of life are important, because what happens in early childhood can matter for a lifetime. Stable, responsive, nurturing relationships and rich learning experiences in the earliest years provide lifelong benefits for learning, behaviour and both physical and mental health. Not surprisingly, children in the most disadvantaged quintiles of societies are at the greatest risk of being deprived during this crucial early period (Lake, 2011).

Early childhood is a crucial stage of life in terms of a child's physical, intellectual, emotional and social development. Growth of mental and physical abilities progress at an astounding rate and a very high proportion of learning take place from birth to six years of age. It is a time when children particularly need high quality personal care and learning experiences. It is for these reasons that the early years are the most exciting years for building up the foundations of human intelligence.

According to Grewal, 1971, there is increasing recognition that the first few years of a child's life are a particularly sensitive period in the process of development and laying foundations for cognitive functioning. Children

acquire most of their personal and social habits before the age of six, because their mind is plastic and impressionable, and this makes early childhood period a good time to lay bases for later development. Recent findings in the area of cognitive development have lent educational justification to what Evans (1975) has called 'early intervention'.

A child acquires much more of his reasoning ability, feelings, will and character at this juncture than it does at any other time of his life. Hence it is of utmost importance that training be given to children at this stage. Recent developments in the field of psychology have focused the attention of society on the needs of children during the impressionable years.

The early years are the best period when a child is without inhibition and external control. Their thinking is not rigid and they have originality and flexibility. Bloom(1964) in his book, 'Stability and Change in Human Characteristics' analyzed data concerning intelligence which led him to conclude that the rate of intellectual development is at the point of highest acceleration during the child's early years. Therefore the greatest advantage in matters of child's intellectual development comes from the stimulation of home and school environment of the child during the first four to six years of life (Grewal, 1971).

The initial years of a child's life are globally acknowledged to be the most critical years for lifelong development since the pace of development in these years is extremely rapid. Recent research in the field of neuroscience has provided convincing evidence of the 'critical periods' located within these early years for the full development of the brain's potential. Research has also indicated that if these early years are not supported by, or embedded in, a stimulating and enriching physical and psycho-social environment, the chances of the child's brain developing to its full potential are considerably, and often irreversibly, reduced.

During infancy and childhood between the ages of 3-7, children's thinking advances substantially and they demonstrate marked changes in cognitive behaviour. This makes it necessary on the part of early years' educators to be aware of the qualitative shifts in thinking and how to utilize this knowledge to develop effective curriculum, subjects and activities in order to maximise the level of intellectual functioning of children for continued development.

Early environmental stimulation helps in the cognitive development of the children. Bloom's research data on the growth of intelligence shows that 50 per cent of the total intellectual development of the child is completed by the time a child is four years old (Grewal, 1971). He also pointed out that if children are provided early formalized experiences through play, their creative ability will also be enhanced. Studies have also revealed that it is much less expensive to take preventive measures to provide conducive home/learning experiences to children than to later try to compensate for the damages already done.

1.3.0: Pattern of Cognitive Development During Early Childhood.

Wirings of nerve connections called synapses undergo rapid increase during infancy and childhood. The frequently used nerve connections become strengthened and the less utilised connections become weakened. But the factor that accounts for levels of intellectual functioning is the density of the synapses and not the number of neurons. Immediately after birth, senses are bombarded by stimulation, and synapses begin to form profusely and continue till sexual maturity and then decrease after that. The most important phase of experience-dependent synaptogenesis is between birth to 3 years. Preschool children have brains which are more active, more connected and more flexible than an adult's and they undergo substantial, rapid change and development (Sharma, 2004).

As the child grows and his experience increases, one might say that he mentally stores more and more information, and constructs new and more effective ways of retrieving and applying it. In infancy, information is stored in patterns of action (Schemas). The baby 'knows' his environment through what he can do with it. By the time he is established in elementary school he has an array of relatively stable concepts with which to apprehend his world. Such stability comes only as the child's perceptions and actions and the information he derives therefrom are adapted to the ways others perceive and act (Auleta, 1969).

During early childhood, young children are not only growing physically but they are also growing mentally. Children of this age continue to advance their skills in observing and interacting with the world around them. They also make tremendous leaps in how they process, store, and use information. But quantifying cognitive change can be a bit tricky. One does not count the number of new neurons or measure the amount of connections between synapses or come up with averages for different ages. Rather, they rely on theories, such as Piaget's stages of cognitive development, Erickson's psychosocial stages, to give them a way to understand and measure children's mental and social development and progression (Oswalt, 2017).

1.4.0: Theories on Child Development and Learning

There are several theories on child development and learning which have impacted discussions on school readiness. Among the better known theories, three have had profound impact on kindergarten readiness practices. These three are: the maturationist, the environmentalist and the constructivist perspectives of development.

A. Maturationist Theory

The maturationist theory was advanced by the work of Gessel. According to maturationist theory, development is a biological process that occurs naturally and sequentially in predictable stages over the course of time. This view leads one to believe that young children will acquire knowledge naturally and automatically as a result of maturation. They therefore believe that the best thing for parents to do is to teach young children to count and read the alphabets while waiting for them to become school ready. In the case of some children who are developmentally delayed, maturationists suggest referring these children to transitional kindergartens or to wait for some more time before they become ready.

B. Environmentalist Theory

Environmentalists such as Watson and Skinner hold that children's learning and behaviour are shaped by the environment. They think of learning as reactions to environment, or, in other words, responses to stimuli. These theorists regard children as 'learning' when they have opportunities to react to stimuli in the environment. This perspective has led families, teachers, schools and educators to believe that development and acquisition of knowledge by children comes by way of reactions to the environment and surroundings.

According to the environmentalists, school readiness is a stage when children are capable of responding aptly and accordingly to the environment or situations in school or classroom. Children are said, more or less, to have learnt when they can successfully follow instructions of teachers and thereby partake in teacher initiated learning activities. The oft repeated behaviour is learned behaviour. Environmentalist inclined educations believes that learning comes best through repetition or rote activities like copying alphabets and reciting them time and time again.

C. Constructivist Theory

The constructivist theory of learning has been advocated by Piaget, Montessori, Vgotsky and Bruner. According to this theory, learning is the consequence of both maturation and environment. According to them, children learn when they have reached an age or maturation level essential for a particular skill or skills, and provided that they have been presented with environment favourable for the learning or mastery of that skill.

Constructivists view young children as active participants in the learning process. In addition, constructivists believe young children initiate most of the activities required for learning and development. Because active interaction with the environment and people are necessary for learning and development, constructivists believe that children are ready for school when they can initiate many of the interactions they have with the environment and people around them. KENPRO (2010).

1.5.0: Piaget's Stages of Cognitive Development

Piaget was an employee at the Binet Institute in the 1920s, whose job was to develop French versions of questions on English intelligence tests. He became intrigued with the way children would give incorrect responses which often required logical thinking. He believed that these incorrect responses given by children revealed a manner of thinking strikingly different from an adult's (Mc.Leod, 2015). He was also interested in the way in which fundamental concepts like number, time, quantity, causality etc emerged, rather than on how well children could count, spell or solve problems, i.e., their IQ. Piaget was the first psychologist to make a systematic study of cognitive development.

Piaget's cognitive theory elaborates how children construct mental models of the world. He was against the idea that intelligence is a fixed trait, but viewed it rather, as a resultant progress of biological maturation and environmental experience. His theory therefore focuses on development, rather

than on learning, per se. According to him, children construct an understanding of the world around them, and then experience discrepancies between what they already know and what they discover in their environment.

According to Piaget, children actively seek out information and adapt it to the knowledge and conceptions of the world that they already have and construct their understanding of reality from their own experience. Children organize their knowledge into increasingly complex cognitive structures called schemata. Children possess many different schemata, and these change as the children develop. In the new born, the schemata take the form of innate reflexes and reaction patterns, like sucking. As the child grows and gains experience, the schemata change from motor activities to mental activities called operations which become increasingly intricate with age.

Piaget suggested that schematas are adapted according to the principles of organization and adaptation, which continue to function throughout the lifetime. Organization is the tendency to merge simple physical or psychological structures into more complex systems. Adaptation involves the two complementary processes of assimilation, or fitting new experiences into current cognitive schemata, and accommodation, or adjusting current schemata to fit the new experiences. Most encounters involve both processes (Child Psychology, 2016).

The stages of cognitive development according to Piaget are:

The Sensorimotor Period (0 to 2 Years)

During the initial two years of life, called the sensori-motor period, children make transition from relying on reflexes to using internal representation, which is the basis of symbolic thought. Piaget divided this period into six sub stages, during which the child physically explores the environment, developing abilities such as symbolic thought and deferred

imitation. Throughout these sub stages, children gradually come to understand object permanence. In this stage the child gains understanding of the world around him through senses and actions.

The Preoperational Period (2 to 7 Years)

The major developmental landmark during the preoperational period (2-6/7 years) is the development of the symbolic thought, or the ability to use symbols such as words, images, and gestures to represent objects and events. This can be seen in the rapid development of language, in imaginative play, and in an increase in deferred imitation. Piaget divided this stage into the pre-conceptual stage (2-4 years) and the intuitive stage (4-6/7 years). During the pre-conceptual period, children's thinking is limited by animistic thinking, the tendency to attribute lifelike characteristics to inanimate objects, and by egocentricity, an inability to see things from another person's perspective. A shift away from egocentrism may be related to the development of role-taking abilities. The child during this stage gains understanding through language and images.

Concrete Operational Period (7 to 11 years)

Piaget considered the concrete stage a major turning point in the child's cognitive development, because it marks the beginning of logical or operational thought. In this stage, children can perform most tasks they were unable to in the preceding stage including conservation of various substances and classification and seriation. This stage sees children understand the world through logical and intuitive thinking. They are capable of understanding that multiple factors influence events.

Formal Operational period (11 years onwards)

In this stage children can perform and utilise flexible and abstract reasoning, test mental hypotheses, and consider multiple scientific reasoning for the solution to a problem. They are able to contemplate abstract terms like truth, morality and justice etc. Children can now comprehend not only what is, but what could be, and this allows them to understand politics, ethics and science fictions etc.

1.6.0: Importance of Play for Preschool Children

Play, love and work are ambiguous terms whose meaning can change several times over the course of human life. The play, love and work of children drastically differ from that of the adults. Human adults easily understand the 'new love' that emerges during adolescence period and the concept of work which means 'earning one's own living' but often fail to realise that children's concept for the same are different, so much so that when children engage in play, we tend to think of it in adult terms as opposed to work engaged for its own sake.

Play is essential to development because it contributes to the cognitive, physical, social, and emotional well-being of children. Despite the benefits derived from play for both children and parents, time for free play has been markedly reduced for some children. The United Nations High Commission for Human Rights goes so far as to say, that play is the birthright of every child. However, this birthright is challenged by forces including child labour and exploitation practices, war and neighbourhood violence, and the limited resources available to children living in poverty. Even those children who are fortunate enough to have abundant available resources and who live in relative peace often do not receive the full benefits of play. Many of these children are raised in an increasingly hurried and pressured style that may limit the protective benefits they would gain from child-driven play

For young children, play is a fundamental mode of learning. An infant's playful babbling teaches them to create all the sounds needed to speak their native tongue or any language. A toddler learns that when you bang a metal spoon or a wooden spoon, you get two very different sounds. A child learns through dramatic play that some children are bossy, others timid.

It is through play that children learn about strategies, body language and vocal intonations, through responses from others that they learn about themselves and about mutual respect. Play serves a very different function for children than it does for adults. For children, it is a way to learn about self and the world through experiences (Elkind, 2016). Play is the surest way for children to fully realize all of their intellectual, emotional, and social potential. Play is to children, what work is to adults. The most important function that play helps fulfil is help children be active, make choices, hone skills and practice actions to mastery.

1.7.0: Importance of Early Intervention

For the brain to reach its maximum potential, a child needs, besides other things, a stimulating environment, social interaction, and adequate nutrients. The absence of these things can result in a child being less healthy and having a lower IQ, which makes it harder for them to do well in school and eventually to get jobs as adults. The care, education and instruction of young children outside the home have been of prime concern since almost three decades. The principle embodied in the early childhood education is that it is considered the first rung in the educational ladder. Early childhood education and Preschools are also the need of the time as most parents are working nowadays and do not have quality time to spend with their children. Most kids are left at home with grand parents or helpers who are not capable to guide them the way they need to be. Preschool is not a place to look for mastery in academic curriculum, instead it is a place where the children do all sorts of activities that they find appealing and which teaches them in a special way.

Preschool education helps in a child's emotional, social and personal growth and development. Though a child learns how to talk while at home, in preschool continuous interaction and exposure with children of same age group and teachers helps them to improve their communication skills. This involves conversion of mental images to languages so that thoughts and knowledge be transformed into information.

The early childhood curriculum is the most solidly grounded in philosophy, in clearly articulated methodology, and in theory and research. Many contributions to the discipline of early childhood education have come from occupations and professions outside the academic domain. The common thread that links these contributors was, simply, an understanding of children. And that is precisely what makes early childhood education unique; it starts with the child and not with the subject matter.

Since the fact of the matter is that children will have many experiences happen to them during their early years or preschool period, that these experiences would, in all probability have bearing upon their cognition and intellectual make-up. Every experience that the child undergoes will have its later implications. Therefore, it is best that these experiences present themselves to the child in the manner of educational interventions.

Underprivileged children can be particularly deprived due to lack of material comfort and facilities, and this often leads to adverse effects on their intellectual development. Many children worldwide do not achieve their expected level of cognitive development due to poverty, stunting and associated lack of early learning opportunities (McGregor et. al. 2007). Various studies suggest that there should be stronger emphasis on tackling the roots of disparities in early childhood than on later attempting to alter adolescent and adult behaviours linked with poor learning.

1.8.0: Importance of Educational Intervention for the Cognitive Development of Preschool Children

There is increasing recognition that the first few years of a child's life are a particularly sensitive period in the process of development, laying a foundation in childhood and beyond for cognitive functioning; behavioral, social, and self-regulatory capacities; and physical health. Yet many children face various stressors during these years that can impair their healthy development. Early childhood intervention programs are designed to alleviate the factors that place children at risk of poor outcomes (Karoly, Kilburn, Cannon, 2005).

In recent years, parents have become much concerned about the quality of their children's schooling in general and about the relative merits of specific methods of teaching. One reason has been the competition for admission to good schools and colleges and the increasing percentage of parents and children who believe that good schooling and college equates good jobs (Frost, 1968).

Educational intervention, besides the obvious usage includes such programmes as nursery schools, kindergartens, pre-Kindergartens, Montessori schools and pre-schools, depending on the country. Pre-schools are necessary for kids' development before they enter formal schooling as it helps in their cognitive development and has strong bearing on their school readiness. Research finds that it helps kids to become more independent, confident and it also helps in their all round development. (Ramachandran, 2003)

Preschool stage or early childhood period is the first exercise in which children are separated from the comfort and safe zone of their parents, a time when children are just starting to learn about independence, about life beyond the mother's safe embrace. It is a time when they begin to form their first friendships, and given that their mind is like a sponge that absorbs almost anything and everything, it is imperative that they be presented with

atmosphere that is conducive to learning. So, it has to be a place which is a second home to the child; a place, which has adequate material to draw and make the child feel at ease and secure. Through various activities in the preschool, a child learns the importance of his own name, things and friends (Child Psychology, 2016). In fact, becoming independent is the first stage of growth and besides learning to eat independently, sleep independently, a child learns to survive independently, which are all requisite skills and building blocks or schemas, for later learning.

1.9.0: Development of Anganwadi

The meaning of the word Anganwadi in English language is 'Courtyard shelter'. The word Anganwadi is derived from the Hindi word "Angan", it refers to the courtyard of a house. Angan is a rural Indian term for "a place where people get together to discuss, greet and socialize their matters". The angan is also used occasionally to cook food for household members to sleep in an open air. This part of the house is seen as the heart of the house and is considered a sacred place (Target Study, 2013).

Anganwadis are government sponsored child-care and mother-care development programmes in India at village level which caters to 0-6 age group of children. They were started by the Indian government in 1975 as part of the integrated Child Development Services programme to combat child hunger and malnutrition. Anganwadis provide basic health care facilities in Indian villages and are part of the Indian public health-care system. Besides other things, education as well as pre-school activities is included in the basic health-care activities. The centres are also used as health care depots for basic medicines, contraceptives and child-care.

At present, there are approximately 13.4 lakhs Anganwadis established in every town, city and habitation in India. As per ICDS Scheme guidelines, an

Anganwadi centre is to have a separate sitting room for children/women, separate kitchen, store for food items and dedicated space for children to play. However, recent audits by the government found that most centres lacked essential infrastructure for maintenance of hygiene and sanitation. Furthermore, many were working in dilapidated buildings and temporary structures. As a remedial measure, India launched its first modernised Anganwadi centre in Hasanpur Sonepat, Haryana, and plans to launch 4000 more such centres across the country (Wikipedia, 2017).

1.10.0: Research Setting

For any nation, state or enterprise to be regarded as educationally sound and functional, the sector of early childhood or preschool education cannot but be prioritised. The framework to duly accord priority to preschool education for the first time in Indian history was the Sixth Plan 1980-85 (Singh, 1981). The priority was based on the ground that the age of 3-6 years is of gross potential educational significance. Ever since, numerous committees and commissions have discussed, deliberated, acted on and improved on early childhood education.

The Ministry of Human Resource Development (MHRD), India has taken and is yet still taking immense measures to make Right to Education (RTE) a reality; not just a fiction. The Anganwadis which could be referred to as the Indian cousin of the "Headstart" programme in the United States, is just such a body. The Anganwadi has covered wide grounds, as far as quantity is considered and is functional in all corners of the nation of India.

The strategy of the Anganwadis under the Integrated Child development Scheme (ICDS) by the MHRD India is a measure to put all the children of the nation on an even keel, especially the socio-economically challenged sections; so that minimum lag exists between the advantaged and disadvantaged sections, and no doubt, success has been achieved to a fair degree. However,

whether children, at the entry stage at elementary level are for sure on equal page with their advantaged peers from the higher SES is a debatable issue. Moreover, because the period of early childhood education is so filled with implications, foundations, if any, should be laid at this stage.

To ensure that it is not only the children from the high SES who are at a vantage point, we have to question the preceding early childhood experiences of the disadvantaged preschooler; whether his experiences prior to his elementary schooling have equipped him with requisite school readiness skills. If we fail to assess whether a child at school entry level is at a disadvantage or not, the government will have gone on wasting enormous fiscal resources to redundant measures.

At present, the state of Mizoram, under the undertaking of the MHRD has reached substantive milestones, and many lakhs of children throughout the length and breadth of India have benefitted from the Anganwadi movement as such. But research-wise, the ground covered by early childhood education is still very frugal. Interventional study in the context of Mizoram is still a virgin area that is yet to be explored. Till date, there seems to be no research conducted yet towards the development and testing of interventions for the cognitive development for preschool children.

In this day and age, the significance of early childhood period as a vital link in the chain for sustained productivity is acknowledged and accepted by all. For this reason, inputs are being made into the area from almost all sections of the society. The state of Mizoram is no exception to the rule. Many private, and NGO-run early childhood centres have been started in various parts of the state. However, the need of the hour now is towards assuring qualitative growth and expansion of the existing infrastructures.

1.11.0: Rationale of the Study and Statement of the Problem

Education is the lifeline for efficient and stable working of human society. Education helps develop individual personality making the person knowledgeable, competent, capable and skillful. Parents with high socio-economic status often have more success in preparing their young children for school because they typically have access to a wide range of financial, social and educational supports that characterize families with high socio-economic status. On the other hand, inadequate funds and limited access to available resources can adversely impact families' decisions regarding their young children's development and learning. As a result, children from families with low socio-economic status are less prepared than their peers from families with medium or high socio-economic status. (Memon, Joubish, & Khurram 2010).

Environmental conditions of poverty and the present system of schooling are insufficient to promote proper/healthy cognitive development. Poverty is associated with a wide range of childhood difficulties, including poor home environment, lack of educational equipments, school under-achievement, delinquency and low educational attainment. Intervening in the 0-6 years period when children are at their most receptive stage of development has the potential to permanently alter their development trajectories and protect them against risk factors present in the early environment.

Early childhood education programs are valuable interventions to assist children in developing appropriate school-readiness skills to facilitate the transition to formal schooling. Early intervention can prevent the consequences of early adversity. Research shows that later interventions are likely to be less successful – and in some cases are ineffective. For example, when children who experienced extreme neglect were placed in responsive foster care families around the age of 2-3 years, their IQs increased more substantially and their brain activity and attachment relationships were more likely to become normal than if they were placed at a later stage. Early

interventions from 0-6 years have received renewed attention as one of the most desirable strategies for promoting optimal development throughout the childhood period in recent years. While there is no "magic age" for intervention, it is clear that, in most cases, intervening as early as possible is significantly more effective than waiting. Failure to take action during this crucial period can have lifetime consequences for adult functioning, for the care of the next generation, and for the well-being of societies (Engle, Fernald, Alderman, Berhrman, O Glara, Yousafzai, Cabrall, 2011).

Effective investments in early child development have the potential to reduce inequalities prolonged by poverty, poor nutrition, and restricted learning opportunities. A simulation model of the potential long-term economic effects of increasing preschool enrolment to 25% or 50% in every low-income and middle-income country showed a benefit-to-cost ratio ranging from 6·4 to 17·6, depending on preschool enrolment rate and discount rate (Engle, et.al. 2011).

Most interventional programmes are usually targeted at disadvantaged children, because an 'ideal' atmosphere which is conducive for the proper cognitive development of children tends to lack in these homes. Children need to manipulate their senses to the optimum for meaningful cognition to take place. And this can become a problem in many homes due to time constraint and lack of understanding on behalf of the parents and care-takers.

Educational interventions, for the purpose of cognitive development is also a necessity, because the existing programs of early childhood education are not equally effective in promoting the learning and cognitive development of young children as they lack balance and co-ordination and long-term benefits can only be expected from high quality ECE programs, and these are few and far in between.

Another significant problem with ECE programmes is that the most effective ones are unaffordable for most families besides being limited in seats. Due to these reasons, children from low-income families face many challenges

educationally, socially and economically. This is especially true for children growing up in areas in which institutional and economic resources are limited and poverty is more concentrated.

Children learn best when they are engaged in play and child development experts also agree that play is very important cognitive and emotional development of all children. Play is multi-faceted, and although it is a fun experience for the child, often many skills are learned through play. Play helps children learn relationships and social skills, and develop values and ethics. However, at present there are no play-oriented interventional packages available.

Early childhood education is still a relatively new phenomenon in the context of Mizoram. Although there have been programmes somewhat similar to early childhood education here and there, like the 'A-Pawl' and ICDS programmes, pre-school education, as is normally accepted is a novel movement. In fact the first formal pre-school in Mizoram was established only in 1998. Since then, many pre-schools have sprung up in different parts of the state capital. Besides, pre-school education as an area of study too has only covered few grounds.

The existing pre-schools no doubt do justice to the purpose and objectives of early childhood education, given that they are commercial in nature and intended with the objective of attracting good market. But a big disadvantage of these private run pre-schools is that they are not affordable for the socio-economically disadvantaged. For this reason, many who wish to receive preschool education are forced to turn to the other alternative, Anganwadi.

The Anganwadis, because they are intended as a collaborative programme encompassing health, nutrition and education programme cannot give the cognitive development of children its due importance. The education aspect, cannot but take a backseat position with so many other duties and

responsibilities to dispel. Besides, most of the workers and helpers in the Anganwadi centres are not as skilled or qualified as professionals. They are, mostly women from the socio-economically disadvantaged sections of the society, who, for the most part have had no prior backgrounds in 'education' especially early childhood education; save for the requisite training to be undergone by a worker under the programme.

Many disastrous experiences of early childhood have been known to be irreversible. Therefore, it is very important to make sure that measures are taken to ensure that children get exposed to desirable environment and experiences. There have been justifiable amounts of researches done in the area of early childhood programmes and their impact on children's cognition and learning worldwide throughout history by many great educationists and psychologists. However, the quantum of researches in the area of early childhood education in India, let alone Mizoram, has been meagre. Moreover, given the rising cost of quality education in all corners of the world, early interventions for the cognitive enhancement of preschool children in a state like ours is a necessity as the present systems of early childhood education come with such high cost and are therefore unaffordable for the sections who seem to need it the most.

For reasons stated as such, the present study is an attempt to provide good, meaningful but cost-effective cognitive development programme to the lesser advantaged sections of pre-school aged children.

There are vital questions pertaining to the cognitive development of pre-school children such as –

1) Will development of interventional packages help in fostering the cognitive development of preschool children?
2) Are there significant differences in the cognitive development of children of English Medium Preschools and Anganwadis?
3) What kind of family background do pre-school children come from?

4) Do the socio-economic status of parents of children from English Medium Preschools and Anganwadis differ significantly?
5) Will interventional packages developed specifically to foster the cognitive development of preschool children be significantly effective?

In order to get answers to these questions empirically and to develop interventional packages suitable to pre-school children particularly of Anganwadis, the present study was undertaken and the title is stated as:

Development of Interventional Packages for Fostering Cognitive Development of Pre-School Children

1.12.0: Objectives of the Study

1) To develop interventional packages for fostering the cognitive development of preschool children.
2) To study the cognitive profiles of children of English Medium Preschools and Anganwadis.
3) To compare the cognitive profiles of children of English Medium Preschools with that of Anganwadis
4) To study the socio-economic status of parents of children from English Medium Preschools and Anganwadis.
5) To compare the socio-economic status of parents of children from English Medium Preschools and Anganwadis.
6) To study the effectiveness of the interventional packages.

1.13.0: Research Hypotheses

1) There is significant difference between the cognitive profiles of children of English Medium Preschools and Anganwadis.
2) There is significant difference between the socio-economic status of parents of children from English Medium Preschools and Anganwadis.
3) Interventional Package for Conceptual Skills developed by the investigator has significant effectiveness in fostering the conceptual skills of preschool children.
4) Interventional Package for Information and Comprehension developed by the investigator has significant effectiveness in fostering the information and comprehension skills of preschool children.
5) Interventional Package for Visual Perception developed by the investigator has significant effectiveness in fostering the visual perception skills of preschool children.
6) Interventional Package for Memory developed by the investigator has significant effectiveness in fostering the memory skills of preschool children.
7) Interventional Package for Object Vocabulary developed by the investigator has significant effectiveness in fostering the object vocabulary skills of preschool children.
8) Interventional Packages developed by the investigator has significant effectiveness in fostering the cognitive development of preschool children.

Null Hypothesis

For testing purposes, the research hypotheses have been stated in the form of null hypotheses as follows:

1) There is no significant difference between the cognitive profiles of children of English Medium Preschools and Anganwadis.
2) There is no significant difference between the socio-economic status of parents of children from English Medium Preschools and Anganwadis.
3) There is no significant effect of Conceptual Skills Intervention on fostering of conceptual skills among preschool children.
4) There is no significant effect of Information and Comprehension Intervention on fostering of information and comprehension skills among preschool children.
5) There is no significant effect of Visual Perception Intervention on fostering of visual perception skills among preschool children.
6) There is no significant effect of Memory Intervention on fostering of memory skills among preschool children.
7) There is no significant effect of Object Vocabulary Intervention on fostering of object vocabulary skills among preschool children.
8) There is no significant effect of Interventional Packages for fostering of cognitive development among preschool children.

1.14.0: Operational Definitions of the Terms Used

Cognitive development:

Cognitive development in the present study means the development of cognitive skills such as skills in concept formation, general information, comprehension, visual perception, recall/memory, object vocabulary

Interventional packages:

In the present study, Interventional Packages imply a combination of verbal or performance type play-oriented and discovery-learning activities designed specifically for fostering the cognitive development of pre-school children.

Pre-school children:

Preschool children in the present study refer to children of 3 to 6 years of age who are enrolled in English Medium Preschools and Anganwadis.

1.15.0: Organisation of the Report

The report of the present study has been divided into six chapters for a more systematised presentation.

Chapter I is the introduction and includes the conceptual framework of the study, need and importance of early childhood education and cognitive development of early childhood care and education as well as some prominent cognitive theories. The chapter also includes the rationale of the study, the statement of the problem, and some operational definitions.

Chapter II deals with the review of related studies. It is presented under the sub-heads of overview of related studies reviewed, reviews of studies relating to development of interventions, cognitive development, SES of parents, effectiveness of interventions and position of present research in relation to the reviewed studies.

Chapter III consists of the methodology and procedures employed for the present study. The population and sample, tools for data collection, descriptive and differential statistical techniques used as well as the techniques of administration of pre-test and post-tests, collection of SES from parents, and

the administration of Interventional Packages have been included in this chapter.

Chapter IV is devoted to the main subject of the present study, the development of Interventional Packages. The chapter includes the rationale for the construction of the interventional packages as well as the steps followed in its construction and the principles for selection of activities for inclusion in the packages. The validity of the interventional Packages is also established in this chapter. The chapter closes with the plans for execution of the Interventional Packages.

Chapter V contains analysis and interpretation of data relating to the objectives of the present study. The cognitive profiles of preschool children of Anganwadis and English Medium Preschools are analysed and then compared for significant differences. The same is done for the parents' SES. The testing of the effectiveness of the Interventional Packages is also included in this chapter.

Chapter VI, the concluding chapter highlights the major findings, discussion, recommendations, educational implications of the study and suggestions for further research and conclusion.

CHAPTER II

REVIEW OF RELATED STUDIES

CHAPTER II

REVIEW OF RELATED STUDIES

2.1.0: Introduction

The priority given to preschool education is based on the ground that the age of 3-6 years is of gross potential educational significance. Psychologists, educationists and economists all testify that early childhood education is important for later development of aptitudes and personality, the formation of correct habits of mind and body, preparing the base for formal education at the elementary level, minimizing the rate of school drop-outs and enormous wastage in educational effort, raising the child's IQ, increasing his vocabulary, alleviating the causes of failure, increasing a child's ability to function successfully as an adult and the like (Singh, 1981).

However, considering the above facts, an overview of researches along different dimensions reveals a contradictory affair of things. The attention given to the development of a cost-effective curriculum to preschool children to equip them for a future from an early stage is not only meager but far from satisfying. This chapter therefore attempts to briefly review the related researches available on the development of interventions for preschoolers' intellectual development as well as to ascertain the effectiveness of the already existing ones. Besides, the educational potential of the early years is too great to waste for a country like India.

In order to do justice to the objectives of the study and also for the sake of convenience in navigation and viewing, the chapter has been organized under the following heads:

2.2.0: Overview of Related Studies Reviewed

2.3.0: Review of Studies Relating to Development of Interventions

2.4.0: Review of Studies Relating to Cognitive Development

2.5.0: Review of Studies Relating to SES of Parents

2.6.0: Review of Studies Relating to Effectiveness of Interventions

2.7.0: Position of Present Research in Relation to the Reviewed Studies

2.2.0: Overview of Research Studies Reviewed

Sl. No.	Period	No. of Studies Dimension Wise Distribution				Grand Total
1.	1974 - 2016	Studies on Development of Interventions	Studies on Cognitive Development	Studies on Effectiveness of Interventions	Studies on SES	
Total		3	10	63	20	97

The larger chunk of the studies reviewed under this chapter is mainly composed of doctoral theses, meta-analyses reports of research projects by various departments and institutions of education and a handful of dissertation papers for degrees of M.Phil.

2.3.0: Review of Studies Relating to Development of Interventions

Although this section is the heart of the present study, due to certain limitations, only three studies were available for review. This however, throws light on the necessity of conducting more researches relating to this area.

Patel, (1983) studied the effectiveness of a reading readiness programme he had developed on 320 pupils of pre-primary schools of high-

income and low-income parents. A control group was comprised of another 320 pupils. Factorial design was developed through a criterion-referenced test of reading readiness which was constructed to measure concept formation, visual discrimination, auditory discrimination, and knowledge of alphabet, acquisition of vocabulary, associating meaning with printed symbols and copying simple figures. It was found that the reading readiness programme had positive impact on the reading readiness scores of pupils of the experimental group. Moreover, the children of the higher income parents were superior in reading readiness than the lower income group. The reading readiness of the pupils appeared to be dependent on treatment as well as parents' education and income.

After developing a cognitively oriented programme for preschool children (COPPC) **Srivastava,** (1987) evaluated the impact of this innovative training methodology in terms of the knowledge, skills, and attitudes of preschool teachers and supervisors and also in terms of the preschoolers' language, cognitive development, personality and creativity. The sample consisted of seven batches of trainees from seven districts of Karnataka. Findings reveal that COPPC resulted in stimulating young children to be active, creative and independent in thinking and in developing effective language skills.

Pandey, (1989) constructed, standardized and tested the effectiveness of a Cognitive Development Test (CDT) that she had developed for preschool children by employing the experimental-control group design. The researcher used the experimental-control group design and used tools such as Personal Data Sheet, Home Stimulation Inventory, Anganwadi Observation Schedule and Health Status Inventory. She found that sex effect was absent for all six sub-tests. The conceptual skills of the experimental group were superior to those of the control group in every age or class. In respect of the sub-test on information, the experimental group scored markedly more than their control counterparts.

2.4.0: Review of Studies Relating to Cognitive Development

Development of cognitive skills has been a hot topic of discussion through the ages and through continents. Many have tried to study the complexities involved in meaningful cognition, often using animals and even human subjects. Therefore, many of the studies reviewed under this sub-section reveal that cognition can be impacted by many different things. With some subjects, motivation acts as an incentive, while to others, parents involvement has been a driving force in the academic success of children.

Bharathi, (1988) conducted a study to examine the existence of pre-causal thinking in Indian children and the stages of its development in them. Drawing on a sample of 110 children of ages 5,8 and 11from different SES strata, he concluded that causal thinking developed with increase in age. His findings showed that 8 year olds were at the transactional stage of comprehension whereas 5 year olds were not yet at the comprehension stage. Logical thinking was found in the 11 year old children. Pre-causal thinking existed at the lower age group and gradually disappeared as the children grew older.

Studying the impact of home environment variables and caste on the conservation ability of children, **Behera,** (1989) analysed the 70 minute individual interviews of 80 mothers from the Brahmin and Harijan castes, he found that children from the higher caste performed better on conservation tasks. In other words the Brahmin children had better cognitive skills than their Harijan counterparts.

To investigate the effects of schooling on cognitive processes of children, such as self-developmental planning, future perceptions and dreams. **Chhotray,** (1989) selected 60 children aged 10 to 12 for the study of which 20 were schooled, 20 were unschooled and 20 were from high castes and schooled. The results found showed that schooling shaped the anticipation of the future, of dreams and the development of self of children. Ambition was

found to be highest in the higher caste schooled children and lowest in the unschooled . This same group showed more aspiration and confidence towards their progress.

Upon examining the development of the cognitive activities of coding and planning in relation to schooling using performance of Piagetian tasks for concrete operations and coding tasks, **Das,** (1988) found that age was a major factor in the development of these skills, although schooled children generally performed better than the unschooled. The relation was found to be almost non-existent and even where it was found it only ranged from low to medium.

Dash, (1991) analysed the cognitive and speech related processes in relation to reading efficiency and IQ of 60 subjects of grade 3. He observed major differences in verbal processing variables which required simultaneous or successive processing. Good readers were superior to poor readers in Name Matching, Figure Memory and Serial Recall. On speech related tasks, good and poor readers did not differ. The measures of attention, coding and speech rate showed high interrelationship for both good and poor readers.

Dei (1991) examined the interrelationship between non-verbal measures of cognition and studied the difference in the performances of these measures by the sexes. It was found that boys and girls did not differ on the general intelligence test and that the relation among the measures used, viz. Raven's Coloured Progressive Matrices, Wechler Digit Span Test and the Non-Language Test of Working Memory (Baddly and Hitch), was found to be positive and significant.

Dhaliwal (1988) examined the effects of age, sex, sense modality and distribution of practice on short term and long term memory and found that age and sense modality were significant determiners of STM and LTM while sex was not. Intelligence was found to have a positive correlation with STM and LTM.

Dutt, (1989) investigated the effect of problem-solving strategies on problem-solving abilities in science and found that cognitive style and intelligence contribute significantly to the total variance in problem-solving ability.

This study by **Gopal,** (1992) examined the differences in cognitive development of children staying at home and those visiting Anganwadis and if the stimulation provided there is significantly better than that at home. The author concluded that the Anganwadis received less favourable attitude from all parents, who were mostly illeterate and had no concept of the value of early education.

Studying deprivation in relation to certain cognitive and non-cognitive variables among adolescents, **Gupta,** (1991) found that students from high economic status were extroverted and had high temperaments. They were more intelligent, more creative and higher achieving than deprived students.

2.5.0: Review of Studies Relating to SES of Parents

Most of the studies under this category report that there is positive and significant correlation between the cognitive development of individuals and their family or parents' SES. The people who hail from the higher SES are, more times than not, those who do well academically.

Narula, (1982) explored the play preferences of nursery school children in indoor and outdoor situations and attempted to establish the relationship between play preferences and their socio-economic status. A randomly selected sample of 500 children (250 boys and 250 girls) was tested for intelligence through the Seguin Form Board and an Indian adaptation of Rosenzweig Picture Frustration Test. The study revealed, among many other things, that the preschool children at the senior stage displayed better perception in comparison to those at the junior stage. The study has its implications for the nursery schools, where different play activities need to be

provided to the children irrespective of sex and socio-economic status as they help in the cognitive development of the preschoolers.

Upon examining the effect/influence of maternal psycho-social functions on the nutritional status of rural preschool children, **Vazir,** (1983) randomly selected two hundred families having one or more than one preschool aged child from the Hyderabad city municipal limits. Among other things, the study revealed that the socio-economic status of the family, nutritional status of the mother, children's nutritional status, maternal intellectual ability were all positively correlated.

Patel, (1983) studied the effectiveness of a reading readiness programme he had developed on 320 pupils of pre-primary schools of high-income and low-income parents. A control group was comprised of another 320 pupils. Factorial design was developed through a criterion-referenced test of reading readiness which was constructed to measure concept formation, visual discrimination, auditory discrimination, and knowledge of alphabet, acquisition of vocabulary, associating meaning with printed symbols and copying simple figures. It was found that the reading readiness programme had positive impact on the reading readiness scores of pupils of the experimental group. Moreover, the children of the higher income parents were superior in reading readiness than the lower income group. The reading readiness of the pupils appeared to be dependent on treatment as well as parents' education and income.

Lamb, Bibby, Wood, and Gervase, (1988) designed and evaluated an intervention programme to facilitate the transfer of skills learned over the course of the intervention to different types of task. A total of 41 children (aged 13-16 years) with moderate learning difficulties participated in the intervention programme. The children were assessed before and after the programme to determine whether improvements in strategic behaviour were evident and whether this generalised to new situations. It was found that gains made in regulatory skills over the course of the intervention were accompanied by

improvements in other performance measures such as reading and IQ even after a relatively short intervention. The development of regulatory skills led to significant improvements on a range of tasks which were observed for a group of children with moderate learning difficulties.

Feldman, (1988) studied the school and life experiences of former pre-kindergarten children seventeen years after they participated in the Syracuse Prekindergarten Programme, to discern the relationship of these learning experiences of later events in the lives of the children and parents. The enrolled students were three and four year olds and members of low-income, low-educational level families both black and white. A qualitative method of research was elected in order to gather descriptive data from the perspectives of the participants. From the total of 60 designated study children, 20 students and 20 parents were interviewed. Ten students were identified with above average or excellent school achievement and 10 students with below average school achievement.

A study by **Patnaik,** (1988) examined the cognitive gains of preschooling and analysed the differences between pre-schooled and non pre-schooled children in grades I through III in certain selected cognitive tasks. The sample of the study consisted of 90 preschool children and 90 non pre-schooled children as the comparison/contrast sample. The tools used were family SES questionnaire, tests of intelligence and language achievement. Means, SDs and ANOVA were used for statistical analyses. It was found that the two samples differed significantly on 10 out of 26 variables: but very few differences were found between the two groups in family SES. The non pre-schooled children were found scoring lower in teacher ratings. A series of multiple regression analyses revealed that the SES and Home Environment variables did not predict the test scores of pre-schooled and non pre-schooled children.

Srilatha, (1988) analysed and compared the effect of mother-child interaction patterns in the development of children in upper, upper-middle,

middle and lower middle SES groups through a sample of three hundred mothers. She found that there was an association between the socio-economic status and the reactions of mothers towards children's behavior.

Kasturi, (1990) examined the socio-economic status and time related effects of preschool education on cognitive abilities to answer whether preschool programmes had equal impact on the cognitive abilities of children irrespective of their social class belongingness and whether pre-school education had any long-term effect on the cognitive development of children. The sample for the first study consisted of 80 children in the age-group of 3-5 years (out of which 40 had formal preschool education while 40 had no exposure to preschool education. They were selected from two SESs (one with higher income and the other with lower income), thus forming four sub-groups. The sample for the second study consisted of 80 subjects divided into four sub-groups on the basis of their age (pre-adolescents and adolescents) and preschool experience (with formal preschool experience and without preschool experience). The findings highlighted that in Study I, SES and preschool education had positive impact upon cognitive abilities. In the Study II, age and preschool education were found to have significant effect upon the cognitive abilities also.

The effects of parental interaction and educational intervention in optimizing the integrated development of pre-school children was studied by **Seth,** (1991). The author examined the factors associated with child competence so as to compare the competence profiles of 240 preschool from four nursery schools in Bangalore belonging to high and low interacting parents and thereby investigated the underlying causes for the varying levels of parental interaction. Comparisons were made regarding the profiles of cognitive competence due to different styles of classroom management and the association modes of classroom interaction and learner competence. His findings highlight that both the educational qualifications and economic status of parents influenced the competence of children, with high competence of

children being related to the higher level of the education of the parents and the personal academic guidance given to them. High and low parental interaction greatly influenced the children in all developmental dimensions such as cognitive, motor, social and integrated development. High SES parents were also found to have higher degrees of interaction with their preschoolers which consequently led to better performances of their wards.

Kaul, et.al. (1992) evaluated the process based programme for development of number readiness at the pre-primary stage with a sample consisting of 60 children of the 4-5 years age-group. The experimental group consisted of 20 children who had intervention of a process-based programme for development of number readiness. Control group I consisted of 20 children matched in age, SES; Control group II consisted of 10 children matched in age, SES, but drawn from a school of lower quality; and Control group III consisted of 10 children matched in age but of high SES and from an elite school. She found that irrespective of SES and type of schooling, the children exposed to the number readiness programme demonstrated better understanding of numbers. The experimental group invariably performed better in seriation, sequential thinking and classification than the control groups. It was also found that the control group III had better rote memorization skills than all the other groups.

Memon, Joubish, Muhammad& Khurram, (2010) in their study titled Impact of Parental Socio-Economic Status on Students' Educational Achievements at Secondary Schools of District Malir, Karachi found that there was significant relationship between parent's occupational status and academic performance of the students at matriculation examination. Similarly a significant relationship was found between family income and educational achievement. It is, therefore, proved that the higher the income of the family better would be educational performance of the students at matriculation examination.

Ogunshola & Adewale, (2012) investigated the relationship between home-based environment factors and the academic performance of students in selected secondary schools within a local government area in Kwara State through a sample obtained from one hundred and eighty (180) students randomly selected from three secondary schools. The four factors were examined and statistically analysed: parental socio-economic background, parental educational background, parental educational qualification and students' health statuses. Parental socio-economic statuses and parental educational background did not have significance effect on the academic performance of the students. However, the parental educational qualification and health statuses of the students were identified to have statistical significant effect o the academic performance of the students. The two variables that indicated significant influence reflect the nature of the student' home environment and played notable role in the academic achievement of the respondents.

Using Regression analysis, **Okioga,** (2013) did a case study on the impact of students' socio-economic background on academic performance in Kisii, Kenya in 2013 and established the relationship between the student socio-economic background and academic performance. The objective of the study was to evaluate the factors that influenced the student academic performance and the relationship between the student socio-economic background and academic performance. A sample of 186 respondents was selected in all the six faculties using simple random sampling. The study revealed that the students' social economic background influenced student academic performance since education plays a major role in skill sets for acquiring jobs. The middle class parents took active role in their children's education and development by using controlled organized activities and fostering a sense of entitlement through encouraged discussion. He also found that lower income families had children who did not succeed to the levels of the middle income children, who also had greater sense of entitlement, more argumentative, or better prepared for adult life.

Examining the influence of socio-economic status of parents and home environment on the study habits and academic achievement of students in selected primary schools of Meerut district of Uttar Pradesh **Singh, Singh, & Venkateshwara,** (2014), highlighted that the students belonging from the families which differ in relation to the socio-economic status do not differ significantly at the end of the experiment. However, the mean scores of students belonging to higher status families was observed higher with respect to the student belonging from lower status families; the students whose parents have higher educational level differ significantly with respect to the students whose parents are either illiterate or are unable to observe the educational activities of their children. They concluded that the socio-economic status of parents as well as parental educational level has a significant role in determining the educational achievement and social adjustment of the children.

Al-Matalka, (2014) studied the relationship between parent's socioeconomic status and parental involvement strategies in their child's education among Jordanian parents who enrolled their children in governmental schools. The total sample of the present study was 150 Jordanian students who completed their education at governmental schools. The sampling design employed was purposive sampling method. A questionnaire technique was used to obtain quantitative data related to parental socioeconomic background and their involvement strategies in their children education from the selected parents. The results revealed that regardless of occupation and income, the educational level of the parents has greater impact. As a result, the study provides findings and suggestions that can inform future research, family care agencies, educational institutions, social work agencies and intervention.

With an objective of assessing the impact of parental socio-economic status (SES) on students' academic achievement, **Kapinga,** (2014) conducted a research in the secondary schools of Tanzania. Two research objectives guided the study: How does parents' occupation, income, level of education and home environment affect students' academic achievement in secondary schools? To what extent does parental involvement in education of their children enhance

academic achievement? The study found that majority of the students from the selected secondary schools were from low SES. The study established that there is a close relationship between SES and academic achievement. It further reported that majority of the parents are not involved in the learning of their children as well as in the school improvement programmes. The study recommended that the government should review the policy of cost sharing and make it free too, especially to low SES students. In addition, schools should have professional guidance and counsellors to help students with problems to reduce the gap between low and high SES.

A study by **Khan, Rana, Iqbal, & Tasneem,** (2015) was conducted to focus the influence and impact of parents educational level on students academic achievement at secondary level of education. The class 9 results of the students'were utilized for this study. Research population was 200 students of different public and private high schools of District Rajanpur, South Punjab who were selected through simple random method. Oral interview, observation and a questionnaire were used for data collection. Descriptive study based on empirical data was tested to correlate the described variables. After analysis of the data the research finds significant positive relationship between parents education level and academic achievements of students.

Kumar, (2015) analysed the influence of parents' SEF like education, profession and income on students' performance in IIT-JEE examinations by applying simple statistics of mean deviation (MD) and standard deviation (SD) techniques. Statistical measures of variance approach was used to examine effect of prominent SEF namely parents' education, occupation and income on their children's performance in IIT-JEE examination. Data for the purpose was collected from various Reports of the Joint Implementation Committee by IITs. The author concluded that the SEF are not vital factors that influence performance of the students in IIT-JEE examinations. Performance of those students was consistent who were coming from low income strata and whose both parents were not highly educated. If they get good opportunities in

respect of good schooling and financial resources they could likely perform better in such examinations as is evident from the analysis. However, students whose parents' profession was engineering they could perform better than other students.

Gabriel, Muli, Muasya, Maonga, & Mukhungulu,(2016) sought to investigate critical parental socio-economic factors affecting the academic achievement of students in selected secondary schools in urban informal settlements in Westlands District in Nairobi County. The study was premised on the classical Liberal Theory of Equal Opportunity and social Darwinism proposed by Charles Darwin. A descriptive survey design using a sample of 125 respondents comprising of 91 students, 18 teachers and 16 parents was used for the study. The tools for data collection were questionnaires for students, Focus Group Discussions for teachers and Interview schedules for parents. Quantitative data from the questionnaires was analyzed using descriptive and inferential statistics while the qualitative data from interviews was managed through thematic techniques. It was concluded that, parental occupation and involvement in learning activities and effective parent-teacher relationship were facilitating factors. Parents' low ability to finance education, coupled with the poor status of physical and instructional resources were inhibiting factors to students' academic achievement in the study locale.

In his study, **Ogbugo-Ololubei,** (2016) examined the impact of parental background on the academic achievement of secondary school students in Obio/Akpor Local Government Area of Rivers State. Random sampling method was used to select size 1,426 senior secondary school (SSS) students. A structured questionnaire titled Students Parental Background Variable Inventory (SPBVI) was used to collect data from respondents. To determine the extent of significant relationship that existed between the independent and dependent variables at 0.05 alpha levels, Pearson Product Moment Correlation (r) was employed to analyze the data and reliability of the instrument. The result showed positive relationship between parent socioeconomic status,

educational status, parents' level of income, family size and students' academic achievement.

2.6.0: Review of Studies Relating to Effectiveness of Interventions

Under this sub-section, 61 studies have been reviewed. The majority of the studies included under this heading are effectiveness of various types of interventions as well as studies on impact of interventions of some kind with academic oriented variables.

It is not possible to study cognition or cognitive development, per se, because it is a complex umbrella term which includes various mental processes that bring on improved performances in language skills, school readiness skills, mathematics skills, reading readiness, academic achievement and higher intelligence scores etc. The review of related researches therefore, includes impact and intervention studies of various kinds which have resulted in advances in the above mentioned cognitive skills.

Muralidharan, (1974) attempted to study the effect of pre-school education on the intellectual abilities of underprivileged children. He selected fourteen children from school 1 and 15 from school 2. The formal group had two years of preschooling and were in kindergarten class. The second group belonged to class 1 of a local free primary school and did not have the advantage of preschooling. Phatak's Draw a man Test was used. Mean, SD and "t" ratio were calculated. He and found that children who attended pre-schools did consistently better in all aspects of language development than the children in the primary school. The difference reached the level of significance with regard to the number of words and in degree of comprehension. The preschoolers were found to have a much higher score in intellectual development than the primary school group. The differences were found to be highly significant.

Rath and Patnaik, (1978) administered the Raven's Coloured Progressive Matrices Test and a verbal reasoning test on advantaged and

disadvantaged groups of primary grade children. The disadvantaged children scored significantly lower than the advantaged in both the tests. Each group was later divided into control and experimental sub-groups. The experimental group received intervention training in cognitive skills. Training produced improvements in the test performances. The disadvantaged children improved more than the advantaged and reached the same levels as the latter after training.

Narula, (1982) explored the play preferences of nursery school children in indoor and outdoor situations and attempted to establish the relationship between play preferences and their socio-economic status. A randomly selected sample of 500 children (250 boys and 250 girls) was tested for intelligence through the Seguin Form Board and an Indian adaptation of Rosenzweig Picture Frustration Test. The study revealed, among many other things, that the preschool children at the senior stage displayed better perception in comparison to those at the junior stage. The study has its implications for the nursery schools, where different play activities need to be provided to the children irrespective of sex and socio-economic status as they help in the cognitive development of the preschoolers.

Hannah, (1984) investigated the relationship of a kindergarten intervention program and reading readiness, language skills and reading achievements. The selection of students was made by identifying those who incorrectly answered at least 30% of the items on the kindergarten screen. Thirty kindergarten students participated. These students received instruction two afternoons each week to promote language skill development through the direct teaching of basic skills. Individual and small group instruction was given in carefully planned and sequenced lessons. Pre and posttest scores of the KIP participants were investigated in the areas of readiness and language. Evaluation of the data provided information that there were statistically significant gains between a students' language concept development and

his/her reading achievement and the Kindergarten Intervention Program (KIP) participants.

The results of an investigation of achievements and self concept in all day kindergartens and traditional half day kindergartens by **Lotowycz,** (1984) indicated that there are significant differences in achievement among comparable groups of students. The achievement and self-concept development of comparable groups of all-day kindergarten and traditional half-day kindergarten students are not consistent or plentiful. The study attempted to determine whether or not difference differences exist in academic achievement and self-concept perception of comparable groups of kindergarten students attending all-day kindergarten and half-day kindergarten programmes. The results indicated that among comparable groups of students who have attended all-day and half-day kindergarten, there are some significant differences in achievement, as measured by mean scores achieved on the CTBS subtests, favouring the half-day kindergarten.

Mishra, (1986) examined the impact of home and socio-cultural environments on infant behavior and development. He classified his sample into higher caste and lower caste babies of both urban and rural areas and from tribal homes and analysed his data using ANOVA, correlation, multiple regression and factor analysis techniques and found that the home environment of the five groups of infants differed significantly and that the rural and lower caste babies had lower home scores than urban and upper caste babies. The tribal babies were found to have the lowest home scores than the babies of all other groups except the urban lower caste group.

In an attempt to study the effectiveness of portage home-based training programme on the cognitive development of preschool mentally retarded children **Azad,** (1986) conducted a quasi-experimental design by selecting a sample of 19 mentally retarded children between the age range of 37 months to 69 months. The sample subjects underwent a 53 week training programme which consisted of home-based teaching. When the subjects were evaluated at

the end of the training period, significant differences in mean gains, significant at 0.01 level was found on their cognitive behaviours.

To determine the knowledge and skills of anganwadi workers for providing cognitive experiences, **Sahni, & Agarwal,** (1986) analysed an intervention programme by drawing anganwadi children from five villages of Hissar Block II. Close-ended inventories were used to assess the knowledge and skills of anganwadi workers and a test of cognitive development to measure the cognitive abilities of the preschoolers. The study revealed that there was significant difference between pre and post intervention in the knowledge and skills of anganwadi workers and also in the cognitive abilities of children before and after the intervention.

To find out whether exposing a set of preschool children who had a common environmental background to a short duration of perceptual training through play materials would facilitate perceptual development, **Manjuvani,** (1986) studied a sample consisted of 60 children, 30 each drawn from two preschools. The tools used included a tool to evaluate the Quality of Environment of the preschools, a tool to measure prolonged deprivation, Figure Copying Test, Colour Naming Tests, materials for testing perceptual Discrimination and play materials from the Edma kit. She found that enrichment helped to significantly improve the children in copying geometic forms, as well as lower the time taken errors. There was significant and favourable difference in the perceptual discrimination tasks following enriched experience.

To study the relationship between physical development, language development and cognitive development of tribal preschool children, **Muralidharan, & Kaur,** selected a sample of 12 anganwadis. The results indicated that there exists a positive correlation between physical development of children and their development in language and cognitive areas.

The impact of an Intervention programme on the language and cognitive development of preschool children from tribal and urban slum areas was examined by **Muralidharan & Kaur** (1987). The study was conducted on 144 children drawn from the Anganwadis of the Tokpal Project, Bastar district Madhya Pradesh. The design followed was experimental control, pretest-posttest design. Both the experimental and control groups were given pretests in language and cognitive tasks. The Anganwadi workers of the experimental group were given pretests in language and cognitive tasks. In most cases, the experimental group of tribal children showed a higher gain than the control group. It thus emerged that no matter how disadvantaged the children were, well-planned early childhood education strategies fostered children's cognitive skills. In all the cognitive tasks, the experimental group scored consistently higher than the control group. In language tasks the direction was the same but differences were significant in two tasks.

Muralidharan, & Pankajam, (1987) conducted an evaluative study on 128 preschool children to examine the differences in the different models of preschool teacher training, from the point of view of how teachers' trainings impacted the preschoolers and how children gained from them. The study found out that the children whose teachers had two years training scored highest succeeded by anganwadi children whose teachers had six (6) months training.

Studying the correlation between children's academic achievement, non-verbal intelligence and story writing ability, **Patnaik,** (1988) examined the different modes of story-telling on the memory and comprehension of 100 primary grade children. He found that the subjects' reading text of the story produced significantly better memory and comprehension than seeing pictures only. He also found that correlation between children's intelligence and story-writing was positive but not significant.

Studying the practices for provision of play, among other things, **Bagai,** (1988) found that there was a positive relationship between provision of play

materials and the nature of verbal interaction and stimulation and the child's measured social maturity and intelligence.

Muralidharan, & Pankajam, (1988) did an evaluative study of different models of preschool teacher training programme from the point of view of their impact on children. The study was conducted in Madurai of Tamil Nadu on 58 teachers drawn from the four different running schemes, and 128 children, 8 boys and 8 girls, each of three to four and four to five years, selected from two schools each, in which teachers trained under the four training models i) two-year training, ii) one-year training, iii) four and a half to six months training iv) Anganwadi training of four months. The tools used were observations schedules for preschool teachers, schedule for training institutions language test for children- oral vocabulary, action picture reading, acquaintance with environment, oral expression and listening comprehension, and cognitive tests for children-sequential thinking, shapes discrimination and colour discrimination. It was found that the level of language and cognitive development of children under the teachers of the two-year training scheme and the Anganwadi workers was the highest; the lowest was that of the group of children who were with the teachers of the four and a half to six months' training. However, it was also observed that it was not nearly the duration of the training per se that seemed to matter, but the inputs that went into the training into the workers, for e.g., an experienced and well qualified team of teacher educators which possibly made a difference in the performance of the workers.

Asi, (1989) examined whether or not pre-primary school children showed better progress and school readiness at the primary stage. The sample of the study covered 30 children of class I randomly drawn from two government schools- fifteen (15) with pre-primary experience and fifteen (15) without pre-primary experience. The tools for data collection included an opinionaire for parents, a questionnaire for teachers and an interview of and write-up from teachers, and written and oral tests for children. It was found

that pre-primary schooling not only prepared children for formal schooling, but also contributed to their personality development. The learning readiness of the children with pre-primary was found to be better than those without pre-primary education at class I level.

Chandrika, (1989) comparatively assessed the cognitive development of elementary school children with a sample of 100 children enrolled in 6 municipal schools in an urban area. Half of them 'have Anganwadi experience for at least one year and the other half without similar experiences. The tools used were Raven's Coloured Progressive Matrices (CPM), Wechsler's intelligence Scale for Children (WISC), Vocabulary Test and an Interview Schedule. She found no significant differences between the scores of children with anganwadi experience and those without it on the various cognitive tests; only that children from high-income families obtained the highest scores followed by children from middle-income homes.

To evaluate the effects of preschool education on the cognitive abilities and academic achievements of pre-adolescents and adolescents, **Tripathy (**1989), selected 80 students and divided them into four sub-groups on the basis of their age and preschool experience (with preschool experience and without preschool experience), 20 subjects were included in each group. Raven's Progressive Matrices and Digit-Span were used. The pre-adolescent and adolescent group students with formal preschool education were found to be better than the students without formal preschool education. Mean scores of the matrices showed that students with preschool experience performed better than the students without preschool experience in both the pre-adolescent and adolescent groups.

Mandke, (1989) carried out a study with an attempt to find out the effect of a short-term school readiness programme he had developed for children who had no experience in preschool in order to facilitate their adjustment in primary schools. For his sample he selected 120 children- 100 who had attended preschool and 20 children who had not attended any kind of

preschool programme. He used Structured Interview Schedules, and Language and Scholastic Readiness Tests and found that the non-school going children did require varied language experiences though they were not poor in all aspects of language development and that they needed preparation to learn the formal school tasks.

The objectives of a study carried out by **Muralidharan, & Mishra,** (1989) was to evolve a home-based instructional package for child development and to develop awareness in parents of their own strengths and potential as home educators. The study was conducted on disadvantaged families of tribal village and urban slum colonies in and around Bhubaneshwar, Orissa, where parents were neither aware of the importance of the early years of life nor confident of their own abilities to function as educators of chidren. All the 65 families in the tribal areas, and 100 homes from the urban slum were taken for the study. At the end of 52 weeks of intervention, an evauation was done using an experimental-control group design. The tools used for evaluation were interview schedules and tests to measure Developmental Level of Children covering aspects such as physical-motor, personal-social, language and cognitive development. It was found that the intervention programme worked effectively in the tribal village. The experimental group performed consistently better than the control group regarding mother's awareness of stimulation activities, health and nutrition, and children's performance in Developmental tests. However, the same was not true for the urban slum group in which case the scores of the mothers of the experimental group were significantly lower than those of the control group. With regard to children, in four out of the six-age groups, no significant difference was found between 2-3 years and between the two groups, but between 5-6 years, the control sample performed better than the experimental group.

Pandey, (1989) constructed, standardized and tested the effectiveness of a Cognitive Development Test (CDT) that she had developed for preschool children by employing the experimental-control group design. The researcher

used the experimental-control group design and used tools such as Personal Data Sheet, Home Stimulation Inventory, Anganwadi Observation Schedule and Health Status Inventory. She found that sex effect was absent for all six sub-tests. The conceptual skills of the experimental group were superior to those of the control group in every age or class. In respect of the sub-test on information, the experimental group scored markedly more than their control counterparts.

One hundred children (50 boys and 50 girls) were selected by **Subhashini,** (1990) to find out their level of reading, writing and arithmetic readiness as well as to prepare a readiness kit for them. The readiness kit was developed and its effectiveness to promote the reading, writing and arithmetic was tested. The pretest-posttest equivalent groups design was employed for the study. The readiness kit was administered to the experimental group only. The findings revealed that the readiness kit was effective in promoting the reading, writing and arithmetic readiness of the preschool children.

Kasturi, (1990) examined the socio-economic status and time related effects of preschool education on cognitive abilities to answer whether preschool programmes had equal impact on the cognitive abilities of children irrespective of their social class belongingness and whether pre-school education had any long-term effect on the cognitive development of children. The sample for the first study consisted of 80 children in the age-group of 3-5 years (out of which 40 had formal preschool education while 40 had no exposure to preschool education. They were selected from two SESs (one with higher income and the other with lower income), thus forming four sub-groups. The sample for the second study consisted of 80 subjects divided into four sub-groups on the basis of their age (pre-adolescents and adolescents) and preschool experience (with formal preschool experience and without preschool experience). The findings highlighted that in Study I, SES and preschool education had positive impact upon cognitive abilities. In the Study II, age and

preschool education were found to have significant effect upon the cognitive abilities also.

A variety of factors including increased enrolment in kindergarten and preschool programmes concern about academic achievement, and national achievement comparisons, have combined to create a situation in which children are assessed before kindergarten entry to determine school readiness. In this study **Buch,** (1990) compares third graders who attended developmental kindergarten programmes with fourth graders, matched for age, gender and 10 scores on the California Achievement test, administered at Grade 3, were compared. The group that attended developmental kindergarten scored significantly higher on all achievement measures.

Bergan, Sladeczek, & Schwarz, (1991) examined the effects of measurement and planning system on kindergartener children's cognitive development, promotion and referral to special education. Multivariate tests of significance indicated children in the experimental group, whose teachers implemented the system achieved significantly higher post-test scores in maths, reading and science than control group. Two structural equation models were developed to examine the effects of implementation of the measurement and planning system on referral and placement in special education and on promotion to the first grade. The findings on promotion underscore the importance of early basic skill acquisition in maths and reading and suggest that children who are high in basic skills are not likely to be referred or placed in special education.

Mishra, (1991) carried out a research to study the effects of cognitive intervention training on intelligence and curiosity of preschool children. The sample consisted of 20 children of 4 to 5 years of age, from the model preschool of the Advanced Study in Psychology of Utkal University. These children were randomly divided into two groups of 10 children each, one constituting the experimental group and the other the control group. The tools used included Curiosity Scale of dash and Jena, Non-verbal Intelligence Test or

the CMMs Test by Burgmeisterm, Blun and Large. The findings revealed that the experimental and control groups did not differ significantly from each other in their CMMs raw scores. The intercorrelation between the pre and post intervention CMMs scores revealed that the variations were less and correlation was higher in case of the experimental group to the control group. Similarly, the intercorrelation between the pre and post intervention curiosity scores revealed that variations were less and correlation was higher in the case of the control group compared to the experimental group.

Kaul, & Upadhyay (1992) assessed the impact of ECE on retention in primary grades. The sample was drawn from the primary school located near the ECE centre in eight states. The total sample consisted of 31,483 children, out of which 10,636 children had ECE experience whereas 20,847 children were admitted directly from home. Each cohort of children was identified State-wise and year-wise, and followed up from 1983-84 to 1986-87. The tools used in the study included information blanks and master-sheets to record data. The data were analysed using percentages. The findings of the study revealed that children with ECE experience were found to have better retention rate in comparison to children who had direct entry in schools. The difference in percentage of the two groups was higher and in favour of children with ECE experience. The drop-out rate for the ECE group was less than that for the direct early children. The impact of ECE experience on retention in primary grades was greater for girls as compared to boys.

Murthy, (1992) investigated the scholastic readiness of preschool children in an attempt to identify factors responsible for scholastic readiness of preschoolers and to compare them and suggest an intervention and compensatory programmes for children who were not ready. The sample comprised 337 children comprising 213 boys and 124 girls, using incidental sampling technique. The tools used were school report card, scholastic readiness and interview schedule. The statistical techniques were correlations, analysis of variance and t-test. The investigator found that differences existed

in the academic achievement of children with different levels of scholastic readiness and that home environment contributed to child's scholastic readiness and academic achievement.

Kaul, et.al. (1992) evaluated the process based programme for development of number readiness at the pre-primary stage with a sample consisting of 60 children of the 4-5 years age-group. The experimental group consisted of 20 children who had intervention of a process-based programme for development of number readiness. Control group I consisted of 20 children matched in age, SES; Control group II consisted of 10 children matched in age, SES, but drawn from a school of lower quality; and Control group III consisted of 10 children matched in age but of high SES and from an elite school. She found that irrespective of SES and type of schooling, the children exposed to the number readiness programme demonstrated better understanding of numbers. The experimental group invariably performed better in seriation, sequential thinking and classification than the control groups. It was also found that the control group III had better rote memorization skills than all the other groups.

Kaur, Muralidharan, Limdi, Rozario, Maheshwari, (1992) did a follow-up study of Bastar (1982-1990) in an attempt to examine the long-term gains of preschool intervention in terms of academic performance and occupational and marital status of the tribal children of Bastar followed-up the children on whom baseline information was available in terms of some selected variables. Out of the original sample of 142 students covering 73 boys and 69 girls studied during the 1990, which comprised 49 boys and 21 girls. The study revealed that the original sample of the year 1982 comprised 142 children of which 49% were in schools and 51.6% were out of school; fewer girls than boys were going to school and only 30.76% were at the right grade for their age. Thus the stagnation rate was high. There was no significant correlation between children's performance in 1982 and 1990. Only one-third of Grades IV and V could read 80% of the text correctly. A large number of children

failed to recognize the signs of basic arithmetic and only 12.5 % knew the correct place value.

Muralidharan, & Upadhyay, (1992) conducted an extensive study to assess: how far the toy-making competitions in the states have been effective in meeting the objectives of creating awareness about the role and importance of toys and games in child development and in developing competencies among teachers to produce educational toys/games from low-cost materials; to develop skills among teachers in making suitable toys/games for children of different age groups; to impart knowledge about the use of different media in toy-making; to create awareness about the playway method and the child-centred approach to education; to find out the reasons for inadequate participation of teachers in the state-level toy-making competition, and to evolve a strategy for the effective implementation of the scheme of toy-making competitions on the basis of state-level suggestions. He conducted his research on ninety-seven teachers and fifty-one headmasters from 17 states/UTs and four Field Advisors of the NCERT. The tools for data collection included a questionnaire. The data were analysed using percentages. The study recommended that, in order to attract teachers towards this scheme, involvement of the DIETs should be ensured; State and district level education authorities should be made more aware and responsive about toy-making and the use of toy/games in the child-centred activity based approach to learning at the primary stage; Some incentive to participating teachers through TA/DA and contingent amounts to meet the cost of raw materials and postage, should be given; The prize money should be increased; An orientation and awareness programme should be organized for teachers before participation in the toy-making competitions; Exhibitions of teacher-made toys/games should be promoted at district and state levels, and ideas reflected in the entries in toy-making competitions should be documented and disseminated.

With an aim to giving preschool children varied and ample opportunities to develop awareness of science around them, **Srivastava,** (1992) conducted a

longitudinal impact study on a sample of 210 students from seven non-governmental organizations. She found that exposure to science-oriented educational toys considerably improved preschool children's concepts of colour, shape, number, volume, texture, weight and science concepts among many others; these gains were noticeable after three months of exposure. Teaching patterns were also found to be responsible for significant developments of concepts. The exposure to science-oriented toys also had significant positive effect on the language development of the children.

Using a sample consisting of 40 preschool children randomly divided into four equal groups, each assigned to four treatment conditions, **Hejmadi, (1997)** tested the effectiveness of intervention training on some cognitive abilities. The tools employed were Torrance Test of Creative Thinking (TTCT) and Draw a Child Test using statistical techniques like mean, SD and ANOVA. Findings conclude that the experimental and control groups differed significantly from each other in their intelligence and creativity scores irrespective of testing conditions. The group receiving interventions were found to be the most creative in comparison to the other two experimental groups.

Inspired by the salutary effect of the 'Head start' programme inaugurated in the United States of America in the early 1960s, **Taiwo & Tyolo,** (2002) conducted a case study of grade one pupils in Botswana to test the effect of pre-school education on academic performance in primary school. The study aimed at finding out whether there were significant differences in the performances of Botswana grade one pupils with pre-school education experience and their counterparts without such an experience on selected tasks in English language, mathematics and science. Using purposive sampling technique for school selection, a total of 120 grade one pupils were randomly selected for the study from four selected primary schools in Botswana. In addition, 20 grade one teachers from the study schools participated in the study. For data collection purpose, each pupil-subject was individually interviewed

for about 20 min on the study tasks; and the opinions of the twenty teachers on the subject of the study was sampled by the use of a questionnaire. The results of the study indicated that pupils with pre-school education experience significantly out-performed their counterparts without such experience in all the three school subject areas surveyed by the study.

On studying the "Impact of pre-school on young children's cognitive attainments at entry to reception **Sammons, & Silva** (2004) found that the duration of time in pre-school is found to have a significant and positive impact on attainment over and above important influences such as family, socio-economic status, income, mother's qualification level, ethnic and language background.

Williamson, Salkie, & Letourneau, (2005) using bivariate and multivariate analyses examined the relationships that caregiver activity, household income source, and family characteristics have with the cognitive development of 59 impoverished children who were less than three years old. They found that, of the three poverty experience variables included in the multivariate analysis, only employment as the exclusive source of household income had positive relationship with children's cognitive development. Two of the family characteristics, income adequacy and caregiver education, also were associated with the children's cognitive score, and they were both better relative predictors than the employment-only income source variable. Income adequacy was positively associated and caregiver education was negatively associated with children's cognitive development.

Based on a study titled "Full day versus Half-Day Kindergarten: In which programme do children learn more?" **Lee, Burkam, Ready, Honigman, Meisels,** (2006), using a sample of over 8,000 kindergarteners and 500 U.S. public schools that participated in the Early Childhood Longitudinal Study-Kindergarten Cohort found that schools that offer full-day programmes learn more in literacy and Mathematics than their half-day counterparts.

Rolla San Francisco, Arias, Villers, & Snow, (2006) in their experimental study evaluated the differential impact of three early literacy interventions—tutoring, classroom activities, and work with families—on the emergent literacy skills of low-income Costa Rican kindergarteners. They found that tutoring or a combination of all three interventions was the most effective but that providing high-quality materials to teachers without training had no impact and that more intensive interventions of longer duration would be needed to ensure long-term impact on first grade repetition and eventual school dropout. Continuing research was found needing to assess the impact of these interventions on student outcomes and repetition rates in first grade, as well as exploring the impact of the more intensive intervention of professional development.

Aboud, (2006) evaluated a preschool program in rural Bangladesh in terms of cognitive and social outcomes of children. The preschools provided a half-day program, 6 days a week, with free play, stories, and instruction in literacy and math. Four hundred children between 4.5 and 6.5 years were assessed, half in preschools and half in villages where there were no preschools. After controlling the differences in child's age, nutritional status, mother's education, and assets, preschool children performed better than the comparison children on measures of vocabulary, verbal reasoning, nonverbal reasoning, and school readiness. On some indicators of social development during play, preschool children performed better, though not on the cognitive aspects of play.

McGregor, Cheung, Cueto, Glewwe, Richter, & Strupp, (2007) Barbara upon studying the Developmental Potential in The First 5 Years for Children in Developing Countries found that disadvantaged children of south Asia and sub-Saharan Africa were likely to do poorly in school and therefore have poor cognitive and educational performance and subsequently have low incomes, high fertility, and provide poor care for their children, thus contributing to the intergenerational transmission of poverty.

Mwaura , Sylva & Malmberg, (2008) investigated the effect of two types of preschool (Madrasa and non-Madrasa) experience on the cognitive development of children in East Africa in the context of three countries Kenya, Uganda, and Tanzania/Zanzibar. This quasi experimental evaluation used four subscales adapted from the British Ability Scale II. The development of 423 children was studied at pre-test (entry to preschool) and at post-test 18 months later. Hierarchical regression showed that children with both types of preschool experience performed better than the home (comparison) group; however, children attending Madrasa Resource Centre preschools achieved significantly higher scores overall.

Moore, Akhter & Aboud, (2008) used a pre–post intervention–control design to compare a piloted-revised versus a regular preschool program offered by an organization in rural Bangladesh. After 7 months in operation, the quality of the piloted-revised program was higher than the regular program, though the regular program had also improved. Children attending pilot preschools made greater gains than children attending regular preschools on most outcome measures. Action research was conducted alongside the quantitative evaluation to study the process of the implementation and to identify areas for further improvement.

On examining whether child care centres benefit poor children after school entry? **Bassok, French, Fuller& Keagan,** (2008) found that attendance in preschool centres can yield short-term benefits for children from poor or middle class families. They reported on child-care and home environments of 229 children in the US who were 2.5 years of age (on average) at entry to the study. Among children attending a centre at 2.5 or 4.5 years (on average) of age, cognitive proficiencies were significantly higher at 7.5 years of age, compared with children in home-based care, after taking into account prior proficiency levels , maternal attributes , and other covariates. No relationship between centre attendance and social development, positive or negative was detected at 7.5. a priori selection factors modestly helped to explain the

likelihood that mothers enrolled their child in a centre. But associations between centre exposure and higher cognitive proficiency at age 7 remained after controlling for selection factors and testing for omitted variables bias.

A study by **McPherson,** (2008) attempted to examine and evaluate the components of the existing pre-kindergarten programme and the local head start programme in order to determine whether the components are aligned with the state standards in preparing children for success in school. Evaluation of the programmes was conducted through interviews and questionnaires. The results of this study indicate that more than half of the children entering kindergarten from Head Start and the local Pre-K were equipped with early learning skills that are known to enhance academic achievement.

Humphrey, (2008) conducted a study to examine and assess the effectiveness of the preschool settings of the Pearl River community regarding the achievement of Native American kindergarten students. The data were examined to compare student achievement of the Pearl River Elementary School kindergarten class of 2006-2007 as measured by the TerraNova subtests in Reading/Language and Mathematics. A sample of n = 74 was obtained for this study. Descriptive statistics were used to analyze previous preschool experiences of the participants. Demographic data showed that most students in the Pearl River Elementary School kindergarten class of 2006-2007 had attended some type of preschool. TerraNova scores for the participants were also examined. Descriptive statistics were used to examine how well the kindergarten students at Pearl River Elementary School compared with the national average. The data indicated that the kindergarteners at Pearl River Elementary School did not score as high as the national average on any of the subtests for Reading, Language, and Mathematics. A MANOVA was used to test the null hypothesis that stated that there were no statistically significant differences among the means of the TerraNova scores based upon type of preschool attended. The independent variable for the analysis was type of preschool attended. The dependent variables were the subtest scores on the

TerraNova in Reading, Language, and Mathematics. Results indicated that students who had attended the Pearl River pre-kindergarten program outscored the students who had attended the Pearl River Head Start program in both Language and Mathematics subtests. Results did not indicate that there was any statistical difference in the mean of the Reading subtest based upon type of preschool attended.

A randomized controlled trial was conducted in 40 Head Start and state preschool classrooms with 278 children, by **Klein, Starkey, Clements, Sarama, Iyer,** (2008) to determine whether a pre-kindergarten mathematics intervention was effective. Intervention teachers received training that enabled them to implement with fidelity, and a large majority of parents regularly used math activities teachers sent home. Intervention and control groups did not differ on math assessments at pretest; however, gain scores of intervention children were significantly greater than those of control children at posttest. Thus, the intervention reduced the gap in the children's early mathematical knowledge.

An experimental study was conducted by **Sahu,** (2008) to study the effects of intervention using pretest-intervention-posttest design with an experimental and control group, the experimental group of children received intervention for one month. Both the control and experimental groups were assessed at baseline. Posttest results of the two groups revealed significant differences in favour of the experimental group in gross-motor, fine-motor, self-help, language, and cognition.

A study conducted by **Tarumi, & Bredenberg,** (2009) examined whether intervention such as the government of Cambodia pilot school readiness program (SRP) has effects on students' immediate acquisition of school readiness skills as well as students' longer term achievement of formal curriculum. The study finds that children who participated in SRP outperform children that did not participate in both outcomes, controlling for pretest score and background variables. The findings suggest that the intervention may be

one alternative model to preschools in countries where access to pre-primary education is limited.

A regression discontinuity design by **Coburn,** (2009) sought to explore the relationship between attendance in public kindergarten programmes and school readiness skills. A sample of 179 students entering prekindergarten and 67 students entering kindergarten who completed kindergarten the previous year was collected with parental consent to release Brigance screen scores and eligibility status for free/reduced lunch (indicator of socio-economic status). A second analysis with ANOVA was conducted with a sample of the same 67 students entering kindergarten who completed prekindergarten and 86 students entering kindergarten who had not participated in kindergarten. Both the regression discontinuity and ANOVA results indicate a significant impact of prekindergarten participation on school readiness skills than kindergarten students who were from low socio-economic backgrounds. Kindergarten students who were eligible for free/reduced lunch and attended prekindergarten performed better than kindergarten who were eligible for free/reduced lunch and did not attend prekindergarten. A limitation of this study is that the sample of students was drawn from a geographic region where there is little race/ethnicity diversity.

The purpose of the study by **Opel, Ameer, & Aboud,** (2009)was to examine the efficacy of a 4-week dialogic reading intervention with rural Bangladeshi preschoolers with the intention of increasing their expressive vocabulary. Eighty preschoolers randomly selected from five preschools participated in the 4-week program. Their expressive vocabulary, measured in terms of definitions, was tested on 170 challenging words before and after the program and compared with that of control children who participated in the regular language program. Both groups were read in Bangla eight children's storybooks with illustrations, but the dialogic reading teacher was given a set of "wh" and definitional questions to enhance children's verbal participation. The mean vocabulary scores of dialogic program children increased from 26% to 54% whereas the control children remained at the same level. Results are discussed in terms of the successful application of dialogic reading to low-resource preschools.

Welsh, Nix, Blair, Bierman, & Nelson, (2010) examined the developmental associations between growth in domain-general cognitive processes (working memory and attention control) and growth in domain-specific skills (emergent literacy and numeracy) across the prekindergarten year and their relative contributions to kindergarten reading and maths achievement. One hundred and sixty-four Head-start children were followed longitudinally. Path analyses revealed that working memory and attention control predicted growth in emergent literacy and numeracy skills during the prekindergarten year and that growth in these domain-general cognitive skills made unique contributions to the prediction of kindergarten maths and reading achievement, controlling for growth in domain-specific skills. These findings extend research highlighting the importance of working memory and attention control for academic learning, demonstrating the effects in early childhood, prior to school entry.

Marulis, and Neuman, (2010) studied the effects of vocabulary intervention on young children's word learning and found a gain of nearly one

standard deviation on average on vocabulary measures. This meta-analysis examines the effects of vocabulary interventions on pre-K and kindergarten children's oral language development. The authors quantitatively reviewed 67 studies and 216 effects sizes to better understand the impact of training on word learning. Results indicated an overall effect size of .88, demonstrating, on average, a gain of nearly one standard deviation on vocabulary measures. Moderator analyses reported greater effects for trained adults in providing the treatment, combined pedagogical strategies that included explicit and implicit instruction, and author created measures. Middle and upper income-at-risk children were significantly were more likely to benefit from vocabulary intervention than those students also at risk and poor. These results indicate that although they might improve oral language skills, vocabulary interventions are not sufficiently powerful to close the gap- even in the preschool and kindergarten years.

The purpose of this causal-comparative study by **KMak,** (2010) was to examine the relationships between kindergarten reading-readiness skills by type of preschool, type of student, and attendance. Students were divided into three categories: at-risk, general population, and special education. The attendance by years and by total hours was compared with reading-readiness skills as measured on the Illinois Snapshots of Early Literacy (ISEL-K/1). Results of this study indicated the following: students who attended a traditional preschool program had stronger kindergarten reading-readiness skills than students who attended a blended preschool program or no preschool program; stronger kindergarten reading-readiness skills were seen from students with a greater number of years of preschool; kindergarten reading-readiness skills increased as the amount of weekly preschool attendance increased; for students in the general population, the type of preschool attended they attended made a difference in reading-readiness skills.

A comparative study by **Stiffler,** (2010) answers whether the attainment of year-end kindergarten reading benchmark status vary between students

enrolled in half-day kindergarten and those enrolled in full-day kindergarten after controlling for differences in initial instructional recommendations? The researcher analysed the 2005-2006 achievement of 906 students who were enrolled in 53 kindergartens across 10 different schools in an elementary district in the American Southwest; 25 classes were full day and 28 were half-day. The beginning and end of year instructional recommendations yielded from the DIBELS formative assessment system revealed benchmark status. Binary logistic regression allowed the researcher to control for differences in the beginning of the year instructional recommendation. Results revealed that a student enrolled in full-day kindergarten was 3.235 times more likely to attain end-of-year benchmark status than a student enrolled in a half-day kindergarten. The study also reported that a student in the study was 12.629 times more likely to attain end-of-year benchmark status if he or she was enrolled in a half-day and did not meet beginning-of-the-year benchmark status.

Upon testing the effects of full day kindergarten on academic achievement and social development, **Cooper, Batts Allen, Patall, & Dent,** (2010) revealed that attending full day kindergarten had a positive association with academic achievement (compared to half day kindergarten) equal to about one quarter standard deviation at the end of the kindergarten year. A meta-analysis found that attending full-day (or all-day) kindergarten had a positive association with academic achievement (compared to half-day kindergarten) equal to about one quarter standard deviation at the end of the kindergarten year. But the association disappeared by third grade. Reasons for this fade-out are discussed. Social development measures revealed mixed results. Evidence regarding child independence was inconclusive. Evidence was suggestive of a small positive association between full-day kindergarten and attendance and a small positive association with the child's self confidence and ability to work and play with others. However, children may not have as positive an attitude toward school in full-day versus half-day kindergarten and may experience

more non-academic outcomes. The authors suggest that full-day kindergarten should be available to all children but not necessarily prescribed.

Kim, & Guryan, (2010) evaluated the effects of summer-reading intervention with and without a parent training component with a sample of low-income Latino children from language minority families. A sample of 370 children were pre-tested on a measure of reading comprehension and vocabulary and were randomly assigned to a treatment group and a control group. The findings conclude that although children in the treatment group were reported as reading more books than the control group, there was no significant effect on reading comprehension and vocabulary. Recommendations for improving the efficacy of the intervention were thus discussed.

Marley, & Szabo, (2010) examined the cognitive benefits of improving Children's listening comprehension with a physical manipulation strategy. The participants were 76 kindergarten and first grade students randomly assigned to 2 strategies: stories with pictures or manipulation. After the training period the pictures were removed and participants were instructed to imagine story events. They found significant differences in favour of the manipulation strategy.

Malmberg, Mwaura & **Sylva,** (2011) investigated the effects of the Madrasa Resource Center (MRC), a child-centered intervention program, on East-African (Kenya, Zanzibar, and Uganda) preschool children's cognitive development. Altogether 321 children (153 non-intervention and 168 intervention) participated in a cross-sequential study over three time-points during preschool (mean ages 4.3, 6.0, and 7.1 years). A multilevel model (MLM; time-points nested within children nested within schools), in which time was coded flexibly (i.e., child's age operationalized as months from start of the intervention), showed a beneficial curvilinear effect of the intervention program on children's cognitive gains. A moderation analysis suggested that the effect of observed preschool quality (ECERS) was stronger in the

intervention program. The findings are discussed within the context of East-African preschool policy.

Hu, Adey, & Jia (2011) in their study titled "Effects of a 'Learn to think' intervention programme on primary school students" found that Grade 1 and Grade II students showed effects of LTT from one year after their start and increasing: on thinking ability d=.78-1.45; on Chinese d=.68-1.07; on Maths .58-.87. Grade 3 students showed effects from six months after their start: on thinking ability .90-1.37; Chinese .77-1.32; Math .65-1.29. The effects were concentrated in students in the middle band of initial ability.

Aboud & Hossain, (2011) collected evidence regarding changes over 3 years in the quality of a preprimary program in rural Bangladesh and differences in school achievement of children who did and did not attend. The quality of 30 preprimary schools was evaluated using the ECERS-R (Early Childhood Environment Rating Scale – Revised) and ECERS-E (– Extension). Results indicated that the quality improved overall from 3.50 in 2006 to 5.24 in 2008. Samples of 180 graduates of these schools were annually followed into first and second grades and tested for five competencies: speaking, writing, reading, oral mathematics and written mathematics. Their achievement scores were compared with students in their classrooms and students in neighboring schools who did not have the opportunity to attend preprimary schools. First graders in 2008 performed significantly better than comparisons in all competencies, and better than earlier graduates. Second graders performed significantly better than comparisons on all but Reading. Qualities of the math preprimary program correlated with math achievement in Grade 1 only. Consequently the quality of the preprimary program improved over time along with higher achievement for its graduates.

The effects of the Montessori method on preschool children's readiness to primary education was examined by **Kayili & Ari,** (2011). The sample consisted of 50 randomly chosen five six-year olds attending nursery school between 2009-2010 in the Selcuklu county of Konya. 25 students were placed

in the experimental group and 25 were in the control group. tests were administered to before and after experimentation. Tools used for data analysis were MaNN Whitney U test and Wilcoxon signed-rank test. The conclusion derived at was that the Montessori method made positive contribution to preschool children's school readiness and that it was more efficient than the current preschool education programme.

The effect of pre-reading programme developed for 6 year olds was examined by **Buyuktaskapu,** (2012). To fulfill the objectives of the study, 25 primary school first grade pupils participated and were compared with another 25 primary school first grade pupils who attended nursery class. Tools such as Basic Reading Writing Skills Scale, Reading Comprehension Scales, Mechanic Reading Skills Observation Form and Writing Skill Scales were administered to the first graders both in the middle of the first term and in the middle of second term. The findings reveal that children who attended the family supported pre-reading programme had higher reading success.

Berumet, (2012) conducted a study with 24 children with an attempt to improve language and cognitive development of infant and young children residing in institutional settings in Turkey. There were 12 children with a mean age of 35 months in the intervention group and 12 children with a mean age of 36 months in the control group. when both groups' pre-test and post-test general development t-scores and cognitive and language sub-domain developmental gaps were compared, it was found that neither the time nor the time by group interactions were significant. Nevertheless, both groups' developmental gap appeared to decline. The study also indicated that infants and children who were in the intervention group showed a decline in language and cognitive development gaps, whereas the control group children's developmental gaps were increased which shows that by increasing the quality of care in children's homes infants' and young children's development can be enhanced.

Rao, Sun, Zhou, & Zhang, (2012) conducted two studies to examine the relationship between preschool experiences and the early academic achievement of rural Chinese children. In both Study 1 (n = 165) and Study 2 (n = 205), the school preparedness, and the literacy and mathematics attainment of first graders with different preschool experiences (kindergarten, separate pre-primary class, "sitting-in" a Grade 1 class, no preschool experience) were assessed. In Study 1, educational attainment was evaluated using end-of-semester examinations designed by local educational authorities; whereas in Study 2, better-constructed and identical tests were administered at the beginning and end of the academic year. Further, in Study 2, the different types of preschool programs attended by participating children were directly observed. Findings from both studies showed that children with developmentally appropriate preschool experiences (kindergartens or separate pre-primary classes) had higher school readiness scores than other children. Results from Study 2 also indicated that (i) disparities in children's school attainment were associated with the type of their preschool experience; and (ii) children from the developmentally appropriate kindergarten program showed higher mathematics and literacy achievement at the end of Grade 1 than children who merely "sat in" Grade 1 classes or had no preschool experience. Implications of the findings for the scaling up of preschool services in rural China are discussed.

An Evaluative study of early education based on physical environmental guidelines was done by **Satterlee & Williams,** (2015). They found that most early childhood educational programs operate without proper indoor environments. Indoor air quality, temperature, ventilation, day lighting, and acoustics are crucial factors for educational settings in early childhood education. The study documented the physical environment in early childhood education centers in three counties in Maryland. Results indicated that building performance and indoor air quality standards vary according to the socioeconomic status of children who attend early childhood programs, and

that environmental factors correlate with educational achievement (as measured by kindergarten readiness scores).

2.7.0: Position of present research in relation to the reviewed studies

A review of available researches relating to effectiveness of interventions resonates that much research has been done in this area. Most of the studies are comparative studies between the effectiveness of full-day versus half-day interventions, whether these interventions lead to cognitive development or not; and some other studies are related to language and other cognitive related aspects. A good number of studies have also been done on evaluations of interventions and whether or not they help preschoolers to have school readiness. It is evident from the findings of these numerous researches that interventions in general are effective and many children often reap immediate benefits from them, sometimes the impact of these interventions are even lasting and continue till adolescence and adulthood.

Interventional studies in India are mostly relating to language and cognitive tasks, whereas in the western countries, most of the interventional studies are concerned with the comparative effectiveness of full-day versus half-day kindergartens or preschools. A trend that is evident from these reviews is that our country, India is still mostly in the stage of examining the effectiveness of interventions, per se. On the other hand, in the developed countries studies are mostly about the effectiveness of one model of intervention over another, and whether the duration of the interventions have serious implications upon the cognitive development of individuals.

Pertaining to the development of interventions, there is dearth of literature on the topic. This is indicative of the fact that this area as a subject matter of research is still very much virgin and yet to be explored. For the present study too, only three studies have been reviewed, and this too, after a review of almost two-hundred studies, both online and otherwise. It may thus

be concluded that, interventions are effective as a whole; that if interventions are developed after thorough groundwork and enquiry into prevailing conditions have been made, they stand to serve a very important function, i.e. provide cost-effective and high-quality school readiness skills to preschoolers. It is worth careful mention that the implications of developing interventions for the holistic growth of preschool children in Mizoram in the other two domains as well, i.e., conative (affective) and psycho-motor is exceptionally provocative, given the predicament of the larger mass of people hailing from the moderate socio-economic status.

Considering the period covered, as relates to the matter of SES, there are only modest numbers of studies on the SES of parents. A perusal at these studies reveals that the majority of the studies have been conducted in the African continent and a handful of others here and there. Moreover, the nature of SES study is such that it is not possible to take it up in isolation. Therefore, this area may be taken up for research by correlating it with other variables such as academic achievement, language development, physical development or socio-emotional development etc.

A perusal of the reviewed research studies exposes that good grounds have been covered so far as studies on interventions are concerned. However, a study on the development of interventions for development of cognitive development of preschoolers, and the testing of effectiveness as such, of such an intervention, has not been done before in the context of Mizoram. Though there may have been limitations on the part of the investigator to access all available literature, to the extent of the researcher's knowledge, there were only three research studies to be reviewed. This speaks volumes about the dearth of studies in the area. Besides, the available literature was almost three decades old. Therefore, the study "Development of Interventional Packages for Fostering the Cognitive Development of Preschool children" is a modest endeavor to bridge the gap in the existing system.

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CHAPTER III

METHODOLOGY OF THE STUDY

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METHODOLOGY OF THE STUDY

3.1.0: Introduction

This chapter describes and justifies the research methods and includes the description of tools used in the study, the population and samples of the study as well as the sampling techniques employed.

3.2.0: Method of Study

a) Mixed Method Approach

The present study is a mixed method approach as it employs both descriptive survey method and Pre-test and Post-test Experimental design.

i) Descriptive Survey Method

To study and analyse the cognitive profiles of children of English Medium Preschools and Anganwadis, as well as to study the SES of parents of children from English Medium Preschool and from Anganwadi, Descriptive Survey Method has been followed.

ii) Pre-test and Post-test Experimental Design

To test the effectiveness of the developed interventions, pre-test and post-test experimental design has been employed.

3.3.0: Population and Sample

The present study comprises of the following categories of population:

Population I:

Children of all English Medium Preschools and Anganwadis comprise the population I.

Population II:

The second category of population of the present study is comprised of all parents of children from English Medium Preschools and Anganwadis.

Population III:

All Preschool children of Anganwadis form the population for experimental study.

Sample I:

A sample of 100 preschool children, 50 each from English Medium Preschool and Anganwadi in Aizawl was taken by following purposive sampling method.

Sample II:

A sample of 100 parents of sampled preschool children, 50 each from English Medium Preschool and Anganwadi was taken as the second category of sample.

Sample III:

Only 50 children from one Anganwadi centre in Aizawl were selected as the experimental group.

3.4.0: Tools Used

The following tools were used for collecting data:

i) Pandey's Cognitive Development Test for Pre-schoolers
ii) SES Scale developed by Lallianzuali Fanai

Pandey's Cognitive Development Test for Pre-schoolers

The Pandey's Cognitive Development Test for Pre-schoolers (PCDTP) is a standardised cognitive test developed by Hema Pandey which measures the cognitive abilities of preschoolers. The test measures cognitive abilities of children through verbal and non-verbal items. The PCDTP test consists of 6 sub-tests with 20 items in total.

The Pandey's Cognitive Development Test for Preschoolers contains ten (10) broad items; with these ten items further having varying numbers of sub-items under them. The first item relates to conceptual skills. Moreover, the conceptual skills items have been categorized into concepts of shape, colour, time, classification, number, serialisation, weight, size, texture and cognition of coins. The maximum score for conceptual skills is twenty seven (27) points. The second item is information and comprehension with a maximum score of thirteen (13). Visual perception items follow next, with maximum score of seven (7). The memory items have a maximum score of ten (10) points. Object vocabulary items carry a maximum score of six (6) points. The total maximum score for the entire test is sixty five (65) and the minimum score is zero (0). Higher scores indicate higher/better cognitive development and lower scores indicate lower/weaker cognitive development.

SES Scale developed by Lallianzuali Fanai

The SES scale used for collecting the socio-economic and educational status of parents of preschool children from English Medium Preschool and Anganwadi is a questionnaire consisting of nine (9) items seeking information relating to the education, occupation and social position of the parents. Slight modifications were made in the test to meet the current standards.

The Fanai's Socio Economic Status Scale is a checklist which includes ten (10) items, which assesses the status of preschoolers' families across three

(3) dimensions, namely social status, economic status and educational status. There are varying numbers of items under educational, social and economic variables and each variable is rated across varying scales. The scores for the different variables are assigned in descending order from top to bottom, with minimum scores for the variables ranging from zero (0) and the maximum scores ranging up to twelve (12). Lower scores indicate lower educational, social or economic status and higher scores indicate higher educational, social and economic status.

3.5.0: Collection of Data

Both the children of English Medium Preschool and the Anganwadi i.e. the experimental group were given cognitive tests as a measure for obtaining their cognitive profiles to fulfil the second and third objectives of the present study. Only the preschool children of Anganwadis got exposed to the interventional package for a period of six months. The initial test for obtaining cognitive profiles of the experimental group served as a pre-test, and the second test after the administration of the interventional packages served as a post-test as per the experimental design of the present study and as a measure to ascertain the effectiveness of the Interventional Packages.

The investigator developed the Interventional Packages for fostering the cognitive development of preschool children. The validity of the Interventional Packages was then established by preparing a checklist as a measure for content analysis to ensure the validity of the packages and the checklist was given out to experts in the fields of psychology and early childhood development and education working in the field from the Social Welfare Department, SCERT as well as curriculum developers and some working preschool teachers.

A. Administration of Pre-test

In order to administer pre-test to the children of English Medium Preschools and Anganwadis i.e., to obtain the cognitive profiles of the children, the investigator visited the site of the preschool centre everyday and personally administered the Pandey's Cognitive Development Test for preschoolers (PCDTP). About three students were taken aside and given the PCDTP every day until the necessary numbers of students were covered. Fifty preschoolers were selected from the Anganwadi centre and the cognitive test was administered on them.

B. Administration of Interventional Packages

The Interventional Packages were administered to children of Anganwadi Centre, Dawrpui, Aizawl. The existing time-table of the Anganwadi centre was first looked in to before administering the interventional packages, so that activities could be arranged most meaningfully and to avoid minimum wastage of time.

Before administering the Interventional Packages to the children of the Anganwadi centre, a week's training and supervision was given to the currently employed teacher in order to acquaint her to the goals and objectives of the intervention. Proper guidance and reminders were given to her regarding the broad educational objectives of early childhood education programmes and narrower instructional objectives of the interventional packages as well as the time frame for its complete execution.

The duration of the daily programme at the Anganwadi centre was two hours. The centre's timing was 10 O'clock till 12:30 in the afternoon. The items/activities were devoted an average length of one hour everyday out of the normal Anganwadi time table. The investigator accommodated and supervised these sessions/classes 2-3 times a week.

The interventional packages were administered from the month of June 2013 whereas the session had already been started in January 2013. This means that classes had been carried on for half the length of the whole session. It was found that the attendance of the class was quite unsatisfactory, safe for a handful of students who had regular attendance. The centre had enrolled about a hundred students at the beginning of the year, but this figure had dropped by almost one quarter by the time the packages were due to be administered. Therefore, parents were contacted and information was disseminated that an interventional packages designed to foster the cognitive development of the preschoolers would be administered at the centre.

C. Administration of Post-test

The administration of a second test i.e. post-test for the children of Anganwadis to test the effectiveness of the interventional packages was done. To administer the post-tests to the children of Anganwadis, subjects were traced and followed at their homes as sessions were already over. Children were approached again every day until all the 50 subjects from the pre-test were covered.

D. Collection of SES from Parents

To collect the SES from parents, most of the forms were given out from the School and Centre and a few parents were approached at their homes. Announcements were made and proper explanations were given regarding its purpose to ensure proper and correct responses from them. The forms were later collected by the investigator at the time of the post-tests and errors if any, were corrected immediately.

3.6.0: Organisation of Data

With the objectives of the study in mind, the data for the present study are organised in sequential order. The data relating to the cognitive profiles of the children of English Medium Preschools and Anganwadis are analysed and compared, and significant differences are computed. The data collected from parents of preschool children from English Medium Preschool and Anganwadi relating to their socio-economic and educational status are compared, analysed and presented in objective-wise manner. The validity of the interventional packages established through a rating scale developed for the purpose by the investigator is analysed and presented. The effectiveness of the interventional packages determined by administering post-tests to the preschool children of Anganwadis is then presented.

3.7.0: Analysis of Data

All raw data were recorded in the scoring sheets and scored fairly and accurately with the scoring keys that came with the tools. The raw data obtained thus through the different tools were carefully and systematically arranged in an orderly manner in tables and charts and then entered in SPSS package/software before being treated with appropriate statistical tools.

The data of the present study were analysed both qualitatively and quantitatively. For quantitative analysis, descriptive statistics like percentage, mean and standard deviation were used.

3.7.1: Statistical Treatment of Data

Descriptive Statistics

Given the nature of data and the objectives of the study, the following techniques were used for analysis. Data collected from the preschoolers and

their parents were analysed using SPSS. Descriptive statistical techniques such as mean, standard deviation and percentage were employed to find out the cognitive profiles of children of English Medium Preschool and Anganwadi and also for purposes of classifying the socio-economic status of parents of preschool children into different categories.

Tests of significance for mean difference

To find out the differences in mean scores between the two groups i.e., children of English Medium Preschool and of Anganwadi, independent t-tests were computed.

To find out the differences in mean scores within the group i.e., pre-test to post-test, paired t-tests in respect of Anganwadi children were calculated.

To find out the significance of difference between the means of the socio-economic and educational status of parents of children from English Medium Preschool and that from Anganwadis, independent t-tests were worked out.

CHAPTER IV

DEVELOPMENT AND VALIDATION OF INTERVENTIONAL PACKAGES

CHAPTER IV

DEVELOPMENT OF INTERVENTIONAL PACKAGES

4.1.0 Introduction

The present section is the crux of the study. Therefore the whole of this chapter has been devoted to the development and procedures followed for establishing the validity of the interventional packages.

The clientele age range for preschool or early childhood education is 3-6 years. Though there are established developmental norms for every age-range, children display very varied developmental milestones. Age gaps, even as small as a few months can have tons of implications. For this reason, attempts were made to incorporate activities which would least pose threat to the age factor. The present chapter has been broadly classified under the following heads.

4.1.0: Rationale for Development of Interventional Packages

4.2.0: Steps in Development of Interventional Packages

4.3.0: Principles for Selection of Activities for Inclusion in the Packages

4.4.0: Interventional Packages

4.5.0: Establishment of the Validity of the Interventional Packages

4.6.0: Plan for Execution of Interventional Packages

4.7.0: Tabular Representation of Plan for Execution of Interventional packages

4.2.0: Rationale for Development of Interventional Packages

There are many advantages to having varied toys at one's disposal, and an economically sound household may offer just that. However, this fact guarantees neither effective learning nor bright learners. Incidentally, it is ample opportunity for sense manipulation that leads to meaningful cognition/learning. The cognitively advanced children are usually those who get optimum opportunities to manipulate their senses and have repeated exposure to utilise those skills the most. For example, in a better environment, children may get the opportunity to learn various conceptual skills of shape, colour and weight etc. with the help of carefully made block designs, nonetheless, a child from a less privileged home could be taught the same concepts with lesser costing materials like old wood blocks and available household items.

The materials used for making and conducting the various activities for the interventional packages are mostly low-cost, no-cost, inexpensive and easily available and accessible resources which have been prepared by the investigator herself, ranging from flash cards, charts, stencilled shapes, cut-outs from picture books and magazines; discarded wood blocks from furniture workshops, stones, pebbles and certain vegetables and fruits.

The activities in the Interventional packages, though planned to cover various objectives and a period of six months, are not too numerous as far as numbers of items/activities go, because the materials in the activities can be manipulated and modified so that different concepts and objectives can be realised. For e.g., the activity called 'Sort the Port' can be used to teach concepts of shape as well as length and texture if the materials used are modified. Similarly, 'What's in the bag?' can be utilised to learn counting or pre-number concepts as well objects vocabulary. There is an activity called 'Threading' which, while helping to teach counting is equally useful for fine motor development too.

Therefore, the Interventional Packages, if used properly and as planned are expected to be very effective for preschool children's cognitive development because a single activity has the ability to cater to more than one objective at a time.

4.3.0: Steps in Development of Interventional Packages

In order to construct the Interventional packages, the following steps and measures were taken by the investigator:

1. Extensive survey and systematic study of literature relating to early childhood education was done.
2. The objectives and implications of early childhood care and education were thoroughly studied.
3. Cognitive theories of Piaget, Bruner and Vgotsky were carefully studied.
4. The implications of Thorndike's laws of learning were also incorporated.
5. Consultations and discussions were had with experts working in the field of early childhood education.
6. Various existing preschool programmes were weighed and looked into.
7. Numerous activities naturally enjoyed by children were collected and their implications studied.
8. Play-based activities with prospects for cognitive growth were selected.
9. The factor of cost was carefully considered while selecting an activity for inclusion into the interventional packages.
10. The developmental norms of preschool children and culture specific characteristics and limitations have also been carefully considered during the selection, preparation and construction of the activities for the interventional packages.
11. The investigator then prepared a long list of cognition oriented play-based activities appropriate for preschool aged children.

12. The activities found as having the widest implications for the intellectual development and school-readiness of preschoolers were finally selected.
13. An informal try-out of some of the activities was conducted on pre-school aged children.
14. Final selection of activities for inclusion into the interventional packages was done.
15. Proper formats and elaborate lesson plans were prepared for the six (6) months during which the interventional packages were proposed to be administered.
16. The objectives of the interventional packages were broken down into monthly, weekly and daily basis.
17. A preschool teacher with prior experience with preschool children was approached and oriented with the rationale, contents and administration of the interventional packages.
18. The final selected activities were then arranged under different headings in an objectives oriented or theme based manner. All the objectives were broken down in a month-wise manner and separate objectives were laid down for the different months with the activities proceeding from simple to complex and from concrete to abstract.

4.4.0: Principles for Selection of Activities for Inclusion in the Packages

According to some studies, the selection of materials and devices to be communicated should take into account some fundamental principles and laws of learning. The present study therefore has observed the following principles/laws:

1. Law of readiness.
2. Law of effect.
3. Law of exercise
   -law of use
   -law of disuse

The implications of the above laws are, firstly, that learning takes place when there is readiness on the part of the learners. Readiness can have both mental as well as physical connotations; it implies a degree of concentration and eagerness. Physical needs must be satisfied before they start learning. Students who are exhausted or in ill health cannot learn much. Individuals learn best when they are physically, mentally, and emotionally ready to learn, and do not learn well if they see no reason for learning. If students have a strong purpose and a definite reason for learning something, they make more progress than if they lack motivation. In other words, when students are ready to learn, they meet the instructor at least halfway, simplifying the instructor's job. In the case of preschool children, prospects of play can act as a motivating factor. Therefore the activities selected for the packages were done so based on the justification that they were age-appropriate for the target sample.

Secondly, the principle of exercise states that those things most often repeated are best remembered. It is the basis of drill and practice. It has been proved that students learn best and retain information longer when they have meaningful practice and repetition. The key here is that the practice must be meaningful. In the context of the present study too, the activities were meant to be often repeated.

Lastly, the law of effect is based on the emotional reaction of the student. The principle of the law of effect states that learning is strengthened when accompanied by a pleasant sense of satisfaction, and that learning is weakened when associated with an unpleasant feeling. The student will strive to continue doing what provides a pleasant effect to continue learning. Positive reinforcement is more apt to lead to success and motivate the learner. Whatever the learning situation, it should contain elements that affect the students positively and give them a feeling of satisfaction. In the context of the present study too, those activities that are believed to be capable of being re-enacted/re-created at the pre-schoolers homes as well as create a sense of joy to the preschoolers have thus been selected.

4.5.0: Interventional Packages

The Interventional Packages have been developed to foster the cognitive development of preschoolers and to help realise the cognitive objectives of early childhood education. They are of six types, namely:

1) Interventional Package for Conceptual Skills
2) Interventional Package for General Information
3) Interventional Package for Comprehension
4) Interventional Package for Visual Perception
5) Interventional Package for Recall
6) Interventional Package for Object Vocabulary

Development of conceptual skills, general information, visual perception, listening and comprehension, object vocabulary and recall/memory etc are the objectives that coincide with early childhood period and these also form the broad educational objectives of the Interventional Packages. These activities are broadly categorised into individual and group play activities; indoor and outdoor play activities; quiet and active play activities and free and guided play activities. They are further broken up in a month-wise manner spanning six months with different broad objectives which are meant to be realised every month and narrower instructional objectives which are to be realised every week with the help of specific activities.

The broad objectives of the Interventional Packages and their connotations are briefly discussed below-

1. **Conceptual Skills**- Conceptual skills related activities are designed to cater to the development of various conceptual skills of Shape, Colour, Size, Height, Length, Weight, Texture, Time, Number and Classification. e.g., to colour, cut, paste etc.

2. **General Information**- Activities under this sub-category impart knowledge to children regarding various aspects of his/her surrounding

and environment. These activities force students to do deliberate and associative thinking, e.g., colours, numbers and uses of things and objects.

3. **Comprehension**- Comprehension based activities compel students to think, recall and comprehend oral directions and determine the actions of people and deliberate them with reason and abstraction, e.g., can you please take your friend to the bathroom? How many sisters do you have? etc.

4. **Visual Perception**- Visual perception related activities are designed to enable preschoolers ascertain the qualitative aspects of causal relationships that the subject draws out from his environment. Subjects are expected to see essential relationships between objects in the environment, e.g., please put the red chairs on the left side and the yellow chairs on the right side of the room.

5. **Recall-** Memory based activities attempt to compel preschoolers to pay deliberate attention to a simple situation and recall them for later use. These activities are meant to exercise children's memory and power of recall and rote memorisation while also improving their span of attention and mental alertness, e.g., how many boys were there in the car? What did you have for dinner last night? etc.

6. **Object Vocabulary**- Activities under this category attempt to enrich children's prowess about knowledge of objects and their usage as well as their general capacity to reason and absorb their surroundings, e.g., with what do we wash our clothes? What are the uses of a plate?

The Interventional Packages for fostering the cognitive development of preschool children consists of six (6) packages, with a total of 36 activities, each catering to specific objectives in the cognitive domain. The numbers of

items/activities in the different packages are not fixed, but varied. The items used in the different packages may be modified or interchanged depending on the concepts or skills intended to be developed. For example, the activity called 'Sort the Port' may be used to develop the different conceptual skills as well as to develop object vocabulary.

The different packages and the activities included therein are briefly described below:

Interventional Package for Conceptual Skills Development

Conceptual skills related activities are designed to cater to the development of various conceptual skills of shape, colour, size, height, length, weight, texture, time, number and classification, e.g., to colour, cut, paste etc.

1. Name of Activity- Colouring

Objectives of the Activity- Development of eye-hand co-ordination, development of concept of colour, shape, size.

Materials Needed- Crayons, sketch pens, paper cut-outs, picture books, old newspapers.

Details about the Activity- Preschoolers are given crayons of different colours and blank papers to colour.

2. Name of Activity- Cutting

Objectives of the Activity- Development of eye-hand co-ordination, development of concept of shape, colour and size.

Materials Needed- Small scissors, tracing papers, old magazines and picture books

Details about the Activity- Children are instructed to cut out forms, shapes and colours of their choice from old magazines and picture books depending on the theme of the day, e.g. colour, shape, size, length.

3. Name of Activity- Tracing/Stencilling

Objectives of the Activity- Development of eye-hand co-ordination, development of concept of shape, colour and size.

Materials Needed- Small scissors, tracing papers, old magazines and picture books, stencilled vinyl pieces

Details about the Activity- Children are instructed to trace/stencil forms, shapes and colours of their choice from old magazines and picture books depending on the theme of the day, e.g. colour, shape, size, length.

4. Name of Activity- Pasting

Objectives of the Activity- Development of eye-hand co-ordination, concept of shapes, colours, size.

Materials Needed- Small scissors, stencilled papers, paper cut-outs, chart papers, glue stick.

Details about the Activity- Children are given tracing papers and stencilled shapes of varying sizes and colours and asked to cut out the shapes or forms they have stencilled. Children are then instructed to paste these cut-outs onto chart papers and display them based on different themes like size, colour, shapes etc.

5. Name of Activity- 'Cut and Paste'

Objectives of the Activity- Development of concept of eye-hand co-ordination, shapes, colours, size.

Materials Needed- Preschoolers' pre-cut shapes and forms, chart papers and glue sticks.

Details about the Activity- Children are instructed to paste their pre-cut shapes and forms with glue sticks onto chart papers based on the concept/theme of the day.

6. **Name of Activity- 'Sort the Port'**

Objectives of the Activity- Development of concept of size, shape, length, weight, colour, texture, skills of identification and classification

Materials Needed- Old buttons, stones, lentils, bottles and pulses of varying colours, shapes, shapes, size and texture.

Details about the Activity- A huge collection of old buttons, stones, lentils, bottles and pulses is kept in a basket or what is called the 'Port'. Children are assigned to groups and asked to pick handfuls of these buttons to be sorted on the basis of colour, size, height, weight, shape and texture.

7. **Name of Activity- 'Daddy, Mommy and Baby'**

Objectives of the Activity- Development of concept of size

Materials Needed - Vegetables, shoes, books, bottles, chalks, crayons etc

Details about the Activity - Varying amounts of items which have similarity in one dimension while differing in others are kept in a pile or heap and preschoolers are instructed to sort them according to different dimensions. E.g., same colour-different size or same size different weight.

8. **Name of Activity- 'What's in the Bag?'**

Objectives of the Activity- Development of concept of texture, uses of things and objects

Materials Needed- One large basket, one big bag, different items of varying texture like vegetables, fruits, sweets, cotton wool, stones, bottles etc in pairs of two.

Details about the Activity- One of each item is placed in the bag and the other in the basket, so that children can only see the items in the basket. Children are made to put their hands inside the bag while making sure that they can only feel the items but not actually see them. They are then

asked to describe the 'feel' of the items they have touched and match and pick a corresponding item from the basket. After they have described the texture of the item they have picked, they are allowed to take out the item from the bag.

9. Name of Activity- 'Joyride'

Objectives of the Activity- Development of skills of counting, socialization, number concept and gross motor muscles

Materials Needed- Slide, Dice

Details about the Activity- Preschoolers are made to stand in line, the teacher throws a die and the number that comes out is the number of times the child next in line gets to ride down the slide. During each child's ride/slide, the remaining children count aloud the number of rides/slides thus completed.

Interventional Package for General Information

Activities under this sub-category impart knowledge to children regarding various aspects of his/her surrounding and environment. These activities force students to do deliberate and associative thinking, e.g., colours, numbers and uses of things and objects.

1. Name of Activity- Structured Conversation

Objectives of the Activity- Development of confidence, skills in socialisation, speaking, listening and comprehension, general information

Materials Needed- None

Details about the Activity- The teacher asks meaningful questions in a non-intimidating, casual but structured manner the names of different body parts, where children live, their family members, siblings, their likes and dislikes and uses of things and objects etc

2. Name of Activity- Free Conversation

Objectives of the Activity- Development of language, self-confidence, social development, emotional development

Materials Needed- None

Details about the Activity- The teacher gives the class a kind of 'zero period' wherein children can indulge in free play and conversation with their classmates.

3. **Name of Activity- 'Who am I?'**

Objectives of the Activity- Development of 'thinking', listening and comprehension skills and cause and effect relationships, general information

Materials Needed- Available items/pictures in the classroom

Details about the Activity- Different everyday items in and around the school are collected by the teacher and held at eye level of the preschoolers. The teacher then asks the children their usage and names.

4. Name of Activity- 'What's in the Bag?'

Objectives of the Activity- Development of concept of Texture, Uses of things and objects

Materials Needed- One large basket, one big bag, different items of varying texture like vegetables, fruits, sweets, cotton wool, stones, bottles etc in pairs of two.

Details about the Activity- One of each item is placed in the bag and the other in the basket, so that children can only see the items in the basket. Children are made to put their hands inside the bag while making sure that they can only feel the items but not actually see them. They are then asked to describe the 'feel' of the items they have touched and match and pick a corresponding item from the basket. After they have described the texture of the item they have picked, they are allowed to take out the item from the bag.

5. Name of Activity- 'Daddy, Mommy and Baby'

Objectives of the Activity- Development of concept of size

Materials Needed- Vegetables, shoes, books, bottles, chalks, crayons etc

Details about the Activity- Different materials of contrasting sizes are displayed and children are asked to verbally choose items on the basis of size- small, big or biggest.

3. Name of Activity- Storytelling

Objectives of the Activity- Development of listening and comprehension skills

Materials Needed- Story books with illustrations/Flannel graphs/Flash cards

Details about the Activity- The teacher tells short meaningful stories to the preschoolers injecting flash cards, and illustrations and questions relating to the stories are asked at the end of the sessions.

4. Name of Activity- Dramatisation

Objectives of the Activity- Development of listening, articulation skills

Materials Needed- None

Details about the Activity- Children are assigned by the teacher, different roles to assume for play-acting based on stories previously listened in class.

6. Name of Activity- 'To School

Objectives of the Activity- Development of skills in observation of phenomenon

Materials Needed- None

Details about the Activity- The teacher initiates a conversation and asks the students their experiences and sights on their way to school.

7. Name of Activity- In the Kitchen

Objectives of the Activity- Development of concept of Texture

Materials Needed- Regular items in the kitchen like vegetables, pulses, utensils etc.

Details about the Activity - The teacher takes a group of children into the kitchen by turns and lets them handle and manipulate the textures of different vegetables and materials and answers their queries.

Interventional Package for Comprehension

Comprehension- Comprehension based activities propels students to think, recall and comprehend oral directions and determine the actions of people and deliberate them with reason and abstraction,e.g., can you please take your friend to the bathroom? How many sisters do you have? etc.

1. Name of Activity- Structured Conversation

Objectives of the Activity- Development of confidence, skills in socialisation, speaking, listening and comprehension, general information

Materials Needed- None

Details about the Activity- The teacher asks meaningful questions in a non-intimidating, casual but structured manner the names of different body parts, where children live, their family members, siblings, their likes and dislikes and uses of things and objects etc

2. Name of Activity- Storytelling

Objectives of the Activity- Development of listening and comprehension skills

Materials Needed- Story books with illustrations/Flannel graphs/Flash cards

Details about the Activity- The teacher tells short meaningful stories to the preschoolers injecting flash cards, and illustrations and questions relating to the stories are asked at the end of the sessions.

3. Name of Activity- 'If I Could....'

Objectives of the Activity- Development of speech articulation and comprehension

Materials Needed- None

Details about the Activity- The teacher briefly narrates to the class what she would love to become for a day if she had a choice specifying her reasons for the same. After this, the teacher asks the preschoolers to do the same.

4. Name of Activity- Dramatisation

Objectives of the Activity- Development of listening, articulation skills

Materials Needed- None

Details about the Activity- Children are assigned by the teacher, different roles to assume for play-acting based on stories previously listened in class.

5. Name of Activity- "I Want to go Home"

Objectives of the Activity- Development of skills in seriation

Materials Needed- Coloured chalks, sticks, buttons, sweets etc

Details about the Activity-Varying amounts of items which have similarity in one dimension while differing in others are kept in a pile or heap and preschoolers are instructed to sort them according to different dimensions. E.g., same colour-different size or same size different weight.

6. Name of Activity- 'Who am I?'

Objectives of the Activity- Development of 'thinking', listening and comprehension skills and cause and effect relationships, general information

Materials Needed- Available items/pictures in the classroom

Details about the Activity- Different everyday items in and around the school are collected by the teacher and held at eye level of the preschoolers. The teacher then asks the children their usage and names.

7. Name of Activity- 'What If?'

Objectives of the Activity- Developing 'thinking' skills and 'cause and effect' relationships

Materials Needed- None

Details about the Activity- The teacher describes 'what if....' case scenarios to children and gives them cues to continue the make-believe circumstance....e.g. what would happen to me if I fell from a tree....building...cliff etc..?

8. Name of Activity- Colour Bombs

Objectives of the Activity- Development of concept of colour, gross motor development and listening skills

Materials Needed- Chalks of different colours, drum

Details about the Activity-Big circles are drawn on the floor to represent different colours. Children are assembled in the open area and the teacher stands in a corner facing away from the children. Children run in different directions to the beat of the drum. As the drum beat stops children stand still in the colour spot they have chosen and the teacher shouts out a particular colour. All the children who happen to stand in that particular ring are declared 'out'. The process is repeated again till all the children are 'out'.

9. Name of Activity- Chinese Whisper

Objectives of the Activity- Development of listening skills

Materials Needed- None

Details about the Activity- Students are instructed to sit or stand in a circle and the teacher whispers a short 5 or 6 word sentence into the ear of one of the preschoolers which has to be narrated to the next child and so on till the end of the circle. At the end of the whisper, the last child to hear the whispered word or sentence is asked by the teacher to say aloud what he/she has heard. If the sentence turns out not to be the same as the one that was whispered initially by the teacher, then the child next and so on are asked till the one who committed the error is found out.

10. Name of Activity- Rubber Bands

Objectives of the Activity- Development of concept of colour, seriation

Materials Needed- Rubber bands and Scale

Details about the Activity- The teacher hands out packets of rubber bands and scales to the preschoolers and tells them to sort on the basis of colours, she then tells them to wrap the rubber bands around the scales in a meaningful manner, shouting out one colour name after another.

<u>Interventional Package for Visual Perception</u>

Visual Perception- Visual perception related activities are designed to enable preschoolers ascertain the qualitative aspects of causal relationships that the subject draws out from his environment. Subjects are expected to see essential relationships between objects in the environment, e.g., please put the red chairs on the left side and the yellow chairs on the right side of the room.

1. Name of Activity- 'Daddy, Mommy and Baby'

Objectives of the Activity- Development of concept of size

Materials Needed- Vegetables, shoes, books, bottles, chalks, crayons etc

Details about the Activity- Different materials of contrasting sizes are displayed and children are asked to verbally choose items on the basis of size, small, big or biggest.

2. Name of Activity- 'Who am I?'

Objectives of the Activity- Development of 'thinking', listening and comprehension skills and cause and effect relationships, general information

Materials Needed- Available items/pictures in the classroom

Details about the Activity- Different everyday items in and around the school are collected by the teacher and held at eye level of the preschoolers. The teacher then asks the children their usage and names.

3. Name of Activity- Odd Man Out

Objectives of the Activity- Development of skill in classification/discrimination

Materials Needed- Available items and Flash cards depicting 4 sets of pictures per frame with one picture representing an odd characteristic as against the rest.

Details about the Activity- Items or Flash cards, in sets are shown to preschoolers and responses are sought from them to identify the odd ones therein.

8. **Name of Activity- 'What's in the Bag?'**

Objectives of the Activity- Development of concept of Texture, Uses of things and objects

Materials Needed- One large basket, one big bag, different items of varying texture like vegetables, fruits, sweets, cotton wool, stones, bottles etc in pairs of two.

Details about the Activity- One of each item is placed in the bag and the other in the basket, so that children can only see the items in the basket.

Children are made to put their hands inside the bag while making sure that they can only feel the items but not actually see them. They are then asked to describe the 'feel' of the items they have touched and match and pick a corresponding item from the basket. After they have described the texture of the item they have picked, they are allowed to take out the item from the bag.

4. Name of Activity- "I Want to go Home"

Objectives of the Activity- Development of skills in seriation

Materials Needed- Coloured chalks, sticks, buttons, sweets etc

Details about the Activity- Varying amounts of items which have similarity in one dimension while differing in others are kept in a pile or heap and preschoolers are instructed to sort them according to determined dimensions. 'Home' E.g., Balls of similar shapes, but of varying weights, sticks of similar lengths but of varying widths, shapes of similar colours but of differing size will be placed before the preschoolers. The children will then be instructed to classify them along determined criteria.

5. Name of Activity- Left, Right, Up, Down

Objectives of the Activity- Development of concept of direction, Gross physical and fine motor development, listening and comprehension

Materials Needed- Rubber band

Details about the Activity- The teacher hands out two rubber bands of differing colours and instructs the children to wear them, one in each wrist. She then shouts out the directions and gestures for them to change the position/location of the rubber band.....up on their head, down on the floor, on their left or right hand etc.

6. Name of Activity- 'Right and Left Song'

Objectives of the Activity- Development of concept of direction

Materials Needed- None

Details about the Activity- The teacher initiates the song, moving the corresponding part of the body sometimes moving the right or left side of the hands and limbs.

7. Name of Activity- Counting Game

Objectives of the Activity- To teach counting or pre-number concept

Materials Needed- Chalks, Blackboard, books, pencils, Flash Cards depicting different numerals on one side with corresponding number of items on the reverse side and chart papers displaying numerals and corresponding number of items.

Details about the Activity- The teacher points at chart papers with boldly written numerals on them and asks the students to read/count up to the displayed number loudly whatever item or items are shown on the charts. E.g. one apple, one dog....two dogs..., one book, two books, three books...etc and so on.

8. Name of Activity- 'Number/Ten Little Indians' Song

Objectives of the Activity- Development of articulation, counting skills and pre-number concept

Materials Needed- None

Details about the Activity- The teacher initiates singing the number song and the children imitate the teacher. The teacher displays with hand motion the corresponding number of fingers as is currently being sung in the song.

9. Name of Activity- 'Pop the Balloon'

Objectives of the Activity- Developing concept of colour and numbers

Materials Needed- Balloons of different colours

Details about the Activity- Children are divided into different groups. Balloons of different colours are blown up and scattered on the floor.

The teacher shouts out a random number, which is a cue for children to collect the required number of balloons and set aside in a corner allotted to each group. After all the balloons have been divided thus, the teacher shouts out another random number indicating the number of balloons that each group has to pop/burst. The balloons in the activity can also be substituted with small edible items like dry-fried chickpea, raisins or bubble gums.

10. Name of Activity- 'Threading Holes/Buttons'

Objectives of the Activity- Developing eye-hand co-ordination, fine motor muscle co-ordination, concepts of colour and numbers.

Materials Needed- Large and small Buttons, Beads and Threads of different colours

Details about the Activity- Teacher announces random numbers and the children are supposed to thread the corresponding number of buttons or beads accordingly. The children who complete the assigned task come to the teacher and count aloud the numbers and identify the colours of the different buttons/beads.

11. Name of Activity- 'Simon Says'

Objectives of the Activity- Development of listening and visual discrimination skills

Materials Needed- None

Details about the Activity- this game is a variation of the classic 'Simon says" game. One person, preferably the teacher acts as 'Simon". Preschoolers are instructed to put their index fingers at the tip of their noses. They are only supposed to point with their index fingers whichever body part the teacher calls out; but they are not supposed to touch the parts of the face that the teacher points to. The students who touch the parts 'pointed' are considered 'out' from the game. The last

student standing is considered the winner. Winners may be awarded stickers.

12. Name of Activity- Opposites/Contrasts

Objectives of the Activity- Development of concept of contrast

Materials Needed- Pictures/Items/Material showing contrasts in length, shape, size, weight and texture.

Details about the Activity- The teacher holds out different pictures and objects/materials explaining the contrast between light and heavy and long and short etc.

13. Name of Activity- 'Wet Balloons Dry Balloons'

Objectives of the Activity- Development of concept of length, weight and size

Materials Needed- Long air blown balloons and wet water filled balloons of varying sizes.

Details about the Activity- The teacher hands out air and water filled balloons and indulges the children in guided play explaining the contrast between light and heavy and long and short.

14. Name of Activity- Visual Perception

Objectives of the Activity- Development of counting (pre-number concept) skills and power of concentration

Materials Needed- Playing with cards/Playing Cards

Details about the Activity- The teacher distributes decks of playing cards to children and assigns them individually or in groups and urges them to arrange the cards on the basis of suits, colours or numbers.

<u>Interventional Package for Recall/Memory</u>

Recall- Memory based activities attempt to compel preschoolers to pay deliberate attention to a simple situation and recall them for later use. These

activities are meant to exercise children's memory and power of recall and rote memorisation while also improving their span of attention and mental alertness. E.g., how many boys were there in the car? What did you have for dinner last night? Etc

1. **Name of Activity- 'Lost and Found'**

   Objectives of the Activity- Development of visual discrimination, development of memory

   Materials Needed- Available materials like coins, crayons, pens, pencils, keys, chalk etc.

   Details about the Activity- The teacher displays four items on a table in front of a child and tells him to memorise the order of arrangement of these items for about 4 seconds and then rearranges them in a different way and hides/takes away one item, and then asks the child to name the missing object.

2. **Name of Activity- Puzzle Game**

   Objectives of the Activity- Development of visual discrimination, sequential thinking and of reasoning

   Materials Needed- Picture cut-outs of people, cars, animals, houses etc.

   Details about the Activity- Different pictures of varying sizes are cut out from magazines and picture books and are presented to the children, about three pictures to each child as a puzzle. The child is instructed to rearrange these picture pieces to form a complete picture.

15. **Name of Activity- 'To School**

   Objectives of the Activity- Development of skills in observation of phenomenon

   Materials Needed- None

   Details about the Activity- The teacher initiates a conversation and asks the students their experiences and sights on their way to school.

16. Name of Activity- 'Who am I?'

Objectives of the Activity- Development of 'thinking', listening and comprehension skills and cause and effect relationships, general information

Materials Needed- Available items/pictures in the classroom

Details about the Activity- Different everyday items in and around the school are collected by the teacher and held at eye level of the preschoolers. The teacher then asks the children their usage and names.

Interventional Package for Object Vocabulary

Object vocabulary- Activities under this category attempts to enrich children's prowess about knowledge of objects and their usage as well as their general capacity to reason and absorb their surroundings. E.g., with what do we wash our clothes? What are the uses of a plate?

1. Name of Activity- In the Kitchen

Objectives of the Activity- Development of concept of Texture

Materials Needed- Regular items in the kitchen like vegetables, pulses, utensils etc.

Details about the Activity - The teacher takes a group of children into the kitchen by turns and lets them handle and manipulate the textures of different vegetables and materials and answers their queries.

2. Name of Activity- 'To School

Objectives of the Activity- Development of skills in observation of phenomenon

Materials Needed- None

Details about the Activity- The teacher initiates a conversation and asks the students their experiences and sights on their way to school.

3. **Name of Activity- 'Sort the Port'**

Objectives of the Activity- Development of concept of size, shape, length, weight, colour, texture, skills of identification and classification

Materials Needed- Old buttons, stones, lentils, bottles and pulses of varying colours, shapes, shapes, size and texture.

Details the Activity- A huge collection of old buttons, stones, lentils, bottles and pulses is kept in a basket or what is called the 'Port'. Children are assigned to groups and asked to pick handfuls of these buttons to be sorted on the basis of colour, size, height, weight, shape and texture.

4. **Name of Activity- 'Daddy, Mommy and Baby'**

Objectives of the Activity- Development of concept of size

Materials Needed- Vegetables, shoes, books, bottles, chalks, crayons etc

Details about the Activity-Different materials of contrasting sizes are displayed and children are asked to verbally choose items on the basis of size, small, big or biggest.

5. **Name of Activity- Structured Conversation**

Objectives of the Activity- Development of confidence, skills in socialisation, speaking, listening and comprehension, general information

Materials Needed- None

Details about the Activity- The teacher asks meaningful questions in a non-intimidating, casual but structured manner the names of different body parts, where children live, their family members, siblings, their likes and dislikes and uses of things and objects etc

6. **Name of Activity- Storytelling**

Objectives of the Activity- Development of Skills in listening and comprehension

Materials Needed- None

Details about the Activity- The teacher tells the preschoolers stories with meaningful themes like names of different objects and their uses, such as knife, comb, umbrella, glasses etc. and stresses to the class that questions would be asked at the end so that children can gear themselves to give deliberate attention to details.

4.6.0: Establishment of the Validity of the Interventional Packages

The Interventional packages were not developed as tests having scores. Rather, they were designed as a treatment tool in the present experimental design, as such; a single overall index of validity for these interventional packages cannot be established. However, to ensure that the Interventional Packages serve the purpose that they were proposed to serve, content validity was established with the help of a Rating Scale developed by the investigator. Moreover, the following principles were kept in mind while selecting/including the items/activities to be included in the Interventional Packages.

1) It was ensured that the items/activities included in the Interventional Packages covered a significant aspect of the purpose of the investigation.
2) Various terms and procedures to be followed in the interventional packages were clearly defined to the subjects and the preschool instructor at the time of administering the intervention.
3) Suggestions from experts, supervisor and colleagues were solicited to remove the ambiguity relating to the inclusion of specific activities in the interventional packages.
4) It was ensured that the activities covered reasonably well all the aspects of cognitive skills relevant for preschool aged children.

5) The criterion used to determine the validity of the items in the rating scale was response percentage higher than 50 percent under each rated statement.

4.6.1: Rating Scale for the Content Validity

The rating scale used for establishment of content validity of the Interventional Packages contains 10 questions. It is a 4 point rating scale. In other words, 4 options are provided to the experts/respondents for answering the questions in the scale. The options are: To a great extent, To quite an extent, To some extent and Not at all. The rating scale is as given below:

1. How relevant are the items in the Interventional packages in relation to the broad objectives of the cognitive aspects of early childhood care and education?

To a great extent	To quite an extent	To some extent	Not at all
1	2	3	4

2. To what extent do the items in the Interventional packages cover the objectives of the cognitive aspects of early childhood care and education?

To a great extent	To quite an extent	To some extent	Not at all
1	2	3	4

3. To what extent do the items in the Interventional packages cover the objectives of the Interventional Packages?

To a great extent	To quite an extent	To some extent	Not at all
1	2	3	4

4. How comprehensive are the items of the Interventional packages?

To a great extent	To quite an extent	To some extent	Not at all
1	2	3	4

5. How suitable are the items in the Interventional packages for preschool aged children between 3-6 years?

To a great extent	To quite an extent	To some extent	Not at all
1	2	3	4

6. Is the six months' lesson plan satisfactory?

To a great extent	To quite an extent	To some extent	Not at all
1	2	3	4

7. Are the weekly lesson plans suitable for the objectives stated for the specified months?

To a great extent	To quite an extent	To some extent	Not at all
1	2	3	4

8. Is the daily break-up of activities satisfactory?

To a great extent	To quite an extent	To some extent	Not at all
1	2	3	4

9. Are the objectives for the different activities appropriate for the specific activities?

To a great extent	To quite an extent	To some extent	Not at all
1	2	3	4

10. Is the sequence of the activities in the Interventional packages satisfactory?

To a great extent	To quite an extent	To some extent	Not at all
1	2	3	4

4.6.2: Analysis of Responses to the Rating Scale

1. How relevant are the items in the Interventional packages in relation to the broad objectives of the cognitive aspects of early childhood care and education?

To a great extent	To quite an extent	To some extent	Not at all
1	2	3	4
(85.72%)	(14.28%)	-	-

As regards the relevance of items in relation to the broad objectives of the cognitive aspects of early childhood education, 85.72 percent of the respondents are of the opinion that the items in the interventional packages are relevant to the broad objectives of early childhood care and education to a great extent, 14.28 percent are of the opinion that the items are relevant to quite an extent. Overall, it seems that the items are relevant to the broad objectives of early childhood care and education.

2. To what extent do the items in the Interventional packages cover the objectives of the cognitive aspects of early childhood care and education?

To a great extent	To quite an extent	To some extent	Not at all
1	2	3	4
(64.29%)	(35.71%)	-	-

As to whether the items in the interventional packages cover the objectives of the cognitive aspects of early childhood care and education, 64.29 percent believe that they do so to a great extent, while 35.71 percent hold that they cover their intended objectives to quite an extent. All in all, it seems that

the items in the interventional packages cover the cognitive objectives of early childhood care and education fairly well.

3. To what extent do the items in the Interventional packages cover the objectives of the Interventional Packages?

To a great extent	To quite an extent	To some extent	Not at all
1	2	3	4
(50%)	(50%)	-	-

As far as the extent to which the items in the interventional packages cover the objectives of the Interventional Packages, 50 percent each responded that they cover the objectives of the interventional packages to a great extent while the other 50 percent believed they cover their intended purpose to some extent only. It, therefore, seems that on the whole, the interventional packages cover the objectives for which they were intended satisfactorily.

4. How comprehensive are the items of the Interventional packages?

To a great extent	To quite an extent	To some extent	Not at all
1	2	3	4
(35.72%)	(64.28%)	-	-

In relation to the comprehensiveness of items, 35.72 percent agree that the items of the Interventional packages are comprehensive to a great extent. The remaining 64.28 percent are of the opinion that they are comprehensive to quite an extent. It may thus be said that the items in the interventional packages are comprehensive to quite an extent.

5. How suitable are the items in the Interventional packages for preschool aged children between 3-6 years?

To a great extent	To quite an extent	To some extent	Not at all
1	2	3	4
(64.29%)	(35.71%)	-	-

In terms of the suitability of items of the interventional packages for preschoolers aged 3-6, more than half i.e., 64.29 think that they are suitable to a great extent. The remaining 35.71 percent hold that they are suitable to quite an extent. On the whole, it seems that the items in the interventional packages are suitable for children between the ages of 3 to 6.

6. Is the six months' lesson plan satisfactory?

To a great extent	To quite an extent	To some extent	Not at all
1	2	3	4
(35.72%)	(57.14%)	(7.14%)	-

Regarding the lesson plan for six months and whether or not it was satisfactory, 35.72 responded that it was satisfactory to a great extent. The remaining 57.14 percent considered it effective to quite an extent. On the whole, it seems that the lesson plan for six months was satisfactory.

7. Are the weekly lesson plans suitable for the objectives stated for the specified months?

To a great extent	To quite an extent	To some extent	Not at all
1	2	3	4
(50%)	(50%)	-	-

As to whether the weekly lesson plans were felt to be suitable for the objectives stated for the specified months, 50 percent ascertained that it was, to a great extent. The remaining half of the respondents felt that it was suitable for the specified months to a certain extent. It may therefore be said that the lesson plans for the different months are well suited.

8. Is the daily break-up of activities satisfactory?

To a great extent	To quite an extent	To some extent	Not at all
1	2	3	4
(21.44%)	(64.28%)	(14.28%)	-

Regarding the daily break-up of activities, on whether they were satisfactory or not, 21.44 percent opine that they were satisfactory to a great extent. 64.29 percent consider it satisfactory to a certain extent and 14.28 find it satisfactory to some extent only. On the whole, it may be summed up that the break-up of activities is satisfactory.

9. Are the objectives for the different activities appropriate for the specific activities?

To a great extent	To quite an extent	To some extent	Not at all
1	2	3	4
(64.28%)	(35.72%)	-	-

As far as the appropriateness of the objectives for the different activities goes, 64.28 agree that they are appropriate to a great extent. More than half i.e., 35.72 percent believe it is appropriate to a certain extent. Therefore, it may be said that the objectives in the interventional packages are appropriate.

10. Is the sequence of the activities in the Interventional packages satisfactory?

To a great extent	To quite an extent	To some extent	Not at all
1	2	3	4
(42.87%)	(21.42%)	(35.71%)	-

With regard to the sequence in which the activities in the interventional packages have been arranged, 42.87 percent consider the sequence as satisfactory to a great extent. Almost a quarter, i.e., 21.42 percent think that the sequence of activities is satisfactory and 35.71 percent yet believes it to be satisfactory to only some extent. Overall, it may be said that the sequential order of the activities in the Interventional Packages is satisfactory.

11. Overall Responses

To a great extent	To quite an extent	To some extent	Not at all
1	2	3	4
55.72 percent	41.85 percent	5.71 percent	-

Overall , the percentage of responses in the category of "To a great extent" is 55.72 percent, the percentage of responses in the "To quite an extent" is 41.85 percent, and the percentage of responses in the "To some extent" is 5.71 percent.

4.7.0: Plan for Execution of Interventional Packages

Month-wise Breakdown of Broad Objectives

Month One: Conceptual Skills- Shape, Colour, length

Broad Objectives

- Building rapport with the preschooler and gaining his/her confidence
- Teaching of concrete concepts of shape and colour

Weekly break-up of Instructional objectives

Week 1-

1. To teach preschoolers through activities like singing and colouring the concepts of colour and shape respectively.

Week 2-

1. To teach preschoolers through activities like colouring, pasting, cutting and sorting of vegetables and fruits concepts of shape and colour.

Week 3-

1. To teach preschoolers through activities like 'Colour bombs' and 'Pop the balloon', the concept of colour

Week 4- Revision

1. To teach preschoolers through activities like 'Sort the Port' concepts of colour and shapes

<u>Month Two- Conceptual Skills- Size, Length, Texture</u>

Broad Objectives

- To develop the child's confidence and deliberate attention building and/or listening skills
- Development of more concrete concepts-size, length, texture

Weekly break-up of Instructional objectives

Week 1-

1. To teach preschoolers through activities like 'Daddy, Mommy and Baby' concepts of size- height and length.

Week 2-

1. To teach preschoolers through activities like 'Nature walk' concepts of colour, shape, height and length.

Week 3-

1. To teach preschoolers through activities like 'What's in the bag?' and 'In the kitchen' concept of texture.

Week 4-Recap/Revision

Month Three- General Information, Time, Space

Broad Objectives

- Development of abstract concepts of Time and Space
- Developing skills of observation
- To develop skills of counting(pre number concepts)

Weekly Break-up of instructional objectives

Week 1-

1. To teach preschoolers through activity like 'Storytelling', concepts of Time and information about self and their environment.

Week 2-

2. To teach preschoolers through activity like counting pre-number concept.

Week 3-

3. To teach preschoolers through activity like 'Who am I?' skills in observation.

Week 4-Recap/Revision

Month Four- Comprehension and Listening, Visual Perception

Broad Objectives

- Developing skills of seriation and sequential thinking in the preschooler
- Developing concept of opposites

Weekly break-up of Instructional objectives

Week 1-

1. To develop in preschoolers through activities like 'Free conversation', 'Storytelling', 'If I could', etc listening skills.

Week 2-

1. To develop in preschoolers through activities like 'What if?' and 'Opposites' skills in comprehension.

Week 3-

1. To develop in preschoolers through activities like 'Rubber bands' and Visual Perception skills in seriation and counting.

Week 4- Recap/Revision

Month Five- Recall/Memory,

Broad objectives

- To develop the art of Observation and paying attention to details

- To develop independent, creative and imaginative thinking in the preschooler
- To develop cause-effect relationships

Weekly break-up of Instructional objectives

Week 1-

1. To teach preschoolers through 'Playing with Cards/Playing Cards' skills in Recall/Memory Observation and Seriation.

Week 2-

1. To teach preschoolers through activity like Dramatisation skills in comprehension.

Week 3-

1. To teach preschoolers through Structured Conversation cause and effect relationship.

Week 4-Recap/Revision

Month Six- Object Vocabulary

Broad Objectives

- To equip the preschoolers for self-expression through spoken language
- Recapping of all previous activities and objectives

Weekly break-up of Instructional objectives

Week 1-

1. To teach preschoolers through Dramatisation skill in Self expression

Week 2-

1. To enrich preschoolers' vocabulary through activity like 'Who am I?'

Week 3-

1. To teach preschoolers through activity like 'To School' skills in observation and phenomenon around them.

Week 4-Recap/Revision

Transition Period- Physical and/or Voice warming up

Sharing- Set Induction, Motivation, Introducing the Letter, Number and/or concept with the phonic sound

Activity- Introduce the activity with the focus

Recap- Recapitulate on the activities of the day

Songs

1. A B C Song
2. Did you ever see a lizard?
3. Number Song
4. Ten Little Indians
5. I am a little Tea-pot
6. Teddy Bear, Teddy Bear
7. This is the way we…..
8. Head, Shoulders, Knees and Toes

4.8.0: Tabular Representation of Plan for Monthly Execution of Interventional packages

Months	Broad Objectives	Activities
Month One	Conceptual Skills-Shape, Colour, length	Singing, Colouring, Cutting, Pasting, Sorting, 'Colour Bombs', 'Pop the Balloon', 'Sort the Port'

Month Two	Conceptual Skills-Size, Length, Texture	Singing, 'Daddy, Mommy, Baby', Nature Walk', 'What's in the bag?', 'In the Kitchen
Month Three	General Information, Time, Space	Storytelling, 'who am I?', Counting, Pasting, Colouring, Beading, Sorting etc
Month Four	Comprehension, Listening, Visual Perception	'Free Conversation', 'Storytelling', 'If I could' 'What if?', 'Opposites' 'Rubber bands', 'Chinese Whisper'
Month Five	Recall/Memory	'Playing with Cards' Dramatisation, Structured Conversation,
Month Six	Object Vocabulary	Dramatisation, Structured Conversation, 'Who am I?', 'To School'

4.7.1: Tabular Representation for Weekly Execution of Interventional Packages for Month 1 Objectives

Weeks	Instructional Objectives
Week 1	To teach preschoolers through colouring, the concepts of colour and shape respectively.
Week 2	To teach preschoolers through colouring, pasting, cutting and sorting of vegetables and fruits concepts of shape and colour.
Week 3	To teach preschoolers through activities like 'Colour bombs' and 'Pop the Balloon', the concept of colour
Week 4	To teach preschoolers through activities like 'Sort the Port' concepts of colour and shapes

4.7.2: Tabular Representation for Daily Execution of Interventional packages for Week One of Month One

Day	Transition Period (10 minutes)	Sharing (10 minutes)	Activity (30 minutes)	Recap (10 minutes)
Monday	Singing "A B C" song	Sharing, Set Induction and Motivation	Colouring	Feedback and Questions relating to the theme/activity of the day
Tuesday	Singing "Number song"	-do-	Pasting	-do-
Wednesday	Singing "Head, shoulder, knees and toes"	-do-	Cutting	-do-
Thursday	Singing "Did you ever see a Lizard" song	-do-	Stencilling	-do-
Friday	Any song from the previous days	-do-	Cut and Paste	-do-

CHAPTER V

ANALYSIS AND INTERPRETATION OF DATA

CHAPTER V

ANALYSIS AND INTERPRETATION OF DATA

In the present chapter, the data collected for fulfilling the objectives of the present study are analysed and interpreted. They are presented in the following six sections:

5.1.0: Cognitive profiles of children of English Medium Preschools and Anganwadis.

5.2.0: Comparison of the cognitive profiles of children of English Medium Preschools with that of Anganwadis

5.3.0: Socio-economic and educational status of parents of children from English Medium Preschools and Anganwadis

5.4.0: Comparison of the socio-economic status of parents of children from English Medium Preschools and Anganwadis

5.5.0: Effectiveness of Interventional Packages for fostering the cognitive development of preschool children

5.1.0: Cognitive Profiles of Children of English Medium Preschools and Anganwadis

For convenience in understanding, the cognitive profiles of children of English Medium Preschools have been classified into three categories viz. low cognitive abilities, average cognitive abilities and high cognitive abilities. The low category includes subjects who have scored lesser than the grand mean -1 standard deviation, the average category includes subjects who have scored between - 1 standard deviation to + 1 standard deviation and the high category includes those subjects who had scored higher than the grand mean + 1 standard deviation.

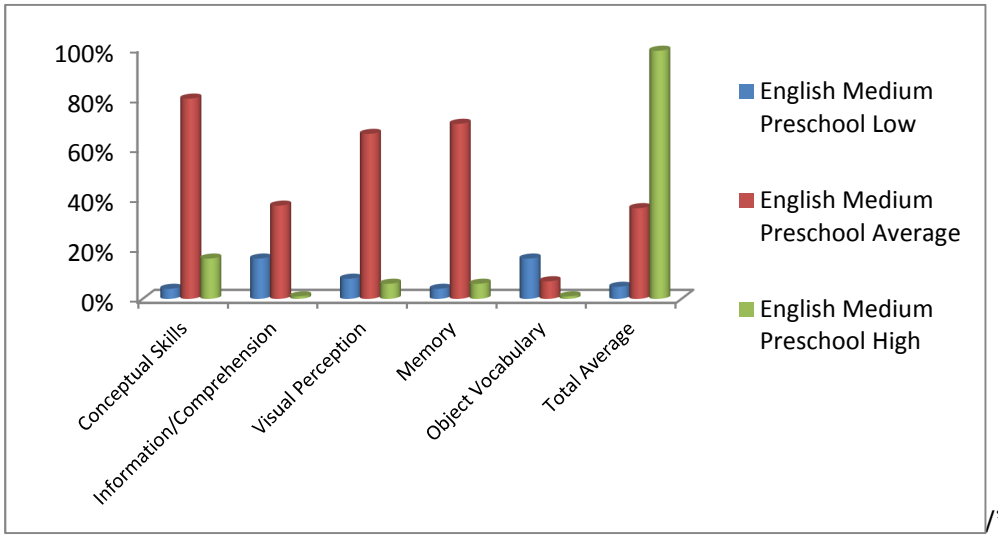
Table 5.1.1

Cognitive Profile of Children of English Medium Preschools

in terms of High Cognitive Profile

Parameters	English Medium Preschool		
	Low	Average	High
No. of Subjects			
Conceptual Skills	2 (4%)	40 (80%)	8 (16%)
Information/Comprehension	8 (16%)	36 (72%)	6 (12%)
Visual	4 (8%)	33 (66%)	13 (26%)
Memory	2 (4%)	35 (70%)	13 (26%)
Object Vocabulary	8 (16%)	36 (72%)	6 (12%)
Total Average	*5 (9.6%)*	*36 (72%)*	*9 (18.4%)*

Figure 5.1: Cognitive Profiles of Children of English Medium Preschools



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The cognitive profile of children of English Medium Preschools is as follows:

1. With regard to conceptual skills
    a) 16% of the students fall in the upper or high cognitive range.
    b) 80% of the students fall in the average or middle cognitive range
    c) 4% of the students fall in the low cognitive ability range
2. With regard to Information/Comprehension , out of the total 50 subjects:
    a) 12% of the students fall in the upper or high cognitive range.
    b) 72% of the students fall in the average or middle cognitive range
    c) 16% of the students fall in the low cognitive ability range
3. With regard to visual perception, out of the total 50 subjects:
    a) 6% of the students fall in the upper or high cognitive range.
    b) 66% of the students fall in the average or middle cognitive range
    c) 8% of the students fall in the low cognitive ability range
4. With regard to memory, out of the total 50 subjects:
    a) 26% of the students fall in the upper or high cognitive range.
    b) 70% of the students fall in the average or middle cognitive range
    c) 4% of the students fall in the low cognitive ability range
5. With regard to object vocabulary, out of the total 50 subjects:
    a) 12% of the students fall in the upper or high cognitive range.
    b) 72% of the students fall in the average or middle cognitive range
    c) 16% of the students fall in the low cognitive ability range

On the overall, the cognitive profile of children of English Medium Preschools is as follows:

i) 9.2% of the students fall in the upper or high cognitive range.
ii) 36% of the students fall in the average or middle cognitive range
iii) 4.8% of the students fall in the low cognitive ability range

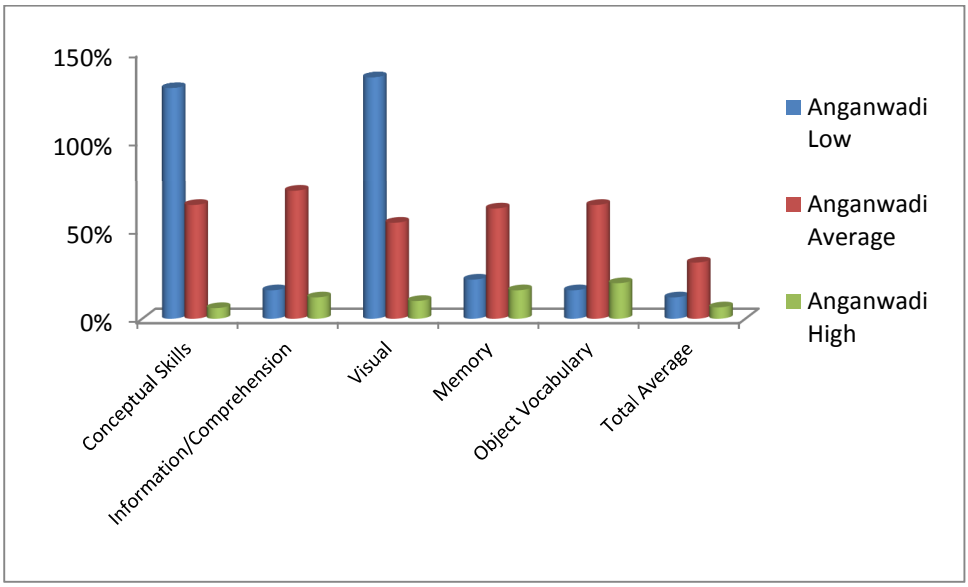
Table 5.1.2

Cognitive Profiles of Children of Anganwadis

In terms of Low, Average and High Cognitive Profile

Parameters	Children of Anganwadis		
	Low	Average	High
No. of Subjects			
Conceptual Skills	15 (30%)	32 (64%)	3 (6%)
Information/Comprehension	8 (16%)	36 (72%)	6 (12%)
Visual	18 (36%)	27 (54%)	5 (10%)
Memory	11 (22%)	31 (62%)	8 (16%)
Object Vocabulary	8 (16%)	32 (64%)	10 (20%)
Total Average	*12 (12%)*	*32 (31.6%)*	*6 (6.4%)*

Fig. 5.2: Cognitive Profile of Anganwadi Children



1. With regard to conceptual skills:
    a) 6% of the students fall in the upper or high cognitive range.
    b) 64% of the students fall in the average or middle cognitive range
    c) 30% of the students fall in the low cognitive ability range
2. With regard to Information/Comprehension, out of the total 50 subjects:
    a) 12% of the students fall in the upper or high cognitive range.
    b) 72% of the students fall in the average or middle cognitive range
    c) 16% of the students fall in the low cognitive ability range
3. With regard to visual perception, out of the total 50 subjects:
    a) 10% of the students fall in the upper or high cognitive range.
    b) 54% of the students fall in the average or middle cognitive range
    c) 36% of the students fall in the low cognitive ability range
4. With regard to memory, out of the total 50 subjects:
    a) 16% of the students fall in the upper or high cognitive range.
    b) 62% of the students fall in the average or middle cognitive range
    c) 22% of the students fall in the low cognitive ability range
5. With regard to object vocabulary, out of the total 50 subjects:
    a) 20% of the students fall in the upper or high cognitive range.
    b) 64% of the students fall in the average or middle cognitive range
    c) 16% of the students fall in the low cognitive ability range

On the overall, the cognitive profiles of children of Anganwadis is as follows:

a) 6.4% of the students fall in the upper or high cognitive range.
b) 31.6% of the students fall in the average or middle cognitive range
c) 12% of the students fall in the low cognitive ability range

Table 5.1.3

Cognitive Profiles of Children of English Medium Preschools and Anganwadis

Sl. No	Parameters	English Medium Preschools		Anganwadis	
		Mean	**SD**	**Mean**	**SD**
1	Conceptual Skills	1.55	0.37	1.00	0.53
2	Information&Comprehension	2.25	0.88	2.25	0.75
3	Visual Perception	1.74	0.79	1.03	0.80
4	Memory	0.99	0.58	0.68	0.58
5	Object Vocabulary	4.35	1.26	4.52	1.26
6	**Overall**	**10.88**	**2.78**	**9.48**	**3.08**

Source : Computed

Out of all the cognitive skills tested, the children of English Medium Preschools obtain the highest mean score in object vocabulary in which the variability is also found to be high. The children are also found to be better in information and comprehension skills in comparison with other skills. The children are found to be weak in the skill of memory.

Object vocabulary is the cognitive skill in which children of Anganwadis are strongest followed by information and comprehension skills. Again memory is the skill in which children of Anganwadis are weakest.

5.2.0: Comparison of the Cognitive Profiles of Children of English Medium Preschools with that of Anganwadis

The differences in the cognitive profiles of children of Anganwadis and English Medium Preschools were calculated through independent t-tests and is depicted in table 5.2.1

Table 5.2.1

Conceptual Skill, Skill-wise Comparison of Cognitive Profiles of Children of English Medium Preschools and Anganwadis

Sl. No.	Skills	Group				Mean Difference	Std. Error Difference	't'
		English Medium		Anganwadi				
		Mean	S.D	Mean	S.D			
	Conceptual Skills							
1	Concept of Shape	2.7	0.8	1.3	1.4	1.3	0.2	5.8**
2	Concept of Colours	4.9	1.4	3.1	2.0	1.8	0.3	5.3**
3	Concept of Time	1.2	0.8	0.9	0.7	0.3	0.2	2.1*
4	ConceptofClassification	1.5	0.8	0.8	0.8	0.6	0.2	4.0**
5	Concept of Numbers	1.5	1.2	1.1	1.3	0.4	0.2	1.6
6	Concept of Seriation	0.9	0.3	0.7	0.5	0.2	0.1	2.5*
7	Concept of Weight	0.5	0.5	0.3	0.5	0.2	0.1	2.3*
8	Concept of Size	1.5	0.6	1.1	0.8	0.4	0.1	2.7**
9	Concept of Texture	0.5	0.8	0.3	0.6	0.2	0.1	1.7
10	Concept of Coins	0.3	1.1	0.4	0.9	0.0	0.2	0.2

Fig. 5.3Conceptual Skill, Skill-wise Comparison of Cognitive Profiles of Children of English Medium Preschools and Anganwadis

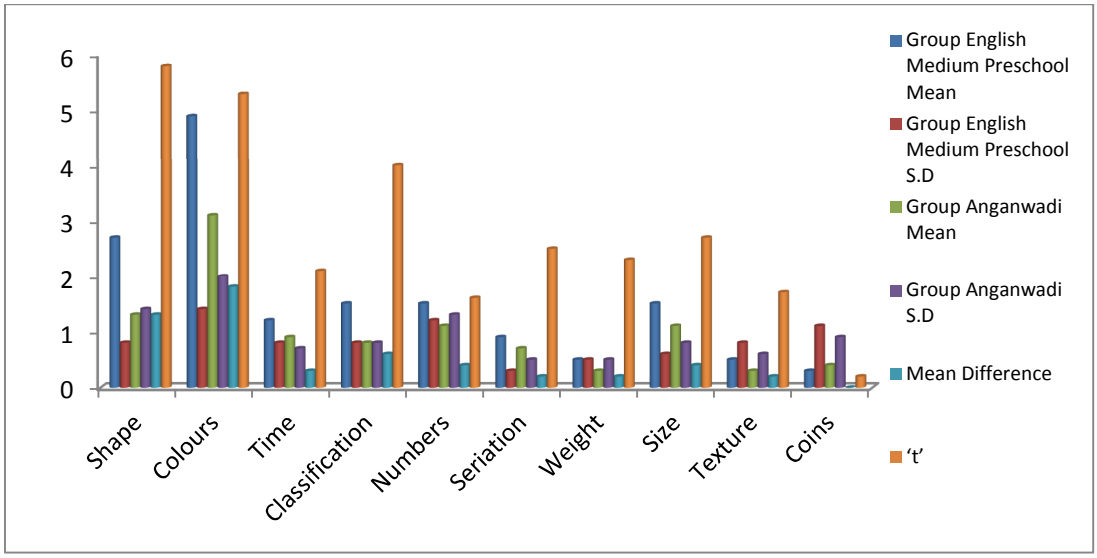


Table 5.2.1 reveals that:

1. The mean for the children of English Medium Preschools is 2.7, while it is 1.3 for the children of Anganwadis. The t-value for the significance of difference between the children of English Medium Preschools and Anganwadis with regard to concept of shape is 5.8, whereas the desired value at 0.01 levels to declare this difference is 2.63. Since the calculated value is more than the desired t-value, it indicates that the children of English Medium Preschools are better than that of Anganwadis.

2. The mean for the children of English Medium Preschools and children of Anganwadis is 4.9 and 3.1 respectively. The t-value for the significance of difference between children of Anganwadis and of English Medium Preschools with regard to concept of colour is 5.3 at 0.01 level. This indicates that the children of English Medium Preschools are better than the children of Anganwadis in their concept of colour.

3. The mean for children of English Medium Preschools is 1.2 and that it is 0.9 for the children of Anganwadis with regard to concept of time. The t-value for the significance of difference is 2.1 and this figure is found to be significant at 0.05 level. Since this figure is higher than the required t-value, it indicates that the children of English Medium Preschools are better at telling time than the children of Anganwadis.

4. As far as classification skills are concerned, the mean for children of English Medium Preschools is 1.5, whereas it is 0.8 for the children of Anganwadis. The t-value for the significance of difference between the children of English Medium Preschools and that of Anganwadis is calculated as 4 which is significant at 0.01 level. This indicates that the children of English Medium Preschools are better in their concept of classification than the children of Anganwadis.

5. For conceptual skills in numbers, the mean for the children of English Medium Preschools is 1.5 and for the children of Anganwadis it is 1.1. The t-value for the significance of difference between the children of English Medium Preschools and that of Anganwadis is 1.6. But the desired t-value at 0.05 levels is 1.99 in order to be declared significant. This reveals that there is no significant difference between the children of English Medium Preschools and that of Anganwadis in relation to this skill.

6. The mean for the children of English Medium Preschools regarding seriation is 0.9, while it is 0.7 for the children of Anganwadis. The t-value for the significance of difference between children of Anganwadis and children of English Medium Preschools for the same is computed as 2.5, and this figure is significant at 0.05 levels. This implies that the children of English Medium Preschools are better than that of Anganwadis in skill of seriation.

7. The mean for the children of English Medium Preschools and preschool children of Anganwadis is 0.5 and 0.3 respectively. The calculated t-value for the significance of difference between the children of English Medium Preschools and Anganwadis in conceptual skills in weight has been found to be 2.3 which is significant at 0.05 levels. This means that the children of English Medium Preschools are better than the children of Anganwadis.

8. Regarding conceptual skills in size, the mean is 1.5 for children of English Medium Preschools and 1.1 for the children of Anganwadis. The t-value for the significance of difference between the children of Anganwadis and English Medium Preschools at 0.01 level is 2.7. Since this calculated t-value is significant and is more than the required t-value, it indicates that the children of English Medium Preschools are better than the children of Anganwadis.

9. The mean for the children of English Medium Preschools and children of Anganwadis pertaining to texture is 0.5 and 0.3 respectively. The calculated t-

value for the significance of difference between the children of English Medium Preschools and Anganwadis and is 1.7, the required t-value in order to be declared significant though, is 1.99 at 0.05 level and is higher than our calculated value. This indicates that there is no significant difference between the children of English Medium Preschools and children of Anganwadis when it comes to texture.

10. The mean for the children of English Medium Preschools in relation to conceptual skill of coins is 0.3 while it is 0.4 for the children of Anganwadis. The derived t-value for the significance of difference between the children of Anganwadis and children of English Medium Preschools for the same skills is 0.2, which is significant at neither 0.01 nor 0.05 levels, because the required t-value is 1.99 at 0.05 levels. This indicates that there is no significant difference between children of Anganwadis and children of English Medium Preschool in this regard.

Table 5.2.2

Information and Comprehension Skill-wise Comparison of Cognitive Profiles of Children of English Medium Preschools and Anganwadis

Sl. No.	Skill	Preschool Children of				Mean Difference	Std. Error Difference	't'
		English Medium Preschools		Anganwadis				
		Mean	S.D	Mean	S.D			
	Information & Comprehension							
1	Information	3.2	1.9	3.2	1.5	0.1	0.3	0.2
2	Verbal comprehension	1.8	0.9	1.9	1.0	0.0	0.2	0.2
3	Listening Comprehension	1.7	0.7	1.6	0.8	0.1	0.1	0.7

Fig. 5.4Information and Comprehension Skill-wise Comparison of Cognitive Profiles of Children of English Medium Preschools and Anganwadis

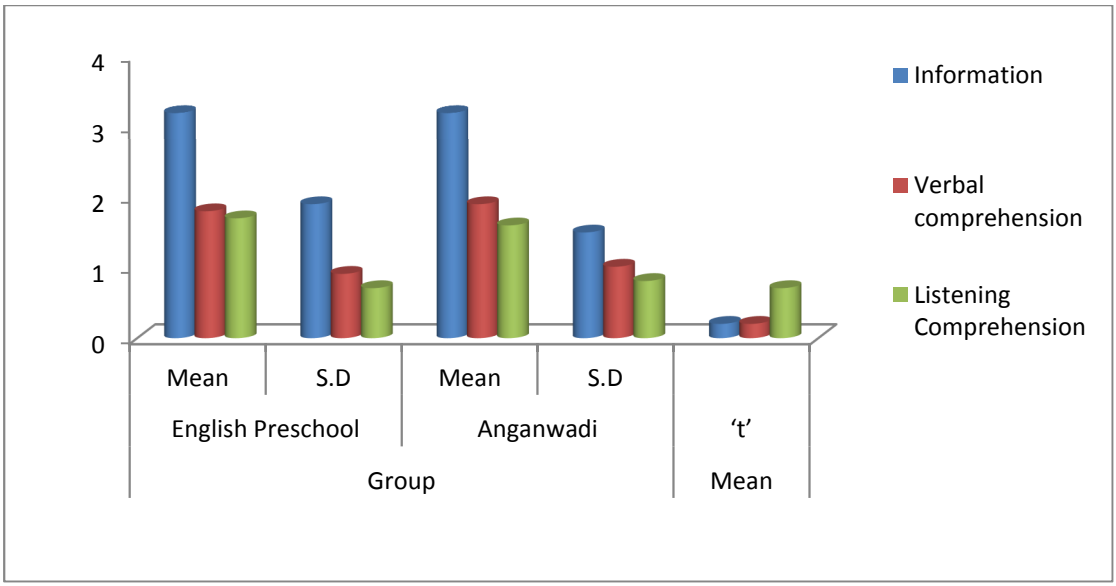


Table 5.2.2 reveals the following:

1. In information, the mean for the children of English Medium Preschools and that of Anganwadis is 3.2 and 3.2 respectively. The required t-value for the significance of difference between the children of Anganwadis and that of English Medium Preschools is 1.99 at 0.05 level, but our calculated t-value is only 0.2, this highlights that there is no significant difference between the two groups in this skill.

2. The mean for the children of English Medium Preschools for verbal perception is 1.8, whereas it is 1.9 for the children of Anganwadis. The computed t-value for the significance of difference between the children of Anganwadis and English Medium Preschools however is 0.2 and this value is not insignificant at either 0.01 or 0.05 level.

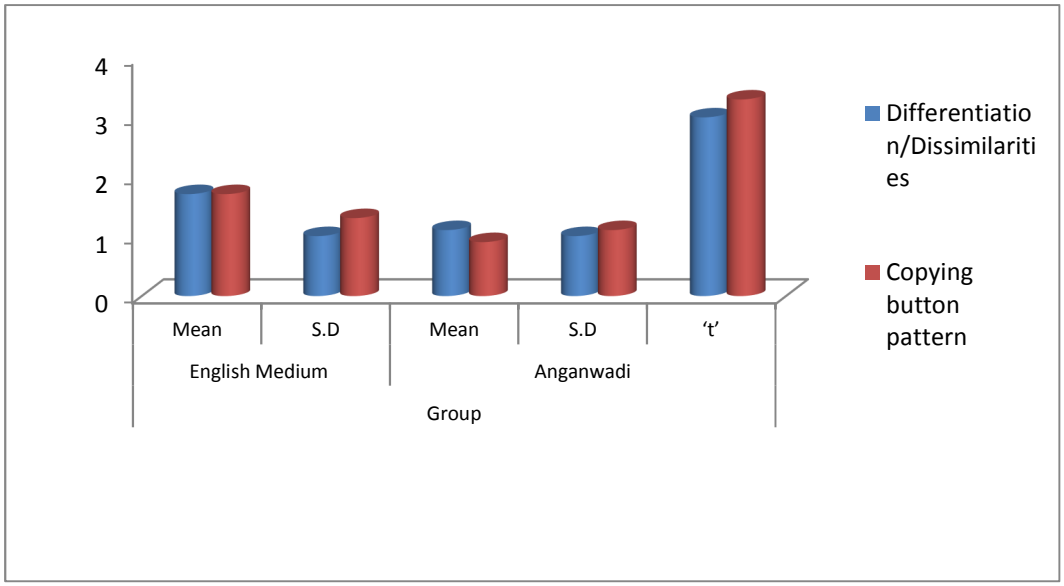
3. For listening comprehension, the mean for the children of English Medium Preschools is 1.7 and it is 1.6 for the children of Anganwadis. The calculated t-value for the significance of difference between the children of Anganwadis and English Medium Preschools is 0.7. This t-value is not significant at either 0.01 or 0.05 levels. This shows that there is no significant difference among the children of Anganwadis and children of English Medium Preschools.

Table 5.2.3

Visual Perception Skill-wise Comparison of Cognitive Profiles of Children of English Medium Preschools and Anganwadis

Sl. No	Skill	Group				Mean Difference	Std. Error Difference	't'
		English Medium Preschools		Anganwadi				
		Mean	S.D	Mean	S.D			
	Visual Perception							
1	Differentiation/ Dissimilarities	1.7	1.0	1.1	1.0	0.6	0.2	3.0**
2	Copying button pattern	1.7	1.3	0.9	1.1	0.8	0.2	3.3**

Fig. 5.5 Visual Perception Skill-wise Comparison of Cognitive Profiles of Children of English Medium Preschools and Anganwadis



The above Table 5.2.3 highlights that:

1. The mean for the children of English Medium Preschools in differentiation/dissimilarities is 1.7 while it is 1.1 children of Anganwadis. The calculated t-value for the significance of children of Anganwadis and children of English Medium Preschools is 3, which is significant at 0.01 level. This means that the children of English Medium Preschools have performed better than Anganwadis.

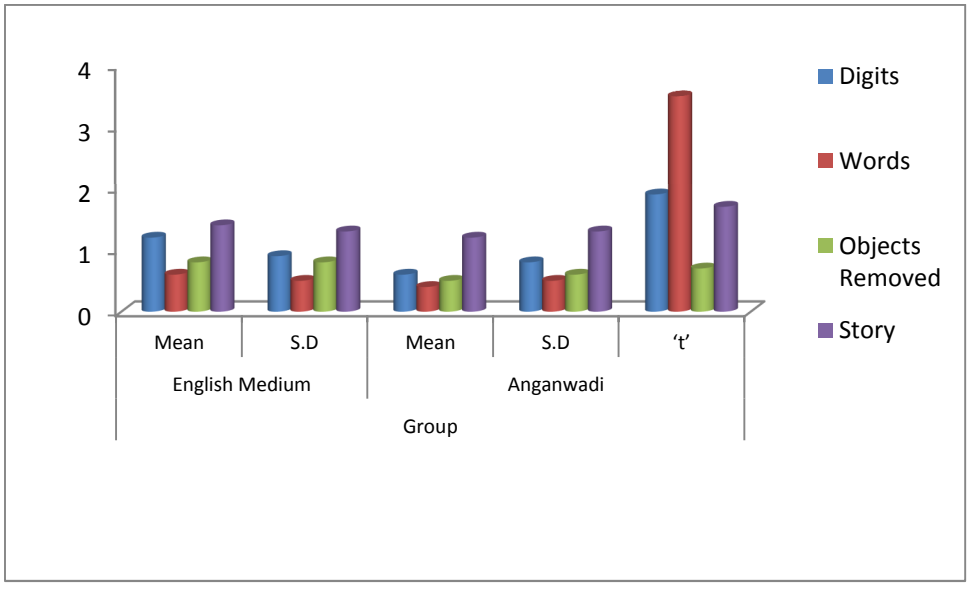
2. In copying button pattern, the data according to the table reveals that, the mean for the children of English Medium Preschools and Anganwadis is 1.7 and 0.9 respectively. The t-value for the significance of difference between the children of Anganwadis and children of English Medium Preschools is 3.3 at 0.01 level of significance. This reveals that the children of English Medium Preschools are better in this skill than the Anganwadi children.

Table 5.2.4

Memory Skill-wise Comparison of Cognitive Profiles of Children of English Medium Preschools and Anganwadis

Sl. No	Skill	Group				Mean Difference	Std. Error Difference	't'
		Control		Experimental				
		Mean	S.D	Mean	S.D			
	Memory							
1	Digits	1.2	0.9	0.6	0.8	0.3	0.2	1.9
2	Words	0.6	0.5	0.4	0.5	0.6	0.2	3.5**
3	Objects Removed	0.8	0.8	0.5	0.6	0.2	0.3	0.7
4	Story	1.4	1.3	1.2	1.3	0.2	0.1	1.7

Fig. 5.6 Memory Skill-wise Comparison of Cognitive Profiles of Children of English Medium Preschools and Anganwadis



A glance at Table 5.2.4 tells us that:

1. The mean for children of English Medium Preschools in memory of digits is 1.2 and 0.6 for the children of Anganwadis. The derived t-value for the significance of difference as per the table in memory digits between the children of Anganwadis and children of English Medium Preschools is 1.9 and shows no significant difference as this t-value is lesser than the required t-value at 0.05 levels.

2. For memory of words, the mean for children of English Medium Preschools is calculated as 0.6 whereas for the Anganwadis, it is calculated as 0.4. The computed t-value for the significance of difference between the children of Anganwadis and children of English Medium Preschools is 3.5 at 0.01 level. This shows that the children of English Medium Preschools are better than that of Anganwadis.

3. The mean for children of English Medium Preschools in objects removed is 0.8, and 0.5 for the children of Anganwadis. The calculated t-value for the significance of difference between the children of Anganwadis and that of English Medium Preschools for the mentioned skill is 3.5 at 0.01 level. This value shows that the children of English Medium Preschools are better than the children of Anganwadis.

4. The mean for the children of English Medium Preschools and that of Anganwadis for memory of story is 1.4 and 1.2 respectively. The t-value for the significance of difference between children of Anganwadis and of English Medium Preschools based on the table for memory story is calculated as 1.7, but the required t-value in order to be significant at 0.05 levels is 1.99. This resonates that no significant difference exists between our two groups.

Table 5.2.5

Object Vocabulary, Skill-wise Comparison of Cognitive Profiles of Children of English Medium Preschools and Anganwadis

Sl. No	Skill	Preschool Children of				Mean Difference	Std. Error Difference	't'
		English Medium Preschool		Anganwadi				
		Mean	S.D	Mean	S.D			
1	Object Vocabulary	4.4	1.3	4.5	1.3	0.2	0.3	0.7

Fig. 5.7 Object Vocabulary, Skill-wise Comparison of Cognitive Profiles of Children of English Medium Preschools and Anganwadis

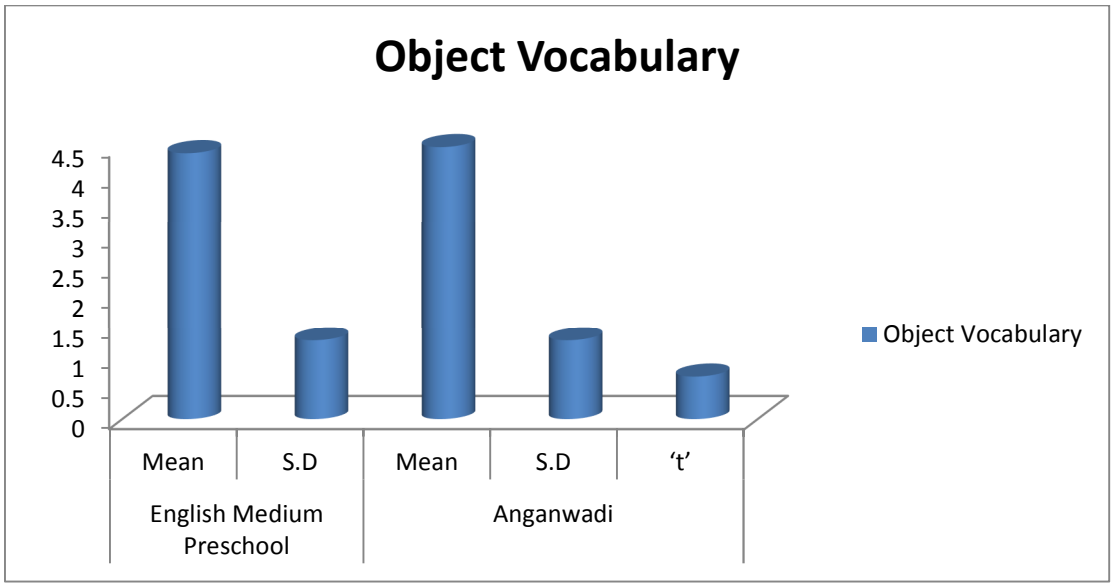


Table 5.2.5 reveals that the mean for the children of English Medium Preschools in object vocabulary is 4.4 whereas it is 4.5 for the children of Anganwadis. The calculated t-value for the significance of difference between children of Anganwadis and children of English Medium Preschools is -0.7 whereas the desired t-value at 0.05 levels to be declared significant is 1.99. This mirrors that no significant difference exists between the children of English Medium Preschools and that of Anganwadis.

This implies that there is significant difference between the cognitive profiles of children of English Medium Preschool and that of Anganwadis. Thus, the null hypothesis which states that, *"there is no significant difference between the cognitive profiles of children of English Medium Preschools and Anganwadis"* is rejected. Therefore, the research hypothesis which states, *"there is significant difference between the cognitive profiles of children of English Medium Preschools and Anganwadis"* is retained.

Table 5.2.6

Comparison of Cognitive Profiles of Children of English Medium Preschools and Anganwadis

Sl No.	Parameters	Preschool Children				t-value
		English Medium Preschools		Anganwadis		
		Mean	SD	Mean	SD	
1	Conceptual Skills	1.55	0.37	1.00	0.53	6.05**
2	Information& Comprehension	2.25	0.88	2.25	0.75	0.2
3	Visual Perception	1.74	0.79	1.03	0.80	4.45**
4	Memory	0.99	0.58	0.68	0.58	6.67**
5	Object Vocabulary	4.35	1.26	4.52	1.26	0.67
6	**Overall**	**10.88**	**2.78**	**9.48**	**3.08**	**2.38***
Source: Computed			***P<0.01 & *P<0.05*			

Fig. 5.8Overall Comparison of Cognitive Profiles of Children of English Medium Preschools and Anganwadis

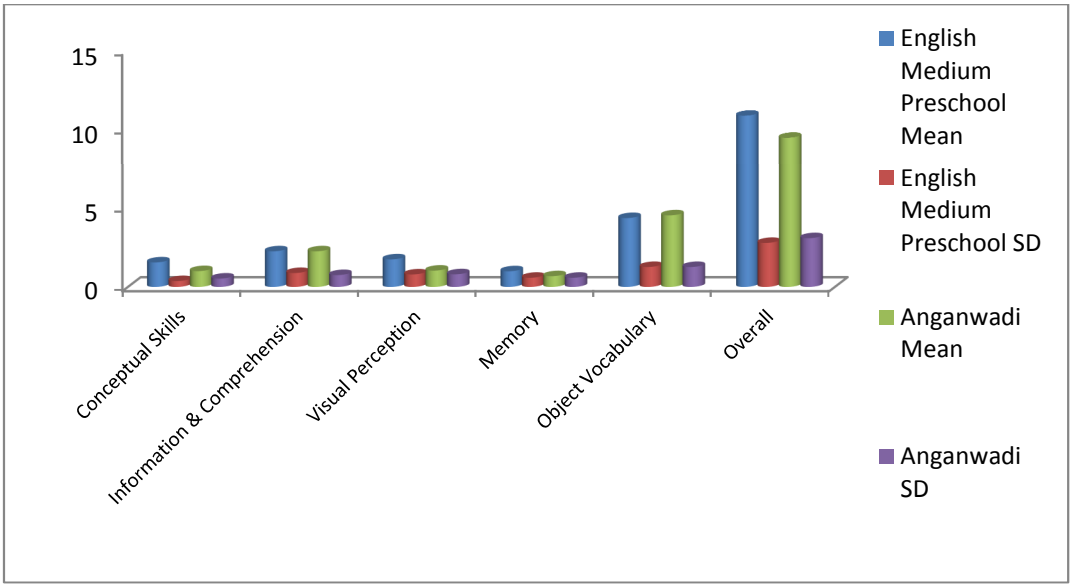


Table 5.2.6 highlights the following:

1. With regard to conceptual skills, the t-value for the significance of difference between the cognitive profiles of children of Anganwadis and English medium Preschools was found to be 6.05 at 0.01 level of significance. This shows that the children of English Medium Preschools are better than the children of Anganwadis.

2. With regard to information and comprehension, the t-value for the significance of difference between the children of English Medium Preschools and of Anganwadis was found to be 0.22. This figure is not significant at either 0.01 or 0.05 levels of significance. This shows that there is no significant difference between the children of Anganwadis and English Medium Preschools in relation to information and comprehension.

3. With regard to visual perception, the t-value for the significance of difference between the children of English Medium Preschools and of Anganwadis was found to be 4.45 at 0.01 level of significance. This

shows that the children of English Medium Preschools are better than the children of Anganwadis in visual perception.

4. With regard to memory, the t-value for the significance of difference between the children of English Medium Preschools and of Anganwadis was found to be 6.67 at 0.01 level of significance. This shows that the children of English Medium Preschools have significantly better memory than the children of Anganwadis.

5. With regard to object vocabulary, the t-value for the significance of difference between the children of English Medium Preschools and of Anganwadis was found to be 0.67. This calculated value is not significant at either at 0.01 or 0.05 levels of significance. This shows that there is no significant difference between the children of Anganwadis and English Medium Preschools in relation to object vocabulary.

On the whole, the t-value for the significance of difference between the children of English Medium Preschools and of Anganwadis in relation to their cognitive profiles was found to be 2.62 at 0.01 level of significance. This shows that the children of English Medium Preschools have better cognitive profiles than the children of Anganwadis. This indicates that the null hypothesis which states, *"there is no significant difference between the cognitive profiles of children of English Medium Preschools and Anganwadis"* is rejected. Therefore, the research hypothesis which states *"there is significant difference between the cognitive profiles of children of English Medium Preschools and Anganwadis"* is retained.

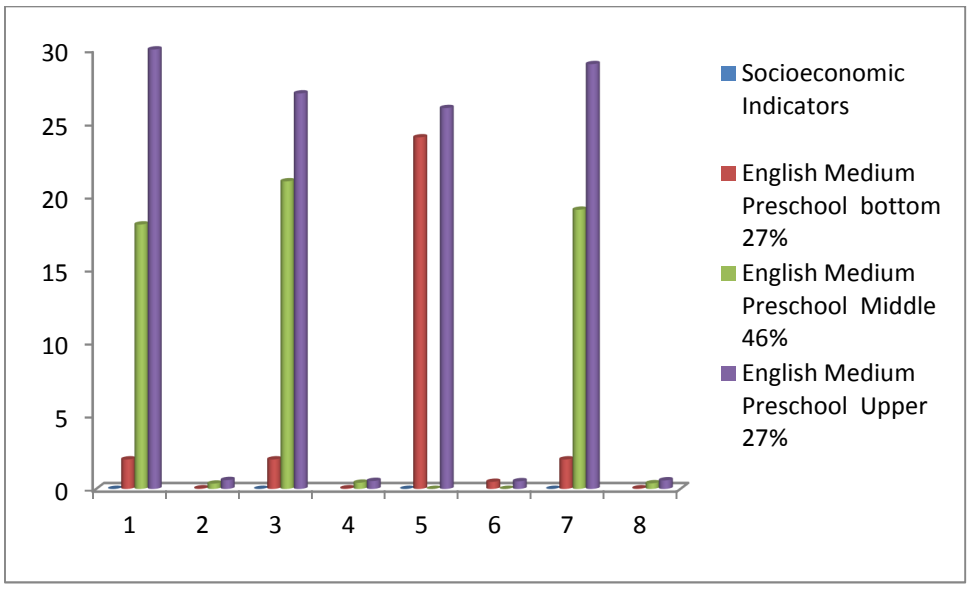
5.3.1: Socio-Economic and Educational Status of Parents of English Medium Preschools and of Anganwadis

Table 5.3.1

Socio-Economic Status of Parents of English Medium Preschools

Indicators	English Medium Preschools		
	Bottom 27%	**Middle 46%**	**Upper 27%**
Parent Education	2	18	30
	4%	36%	60%
Economic Status	2	21	27
	4%	42%	54%
Social Status	24	0	26
	48%	0%	52%
Overall Socio-eco Status	2	19	29
	4%	38%	58%

Fig. 5.9. Socio-Economic Status of Parents of English Medium Preschools



1. With regard to Educational status:
   a) 60% of the parents of children of English Medium Preschools fall in the upper or high educational range.
   b) 36% of the parents of children of English Medium Preschools
   c) fall in the average or middle educational range.
   d) 4% of the parents of children of English Medium Preschools fall in the low educational range
2. With regard to Economic Status:
   a) 54% of the parents of children of English Medium Preschools fall in the high economic status range.
   b) 42% of the parents of children of English Medium Preschools fall in middle economic status range
   c) 4% of the parents of children of English Medium Preschools fall in the low economic status range
3. With regard to Social Status:
   a) 52% of the parents of children of English Medium Preschools fall in the upper or high social status range.
   b) 0% of the parents of children of English Medium Preschools fall in the average or middle status range

c) 48% of the parents of children of English Medium Preschools fall in the low status range

Overall, the socio-economic status of parents of English Medium Preschools children is as follows:

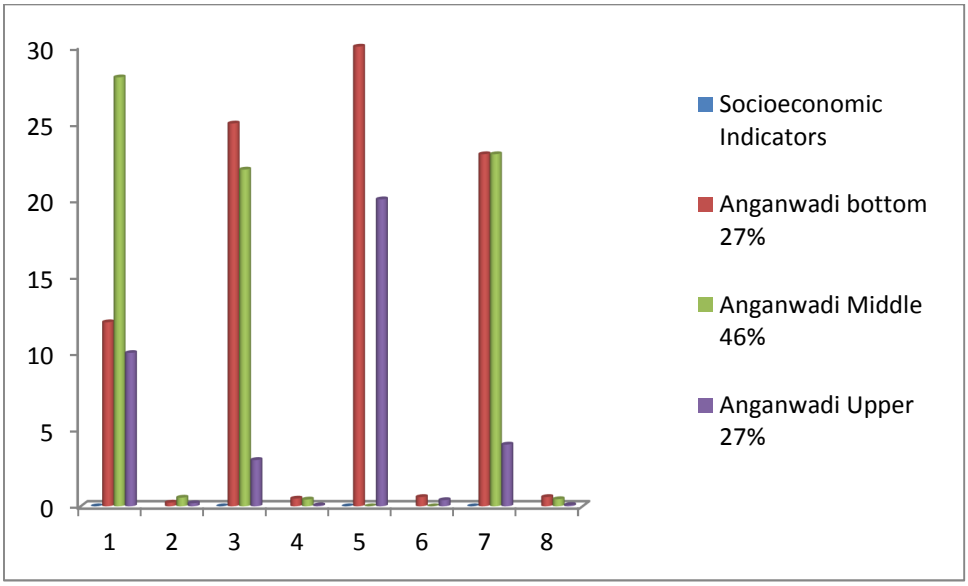
a) 58% of the parents of children of English Medium Preschools fall in the high SES range.
b) 38% of the parents of children of English Medium Preschools fall in the middle SES range
c) 4% of the parents of children of English Medium Preschools fall in the low SES range.

Table 5.3.2

Socio-Economic and Educational Status of Parents of Anganwadi Children

Socioeconomic Indicators	**Anganwadi**		
	Bottom 27%	**Middle 46%**	**Upper 27%**
Parent Education	12	28	10
	24%	56%	20%
Economic Status	25	22	3
	50%	44%	6%
Social Status	30	0	20
	60%	0%	40%
Overall Socio-economic Status	23	23	4
	46%	46%	8%

Fig. 5.10: Socio-economic and Educational Status of parents of Anganwadi Children



1. With regard to Educational status:
   e) 20% of the parents of Anganwadi children fall in the upper or high educational range.
   f) 56% of the parents of Anganwadi children fall in the average or middle educational range.
   g) 24% of the parents of Anganwadi children fall in the low educational range
2. With regard to Economic Status:
   d) 6% of the parents of Anganwadi children fall in the high economic status range.
   e) 44% of the parents of Anganwadi children fall in middle economic status range
   f) 50% of the parents of Anganwadi children fall in the low economic status range
3. With regard to Social Status:
   d) 40% of the parents of Anganwadi children fall in the upper or high social status range.

e) 0% of the parents of Anganwadi children fall in the average or middle status range

f) 60% of the parents of Anganwadi children fall in the low status range

Overall, the socio-economic status of parents of Anganwadi children are as follows:

1. 8% of the parents of Anganwadi children fall in the high SES range.
2. 46% of the parents of Anganwadi children fall in the middle SES range
3. 46% of the parents of Anganwadi children fall in the low SES range

Table 5.3.3

Socio-Economic Status of Parents of Children from English Medium Preschools and Anganwadis

Indicators	Parents of Children from			
	English Medium Preschools		Anganwadis	
	Mean	Std. Dev	Mean	Std. Dev
Educational Status	7.82	1.49	6.30	1.72
Economic Status	39.26	7.40	27.00	7.96
Social Status	1.08	1.37	0.62	0.97
Overall Socio-eco Status	48.16	8.23	33.92	9.14

Out of the three indicators for SES, the parents of English Medium Preschool children rated highest in their economic status, followed by educational status. Their social status is however low.

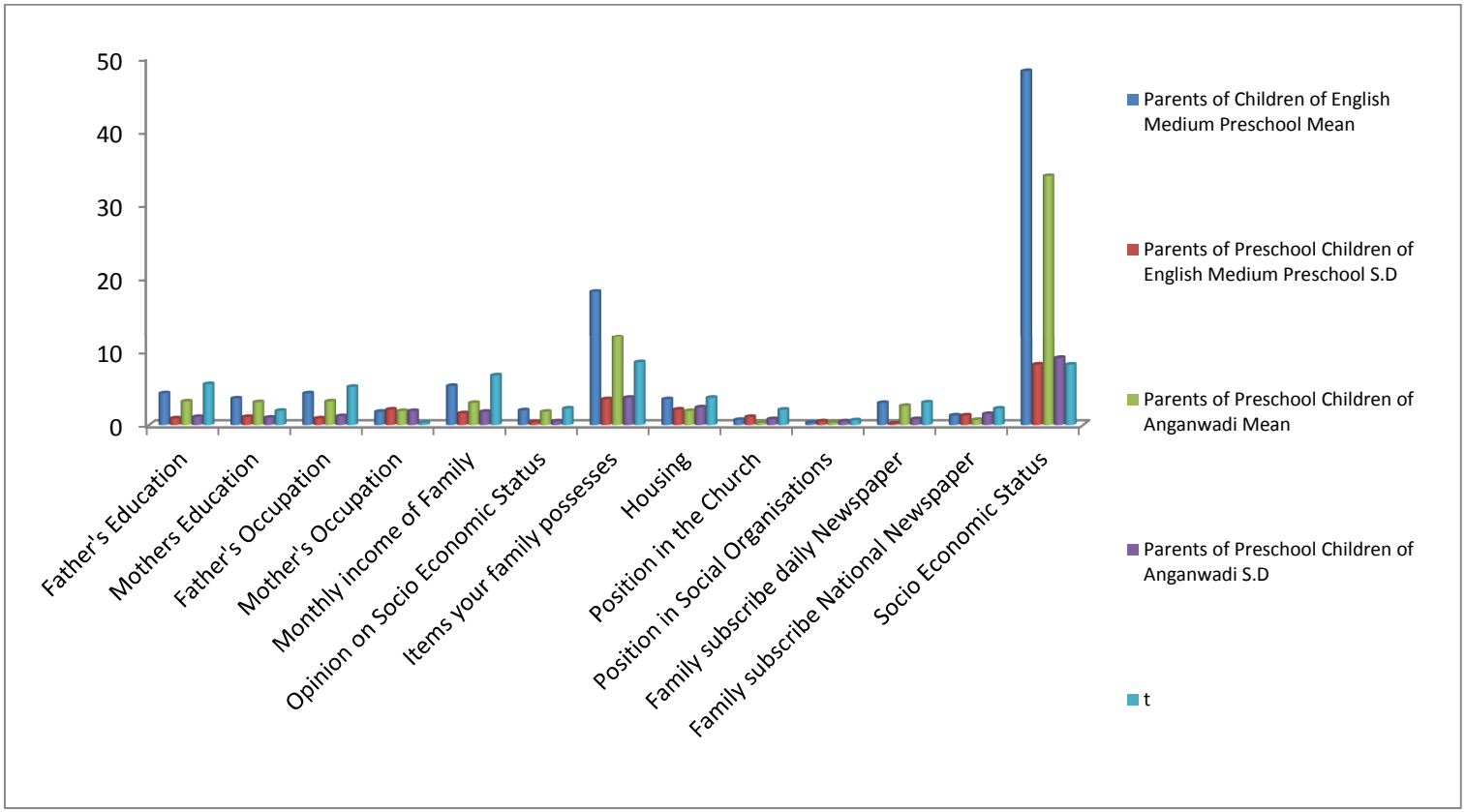
The parents of Anganwadi children rated highest in their economic status and low in their social status.

Table 5.4.1

5.4.1: Comparison of Socio-Economic Status of Parents of English Medium Preschools and Anganwadis

Sl. No	Skill	Parents of Children of						t
		English Medium Preschools		Anganwadis		Total		
		Mean	S.D	Mean	S.D	Mean	S.D	
1	Father's Education	4.3	0.9	3.2	1.1	3.7	1.1	5.55**
2	Mothers Education	3.6	1.1	3.1	1.0	3.4	1.1	1.93**
3	Father's Occupation	4.3	0.9	3.2	1.2	3.7	1.2	5.18**
4	Mother's Occupation	1.8	2.1	1.9	1.9	1.8	2.0	0.30
5	Monthly income of Family	5.3	1.6	3.0	1.8	4.2	2.0	6.73**
6	Opinion on Socio Economic Status	2.0	0.4	1.8	0.5	1.9	0.5	2.24**
7	Items your family possesses	18.2	3.5	12.0	3.7	15.1	4.7	8.52**
8	Housing	3.5	2.1	1.9	2.4	2.7	2.4	3.70**
9	Position in the Church	0.7	1.1	0.3	0.8	0.5	1.0	2.08*
10	Position in Social Organisations	0.3	0.5	0.3	0.5	0.3	0.5	0.64
11	Family subscribe daily Newspaper	3.0	0.2	2.6	0.8	2.8	0.6	3.06**
12	Family subscribe National Newspaper	1.3	1.3	0.7	1.5	1.0	1.5	2.23*
	Socio Economic Status	48.2	8.2	33.9	9.1	41.0	11.2	8.19**

Fig 5.11:Detailed Comparison of Socio-economic Status of Parents of English Medium Preschools and Anganwadis



1. Regarding father's education, the mean for parents of English Medium Preschools is 4.3 whereas it is 3.2 for Anganwadis. The t-value for the significance of difference between the father's education for English Medium Preschools and Anganwadis is calculated as 5.55 at 0.01 level. This indicates that fathers of English Medium Preschools have significantly better education than the fathers of Anganwadi children.

2. With regard to mothers' education, the mean for parents of English Medium Preschools is 3.6 while for the Anganwadis it is 3.1. The t-value for the significance of difference between the English Medium Preschools and Anganwadis is 1.93 at 0.01 level, which means that the mothers of children of English Medium Preschools have better education than that of Anganwadis.

3. When it comes to fathers' occupation, the table depicts that the mean for parents of English Medium Preschools is 4.3 whereas it is 3.2 for Anganwadis, the t-value of 5.18 at 0.01 level denotes significant difference between the occupation of the fathers English Medium Preschools and Anganwadis. This implies that the fathers of English Medium Preschools have better occupations than the fathers of Anganwadi children.

4. When mothers' occupation is taken into consideration, the mean for the English Medium Preschools is 1.8 and for the Anganwadis is 1.9, the t-value of 0.30 is not significant at either 0.01 or 0.05 levels. This reveals that there is no significant difference between the children of English Medium Preschools' and Anganwadis' mothers' occupation.

5. Regarding the monthly income of both the groups, the mean difference for the English Medium Preschools is at 5.3 and 3.0 for the Anganwadis. The t-value is calculated as 6.73 at 0.01 level. This denotes that the parents of

English Medium Preschools have significantly better income than Anganwadis.

6. As far as opinion on socio economic status goes, the table reveals that the mean of the parents of children from English Medium Preschools and Anganwadis is 2.0 and 1.8 respectively. The t-value for the significance of difference is 2.24 and is significant at 0.01 level. This indicates that the parents of English Medium Preschools enjoy significantly higher socio economic status than the parents of Anganwadis.

7. As relates to the items that the families of English Medium Preschools and Anganwadis possess, the mean for the English Medium Preschools i.e., 18.2 is higher than that of the Anganwadis which is 12.2. The calculated t-value for the significance of difference is 8.52 at 0.05 level. We can therefore conclude that the parents of English Medium Preschools possess significantly better items than the parents of Anganwadis.

8. When it comes to housing, the mean for the parents of English Medium Preschools is 3.5, while for the Anganwadis it is 1.9 which is lesser. Besides, the t-value for the significance of difference between the parents of English Medium Preschools and Anganwadis is 2.79 at 0.01 level. This proposes that the parents of English Medium Preschools have significantly better houses than the parents of Anganwadis.

9. As far as position in church goes, the mean for the parents of English Medium Preschools is 0.7 while it is 0.3 for the parents of Anganwadis. The derived t-value of 2.08 is significant at 0.01 level. This indicates that the parents of Anganwadis hold significantly more position in the church than do the parents English Medium Preschools.

10. If we look at the table relating to the parents' position in social organisations, the mean for both the parents of English Medium Preschools and Anganwadis is 0.3. Moreover, the t-value of 0.64 is not significant at either 0.01 or 0.05 level. Thus, it implies that there is no significant difference between the parents of Anganwadis and English Medium Preschools in relation to position in social organisations.

11. Regarding daily newspapers subscribed, the mean for the parents of English Medium Preschools is 3.0, while it is 2.6 for the Anganwadis. The t-value is calculated as 3.06 at 0.01 level for the significance of difference. This indicates that parents of English Medium Preschools subscribe significantly more daily newspapers than the parents of Anganwadis.

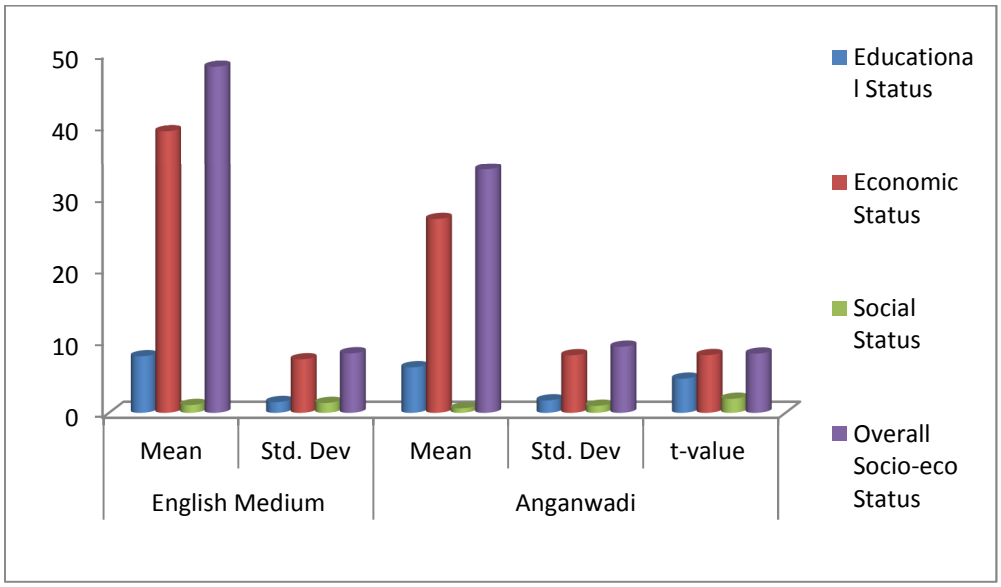
12. In the subscription of national newspapers, the table designates that the mean for the parents of English Medium Preschools is 1.3, and 0.7 for parents of Anganwadis, the t-value for the significance of difference is also 2.23 which is significant at 0.05 level. Thus it can be concluded that the parents of English Medium Preschools subscribe significantly more national newspapers than do the parents of Anganwadi children.

13. On the overall socio-economic status, the mean for parents of English Medium Preschools is 48.2 while for the Anganwadis it is 2.33. The calculated t-value is 8.19 at 0.01 levels of significance. This shows significant difference in favour of the parents of English Medium Preschools. This implies that the parents of English Medium Preschools are significantly better off socio-economically and educationally than the parents of Anganwadis.

Table 5.4.2: Overall Comparison of Socio-Economic Status of parents of Children from English Medium Preschool and Anganwadi

Indicators	Parents of children from				t-value
	English Medium Preschool		Anganwadi		
	Mean	Std. Dev	Mean	Std. Dev	
Educational Status	7.82	1.49	6.30	1.72	4.72**
Economic Status	39.26	7.40	27.00	7.96	7.98**
Social Status	1.08	1.37	0.62	0.97	1.94
Overall Socio-eco Status	48.16	8.23	33.92	9.14	8.19**
Source: Calculated **significant at 0.01level &*significant at 0.05 level					

Fig. 5.12 Overall Comparison of Socio-Economic Status of parents of Children from English Medium Preschools and Anganwadis



A cursory glance at Table 5.4.2 tells that:

1. The mean value for the educational status of parents from English Medium Preschools is 7.82, whereas it is 6.30 for the parents of Anganwadis, the t-value for the significance of difference between the educational profiles of parents of English Medium Preschools and Anganwadis is 4.72 at 0.01 level. Since the mean of the parents of English Medium Preschools is more than the mean of the Anganwadis, it indicates that there is significant difference between the parents' educational status and the difference is in favour of the English Medium Preschool parents.

2. In relation to economic status, the t-value for the significance of difference between the parents of English Medium Preschools and Anganwadis is 7.98 at 0.01 level. The mean for the parents of English Medium Preschool is 39.26 whereas that of the Anganwadis is 27.00.This indicates that there is significant difference between the economic status of the parents of English Medium Preschools and Anganwadis.

3. The mean for the parents of English Medium Preschools is 1.08 and for the Anganwadis is 0.62. The t-value for the significance of difference between the parents of English Medium Preschools with regard to their social status is 1.94, this figure is not significant at either 0.01 or 0.05 level. This indicates that there is no significant difference between the two groups in relation to their social status.

On the whole, as per the table, the mean for the parents of English Medium Preschools is calculated at 48.16 whereas for the Anganwadis, it is calculated at 33.92. The computed t-value for the significance of difference between the parents of English Medium Preschools and Anganwadisis 8.19 at 0.01 level. This shows that there is significant difference in the socio-economic status of parents of English Medium Preschools and Anganwadis.

The above interpretations highlight that there is significant difference between the socio-economic status of parents of English Medium Preschools and Anganwadis. This indicates that the null hypothesis which states, *"there is no significant difference between the socio-economic status of parents of children from English Medium Preschools and Anganwadis"* is rejected. Therefore, the research hypothesis which states, *"there is significant difference between the socio-economic status of parents of children from English Medium Preschools and Anganwadis"* is retained.

5.5.0: Effectiveness of Interventional Packages for Fostering the Cognitive Development of Preschool Children

In order to establish the effectiveness of the interventional packages, the mean differences between the pre-test and post-test of the children of Anganwadis was computed using paired t-tests.

Fig. 5.13 Detailed Effectiveness of Interventional Packages for Conceptual Skills

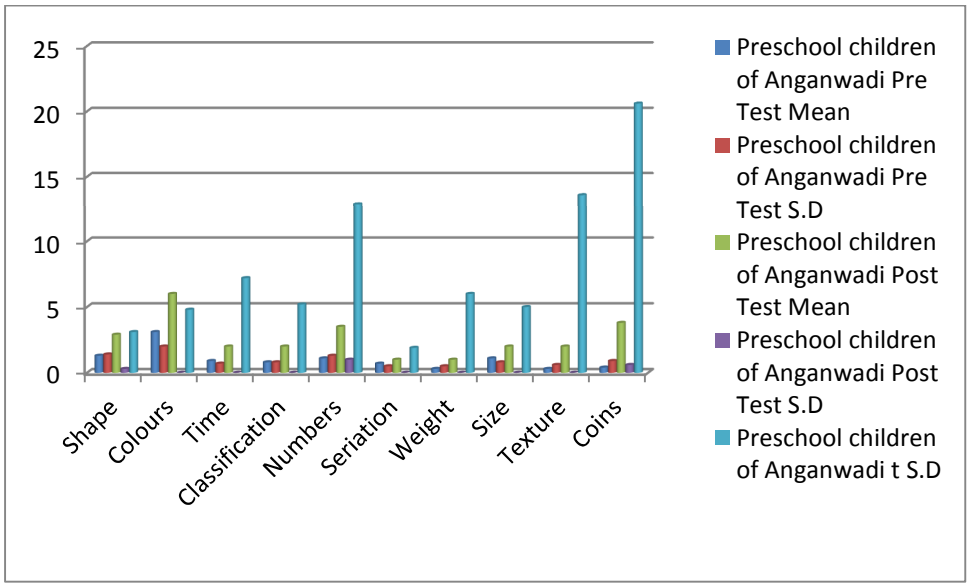


Table 5.5.1

Effectiveness of Interventional Packages for Conceptual Skills

Sl. No		Preschool children of Anganwadis				t
		Pre Test		Post Test		
		Mean	S.D	Mean	S.D	
	Conceptual Skills					
1	Concept of Shape	1.3	1.4	2.9	0.3	3.1**
2	Concept of Colours	3.1	2.0	6.0	0.0	4.8**
3	Concept of Time	0.9	0.7	2.0	0.0	7.2**
4	Concept of Classification	0.8	0.8	2.0	0.0	5.2**
5	Concept of Numbers	1.1	1.3	3.5	1.0	12.9**
6	Concept of Seriation	0.7	0.5	1.0	0.0	1.9
7	Concept of Weight	0.3	0.5	1.0	0.0	6.0**
8	Concept of Size	1.1	0.8	2.0	0.0	5.0**
9	Concept of Texture	0.3	0.6	2.0	0.0	13.6**
10	Concept of Coins	0.4	0.9	3.8	0.6	20.6**

Table 5.5.1 depicts the following:

1. The t-value for the significance of difference between the pretest and posttest of the Anganwadi children with regard to concept of shape is 3.1, whereas the desired value at 0.01 levels to declare this difference is 2.63. Since the calculated value is more than the desired t-value. On the basis of this finding, it can be concluded that the interventional package for conceptual skills is effective for fostering the cognitive development of the preschool children.

2. The t-value for the significance of difference between the pretest and posttest of the children of Anganwadis with regard to concept of colour is 4.8 at 0.01 levels. This indicates that there is significant difference between the pretest and posttest performance of the Anganwadi children. Based on this finding, it can be said that the Anganwadi children have performed

better during the posttest than they did during the pretest. We can thus conclude that the interventional package is effective for fostering the cognitive development of preschool children.

3. The t-value for the children of Anganwadis between their pretest and posttest with regard to concept of time is 7.2, this figure is significant at 0.01 level. As this figure is higher than the required t-value, it mirrors that the children of Anganwadis are better at telling time during the posttest than they were during the pretest. This indicates that the interventional package is effective for fostering the cognitive development of preschoolers.

4. As far as classification skills are concerned, the t-value for the significance of difference between the pretest and posttest scores of the Anganwadi children is found to be 5.2, which is significant at 0.01 level. This means that there is significant difference between the Anganwadi children's pretest and posttest; the experimental group was weaker in skills of classification during the pretest. This implies that the interventional package is effective for fostering the cognitive development of preschool children.

5. The t-value for the significance of difference between the pretest and posttest of the Anganwadi children is 12.9. But the desired t-value at 0.01 levels is 1.6 in order to be declared significant. Since our calculated t-value is much more than the required value. In conclusion, we may say that the interventional package is effective for fostering the cognitive development of preschool children.

6. The t-value for the significance of difference between the pretest score and posttest score of the Anganwadi children as regards seriation skills is 1.9 at 0.05 levels. But the required value to be declared significant at this level is 1.99. This implies that there is no significant difference between the preschool children of Anganwadi's pretest and posttest. In summary, it

may be said that the interventional package is not effective for fostering the cognitive development of preschool children.

7. The calculated t-value for the significance of difference between the pretest and posttest of the Anganwadi children in conceptual skills in weight is found to be 6.0 which is significant at 0.01 level. There is significant difference between the Anganwadi children's pretest and posttest which indicates that the experimental group have improved in this aspect during the posttest. It may thus be said that the interventional package is effective for fostering the cognitive development of preschool children.

8. It is indicated that regarding conceptual skills in size, the t-value for the significance of difference between the pretest and posttest of the Anganwadi children is 5.0 which is significant at 0.01 level. Since this calculated t-value is more than the required t-value, it can be said that there is significant difference between the the pretest and the posttest. The children of Anganwadis have done better in the posttest. Therefore, it can be said that the interventional package is effective for fostering the cognitive development of preschool children.

9. The t-value for the significance of difference between the Anganwadi children's pretest and posttest for conceptual skills in relation to texture is 13.6. The required t-value though, is 1.99 and is lesser than our calculated value. It can therefore be summarised that the interventional package is effective for fostering the cognitive development of preschool children.

10. The derived t-value for the significance of difference between the pretest and posttest of Anganwadi children for conceptual skills of coins is 20.6, which is significant at 0.01 levels, because the required t-value is 1.99 at 0.05 levels. This indicates that there is significant difference between the pre and posttest among the Anganwadi children.

Table 5.5.2

Effectiveness of Interventional Packages for Information and Comprehension

Sl. No		Preschool children of Anganwadis				Paired Differences			t
		Pre Test		Post Test					
		Mean	S.D	Mean	S.D	Mean	S.D	Std. Er. Mean	
	Information &Comprehension								
1	Information	3.2	1.5	6.8	1.1	4.1	2.0	0.3	14.2**
2	Verbal Comprehension	1.9	1.0	4.8	0.4	2.7	1.1	0.2	17.7**
3	Listening Comprehension	1.6	0.8	2.0	0.2	0.2	0.6	0.1	2.4**

Fig. 5.14 Effectiveness of Interventional Packages for Information and Comprehension

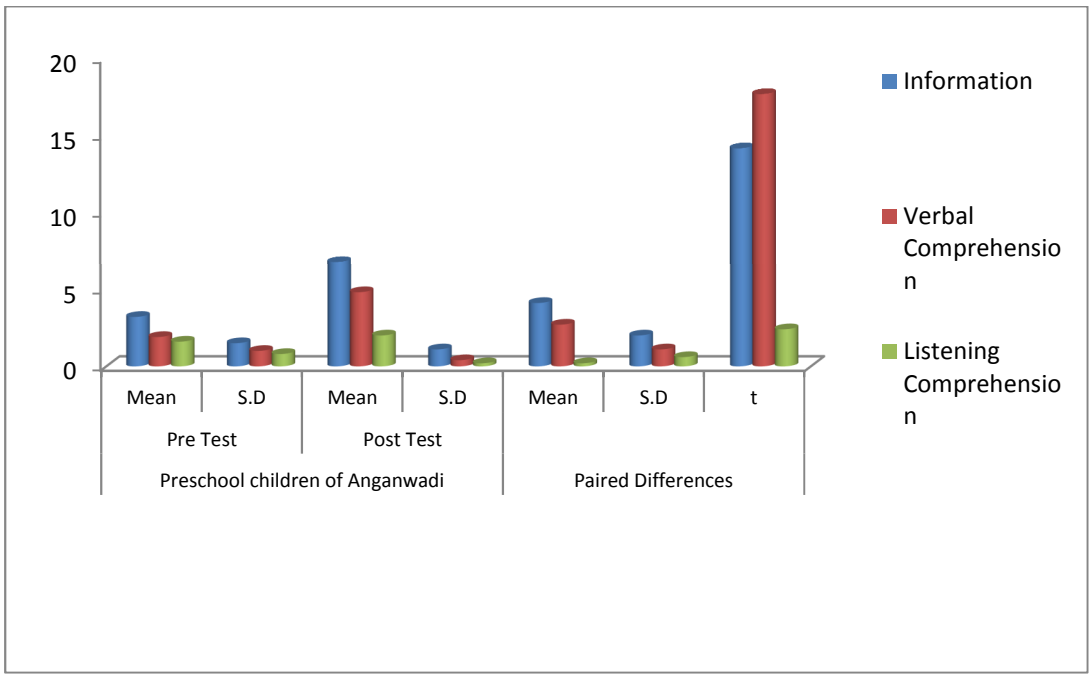


Table 5.5.2 shows that:

1. The required t-value for the significance of difference between the pretest and posttest mean of the Anganwadi children in information is 1.99 at 0.01 levels, but our calculated t-value is 14.2. There is significant difference between the pretest and posttest. This echoes that the interventional package is effective for fostering the cognitive development of preschool children.

2. The t-value for the significance of difference between the pretest and posttest of the Anganwadi children for verbal perception is 17.7 and is significant at 0.01 level. This value shows that there is significant difference between the pretest and posttest. This finding proclaims that the interventional package is effective for fostering the cognitive profile of preschool children.

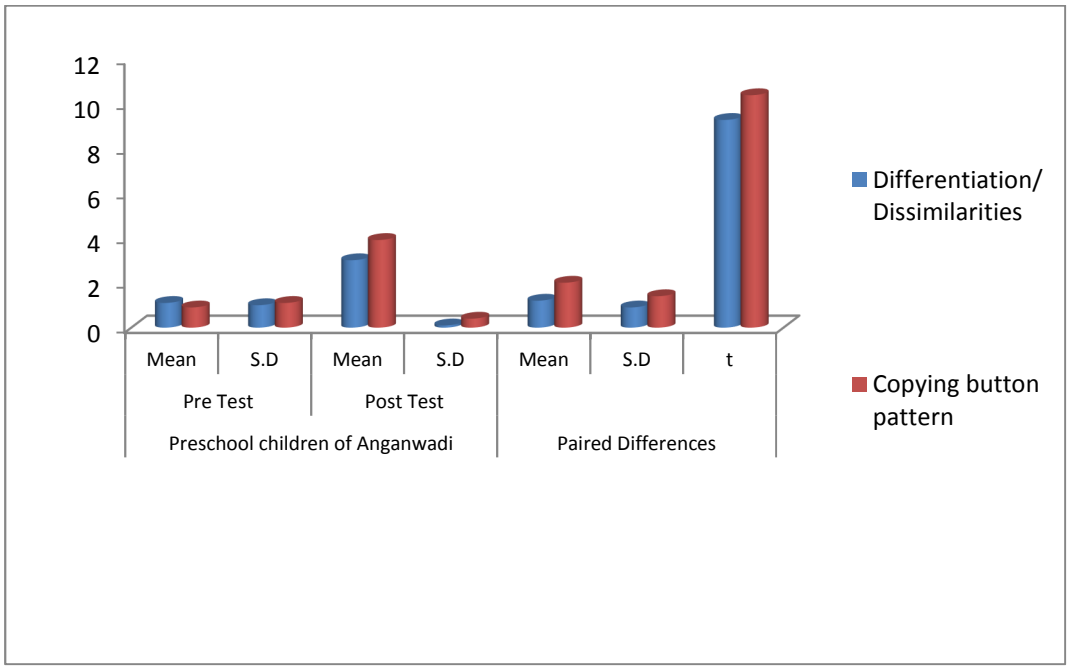
3. For listening comprehension, the calculated t-value for the significance of difference between the children of Anganwadis' pretest and posttest is 2.4. This t-value shows very significant difference at 0.01 level. This shows that the Anganwadi children's performance has improved significantly from pretest to posttest with regard to this skill. This exposes that the interventional package is effective for fostering the cognitive development of preschool children.

Table 5.5.3

Effectiveness of Interventional Packages for Visual Perception

Sl. No		Preschool children of Anganwadi				Paired Differences			t
		Pre Test		Post Test					
		Mean	S.D	Mean	S.D	Mean	S.D	Std. Er. Mean	
	Visual Perception								
1	Differentiation/Dissimilarities	1.1	1.0	3.0	0.1	1.2	0.9	0.1	9.3**
2	Copying button pattern	0.9	1.1	3.9	0.4	2.0	1.4	0.2	10.4**

Fig. 5.15 Effectiveness of Interventional Packages for Visual Perception



It is evident from Table 5.5.3 that:

1. The calculated t-value for the significance of difference between the pretest and posttest of the Anganwadi children in differentiation/dissimilarities is 9.3 which is very significant at 0.01 level. This t-value shows significant difference in the pretest and posttest performance among the preschool children of Anganwadis and implies that the children of Anganwadi have improved significantly in this area from pretest to posttest. This insinuates that the interventional package is effective for fostering the cognitive development of preschool children.

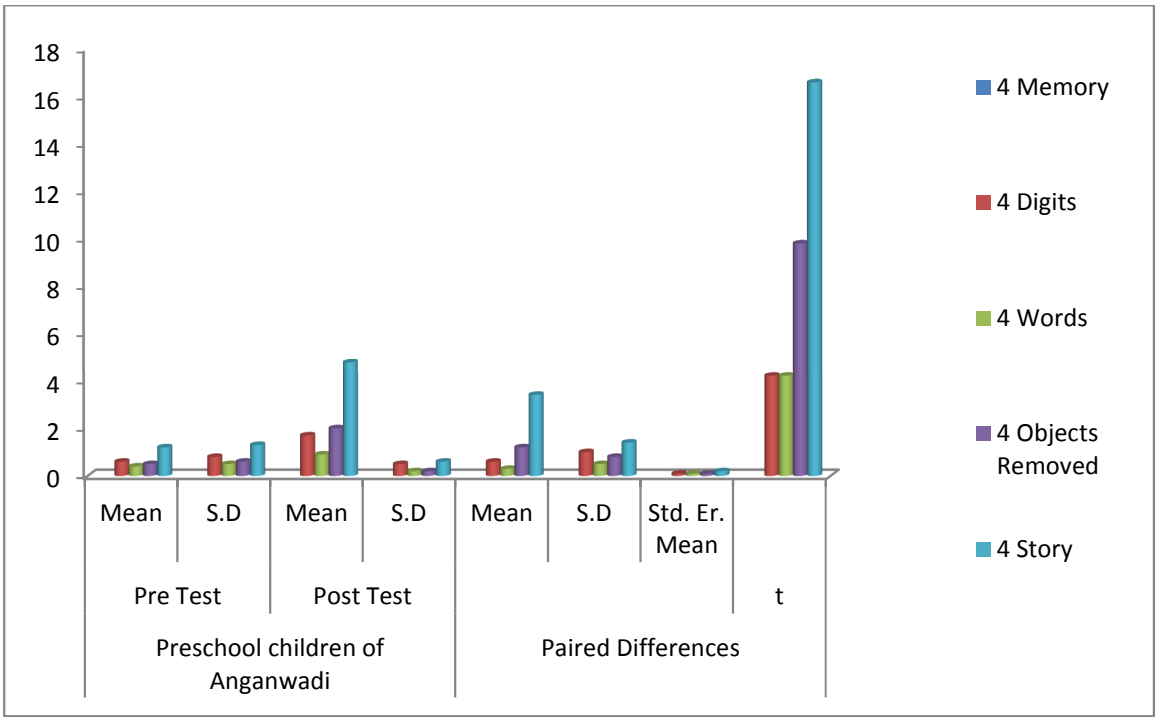
2. In copying button pattern, the t-value for the significance of difference between the pretest and posttest of the Anganwadi children is 10.4 which is very significant at 0.01 level. This reveals that significant difference exists between the pretest and posttest; the preschool children of Anganwadis have done better in this aspect. This proposes that the interventional package is effective for fostering the cognitive development of preschool children.

Table 5.5.4

Effectiveness of Interventional Packages for Memory

Sl. No	Skill	Preschool children of Anganwadis				Paired Differences			t
		Pre Test		Post Test					
		Mean	S.D	Mean	S.D	Mean	S.D	Std. Er. Mean	
	Memory								
1	Digits	0.6	0.8	1.7	0.5	0.6	1.0	0.1	4.2**
2	Words	0.4	0.5	0.9	0.2	0.3	0.5	0.1	4.2**
3	Objects Removed	0.5	0.6	2.0	0.2	1.2	0.8	0.1	9.8**
4	Story	1.2	1.3	4.8	0.6	3.4	1.4	0.2	16.6**

Fig. 5.16 Effectiveness of Interventional Packages for Memory



According to Table 5.5.4:

1. The derived t-value for the significance of difference in memory of digits between the pretest and posttest of the Anganwadi children is 4.2 and is significant at 0.01 level. This shows that significant difference exists between the pretest and posttest as this t-value is lesser than the required t-value. This resonates that interventional package is effective for fostering the cognitive development of preschool children.

2. For memory of words, the derived t-value for the significance of difference between the pretest and posttest of the Anganwadi children is 4.2 which is significant at 0.01 level. This shows that there is significant difference between the pretest and posttest. The children of Anganwadis were weaker during the pretest which reflects that the interventional package is effective for fostering the cognitive development of preschool children.

3. The calculated t-value for the significance of difference between the pretest and posttest of the Anganwadi children in their memory of objects removed is 9.8 which is significant at 0.01 level. This value shows that significant difference exists between the children of Anganwadi's pretest and posttest, and indicates that the children of Anganwadis have become better in this aspect and it echoes that the interventional package is effective for fostering the cognitive development of preschool children.

4. The t-value for the significance of difference between Anganwadi children's pretest and posttest, for memory of story, is calculated as 16.6, but the calculated t-value is much more than the required value at 0.01 level. This shows significant difference exists between the pretest and posttest of the children of Anganwadis. This echoes that the interventional

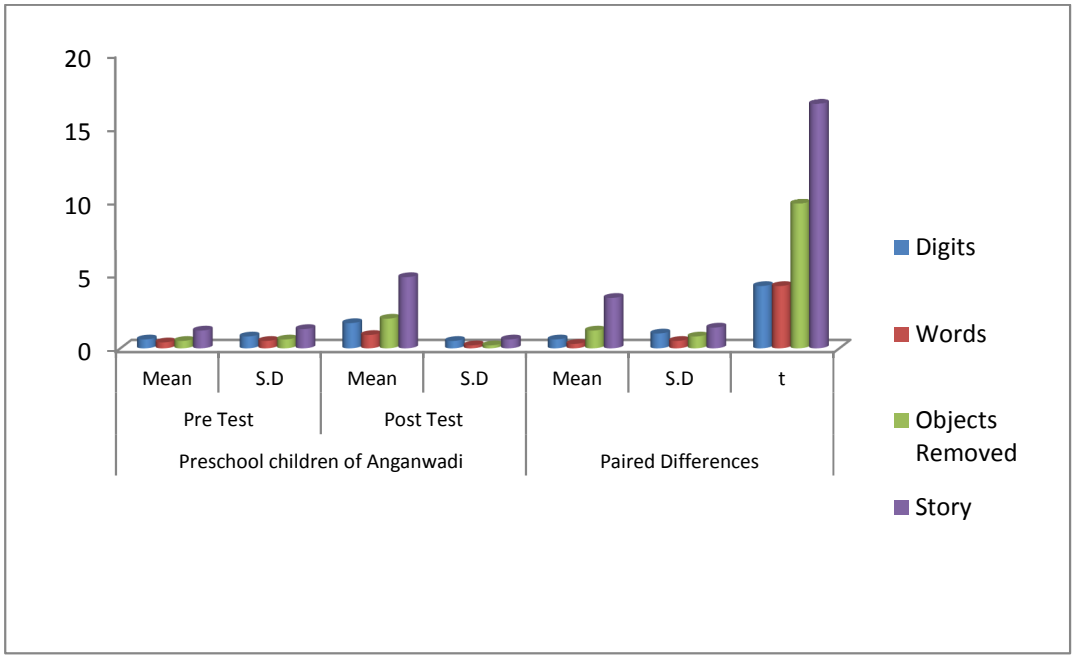
package is effective for fostering the cognitive development of preschool children.

Table. 5.5.5:

Effectiveness of Interventional Packages for Object Vocabulary

Sl. No	Skill	Preschool children of Anganwadi				Paired Differences			t-value
		Pre Test		Post Test					
		Mean	S.D	Mean	S.D	Mean	S.D	Std. Er. Mean	
1.	**Object Vocabulary**	4.5	1.3	6.0	0.0	1.6	1.2	0.2	9.1**
	Cognitive Development:	26.0	10.2	62.1	2.6	28.3	7.5	1.1	26.8**

Fig. 5.17 Effectiveness of Interventional Packages for Object Vocabulary



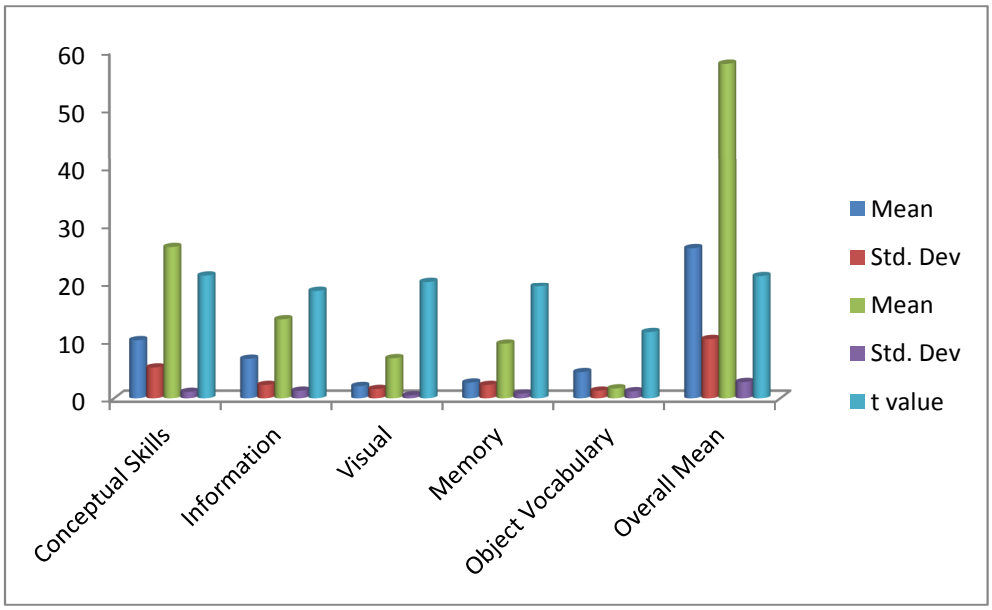
1. The above Table 5.5.5 highlights that the calculated t-value for the significance of difference between the pretest and posttest of the Anganwadi children in object vocabulary is 9.1, in contrast, the desired t-value at 0.01 level of significance is 1.99. This shows significant difference between pretest and posttest of the children of Anganwadi. This declares that the interventional package is effective for fostering the cognitive development of preschool children.

Table 5.5.6

Effectiveness of Interventional Packages for Fostering the Cognitive Development of Preschool children

Parameters	Pretest		Posttest		t-value for diff. of means
	Mean	Std. Dev	Mean	Std. Dev	
Conceptual Skills	10.0	5.3	26.2	1.1	21.3**
Information	6.8	2.3	13.6	1.3	18.5**
Visual	2.1	1.6	6.9	0.5	20.2**
Memory	2.7	2.3	9.4	0.8	19.3**
Object Vocabulary	4.5	1.3	1.7	1.2	11.4**
Overall Mean	26.0	10.2	57.8	2.8	21.2**
Source: Calculated.		**significant at 0.01 & *significant at 0.05 level			

Fig. 5.18 Effectiveness of Interventional Packages



It is found from Table 5.5.6 that:

1) With regard to conceptual skills, the t-value for the significance of difference between the pretest and posttest in the cognitive development of the children from Anganwadis was found to be 21.3 at 0.01 level of significance. This shows that the experimental group have done better after the administration of the Interventional packages. This implies that the Interventional Package is effective for fostering the cognitive development of preschool children. Thus, the null hypothesis which states, *"there is no significant effect of Conceptual Skills Intervention on fostering of conceptual skills among preschool children*" is rejected. Therefore, the research hypothesis which states, "*Interventional Package for Information and comprehension developed by the investigator has significant effectiveness in fostering the visual perception skills of preschool children"* is retained.

2) With regard to information and comprehension, the t-value for the significance of difference between the pretest and posttest of the children of Anganwadis was found to be 18.5. This resonates significant difference at 0.01 level, and it implies that the experimental group has improved significantly from their pretest to posttest in relation to information and comprehension. This highlights that the Interventional Package is effective for fostering the cognitive development of preschool children. Interventional Package for Information and Comprehension developed by the investigator will not have significant effectiveness in fostering the information and comprehension skills of preschool children. Thus, the null hypothesis which states, *"there is no significant effect of Information and Comprehension Intervention on fostering of information and comprehension skills among preschool children"* is rejected. Therefore, the research hypothesis which states, "*Interventional Package for*

Conceptual skills developed by the investigator has significant effectiveness in fostering the visual conceptual skills of preschool children" is retained.

3) With regard to visual perception, the t-value for the significance of difference between the pretest and posttest of Anganwadi children was 20.2 at 0.01 level of significance. This shows that the experimental group has significantly improved after the administration of the Interventional Package. Thus, the null hypothesis which states, *"there is no significant effect of Visual Perception Intervention on fostering of visual perception skills among preschool children"* is rejected. Therefore, the research hypothesis which states, "*Interventional Package for Visual perception developed by the investigator has significant effectiveness in fostering the visual perception skills of preschool children"* is retained.

4) With regard to memory, the t-value for the significance of difference between the pretest and posttest of the Anganwadi children was found to be 19.3 at 0.01 level of significance. This shows that the children of English Medium Preschool have significantly better memory after the administration of the Intervention Package. Thus, the null hypothesis which states, *"there is no significant effect of Memory Intervention on fostering of memory skills among preschool children"* is rejected. Therefore, the research hypothesis which states, *"Interventional Package for memory developed by the investigator has significant effectiveness in fostering the memory skills of preschool children"* is retained.

1) With regard to object vocabulary, the t-value for the significance of difference before and after the administration of the Interventional

Packages was calculated as 11.4 at 0.01 level of significance. This shows that the Interventional Package is effective for fostering the object vocabulary of preschool children. Thus, the null hypothesis which states, *"there is no significant effect of Object Vocabulary Intervention on fostering of object vocabulary skills among preschool children"* is rejected. Therefore, the research hypothesis which states, *"Interventional Package for Object Vocabulary developed by the investigator has significant effectiveness in fostering the object vocabulary skills of preschool children"* is retained.

Overall, the t-value for the significance of difference from pretest to posttest of the Anganwadi children in relation to their cognitive profiles was 21.2 at 0.01 level of significance. This shows that the cognitive development of children of Anganwadis has significantly improved after the Interventional packages were administered. This indicates that the null hypothesis which states *"there is no significant effect of Interventional Packages for fostering of cognitive development among preschool children"* is rejected. Therefore, the research hypothesis which states, *"Interventional Packages developed by the investigator has significant effectiveness in fostering the cognitive development of preschool children"* is retained.

CHAPTER VI

MAJOR FINDINGS, DISCUSSION, RECOMMENDATIONS, EDUCATIONAL IMPLICATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

CHAPTER VI

FINDINGS, DISCUSSION, RECOMMENDATIONS, EDUCATIONAL IMPLICATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

Chapter VI is the concluding chapter. The major findings of the study are presented under this section in the order of their presentation in the objectives of the study. However, since chapter IV had been devoted to the Interventional packages, the findings relating to the validation of the interventional packages have been omitted from this chapter.

6.1.0: Major Findings of the Study

6.2.0: Discussion on the Major Findings of the Study

6.3.0: Recommendations for Improvement of Cognitive Development for Preschool Children

6.4.0: Educational Implications of the Study

6.5.0: Suggestions for Further Research

6.6.0: Conclusion

6.1.0: Major Findings of the Study

6.1.1: Findings Relating to Cognitive Profiles of Children from English Medium Preschools

Out of the five cognitive skills for which they were tested, the children of English Medium Preschool were best in conceptual skills; 80 percent were in

the average range in their cognitive development and a good 16 percent were also in the high cognitive range. Only 4 percent were in the low range in relation to the mentioned skill.

Information and comprehension was another area where the children of English Medium Preschool displayed good cognitive prowess. More than 70 percent fell in the average or middle category in this skill. A little over 10 percent were in both the high and low cognitive range.

The English medium preschool children also showed good cognitive abilities as regards memory; less than 5 percent were in the low category, but 70 percent were in the middle cognitive range. In skills pertaining to visual perception, almost 70 percent fell in the average range and less than 10 percent each in high and low cognitive abilities. Even in relation to object vocabulary, more than 70 percent fell in the average range and less than 20 percent belonged to the low cognitive ability range.

In five parameters of cognitive development, a remarkable72 percent out of all the children of English Medium preschool belonged to the average category, while only 9.6 percent fell in the low category. The percentage of children from English Medium Preschool in the high cognitive abilities was 18.4%.

6.1.2: Findings Relating to the Cognitive Profiles of Children of Anganwadis

Among the children of Anganwadis, maximum percentage of students fell in the average range in cognitive abilities. Out of the five parameters, they showed highest performance in information and comprehension. There were over 70 percent of students falling in this category. However, the high range of cognitive ability only had 6 percent of children; the percentage of students for low cognitive ability was 30 percent for the mentioned skill.

The Anganwadi children showed weak cognitive abilities in relation to visual perception skills. The high cognitive category only had 10 percent of children in it; the average had 54 percent and the low category had 36 percent.

Their cognitive abilities in the remaining three parameters, namely conceptual skills, memory and object vocabulary was pretty much evenly distributed. There were approximately 30 percent children each in the average category in these skills. The high category had no more than 10 percent children under it in each of the three parameters. The percentage of low cognitive ability students was 15, 11 and 12 percent for the mentioned skills.

6.1.3: Findings Relating to Comparison of Cognitive Profiles of Children of English Medium Preschools and Anganwadis

The significance of differences in mean between the cognitive profiles of children of English Medium Preschools and Anganwadis are observed in seven (7) cognitive skills at 0.01 level of significance as revealed by the cognitive test. This implies that the cognitive development of the children of English Medium Preschool is significantly better than the cognitive development of the children of Anganwadi.

Mean differences, significant at 0.05 level was also observed in three (3) cognitive skills such as conceptual skills of time, seriation and weight.

Significant Differences

There were significant differences between the cognitive profiles of children of English Medium Preschools and Anganwadi children significant at 0.01 and 0.05 level in the following skills:

i) Concept of Shape
ii) Concept of Colour
iii) Concept of Time
iv) Concept of Classification

v) Concept of Numbers
vi) Concept of Seriation
vii) Concept of Weight
viii) Concept of Size
ix) Visual perception
x) Memory for words

This implies that the null hypothesis which states *"there is no significant difference between the cognitive profiles of children of English Medium Preschools and Anganwadis*" is rejected in relation to the above mentioned skills. Therefore, the research hypothesis which states, *"there is significant difference between the cognitive profiles of children of English Medium Preschools and Anganwadis"* is retained as there were significant differences between the cognitive profiles of children of English Medium Preschools and Anganwadis and the differences were in favour of English Medium Preschoolers.

Insignificant Differences

There were no significant differences between the cognitive profiles of children of English Medium Preschools and Anganwadi children in the following skills:

i) Concept of Texture
ii) Concept of Coins
iii) Information
iv) Visual perception
v) Listening comprehension
vi) Memory for digits
vii) Memory for objects removed
viii) Memory for story
ix) Object vocabulary

This retains the null hypothesis in relation to the above skills, which states *"there is no significant difference between the cognitive profiles of children of English Medium Preschools and Anganwadis*". Therefore, the research hypothesis which states, *"there is significant difference between the cognitive profiles of children of English Medium Preschools and Anganwadis*" is rejected. The reason is that there were differences in favour of the English Medium Preschool children. Moreover, there were three skills namely, concept of coins, verbal perception and object vocabulary in which there were differences in favour of the Anganwadi children but these differences were not statistically significant.

6.1.4: Major Findings Relating to Socio-Economic Status of Parents of Children from English Medium Preschools

With regard to their education, the percentage of parents of children from English Medium Preschool in the high range was 60 percent, 36 percent belonged to the average range and only 4 % belonged to the low status.

In relation to their economic status, more than 50 percent of parents of children from English Medium Preschool were in the high economic status; 42 percent fell in the middle status, but only 4 percent of them were in the low category.

As relates to the social status of the parents of children of English Medium Preschool, there were approximately 50 percent each in the high and low social status; there were no subjects in the middle social range.

On the whole, the socio-economic status of parents from English Medium Preschool highlights that there were more than 50 percent of parents in the high socio-economic range and less than 5 percent in the low category. The incidence of the percentage of parents in the middle range was 38 percent.

6.1.5: Major Findings Relating to Socio-Economic Status of Parents of Children from Anganwadis

A study of the socio-economic status of parents of children from Anganwadi revealed that, in relation to education, the percentage for high educational status i.e., 20 percent was lower than the percentage of incidence in the low category which was 24 percent. The average category included 56 percent of the parents.

When it came to economic status, the percentage of parents in the high, middle and low economic range were 6 %, 44 % and 50 % respectively.

Relating to the social status, the percentage of parents in high social status was 40 percent only, whereas the percentage of the parents in the low social status was 60 percent.

The overall picture on the socio-economic and educational profiles of parents of preschool children from Anganwadi resonates that as much as 46 percent each, were in the middle and low SES range while only 8 percent were in the high SES range.

6.1.6: Major Findings Relating to Comparison of Socio-Economic Status of parents of Children from Anganwadis

Significant Differences

There were significant differences between the socio-economic status of parents of children of English Medium Preschools and Anganwadis on two (2) out of three (3) components, namely, economic status and educational status at 0.01 level, which were in favour of the parents of English Medium Preschoolers. However, relating to the social component, there were differences in favour of the parents of Anganwadi children but the differences were not statistically significant. On the whole, there was significant

difference at 0.01 level between the SES of the parents of children from English Medium Preschools and Anganwadis.

This resonates that the null hypothesis which states, *"there is no significant difference between the socio-economic status of parents of children from English Medium Preschools and Anganwadis*" is rejected. Therefore, the research hypothesis which states, *"there is significant difference between the socio-economic status of parents of children from English Medium Preschools and Anganwadis"* is retained.

6.1.7: Major Findings Relating to the Effectiveness of the Interventional Packages for Fostering the Cognitive Development of Preschool Children

With regard to conceptual skills, the significance of difference between the pretest and posttest scores of Anganwadi children was 21.3 at 0.01 level. The experimental group did better after the administration of the Interventional package. This implies that the Interventional Package for Conceptual skill is effective for fostering the conceptual skill of preschool children. This means that the null hypothesis which states, *"there is no significant effect of Conceptual Skills Intervention on fostering of conceptual skills among preschool children"* is rejected. Therefore, the research hypothesis which states, *"Interventional Package for Conceptual Skills developed by the investigator has significant effectiveness in fostering the conceptual skills of preschool children"* is retained.

The significance of difference between the pretest and posttest scores of Anganwadi children with regard to Information and Comprehension skills, was 18.5 at 0.01 level of significance. The experimental group performed better after the administration of the Interventional packages. This implies that the Interventional Package for Information and Comprehension is effective for fostering the information and comprehension skills of preschool children. The

null hypothesis which states, *"there is no significant effect of Information and Comprehension Intervention on fostering of information and comprehension skills among preschool children"* is thus rejected. Therefore, the research hypothesis which states, *"Interventional Package for Information and Comprehension developed by the investigator has significant effectiveness in fostering the information and comprehension skills of preschool children"* is retained.

In relation to visual perception, there were significant differences between the pretest and posttest scores of the Anganwadi children, the difference was significant at 0.01 level and the value was 20.2. The performance of the Anganwadi children had significantly improved after the administration of the interventional package. This implies that the Interventional Package for Visual Perception is effective for fostering the information and comprehension skills of preschool children. This, mirrors that the null hypothesis which states, *"there is no significant effect of Visual Perception Intervention on fostering of visual perception skills among preschool children"* is rejected. Therefore, the research hypothesis which states, *"Interventional Package for Visual Perception developed by the investigator has significant effectiveness in fostering the visual perception skills of preschool children"* is retained.

As regards the skill of memory, the significance of difference between the pretest and posttest scores of the Anganwadi children was 19.3 at 0.01 level of significance. This implies that the Interventional Package for Memory is effective for fostering the memory skills of preschoolers. Thus, the null hypothesis which states, *"there is no significant effect of Memory Intervention on fostering of memory skills among preschool children"* is rejected. Therefore, the research hypothesis which states, *"Interventional Package for Memory developed by the investigator has significant effectiveness in fostering the memory skills of preschool children"* is retained.

Regarding object vocabulary, the significance of difference the pretest and posttest scores of the Anganwadi children was 11.4 which was significant at 0.01 level. This reveals that the object vocabulary of the Anganwadi children had significantly improved after the administration of the interventional packages. This implies that the Interventional Package for Memory is effective for fostering the memory skills of preschoolers. The null hypothesis which thus states, *"there is no significant effect of Object Vocabulary Intervention on fostering of object vocabulary skills among preschool children"* is rejected. Therefore, the research hypothesis which states, *"Interventional Package for Object Vocabulary developed by the investigator has significant effectiveness in fostering the object vocabulary skills of preschool children"* is retained.

On the whole, the t-value for the significance of difference of preschool children of Anganwadis from their pretest and posttest in relation to their cognitive development was found to be 21.2 at 0.01 level of significance. The cognitive profiles of children of Anganwadis had significantly improved after the Interventional packages were administered. This indicates that the null hypothesis which states, *"there is no significant effect of Interventional Packages for fostering of cognitive development among preschool children"* is rejected as it is evident that the Interventional Packages are significantly effective. Therefore, the research hypothesis which states, *"Interventional Packages developed by the investigator has significant effectiveness in fostering the cognitive development of preschool children"* is retained.

6.2.0: Discussion on the Major Findings of the Study

6.2.1: Discussion on the Development of the Interventional Packages for Fostering the Cognitive Development of Preschool Children

It was found that children were not at all bothered by the low-cost nature of the materials used in the administration of the various activities in the

interventional packages. They were fine with simply having an activity to challenge them. Children at the Anganwadi centre had as much fun learning concepts using empty bottle caps, water bottles, old buttons and even broken crayons and pencils as did the English Medium Preschool children using custom-made blocks and shapes. They learnt important concepts through available household items, vegetables and rubber-bands. Even discarded carpet strips were put to good use as stencilled shapes. Preschool children learnt the textures of different things from different textures of vegetables and fruits. They learnt about comprehension through their own real-life stories and experiences getting to the Anganwadi centre.

Assurance and acknowledgements from grown-ups go a long way in building the confidence of preschoolers. Preschoolers badly want to belong to groups and win the approval of those around them; friends, playmates and teachers. The most vital ingredient in the development of the cognitive abilities of preschoolers it seems is, besides opportunities for constructive sense manipulation, an earnest interest in them and investment of one's time and attention to them and the milestones that they reach.

6.2.2: Discussion of Findings on Cognitive Profiles of Children and SES of ParentsfromEnglish Medium Preschools and Anganwadis

The cognitive profiles of children of the English Medium Preschools revealed that these children had performed significantly better than the preschool children of Anganwadis along different parameters. This may be because the children of English Medium Preschools come from significantly better socio-economic backgrounds than the Anganwadi children, and higher socio-economic status have been linked to higher levels of academic achievement.

The findings on the socio-economic status of parents of children of English Medium Preschools and Anganwadis highlights that the socio-

economic status of parents have implications on the cognitive profiles of their children. This may be because the parents of the children of English medium Preschools enjoy better socio-economic status than the parents of children of Anganwadis and are therefore in a better position to provide better preschool programmes to their children. They may also be having better awareness about the benefits of investing in good quality preschool programmes since they also have better education than the parents of children of Anganwadis.

The findings on the cognitive profiles of children of English Medium Preschools and Anganwadis indicate that children of English Medium Preschools have better cognitive development than the children of Anganwadis and this could be due to the fact that the parents of children of English medium Preschools have significantly better socio-economic backgrounds than the parents of children of Anganwadis. Memon, et. al. (2010) studying the impact of parental socio-economic status on students' educational achievements in, Karachi also reported that there was significant relationship between parent's occupational status and academic performance of the students at matriculation examination. Similarly a significant relationship was found between family income and educational achievement. It is, therefore, proved that the higher the income of the family better would be educational performance of the students at matriculation examination.

Kainuwa & Muhammad, 2013studying the Influence of socio-economic and educational background of parents on their children's education in Nigeria also reported that higher socio economic status and high levels of education may enhance parents' facility at becoming involved in their children's education, and also enable parents to acquire and model social skills and problem-solving strategies conducive to children's school success. Thus, students whose parents have higher socio-economic status and higher levels of education may have an enhanced regard for learning, more positive ability beliefs, a stronger work orientation, and they may use more effective learning strategies than children of parents with lower socio-economic status and lower levels of education

The findings of the present study conform to the findings of Pam Sammons et. al. which reported that the duration of time in pre-school has significant and positive impact on attainment over and above important influences such as family, socio-economic status, income, mother's qualification level.

A study by Lee, Burkam, et. al. (2006) titled "Full day versus Half-Day Kindergarten: In which programme do children learn more?" also found that schools that offer full-day programmes learn more in literacy and Mathematics than their half-day counterparts.

Similar complimentary findings have also been reported by Loren M. Marulis and Susan Neuman (2010) in their study "Effects of Vocabulary Intervention on Young Children's Word Learning" where they found a gain of nearly one standard deviation on average on vocabulary measures.

6.2.3: Discussion on the Effectiveness of Interventional Packages for Fostering the Cognitive Profiles of Preschool Children

In the present study the preschool children from Anganwadis were seen as performing at an advanced level, comparable to the children of the English Medium Preschools after the administration of the interventional packages. Similar finding was also reported by Rath and Patnaik (1978), who found that disadvantaged children, after being given intervention training on cognitive skills improved more than the advantaged and later reached the same levels as them.

Studies have shown that not only the type of programme, but also the duration of the preschool programmes itself have impact on the cognitive development of preschool children, indicating that the longer the duration of the preschool programme, the better their cognitive development. In the present study, although the post test scores indicated that there were significant

improvements in the cognitive development of preschool children of Anganwadis, there was, however, still room for growth. This may have been because of the duration of the administration of the interventional packages which had to be slightly shortened. The duration of the preschool programme in the Anganwadi centre was two (2) hours and the session length was from July to mid November.

Lee, Burkam, Ready, Honigman, and Meisels (2006), from their study titled "Full day versus Half-Day Kindergarten: In which programme do children learn more?" had also reported that in schools that offer full-day programmes, children learn more in literacy and Mathematics than their half-day counterparts

Similar findings were also reported by Cooper, Allen et al (2010) after studying the effects of full day kindergarten on academic achievement and social development. They found positive association with academic achievement (compared to half day kindergarten) equal to about one quarter standard deviation at the end of the kindergarten year.

Although poverty is a known determinant of poor health and development of children, researchers are just beginning to examine the effects of the type of family poverty experience on children. Recent studies suggest that impoverished children whose families secure at least part of their income from employment are somewhat healthier and have slightly higher developmental scores than their peers whose family income is solely from social assistance. (Williamson, Salkie, Letourneau, 2005).

The above variables leaves one to wonder whether longer duration programmes would have yielded a different final result.

Extraneous Variables

As is the case with most experimental studies, the present study too was not free from intervening variables. These variables caused hurdles in

administering the interventional package to the preschoolers, which could not be directly measured, but which could have effect on the overall outcomes. These were:

- The size of the classroom was insufficient and was too small to accommodate all the children. Additionally, a kitchen was attached adjacent to the classroom. Often children would become distracted by activities in the kitchen.
- Plastic chairs were used in the Anganwadi centre in place of normal benches. These plastic chairs were lightweight and would often slip causing minor mishaps and children often ending up crying. This happened very often; as a result, classes were disrupted many times
- The centre had a rule of disbursing food-grains every Friday; this interfered with the routine and prevented the teacher from conducting classes.
- The supply of food-grains from ICDS did a downward spiral from the month of August, and had stopped altogether by September. This had a impact on the attendance and led to the dropping-out of some preschoolers.

6.3.0: Recommendations for Improvement of Cognitive Development of Preschool Children

Based on the findings of the study and some observations made by the investigator, some specific and general recommendations have been made as follows.

6.3.1: Specific Recommendations

- Given the effectiveness of the interventional packages for fostering cognitive development of preschoolers, the Interventional packages could be patented.

- The Interventional Packages could be used separately as remedial tools for fostering the cognitive development of preschool children in specific problem areas.
- The Interventional package for Conceptual skills could be used to foster the conceptual skills of preschoolers.
- The Interventional package for Information & Comprehension could be used to foster the information and comprehension skills of preschoolers.
- The Interventional package for Visual Perception could be used to foster the visual perceptual skills of preschoolers.
- The Interventional package for Memory could be used to foster the memory skills of preschoolers.
- The Interventional package for Object Vocabulary could be used to foster the object vocabulary skills of preschoolers.
- The Interventional packages could be adopted for use in different Anganwadi centres.
- The duration of administration of the Interventional Packages could be increased to more hours.
- The packages could be recommended for use with children in any type of preschools.
- The packages could be recommended to parents and caretakers alike for use at home with preschool aged children.

6.3.2: General Recommendations

- Since Anganwadi centres are the most opted alternative to preschool programmes, these centres should be spacious enough to accommodate maximum numbers of preschoolers. Given the importance of early childhood period, especially 3- 6 years, the nation cannot leave the responsibility of catering to preschoolers' development, cognitive or

otherwise in the hands of private sectors alone. The numbers of centres in a given area should hardly suffice considering the size of population of the country.

- Proper wooden benches or chairs, in place of plastic chairs should be used with preschoolers. Benches would ensure better safety for preschoolers and thereby prevent minor accidents from taking place. Ensuring the physical safety of preschool children can go a long way in gaining the attention of preschoolers and in getting them mentally prepared with minimum distractions.
- Disbursal of food from ICDS should be properly scheduled so as to cause minimum disruption to classes.
- Administrators should carefully monitor midday-meal schemes and food disbursal programmes under the ICDS to ensure that nutrition reach the target groups in due time consistently.
- Anganwadi centres should be adequately staffed. Anganwadis are centres of health, nutrition, play and activities and they house preschool children of varying age groups. Therefore, the present system of assigning two personnel to a single centre is insufficient.
- Since the workers at the Anganwadi centres are mostly non-professionals with moderate levels of academic proficiency, they should be made to undergo orientations/refresher courses on the importance and implications of early childhood care and education on a regular basis. Programmes should also be organised on basic care and education of children with special needs.
- The education and care of the young preschoolers is a job that requires concerted efforts from all stakeholders – teachers, workers, administrators, and last but not least, parents. Therefore, active participation of parents should be solicited. Parents should be given proper awareness about their children's progress, strengths and weaknesses and should be made involved in the activities and programmes of the Anganwadi centres.

6.4.0: Educational Implications of the Study

The study has important implications for preschoolers, preschool teachers, administrators and curriculum planners.

- Preschoolers are not just be killing time at Anganwadi centres. They are gaining rudimentary cognitive skills and schemas which are very vital for their later learning and school readiness.
- Parents get their much needed time to attend to other important matters now with the preschooler safely occupied in fun and active hands-on learning.
- Parents are relieved of the financial and psychological burden of having to provide quality education to their wards.
- Teachers and parents are prompted to create their very own cost-effective custom made learning tools.
- School retention is ensured to a certain extent.
- Younger mothers are offered scope for pursuance of non-formal/continuing education or other economic pursuits.
- The study highlights the positive correlation between play interventions and cognitive development.
- The study highlights the necessity of using child-proof furniture and equipments.
- The study throws light on the necessity of organising regular trainings for anganwadi workers with exclusive stress on awareness generation about the importance and implications of early childhood education.
- The study may be an eye opener for educational planners towards realising that while planning the curriculum it is important to bear in mind the varied locally available resources.
- The study may help parents to realise the importance of the role they play towards their preschoolers' growth. Healthy atmospheres at home

go a long way in fostering the cognitive development of preschool children

6.5.0: Suggestions for Further Research

Further researches may be undertaken in the following lines-

- Experimental research may be conducted with variations in the research design with children of English Medium Preschools and Anganwadis.
- Further studies may be conducted with larger samples to validate the present findings.
- Similar studies may be conducted on preschool children of other Anganwadi centres
- Similar studies may be conducted on preschool children of Anganwadi of other districts of Mizoram.
- Similar studies may be conducted on preschool children of English Medium Preschools.
- Further research may be conducted in other states for the purpose of comparing the present findings.
- Further studies could be taken up to develop interventions for socio-emotional development of preschool children.
- Further studies could be taken up to develop interventions physical development of preschool children.

6.6.0: Conclusion

The cognitive profiles of children of English Medium Preschools and Anganwadi children at the pre-test stage revealed that the cognitive profiles of children of English Medium Preschools were better than that of Anganwadis.

This finding could be attributed to the higher socio-economic status of the parents of children of English Medium preschools. Higher socio economic status and high levels of education may enhance parents' facility at becoming involved in their children's education, and also enable parents to acquire and model social skills and problem-solving strategies conducive to children's school success. Thus, students whose parents have higher socio-economic status and higher levels of education may have an enhanced regard for learning, more positive ability beliefs, a stronger work orientation, and they may use more effective learning strategies than children of parents with lower socio-economic status and lower levels of education.

However, after the administration of the Interventional Packages, the existing disparities were reduced to a significant level. The findings of the present study echoes that, with proper care, even disadvantaged children from the economically challenged sections of the society can be helped to achieve positive cognitive development with the help of low-cost educational interventions.

Kumar,(2015) who had analysed the influence of parents' socio-economic factors like education, profession and income on students' performance in IIT-JEE examinations, concluded that the socio-economic factors are not vital factors that influence performance of the students in IIT-JEE examinations. Performance of those students was consistent who were coming from low income strata and whose parents (both mother and father) were not highly educated, if given good opportunities in respect of good schooling and financial resources they could perform better in such examinations.

No doubt, low socio-economic status most times adversely impact academic achievements of students. But this gap can be effectively bridged through effective learning strategies and interventions as evidenced in the present study.

At the heart of the educational process lies the child. No advances in policy, no acquisitions of new equipment have their desired effect unless they are in harmony with the nature of the child, unless they are fundamentally acceptable to him. Knowledge of the manner in which children develop, therefore, is of prime importance, both in avoiding educationally harmful practices and in introducing effective ones. (CACE 1967)

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APPENDICES

APPENDIX-A

Manual

Pandey's Cognitive Development Test for Pre-Schoolers (PCDTP)

Dr. Hema Pandey
Principal, Trainer's Trainning Centre
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COIMBATORE (T. N.)

1992

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MANUAL

for

Pandey's Cognitive Development Test for Pre-schoolers

TEST DESCRIPTION

Hema Pandey's Cognitive Development test for pre-schoolers is a standardized test which measures the cognitive abilities of pre-schoolers (3—5 yrs.). It is easy to learn and administer, with the administration procedure requiring only a brief training and practice period.

PCDTP has been standardized on 270 (3+, 4+, and 5+ year old) children. The test has high validity. Its' correlation with the Binet scale–Form L-M—1960 revision was ·80.

The test re-test reliability was ·95.

Scope of the test

PCDTP can be used by professional persons who are competent in working with pre-schoolers. These may include Anganwadi Workers, Teachers, Research Scholars, Professionals in day care centres.

A paediatrician may use it as one of his clinical tests to get some estimate about the mental progress.

This test may be used as supplementary test with any other test of intelligence.

Although the instrument was not designed to be used with children with handicaps it may be successfully used with children with developmental delay, the deviation from the mean may be calculated by referring to the norms of a particular age.

Content. PCDTP measures the cognition in children by verbal and non-verbal items. The six sub-tests which make up PCDTP were chosen after wide study of the available text and tests.

The six sub tests are :

Conceptual skills
Information
Comprehension
Visual perception
Memory
Object vocabulary

1. *Conceptual Skills.* This sub-test is oriented to measure the development of various concepts by children, namely, concept of shape, colour, time, classification, number, seriation, weight, size, texture and coins. The sub-test calls into operation rote memory, ability to discriminate, think and utilize past experiences.

2. *Information.* This sub-test measures how much general information the subject has abstracted from his surrounding environment. The test requires ability to comprehend and capacity for associative thinking. Items included in the test are expected to assess the subject's awareness of and alertness to the environment.

3. *Comprehension.* This test measures the subjects ability to think, recall, associate and comprehend oral directions and actions of people in the environment and reasoning with abstraction.

4. *Visual Perception.* Visual perception is basically included to determine the qualitative aspects of relationships which the subject has abstracted from his environment. The subject should be able to see the basic essential relationship between the objects in the environment. This requires ability to comprehend, capacity for associative thinking, discrimination, reasoning, attention, analysis and concentration.

5. *Memory.* This sub-test attempts to determine the level of child's ability to pay attention in a simple situation. It measures immediate auditory recall or immediate auditory (attention) span and level of mental alertness and rote memory.

6. *Object Vocabulary.* This sub-test measures child's richness of ideas, kind and quality of language and degree of abstract thinking. Vocabulary reflects also a child's level of education and environment.

THE TESTING PROCEDURE

Administration

The test should be administered individually and orally, in an exclusively private room.

Working Time. There is no time limit. The child is given sufficient time to complete all the test items.

Guidelines for testing the pre-schoolers. The following guidelines should be kept in mind while testing the pre-schoolers.

—test the children in the forenoon because in the afternoon children are likely to be less alert and sleepy;

—establish rapport with children prior to testing;

—arrange all the testing material systematically in order of presentation and cover it to avoid distractions;

—before starting the testing, the child should be made physically comfortable;

—give adequate praise and encouragement to the child in order to make him confident;

—test results should be recorded simultaneously on the score cards.

Scoring. Give one mark for each correct answer. Score each subtest by hand as it is performed. The total scores constitute the 'raw' scores of the subject. Find out the standard scores of the subject as per his age on the given age norm table. The figure corresponding to the 'raw' score on the Age Norm Table is the standard score of the subject.

The item wise material to be used, testing instructions, total score allotted are given in the subsequent pages.

The testing material has been provided in the kit accompanying the test manual.

Age Norms

Cognitive measurement norms for 3 years, 4 years and 5 years old children are given. These norms serve as a basis for interpreting the scores of examinees. By referring to these norms raw scores of the subject can easily be converted into standard scores for facilitating comparision of the subjects performance with his peers.

The following formula for conversion of raw score to standard score was used (Garrett, 1983).

$$X_1 = \frac{\sigma_1}{\sigma}(X - M) + M_1$$

Where X = a raw score

X_1 = standard score

M = Mean of raw scores

M_1 = Arbitrary mean (100)

σ = SD of raw scores

σ_1 = Arbitrary SD (20)

TABLE

Pandey's Cognitive Development Test for Pre Schoolers (PCDTP)

Sl. No.	*Test items*	*Material used*	*Procedure*	*Total score*	*Item score*	
I.	**Conceptual Skills**					
	1. Concept of Shape	3 pieces each of round, triangle, square plastic blocks.	Mix all the pieces of shapes and place before the child, ask him to "group the similar types of blocks in different places". Order of grouping 1. Group the round pieces 2 Group the squarepieces 3. Group the triangles.	3	1 1 1	
	2. Concept of colour (matching colour and labelling them).	Two cubes whose six sides are coloured with white, black, yellow, blue, green, red.	Ask the child to match the colour on one cube with the colour on the second cube and then label the colour also (give ½ score for colour matching and ½ for labelling it). Keep Ist three scores for matching and 2nd set of three scores for identification. Order of presentation of colour ; red, green, blue, white, black, yellow. Present the colour in the same order in both cases.	6	½ ½ ½ ½ ½ ½	½ ½ ½ ½ ½ ½

Continued

3. Concept of time : 1. Day 2. Night	Cards showing 1. Sun & Brightness 2. Moon & Stars	Ask the child "when do you see moon and stars ?" "When is the sky dark ?" "When do you see sunlight ?"	2	1 1
4. Classification	Bengal gram (whole) Black gram (whole) Peas (whole) 1. Bengal gram and Black gram 2. Above three pulses	1. Give the child two different pulses and ask to sort them" Separate these two pulses". 2. Give the child three different pulses and ask to sort them" Separate these three pulses" on the basis of three different colours.	2	1 1
5. Concept of number	10. buttons	Place the button in front of the child and ask "give me". i. 2 buttons ii. 4 buttons iii. 6 buttons iv. 10 buttons	4	1 1 1 1
6. Concept of Serialisation 1. Seriation	3 sticks of unequal length	Place the three sticks of unequal length in front of the child. Ask the child to "first place the smallest stick, then the bigger, and then the biggest one".	1	1
7. Concept of weight	Rubber ball Plastic ball	Place the balls in the child's hands and ask "which is heavier among the two ?"	1	1

Continued.

8. Concept of size a) Tick and Thin b) Big and small	Three sticks of different thicknesses. Three balls of different sizes	Place the material in front of the child ask him to "point out thick and thin sticks out of three sticks" as well as to "point out the biggest and smallest balls".	2	1 1	
9. Concept of Texture. a. soft b. rough	A card on which cotton & sand paper is glued.	Place the card in front of the child and ask him "touch and point out which is soft and which is hard texture?" OR 1. the texture of cotton 2. the texture of sand paper	2	1 1	
10. Recognizing coins.	A card with 5, 10, 25, 50 paise coins glued on it.	Ask child "what is this coin ?" (showing one after the other) "With which coin can we buy maximum number of toffees ? (showing all the coins together)	4	1 1 1 1	
II. 11. Information	Oral questions	Ask the following questions. 1. What is this ? (Showing your thumb) 2. What are eyes for ? 3. What do you get from a coconut tree ? 4. What is the colour of the grass ?	8	1 1 1 1	

Continued.

		5. How many ears do you have ?		1
		6. What is dosai made of ?		1
		7. How many legs does a dog have ?		1
		8. Why should not you play with a match box ?		1
III. Comprehension				
12. Verbal perception	Oral questions	Ask the following questions		
		1. Point out your right ear ?		1
		2. What should you buy to go by bus ?	5	1
		3. What does the postman bring ?		1
		4. Why do you come to school ?		1
		5. Where does the fish live ?		1
13. Listening Comprehension	Oral directions	Give following directions to the child asking him to follow it :		
		Instructions : Keep this book on the table : close the door, and give me the book placed ever there (pointing to it) :	2	1
		Instructions **: Pick up the book (in front of the child:, take that piece of paper lying in the corner; take that**		1

Continued.

		ball (near the teacher); and keep them on the book (keep every thing at a little distance from the child so that he has to walk up to them).		
IV. Visual Perception				
14. Which one is different (a) Big and small (b) Fruits and vegetables (c) Animals and birds	Cards with the groups of 4 objects	Show the child following cards with a group of 4 subjects and ask which one is different ?		
		1. 3 small buttons and one big button	3	1
		2. 3 types of fruits and one vegetable		1
		3. Pictures of elephant, dog, cow and bird		1
15. Copying button pattern	7 black, 7 red coloured, same size buttons glued in the shown pattern on the card	Ask the child with these buttons make the same pattern as I have.		
		1. 2 buttons	4	1
		2. 3 buttons		1
		3. 4 buttons		1
		4. 5 buttons		1
V. Memory				
16. Memory for digits (a) four digits (b) five digits	Oral expression	Ask the child to "repeat the following digits at the rate of 1 digit per second	2	
		1. 1, 6, 9, 1		1
		2. 8, 4, 3, 6, 5		1

Continued.

17. Memory for words	Oral expression	Ask the child to repeat what I say. "You must repeat it in the same words". 1. Ramu climbed the coconut tree and plucked coconuts.	1	1
18. Memory for objects removed	4 *objects* Coin, thread, comb, key 5 *objects* match box, block, button bangle, pencil	Place the objects under item 1 before the subject and ask;" What is this". After a few seconds cover the objects with a screen and remove the key, then ask "what is missing"? The above mentioned procedure is followed for item 2, also where, the button is removed.	2	1 1
19. Memory for story	Oral story	**Story telling and asking 5 questions** Once upon a time there were 3 goats, one of them made a house of grass. A fox came and blew at the house, which broke. A second goat made a house of wood. The fox came and blew again and the house broke, The third one made the house of bricks. The fox again blew at the house, (blowing) but the house did not break.	5	

Continued.

		1. How many goats were there ?		1
		2. With what did they make their houses ?		1
		3. Who blew at their houses ?	5	1
		4. Which house did not break ?		1
		5. Why ?		1
VI. Object Vocabulary 20. Object identification and description.	Following objects/models/ pictures	Show the objects to the child and ask him.	6	
		(a) 'to name each of them' ($\frac{1}{2}$ marks)		
		(b) 'What each is used for' ($\frac{1}{2}$ marks)		
		Give $\frac{1}{2}$ score for each correct answer of identification, then repeat the items in the same order and ask what each is used for give $\frac{1}{2}$ score for each correct answer for use.		
		i. Pencil		$\frac{1}{2}$, $\frac{1}{2}$
		ii. Knife		$\frac{1}{2}$, $\frac{1}{2}$
		iii. Key		$\frac{1}{2}$, $\frac{1}{2}$
		iv. Watch		$\frac{1}{2}$, $\frac{1}{2}$
		v. Umbrella		$\frac{1}{2}$, $\frac{1}{2}$
		vi. Spectacles		$\frac{1}{2}$, $\frac{1}{2}$
		Total Score	65	
		Score obtained		

Cognitive Development Score Card

Centre No./Name. Address of the Anganwadi/Nursery School.....Place.....Name of the Child.....Sex.....Age.....Home Address .....

Date of testing.....

Sl. No.	*Test*	*Total Score*	*Item Score*	*Score obtained*
I.	**Conceptual Skills**			
1.	Concept of shape	3	1 1 1	
2.	Concept of colours	6	½ ½ ½ ½ ½ ½ ½ ½ ½ ½ ½ ½	
3.	Concept of time	2	1 1	
4.	Classification	2	1 1	
5.	Concept of numbers	4	1 1 1 1	
6.	Concept of seriation	1	1	
7.	Concept of weight	1	1	
8.	Concept of size	2	1 1	
9.	Concept of texture	2	1 1	
10.	Concept of coins	4	1 1 1 1	
II.	11. **Information**	8	1 1 1 1 1 1 1 1	
III	**Comprehension**			
12.	Verbal perception	5	1 1 1 1 1	
13.	Listening comprehension	2	1 1	
IV.	**Visual Perception**			
14.	Differentiation/ Disimiliarities	3	1 1 1	
15.	Copying button pattern	4	1 1 1 1	
V.	**Memory**			
16.	Memory for digits	2	1 1	
17.	Memory for words	1	1	
18.	Memory for objects removed	2	1 1	
19.	Memory for story	5	1 1 1 1 1	
VI.	20. **Object Vocabulary**	6	1 1 1 1 1 1	
			Total Scores 65	
			Scores obtained :——	

TABLE 2

Cognitive Development Norms for three years old children

Raw Scores	*Standard Scores*	*Raw Scores*	*Standard Scores*
1	30	35	120
2	33	36	123
3	35	37	125
4	38	38	128
5	40	39	130
6	43	40	133
7	45	41	136
8	48	42	138
9	51	43	141
10	53	44	144
11	56	45	146
12	59	46	149
13	61	47	152
14	64	48	153
15	67	49	157
16	69	50	160
17	72	51	162
18	75	52	165
19	77	53	168
20	80	54	170
21	83	55	173
22	85	56	176
23	88	57	178
24	91	58	181
25	93	59	184
26	96	60	186
27	99	61	189
28	101	62	192
29	104	63	194
30	107	64	197
31	109	65	200
32	112		
33	115		
34	117		

TABLE 3

Cognitive Development Norms for four year of children

Raw Scores	*Standard Scores*	*Raw Scores*	*Standard Scores*
1	42	34	93
2	43	35	94
3	45	36	96
4	46	37	97
5	48	38	99
6	49	39	100
7	51	40	102
8	52	41	103
9	54	42	105
10	55	43	107
11	57	44	108
12	59	45	110
13	60	46	111
14	62	47	113
15	63	48	114
16	65	49	116
17	66	50	117
18	68	51	119
19	69	52	121
20	71	53	122
21	73	54	124
22	74	55	125
23	76	56	127
24	77	57	128
25	79	58	130
26	80	59	131
27	82	60	133
28	83	61	134
29	85	62	136
30	86	63	138
31	88	64	140
32	90	65	141
33	91		

TABLE 4

Cognitive Development Norms for five years old children

Raw Scores	*Standard Scores*	*Raw Scores*	*Standard Scores*
1	20	33	76
2	22	34	78
3	23	35	79
4	25	36	81
5	27	37	83
6	29	38	85
7	30	39	86
8	32	40	88
9	34	41	90
10	36	42	92
11	37	43	93
12	39	44	95
13	41	45	97
14	43	46	99
15	44	47	100
16	46	48	102
17	48	49	104
18	50	50	106
19	51	51	107
20	53	52	109
21	55	53	111
22	57	54	113
23	58	55	114
24	60	56	116
25	62	57	118
26	64	58	120
27	65	59	121
28	67	60	123
29	69	61	125
30	71	62	127
31	72	63	128
32	74	64	130
		65	132

I M No. 458715

Dr. Hema Pandey (Coimbatore)

Score Card

of

P C D T P

(English Version)

Please fill up the following informations : —

Name of the Child.....

Sex ..... Age..... Date of Testing.....

Centre No. / Name & Address of the Aanganwadi / Nursery School .....

..... Place .....

Home Address .....

Estd. 1971

(0562) 364926

NATIONAL PSYCHOLOGICAL CORPORATION

4/352, KACHERI GHAT, AGRA - 282 004

APPENDIX-B

SOCIO-ECONOMIC STATUS SCALE

A. Personal Information:

1. Name……..Age……Sex……
2. Educational Qualification……
3. Location…….Rural/Urban
4. Father's Education……..Mother's Education……

B. On the basis of this scale socio-economic status of your family is being studied. You are required to give your information related to the question by putting tick ( ) mark in the place holder provided against them. Since the information furnished by you would be kept confidential, you should answer without any reservation. Along with the questions probable answers are given. You have to tick ( ) answer which most suits your family.

1. What is the education of your family members? Father Mother Eldest Son/daughter

   a) University's high degree e.g. Ph.D, D. Lit, D. Sc, M.D or similar professional degree ( ) ( ) ( ) ( )

   b) Post graduate education (M.A., M.Sc, M.Com, M.Ed, M.Th) ( ) ( ) ( ) ( )

   c) Graduate level education (B.A., B.Sc, B.Com, B.Ed, Ll.B) or any other equivalent degree after intermediate ( ) ( ) ( ) ( )

   d) Higher secondary, Intermediate, and other professional certificate or any Diploma after High School ( ) ( ) ( ) ( )

   e) Middle School (Class V – VIII) or equivalent Training certificate ( ) ( ) ( ) ( )

   f) Primary education ( ) ( ) ( ) ( )

2. What is the occupation of your family member?

a) High Administrative (Gazzetted) Officer such as Secretaries, Professors, Director, Principal of college, Reader, Lecturer, Engineer Doctor, Lawyer, Bank Manager, Managing Director of industrial or Business house or Owner of factory, Political leader like M.L.A. and M.P. etc ( ) ( ) ( ) ( )

b) Middle class professionals such as Higher Secondary school Teachers, High School Teacher, Section Officer, Assistant, Research Assistant, Chemist, J.E. Wholesaler, Accountant, Renowned Artist, Shopkeeper, Instructor etc ( ) ( ) ( ) ( )

c) Ordinary Professionals such as Clerk, Typist, Stenographer, Technician, Laboratory assistant, primary and middle school teacher, Salesman, small Shopkeeper, Electrician, Owner of small-scale industry etc ( ) ( ) ( ) ( )

d) Other professionals such as Peon, Driver, linesman, Plumber, Fitter, Mason, Painter, mechanic, carpenter etc ( ) ( ) ( ) ( )

e) Labourer, Coolie, Unskilled Worker etc ( ) ( ) ( ) ( )

3. What is the income of your family per month?
   a) Above Rs 1,00,001 ( )
   b) 90,001 to 1,00,000 ( )
   c) 80,001 to 90,000 ( )
   d) 70,001 to 80,000 ( )
   e) 60,001 to 70,000 ( )
   f) 50,001 to 60,000 ( )
   g) 40,001 to 50,000 ( )
   h) 30,001 to 40,000 ( )
   i) 20,001 to 30,000 ( )
   j) 10,001 to 20,000 ( )
   k) 5,001 to 10,000 ( )
   l) Below 5,000 ( )

4. What is the opinion of your friend/others about you and your family?
   a) Prosperous family ( )
   b) Middle class family ( )
   c) Low class family ( )

5. Tick the items your family possesses
   a) Two Wheeler (Scooter, Scooty, Bike) ( )
   b) Four Wheeler
      i) Private car, Gypsy, Van etc ( )
      ii) Commercial Vehicle (Taxi, Sumo etc) ( )
      iii) Large Commercial vehicles (Bus, truck etc) ( )

c) Household Commodities

i)	Computer	( )
ii)	Washing Machine	( )
iii)	Internet Connection	( )
iv)	CRT T.V.	( )
v)	LED T.V.	( )
vi)	Refridgerator	( )
vii)	Telephone or mobile	( )

6. Does your family own your house? Yes/No
   If Yes, What type of house is it?

i)	RCC Building	( )
ii)	Asbestos with GCI Sheet roof	( )
iii)	Bamboo wall with GCI sheet roof	( )
iv)	Bamboo wall with thatch roof	( )

7. Do/Does you/your parent/Husband hold any important post in the church?

	Father	Mother
i)	Elder	Chairperson
ii)	Committee member	Committee member of women wing
iii)	Deaconate e.g Preacher Sunday-school teacher Evangelist etc	Deaconates e.g. Preacher, Sunday-school teacher

8. Do/Does you/your husband hold any post in social organization like Y.M.A., MHIP etc? Yes/No

9. Does your family subscribe a daily newspaper?
   a) Regularly ( )
   b) Occasionally ( )
   c) Never ( )

10. Does Your family subscribe a national newspaper? ( )
    a) Regularly ( )
    b) Occasionally ( )
    c) Never ( )

PARTICULARS OF THE CANDIDATE

Name of the candiatate	:	LALHLIMPUII
Degree	:	Ph.D
Department	:	Education
Title of Thesis	:	Development of Interventional Packages for Fostering Cognitive Development of Preschool Children
Date of Payment of Admission	:	10.08.2009
Commencement of Thesis	:	04.06.2010
Approval of Research Proposal	:	
1. BOS in Education	:	20.05.2010
2. School Board	:	04.06.2010
Registration No. & Date	:	MZU /Ph.D/322 of 4.6.2010
Due Date of Submission	:	03.06.2015
Extension (If any)	:	Up to 03.06.2017

(Prof. R.P. VADHERA)

Head

Department of Education

ISSN 2395-731X

Mizoram Educational Journal

(A National Refereed Bi-Annual Journal)

Vol. II Issue 2, December, 2016

ISSN 2395-731X

Mizoram Educational Journal

(A National Refereed Bi-Annual Journal)

Vol. II Issue 2, December, 2016

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2. As per the table, the t-value for the significance of difference between the pretest and posttest of the experimental group for verbal perception is 17.7 which is significant at 0.01 level. This finding proclaims that the interventional package is effective for fostering comprehension – verbal perception in preschool children.

3. For listening comprehension, the calculated t-value for the significance of difference between the experimental group's pretest and posttest is 2.4. This t-value shows very significant difference at 0.01 level. This shows that the experimental group's performance has improved significantly from pretest to posttest with regard to this skill. This exposes that the interventional package is effective for fostering the skill of comprehension-listening comprehension in preschool children.

Table 3

Effectiveness of Interventional Package for Visual Perception

Sl. No	Skill	Experimental Group				Paired Differences			Percent Increase	t
		Pre Test		Post Test						
		Mean	S.D	Mean	S.D	Mean	S.D	Std. Er. Mean		
1	Visual Perception: Differentiation/Dissimilarities	1.1	1	3	0.1	1.2	0.9	0.1	107	9.3**
2	Visual Perception: Copying button pattern	0.9	1.1	3.9	0.4	2	1.4	0.2	221.7	10.4**

1. With regard to visual perception- differentiation/dissimilarities, the calculated t-value for the significance of difference between the pretest and posttest of the experimental group is 9.3 which is very significant at 0.01 level. This insinuates that the interventional package is effective for fostering this cognitive development of preschool children.

2. On visual perception - copying button pattern, the t-value for the significance of difference between the pretest and posttest of the experimental group is 10.4 which is very significant at 0.01 level. This implies that the posttest score is higher than the pretest score. This proposes that the interventional package is effective for fostering the cognitive development of preschool children.

Table 4

Effectiveness of Interventional Packages for Memory and Object Vocabulary

Sl. No	Skill	Experimental Group				Paired Differences			Percent Increase	t
		Pre Test		Post Test						
		Mean	S.D	Mean	S.D	Mean	S.D	Std. Er. Mean		
1	Memory:Digits	0.6	0.8	1.7	0.5	0.6	1	0.1	93.3	4.2**
2	Memory:Words	0.4	0.5	0.9	0.2	0.3	0.5	0.1	69.6	4.2**
3	Memory:Objects Removed	0.5	0.6	2	0.2	1.2	0.8	0.1	236	9.8**
4	Memory:Story	1.2	1.3	4.8	0.6	3.4	1.4	0.2	286.4	16.6**
5	Object Vocabulary	4.5	1.3	6	0	1.6	1.2	0.2	34.3	9.1**

1. Regarding memory of digits, the derived t-value for the significance of difference between the pretest and posttest of the experimental group is 4.2 which is significant at 0.01 level. This resonates that interventional package is effective for fostering memory of digits in particular and cognitive development in general, of preschool children.

2. For memory of words, the derived t-value for the significance of difference between the pretest and posttest of the experimental group is 4.2 which is very significant at 0.01 level. This indicates that the experimental group was weaker during the pretest. Hence, the interventional package is effective for fostering memory of words thereby enhancing cognitive development of preschool children.

3. As per our table, the calculated t-value for the significance of difference between the pretest and posttest of the experimental group in their 'memory of objects removed' is 9.8 which is significant at 0.01 level. This value shows that significant difference exists between the experimental group's pretest and posttest, and indicates that the experimental group has become better in this aspect. Thus, the interventional package is effective for fostering the cognitive development of preschool children.

4. The t-value for the significance of difference between experimental group's pretest and posttest, for memory of story, based on the table is calculated as 16.6, but the calculated t-value is much more than the required value at 0.01 level. This shows significant difference that exists between the pretest and posttest of the experimental group which echoes that the interventional package is effective for fostering the cognitive development of preschool children.

5. The last part of the table highlights that the calculated t-value for the significance of difference between the pretest and posttest of the experimental group in object

vocabulary is 9.1, in contrast, the desired t-value at 0.01 level of significance is 1.99. This shows significant difference between pretest and posttest of the experimental group. Therefore, the interventional package is effective for fostering object vocabulary thereby bringing about cognitive development in preschool children.

Table 5

Effectiveness of Interventional Packages for Cognitive Development

Sl. No	Skill	Experimental Group				Paired Differences			Percent Increase	t
		Pre Test		Post Test						
		Mean	S.D	Mean	S.D	Mean	S.D	Std. Er. Mean		
	Cognitive Development	26	10.2	62.1	2.6	28.3	7.5	1.1	109.1	26.8**

Overall, the mean of the experimental group during the pretest was calculated as 26.0 while during the posttest it was 62.1. Moreover, the t-value for the significance of difference of the experimental group from pretest to posttest is 26.8 which is significant at 0.01 level. This resonates that the interventional package is effective for fostering the cognitive development of preschool children.

The above table shows significant improvement from pretest to posttest and suggests that the experimental group had improved for the better in the post-test. Furthermore, the t-value for the significance of difference for the overall mean difference for the experimental group is 4.30 at 0.01 level. Therefore, the hypothesis that states, *"Interventional packages have significant effectiveness in fostering the cognitive development of pre-school children"* is retained.

Major Findings

1. The preschool children of Anganwadi showed remarkable improvements, as indicated by significant t-values, at 0.01 and 0.05 levels observed in their concepts of shape, colour, time, classification, seriation, weight, size, differentiation/ dissimilarities, copying button patterns and in their memory of digits.
2. Safe for conceptual skills in seriation, the experimental group showed improvements significant at 0.01 level of significance in conceptual skills such as shape, colour, time, classification, numbers, weight, size, texture, coins, numbers and texture. They were also better at information, verbal perception and listening comprehension. They further highlighted better prowess in memory for words and objects removed, as indicated by higher mean values during the posttest stage.

3. Interventional packages as a whole had significant effectiveness in fostering the cognitive development of preschool children. In other words, the hypothesis that states, *"Interventional packages have significant effectiveness in fostering the cognitive development of pre-school children"* was accepted.

Discussion

Studies have shown that not only the type of programme, but also the duration of the preschool programmes itself have impact on the cognitive development of preschool children, indicating that the longer the duration of the preschool programme, the better their cognitive development. In the present study, due to many intervening variables, the duration of the administration of the interventional package had to be shortened. The duration of the preschool programme in the Anganwadi centre was also only two (2) hours. The length of the session also had to be drastically shortened and was only from July to early November.

The above variables leaves one to wonder whether a longer duration programme if provided to the Anganwadi preschool children would have had a different or higher impact on the final results.

Conclusion

Numerous studies on the impact of early childhood care and education have focussed on the effects on children from socio-economically disadvantaged families and have found that the incidence of the start of the programme, intensity, and duration could establish equal educational opportunities for children from different social backgrounds. Although early childhood programmes cannot entirely make up for developmental deficits due to unfavourable learning conditions in disadvantaged milieus, the findings indicate that the vast majority of recent early education programmes had substantial positive short-term effects and some smaller long-term effects on cognitive development and that children from socioeconomically disadvantaged families made as much or slightly more progress than their more advantaged peers.

Interventions are useful and they leave positive impacts on the cognitive developments of children, whatever socio-economic background they hail from. The present study also confirms this fact. The issue however is, how early, interventions should be given and for how long, so that lasting implications can be expected at a later time.

Early childhood programmes enhance cognitive development and school success and also narrows the achievement gap between children from low-income families and their more privileged peers. Early interventions can also alter the course of neural

development and avert the development of resultant handicaps linked with socioeconomic disadvantage.

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A Study of the Attitude of the Secondary School Teachers Towards Inclusive Education in Relation to Rural- Urban Background

Lallianzuali Fanai*

Abstract

Attitudes greatly influenced one's personal life. The positive or negative attitude of teachers has a significant impact in teaching learning activities. The declaration of education for all results in the introduction of Inclusive education where education is open for all the normal and the disabled children in one class. Understanding the new innovative idea in general and in particular its implementation is a new phenomenon for teachers. The present study attempts to find out the attitude of Secondary School teachers towards Inclusive education in relation to their location in different aspects- Administrative, Psychological, Social and Co-curricular and curriculum related activities. These aspects are studied in relation to their positive and negative attitudes. There are no significant difference between the Rural and urban in their attitude towards all the dimensions of inclusive education except in favourable psychological aspect.

Key words*: Attitude, Inclusive Education, Location, Secondary School Teachers, Administrative, Psychological, Social and Co-curricular and Curriculum related Activities.*

Introduction

The teacher's attitude in the classroom is very important in teaching and learning as it influences one's personal life. The positive attitude of the teacher motivates and encourages the students in their learning. It imbibes in them the urge for learning and creates determination on students' life. Contrary to this when a teacher has negative attitude towards the students, learning comes to a standstill resulting in drop out or misbehavior in the class and consequential failure. Therefore, attitudes are very important when introducing new Policy or Subject or method of teaching. The declaration of 'Education for all' brings forth the introduction of Inclusive education

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where education is open for all - the normal, the marginalized, and the disabled irrespective of castes, sex, place of birth, creeds and religion. Understanding the new innovative idea in general and its implementation in particular is a new phenomenon for teachers.

Besides the Government of India has declared elementary, secondary and higher secondary education as Inclusive education. Research findings reveal that backwardness in education results in poverty and ignorance; in that, various steps are taken up at the national and international level for education for all. This means education is not restricted for the selected few but for all children and thereby various steps have been taken; one action is making education Inclusive. Government Policy decrees all institutions to admit the disabled children to their school failing of which is a severe offence. The Constitution (Eighty-sixth Amendment) Act, 2002 inserted Article 21-A in the Constitution of India to provide free and compulsory education of all children in the age group of six to fourteen years as a Fundamental Right in such a manner as the State may, by law, determine. Again article 45 is changed and substituted by new a article 45 which states "the State shall endeavour to provide early childhood care and education for all children until they complete the age of six years". So now article 45 seeks education and early childhood care for children up to 6 years or till reaching 6 years of age, later article 21A seeks free and compulsory education for children from 6 years up to 14 years, and also a new clause "k" was added after to clause "J" of article 51A which seeks parents to provide opportunities for education to his child or, as the case may be, ward between the age of six and fourteen years. Thus constitution article 45, 21A and 51Ak all seeks for education of children but at different set of ages. The passing of RTE (Right to Education) Act 2009 which came into force in April 1, 2010 is another great milestone in the field of education for all.

In view of the tender stage of formal education, and the geographical remoteness to the rest of the country, Mizoram has witnessed many a great achievements in various aspects of Education. While there are good elementary and secondary teachers training institutes, there is no training institute for teachers of the disabled. There used to be a distance mode training for teachers of the disabled, which had been terminated. The disabled are mostly children with a variety of disabilities or special needs. Unfortunately there is no properly trained expertise who could accomplish the rising casualty of the present concern. In the present scenario in Mizoram there are 321 high schools with 4394 teachers and the number of disabled children are 899. Of these children with multiple disability are 31, blindness and low vision 625, hearing impaired 122, locomotors disability 67, mentally retarded 31, autism 2, speech problem 22, learning disability 4. Further the number of disabled among girls is 508 and boys is 391.The numerical data here clearly reveals the urgent need for equipping teachers in the area

of different type of disabilities towards Inclusive education as teachers play a fundamental role in implementing an inclusive environment for all children in the classroom. If the teachers have positive attitude towards inclusive education, the differently-abled children would enjoy their learning. This necessitates the need for knowing the attitude of teachers so that government can formulate strategies to improve the education of the disabled, and the goal for education for all will be fulfilled.

Keeping the above in view it is imperative to find out the attitude of Teachers towards inclusive education so this study will provide information to facilitate the successful implementation of the Government policy. Hence, the present study is taken up.

Research Questions

The study attempts to find out the answers to the following questions:-

Are there any differences between rural and urban Teachers in their attitude towards Administrative, Psychological, social and parent related and Curricular and Co-curricular aspect of Inclusive Education?

Objectives of the Study

To find out the attitude of Teachers towards Inclusive Education in relation to their rural- urban back ground in the aspects of Administrative, Psychological, Social & family related and Curricular and Co-curricular.

Hypotheses of the Study

There is no significant difference in the attitude of Teachers towards Inclusive Education in relation to their Rural-Urban background in the aspect of Administrative, Psychological, Social & family related and Curricular and Co-curricular.

Research Design

The present study falls within the category of descriptive research, and since it is scaled down into smaller sample with a specific population, it can also be termed as descriptive sample survey research. The descriptive research is a type of quantitative research that involves making careful descriptions of educational phenomena. The present study is also analytical in nature as it tries to analyze the difference in the attitude of teachers towards (1)Administrative (2) Psychological / Behavioural Aspects of Inclusive Education, (3) Social and parents related Aspects of Inclusive Education, (4) Curricular and Co-curricular Aspects of Inclusive Education, (5) and Administrative Aspects of Inclusive Education in relation to their rural-urban background.

Population of the Study

Overall population 193 (One hundred and ninety three) who attend the in-service Teacher Education held at Institute of Advanced Study in Education.

Tools and its Description

In the present study, Teachers Attitude Scale towards Inclusive Education (TASTIE-SA) developed and standardized by Dr. Vishal Sood and Dr. Mrs Arti Anand was used to collect data from the subjects.

Procedure of the Data Collection

The investigator personally approached the Principal of IASE and the State Project Director, RMSA and told them the purpose of collecting data from the teachers who attend the In-service Teacher Education. After receiving approval from the concerned authority, the investigator personally conducts and administered the questionnaires among the headmasters and teachers who undergoes in-service Teacher Education at IASE. The investigator developed a good rapport before administering the questionnaire among the trainees.

Procedure of Data Analysis

The mass of data relating to the teachers attitude towards inclusive education was properly edited and classified before tabulation. All the raw data were properly checked on the basis of the purpose for which it was collected and the appropriate descriptive statistic's were run on the data. The result of each questions were tabulated. To compare the different variables the investigator used SPSS 16.00 to calculate the 't'-value.

Analysis of Data:

Attitude of Urban and Rural Headmasters and Teachers towards Favourable Administrative related aspect of Inclusive Education.

Table 1: Attitude of Urban and Rural Teachers towards Favourable Administrative related aspect of Inclusive Education.

Location	N	Mean	SD	SEM	SED	t-value	Sig. level
Urban	61	17.08	1.87	0.24	0.29	-1.02	NS
Rural	132	17.38	1.9	0.16			

A perusal of the data vide Table 1, shows that there are 132 Rural and 61 Urban teachers who undergo In-Service Teachers Education among the Secondary Schools

in Aizawl District. The Table also indicates that the 't' value for the significance of difference between Rural and Urban Teachers towards Favourable Administrative related aspect of Inclusive Education is found to be -1.02 which is statistically not significant. This finding implies that urban and rural teachers are not different in their attitude towards the stated aspect of Inclusive Education.

Hence, the Hypothesis that there is no significant difference ~~on~~ in the attitude of Teachers towards Favourable Administrative related aspect of Inclusive Education with respect to their location is accepted.

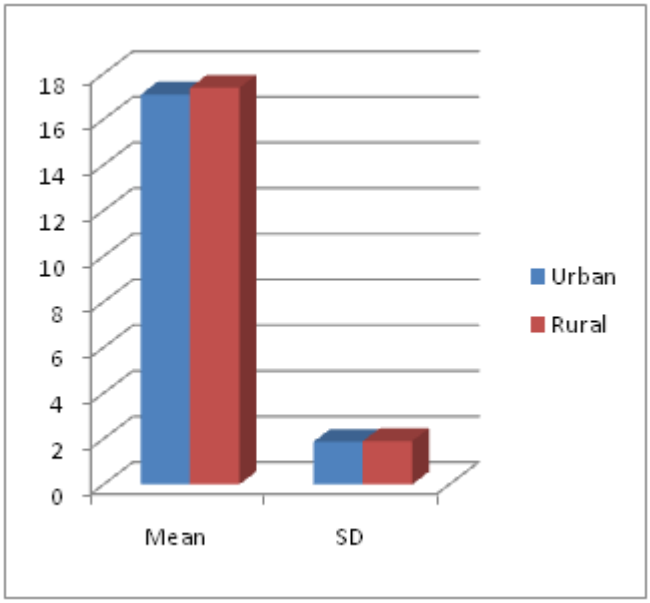

Figure 1 Graphical Presentation of Mean and S.D value of Attitude of Rural and Urban Teachers towards Favourable Administrative related aspect of Inclusive Education.

Attitude of Urban and Rural Teachers towards Unfavourable Administrative related aspect of Inclusive Education.

Table 2 Attitude of Urban and Rural Teachers towards Unfavourable Administrative related aspect of Inclusive Education.

Location	N	Mean	SD	SEM	SED	t-value	Sig. level
Urban	61	11.69	1.48	0.19	0.21	0.21	NS
Rural	132	11.64	1.35	0.11			

Analysis of the data vide Table .2 reveals that there are 132 Teachers in rural and 61 in urban areas who undergo In-Service Teacher education. The Table also reveals

that the 't' value for the significance of difference between rural and urban teachers towards Inclusive Education is found to be 0.21 which is not significant at any level. The finding implies that urban and rural teachers are not different in their attitude towards the stated aspect of Inclusive Education.

Thus, the Hypothesis that there is no significant difference in the attitude of teachers towards Unfavourable Administrative related aspect of Inclusive Education in relation to their location is retained.

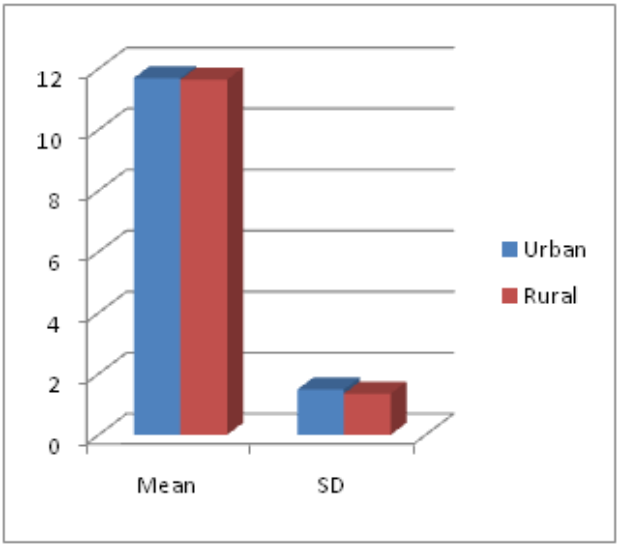

Figure 2 Graphical Presentation of Mean and S.D value of Attitude of Rural and Urban Teachers towards Unfavourable Administrative related aspect of Inclusive Education.

Attitude of Urban and Rural Teachers towards Favourable Psychological/ Behavioural aspect of Inclusive Education.

Table3 Attitude of Urban and Rural Teachers towards Favourable Psychological/ Behavioural aspect of Inclusive Education.

Location	N	Mean	SD	SEM	SED	t-value	Sig. level
Urban	61	12.93	1.85	0.23	0.25	2.6	At 0.01 level
Rural	132	13.58	1.49	0.13			

A perusal of the data vide Table 2 shows that there are 132 Rural and 61 Urban Teachers who undergo In-Service Teachers Education among the Secondary Schools in Aizawl District. The Table also indicates that the 't' value for the significance