

Assessing the Influence of Different Early Childhood Development Models on
Pre-School Children's School Readiness in Kenya

by

Samuel Ngaruiya

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Supervisor: Dr. Alan R. Pence

ABSTRACT

This comparative study explored the influence of different pre-school models on school readiness among pre-school children from different urban socio-economic status (SES) neighbourhoods. The study sampled 207 pre-school children attending different pre-school models in different SES neighbourhoods within the city of Nairobi in Kenya.

In the study, school readiness was conceived as the ability of children to learn and handle primary school tasks. Assessment was done through teachers' rating of children's level of developmental and functional skills using a School Readiness Assessment Instrument (SRAI), which was adopted and modified from the Early Development Instrument (EDI). The study compared school readiness outcomes amongst pre-schoolers aged five and six years. School readiness outcome was also correlated with the level of developmentally appropriate practice of the different pre-schools, assessed through observation and interviews.

Major findings from this study were that, pre-school children who attended Private pre-school models outperformed their peers from public pre-schools in school readiness scores and children from low SES neighbourhoods had lower school readiness scores compared with children from middle and high SES neighbourhoods. The study recommends a paradigm shift from an academically oriented pre-school model to one that embrace a holistic approach in program and assessment of children's school readiness. It also recommends further studies on the influence of cultural variations on school readiness and primary school readiness to receive pre-schoolers.

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CHAPTER 1: INTRODUCTION

Background Information

The Early Childhood Development (ECD) program in Kenya has evolved over the last three decades of independence as a response to socio-economic changes. The program is largely constitutive of the developmental experiences of young children zero to six years and has primarily focused on the custodial care and cognitive development of children in preparation for formal schooling. In fulfilling its commitment to the recommendations of the Jomtien World Conference on Education For All (EFA) and the Dakar framework for action, the government of Kenya has endeavoured to implement an holistic ECD program for children zero to eight years over the last seven years (Master Plan for Education and Training, 1997). In this regard the government secured a loan from the World Bank to implement a five-year ECD Project geared toward an holistic and integrated approach to ECD programming.

Consequently, a new and broader conceptualisation of ECD programs has emerged. The increased awareness of the importance of ECD in establishing the base for later learning and human personality and influencing social economic development has not only resulted in raised demand for ECD services but also in the emergence of different types of ECD service delivery models in the country. The institutional based pre-school program is the most common type of ECD model in the country. Other types of models include home-based care and market based care for children. Market-based care involves a mother taking care of infants in a marketplace while other mothers continue with their business. The institutional ECD program can be categorized as public and private ECD models. The public model is a community venture owned and managed by local communities. These public ECD centres

follow a government designed pre-school curriculum and are known by a wide range of synonymous terms including daycare centres, nursery schools, pre-schools or ECD centres. The private ECD centres are owned and run by individuals, firms or organisations and may follow the government or a different curriculum such as the Montessori or Madrasa curricula. In this study, public ECD models refer to the public pre-schools whereas the private ECD models refer to the private pre-schools following government curriculum, Montessori and Madrasa centres. The public and private ECD models have wide disparities not only in terms of curriculum but also in facilities and quality of services offered. The public pre-schools, especially those in poor urban neighbourhoods, are often characterized by inadequate play/learning materials, shortage of trained pre-school teachers and lack of health and nutrition services. The majority of them follow a traditional teacher-centred teaching methodology with emphasis on recitation and memorization. On the other hand, most of the private pre-schools are well equipped and responsive to children's needs.

The current education system in Kenya is referred to as '8-4-4' system, implying eight years at primary level, four years at secondary level, and four years for basic university education. As noted by Gakuru (1992), schooling in Kenya is highly competitive with regular assessment, selection and ability ranking of pre-school children conducted for placement purposes. Pre-school plays a central role in this process through influence in access and curriculum. The shortage of class one vacancies in primary schools perceived to be of good quality by the communities has resulted in an unofficial selection procedure based on an interview of the child and the use of academic tests. This scenario tends to make the pre-school academically oriented to meet the demands of these tests, often ignoring the holistic development of children. Although ECD has not been legally recognized as part of

the basic education, the national policies support ECD services for children three to six years old. This is reflected in the emphasis on attending pre-primary before formal schooling and the free medical care for children in this age group. Although attendance to a pre-school is not a pre-condition to join primary school, children are normally expected to have at least some pre-school experience before joining primary school (Njoroge, 1994).

The type of pre-school and the age at which the child start pre-schooling is dependent on several factors including cost, parental awareness, occupation and expectations as well as the accessibility to the pre-school. In essence, therefore, children from different socio-economic status households enter pre-school at varying ages and at different levels of school readiness. Academic based entrance tests are used for selection and placement, further disadvantaging children from poor households. A 1999 ECD baseline survey done by the Ministry of Education showed that parental and society expectations influence the teaching and learning methodologies in the pre-school as the teachers are faced with a trade-off between enhancing children's holistic development and meeting the parents' expectations. This situation is aggravated by the lack of standardized school readiness assessment procedures for children transiting from pre-school to primary school.

Thesis Statement

This study focused on assessment of school readiness among pre-school children in public and private pre-schools from different socio-economic status neighbourhoods within the city of Nairobi. The study explored the extent to which the public and the private pre-school models enhance primary school readiness among pre-schoolers from different socio-economic backgrounds. The research utilized a teacher's response rating of pre-schoolers who were about to join primary school in the following year. A School Readiness

Assessment Instrument (SRAI) was used for the assessment. The SRAI was adapted, modified and localised from the Early Development Instrument (EDI) developed by Drs. Dan Offord and Magdalena Janus of McMaster University. The tool is a checklist completed by teachers after several months of interaction with the children. It has been used in the province of British Columbia in Canada for school readiness assessment. Modification of the instrument involved ensuring ecological and cultural relevance. Although no cross-cultural comparison was intended in the study, it is possible to analyze data from the EDI for cross-cultural comparison in various school readiness dimensions. To enable correlation of pre-school quality with school readiness scores, an assessment of the level of developmentally appropriate practice in the pre-schools was done through direct observation of the pre-school learning environment and interviewing of the pre-school heads and teachers.

Rationale for Thesis

The purpose of this study was to explore the extent to which public and private pre-school models prepare children from different socio-economic backgrounds to be ready to learn and to handle primary school tasks. In this study, primary school readiness is perceived as the acquisition of the appropriate knowledge, skills and abilities that help children to cope with primary school demands. The Kenya national pre-school guidelines elucidate the primary role of the pre-school as to enhance development and prepare children to be ready to learn and handle formal school curriculum. Readiness to learn is the attainment of a level of development at which the children have the capacity to handle specific subject matter in primary school curriculum. It involves acquisition of a specific set of cognitive, linguistic, social and motor skills that enable the children to assimilate the school curriculum (Kagan, 1990; Crnic & Lamberty, 1994). In essence, assessment of the children's school readiness

should take into account not only the chronological age but also the maturational level of the child. The premise is that, whereas age is an important factor, children should also acquire certain developmentally based abilities and skills prior to school entry. Therefore, the main purposes of this study were to:

- generate appropriate and developmentally based assessment procedure of school readiness as opposed to the focus on chronological age and academically oriented entrance tests;
- generate data and information that will promote children's early learning and development through support to targeted ECD programs;
- inform public policy on the importance of quality pre-school programs in promoting children's school readiness and providing a firm foundation for primary school performance and success; and,
- influence the pre-school teachers, District Centre for Early Childhood Education (DICECE) trainers and other stakeholders' perspectives on holistic assessment of pre-school children.

Selection of this research topic was therefore motivated by field experiences and recommendations from other research studies on the need for a developmentally based school readiness assessment. On the same note, there is a need for uniformity in the assessment of children's school readiness due to the different ECD models existing in the country. There is also the need for understanding the level of school readiness for proper instructional planning as well as identification and placement of children with special needs.

Importance of Thesis

If education is to produce skilled citizens and a workforce that is internationally competitive, then children need to be prepared for school from the earliest years. The main goal for pre-school education in Kenya is the preparation of children for formal learning in primary school (Kamunge, 1988). However, children are admitted into primary school after attaining five or six years without any consideration for their readiness to learn. The varying socio-economic settings and the disparities in pre-schools result in children joining primary school at different levels of school readiness. This often results in the inability of some children to cope up with the primary school demands (Nair, 2000). A study conducted by Nyamwaya and Mwaura (1996) on the transition of children from pre-school to primary school in Kenya indicated a high drop-out, repetition and absenteeism rate among children in lower primary school classes. The researchers attributed the problem to the children's lack of preparedness for schooling as well as the un-readiness for schools to receive the young children. The World Bank-supported Kenya ECD Project incorporated a transition component that aims at addressing the transition issues that include reducing the number of early primary school pupils who repeat grades and drop out of school (Kenya Early Childhood Development Project, Staff Appraisal Report, 1997). Against this background, there is a need to understand the level of school readiness at which children from different pre-school models and neighbourhoods join primary school.

This study is important for several reasons: promoting an holistic and developmentally based assessment of school readiness; generating information that elucidates the importance of school readiness in promoting primary school retention, completion rates, reduced drop-out and absenteeism and hence improving the efficiency of

the primary school system; providing empirical data for continued advocacy for support to ECD services and hence more community and government commitment in the pre-school sub-sector; and stimulating pre-school based screening for developmental delays and learning disabilities.

As Nair (2000) has noted, assessment for developmental disabilities at clinical level is only possible for a few children who are taken to clinics and whose parents can afford the cost. However, assessment by pre-school teachers would reach more children and provide a good opportunity for early identification of children with learning disabilities, developmental lags or those who require special attention before entry into primary school. Early identification of handicapping and at-risk conditions is important because it facilitates implementation of intervention programs in the formative years (Marfo & Thorburn, 1994). The research findings may also influence and transform the academic assessment of children to emphasize on developmentally based assessment. Comparison of the school readiness status of children from different socio-economic settings aims to enhance more effectively interventions by government, the private sector and donors. As already mentioned, information may be used for advocacy and mobilizing communities for increased support for ECD services. Since the assessment focuses on various developmental domains, data may be used to identify gaps in the different ECD models. Assessment of developmental and learning progress in school age children is expected to assist in preventing the potential school failures in the long run. The study would also stimulate comprehensive assessment of pre-school children's school readiness prior to primary school entrance. The research also aims at filling the gap of home-grown child development assessment instruments. As Kagitcibasi and Landers (1990) have noted, Africa lags behind on the availability and use of

child development assessment instruments. The EDI was critically examined and subjected to review by various local ECD experts and was pilot tested to ensure its validity in the local setting. Modification of the EDI involved editing information which was not relevant to the local setting and rewording some sentences to suit the level of local pre-school teachers.

CHAPTER 2: LITERATURE REVIEW

Introduction

This literature review provides an overview of ECD and school readiness assessment in Kenya. The review examines in brief the conceptual definitions, determinants, dimensions and the importance of school readiness. It also highlights the different global approaches in school readiness assessment as well as the factors and conditions that affect school readiness. A discussion on the perceived conceptual framework for school readiness is also provided.

Overview of ECD and School Readiness in Kenya

Early Childhood Development (ECD) refers to the policies and programs for children from birth to eight years of age, their parents and caregivers. The purpose of these programs is to protect children's right to develop full cognitive, emotional, social and physical potential (UNICEF, 2001). In Kenya, the term ECD is used to refer to the various institutional and non-institutional childcare settings, including pre-schools. However, the majority of the public ECD centres (pre-schools) in Kenya do not provide holistic services and are faced with numerous problems, including inadequate government support, inadequate childcare and the absence of health and nutrition services (Kenya ECD Project, 1997). The main aim of the Kenya ECD Project has been to provide custodial care and prepare children for formal schooling (Gakuru, Kabiru et al, 1987). The pre-school curriculum guidelines cite the main goal of ECD as to enhance holistic development of children from zero to eight years, further signifying the critical importance attached to ECD. However, children from different socio-economic backgrounds enter primary school at different ages and levels of school readiness. Lack of a uniform assessment procedure and the parental and community values and expectations has resulted in the use of academically

focused performance tests without any consideration of other developmental aspects. There has not been any attempt for a holistic assessment of children to identify their level of preparedness before entering primary school. The situation concurs with Myers and Landers' (1989) position that there is a tendency to overlook the important education, growth and development that occur in the earliest years before a child enters formal schooling when evaluating the effectiveness of primary schools.

Definitions and Concepts of School Readiness

Several authors have provided different conceptualisation of school readiness. Crnic and Lamberty (2000) define school readiness as “the attainment of fixed standards of physical, intellectual and social development sufficient to enable children to meet school requirements and assimilate the curriculum content.” This definition, while advocating for school readiness based on maturational change, disregards the varied pattern of children's growth and development that is externally and internally dependent. Edwards (1999) defines school readiness as “the preparedness of children to learn what school expects or wants them to learn.” She views school readiness as a process that is context-dependent and therefore requiring a common period of schooling before it can be effectively assessed. She further argues that children's readiness for school is enhanced when children are exposed to a stable physical environment which is safe and predictable with consistent and responsive caregivers who are emotionally interested in the children and with competent peers and materials that stimulate their explorative potential. The definition therefore highlights the need to have integrated ECD program and holistic assessment of children's readiness for school.

Kagan (1990) defines school readiness as the attainment of a level of development at which the child has the capacity to learn specific subjects; that is, it involves the acquisition

of specific sets of cognitive, linguistic, social and motor skills that enable the child to assimilate the school's curriculum. Kagan emphasizes maturational change and assessment based on the age of the child. Myers and Landers (1989) consider child readiness for school in terms of physical capabilities and activity level, cognitive ability, learning style, knowledge base and social and psychological competencies. This definition embraces an holistic approach that is embedded in child development characteristics. The Human Early Learning Partnership (HELP) in Canada defines school readiness as the child's ability to cope with the challenges associated with entry to formal schooling. The definition pinpoints the need for social competence and emotional maturity for a child to benefit from school curriculum and activities. In Kenya, however, readiness in social and emotional competence is not assessed when children enter primary school. School readiness is therefore viewed as the acquisition of specific skills and abilities before children enter school. The varied conceptions underscore the need for a holistic school readiness assessment approach. The United States National Education Goals Panel (Shepard, Kagan & Wutz, 1997) noted that school readiness encompasses more than cognitive and literacy skills. They point out that other aspects of child development, including health, social, emotional and the child's enthusiasm, are of equal or greater importance in preparing children for school.

Samuel Meisels (1998) describes school readiness as a relationship rather than a particular quality or set of characteristics of the child. He argues that readiness is context dependent and, therefore, a child will be considered ready for schooling depending on the nature, context and expectations of the school the child attends. This signifies the importance of considering the community and parental expectations and values when assessing school readiness. Community-based research studies in Kenya show that parents and communities

expect the pre-schools to impart reading and numeracy skills as well as knowledge and attitudes that are pre-cursors to children's ability to read and write (Gakuru, Kabiru, et al. 1987). Mwamwenda (1996) views learning as a continuous process that starts from birth resulting in a change in behaviour in child thinking (cognitive and psychomotor acts) and feelings (affective).

Kagan (1990) conceives readiness to learn as the attainment of a level of development at which the child has the capacity to learn specific materials, whereas readiness for school involves the acquisition of a specific set of cognitive, linguistic, social and motor skills that enable a child to assimilate the school curriculum. This points to the fact that readiness for school is multifaceted, encompassing different domains, which must develop within a continuum.

In Kenya chronological age has been used as a common indicator for school readiness, with the official primary school entry age set at six years. However, some children join school earlier or later than the set legal age (Education for All, 2000). Since pre-schooling is not a pre-condition for formal schooling, it is assumed that by the age of five or six, children have the capacity to handle and adjust to the primary school environment. However, children of the same age might have different developmental levels due to various developmental risks and protective factors exerted by different social economic backgrounds. Nyamwaya and Mwaura (1996) highlighted two perspectives on school readiness. They suggested that a smooth transition from pre-school to primary school could be enhanced through a situation of mutual readiness, whereby children are ready for school and the school is also ready for the children. This supports the need for an holistic assessment of children in order to know their level of school readiness for improved school instructions. Kagan (1990)

points out that if the entry age is the same for all children and if individualized educational support and services are provided, schools will have an equitable assessment strategy that is sensitive to the children's differences. Because of the inequities in children's experiences and difference in their backgrounds, school and communities must pay attention to the factors that influence how families support readiness and the transition to school. The National Association for the Education of Young Children (1995) identifies the following characteristics for school readiness: confidence, curiosity, intentionality, self-control and the capacity to communicate and be cooperative. Young (2002) posits that the child who is ready for school is socially and emotionally healthy, confident and friendly, has good peer relationships, tackles challenging tasks and persists with them, has good language skills and communicates well, listens to instructions and is attentive. School readiness pertains not only to the innate capacities of the child but also to the child's gender, physical health, social competence and self-esteem, which are largely influenced by the environment.

Importance of School Readiness

When children's needs are met, they are more likely to gain improved critical thinking skills, self-confidence, problem-solving abilities and capacity to cooperate with others. These in effect determine the children's overall performance in school and change their developmental trajectories. Many empirical research findings from both the minority and majority worlds have provided evidence that a child's early years are crucial to brain development and academic achievement. Children who participate in ECD have greater motivation to learn, higher achievement, lower grade retention and special education and higher school graduation and socialization than children who do not participate (Young, 2002). Children's early development, by the time they enter school, significantly affects

whether they succeed in school and later in life. Many longitudinal studies have elucidated the importance of quality ECD services in preparing children for school. These studies have indicated that ECD programs promote children's school readiness, which in return influences the performance, progress and completion at primary school (Myers & Landers, 1989).

Subsequently, children whose knowledge and skills are behind those of their classmates enter school disadvantaged. Doherty (1997) points out children who are ready to learn at the time of entry into primary school are more likely to complete school, find employment and make positive contributions to the society. On the other hand, children who are not ready to learn at school entry are likely to repeat grades, require special coaching, or even drop out of school. Further, school readiness at age six has been indicated as a significant predictor of children's ability to benefit from academic instruction in the early grades of elementary school.

Academic achievement in early grades in turn predicts the primary and secondary school completion. Children who have difficulties mastering the basic concepts develop knowledge/skill gaps that may hinder their ability to grasp more advanced concepts in higher grades. Research has also shown that children who are not ready for school also lack emotional and social skills and exhibit behaviours such as physical aggression, bullying, and interruption of other children's activities, often resulting in peer rejection, low self-esteem and lack of involvement in school activities (Child Trends, 2000). Follow-up studies in the United States indicated that a lack of appropriate social skills at school entry is one of the best predictors of early adolescence delinquent behaviour (Doherty, 1997). Completion of school is associated with acquisition of requisite skills needed in the labour market. Children who lack school readiness at school entry have difficulty developing the requisite skills and knowledge base and hence are likely to miss employment (Young, 1996).

Purpose of Assessing School Readiness

Assessment of school readiness has several purposes including promoting children's learning and development, identifying children who require special services, monitoring trends and evaluating programs and services (Child Trends, 2000). The main goal for assessing school readiness is to identify what the children know and are able to do as well as what they need to know. Assessments to identify children's level of knowledge and skills are done by teachers and school administrators using observation and curriculum-based tests. Diagnostic assessment is done to identify children with special conditions such as physical, mental or visual impairment. Monitoring and evaluation is done to ascertain the effectiveness of a program (Evans, Myers, & Ilfeld, 2000).

Determinants of School Readiness

Children's readiness for school is partly determined by the child's physical development, aptitude and motivation to learn. Developmentally based assessment of school readiness focuses on the developmental milestones of the child. Essentially, it is important to understand the characteristic of early child development and learning for effective assessment of pre-schoolers. Evans, Myers and Ilfeld (1999) define child development as a process of change in which the child learns to handle evermore-complex levels of moving, thinking, feeling and relating to others. Myers (1993) further describes child development as a multi-dimensional process that encompasses different domains including cognitive, physical, emotional and social domains. Secondly, development is integral and an interrelated process, which is uniquely patterned and occurs continually through interactions of the different domains. Effective assessment of children's school readiness must therefore address all the dimensions of child development. Health, nutrition and psychosocial

processes interact to affect survival and development in the early years of life and these interactions influence the readiness of the child for school (Myers & Landers, 1989). Developmental characteristics are particularly vulnerable to the long-lasting effects of malnutrition and infection during the pre-school years and that poor nutrition and health conditions add to the developmental consequences of earlier malnutrition (Nkinyangi & Van der Vynckt, 1991).

Social cultural theories view cognitive development as a socially mediated process that depends on the support the adults and more mature peers provide to the child (Rogoff, 1988, cited in Berk, 1999). This premise reinforces the aspect of cooperative dialogue between the child and the caregiver as a critical determinant of later school readiness. Similarly, social-cultural theory recognizes the importance of ECD experiences in determining the child's behaviours and school readiness through guided participation and scaffolding (Berk, 1999). Within a pre-school setting, teachers influence the children's social emotional development through the reciprocal relationship that forms part of the children's internal working model. Piaget's cognitive development theory stresses the importance of discovery learning (Mwamwenda, 1996), which is important when we visualize quality pre-school to reflect a developmentally appropriate practice. In their study Nyamwaya and Mwaura (1996) have identified readiness indicators of school for children including physical environment, quality of services, teachers' characteristics, learning/teaching aids, social emotional climate and learners' behaviour. Other variables include availability of the pre-schools, accessibility, quality and responsiveness to local needs and circumstances (Myers & Landers, 1989). Berk (1999) proposed a child-centred developmentally appropriate practice that has adequate and appropriate physical facilities, group size, appropriate caregiver-child

ratio, activities that encourage children's explorative behaviour, appropriate caregiver/teacher qualifications and fostering a conducive relationship with the parents and community. Young (2002) has categorized the ingredients of quality to be embedded in the structural features, classroom dynamics and the characteristics of staff in the ECD centre. Mwamwenda (1996) postulates that a child will be pleased with behaviour or activity he or she is prepared for. Preventing a child from engaging in an activity he or she is prepared for results in frustration and, if the child is not ready to engage in certain behaviour, results in annoyance.

School readiness is strongly influenced by two biological conditions over which the individual child has no control. These include the maturational level of the brain and the degree to which the brain is attuned to the mode of school instructions. Neural-biological research has shown that the brain is almost entirely developed by the time the child enters school (Young, 2002). Recent findings also confirm that, environmental conditions during pre-school years substantially affect the growth of children's neural pathways and hence how the brain's circuitry is wired. The wiring of the brain is influenced by the type and consistency of particular stimulations. Regularly used neurons are strengthened while irregularly used neurons are eliminated. This developmental characteristic of brain creates critical periods when the child is at a particular developmental level and is biologically primed to develop more advanced neural structures or skills provided the appropriate stimulation is available (Doherty, 1997). These are the times when the brain is particularly receptive to specific kinds of learning. Critical period has been shown to affect the various dimensions of school readiness as follows: binocular vision develops best from birth to two years, visual acuity- from birth to five years, gross motor development- from birth to four

years, emotional development especially when the child learn to switch off the stress factors is from birth to four years, language development- from two to five years, communication readiness- from 18 months to nine years. If the appropriate stimulation is not provided at the critical period, such development will be impaired or lost. School readiness is also affected by various factors including, physical and social environment of home, family characteristics, timing of parenthood, child's emotional behaviour, health and nutritional status, maternal depression and the availability and affordability of quality early childhood services (Doherty 1997). Some of these factors are briefly highlighted as discussed by Brooks-Gunn, Duncan and Aber (1997) including:

1. Child health

Early physical and mental health of a child is an important determinant of later readiness for school and success. Child health is viewed in terms of health in earliest years, which may affect the child's receptive language, cognitive development and visual motor and spatial skills. Child health also includes immunization that protects children from communicable diseases, nutrition that affect physical and cognitive development, safety, and dental health as well as child emotional and behavioural problems.

2. Family related factors

Family factors, include, the risks and protective factors within the family and the home environment. Research shows that poverty has a negative effect on cognitive skills at age five including number skills, problem solving, creativity and memory. Poverty is also associated with increase in emotional and behavioural problems. Within the home environment the parent and child interaction, physical environment and the caregivers' emotional well-being affects school readiness outcomes. Many children from households in

conditions of poverty experience delays in motor cognitive development that negatively affect their school performance, ability to maximise their educational opportunities and their social functioning later in life (Mikulencak, 1999). Family resources including time and the family structure also affect school readiness.

3. Quality of early childcare services

Research indicates that quality early childhood care and education programs enhance cognitive, emotional and social development especially among pre-schoolers from low-income households (Kagan & Neuman, 1997). Quality care involves interactions with care providers who are responsive and sensitive to individual child's needs and cognitively stimulate, provide language inputs and guiding the child to explore the environment. The structural features that facilitate such interactions include better caregiver-child ratio, small group size, trained caregivers and the motivation of the caregivers (Berk, 1999). Parental involvement in pre-school activities has been cited as important in transition from home to pre-school (Berk, 1999)

4. Neighbourhood conditions

A neighbourhood's low socio-economic status has been associated with less favourable child outcomes including school readiness. Studies in America have indicated that children living in a neighbourhood where most families are not poor had higher developmental levels than same-aged children living in areas with a high concentration of poverty. In addition, the prevalence of low-income neighbours has been found to increase the incidence of acting-out. Child Trends (2000) discusses five theoretical perspectives on the effect of neighbourhood's effect on child outcomes. These include the contagion theory which suggests that a child's behaviour is influenced by peers; the relative deprivation

theory, that hypothesizes child outcomes as a result of social comparison with neighbours; the competition theory, that views poor child outcomes as a result of competition of needs; collective socialisation theory, that sees community social support as an influence on child outcomes; the neighbourhood resources theory, which emphasizes the availability of public and private services in the neighbourhood.

Dimensions of School Readiness

School readiness has several dimensions and many determinant factors as noted above. Assessment of school readiness has however tends to focus on cognitive readiness dimensions which often ignore readiness in other aspects of a child's development. In contrast, an holistic assessment of school readiness would involve analysing the different determinants at child, parental and community levels. The following school readiness dimensions discussed in Child Trends (2000) and included in the Early Development Instrument (EDI) will be adapted in the School Readiness Assessment Instrument (SRAI).

1. Physical well-being and motor development

This dimension incorporates three components, namely: a) general physical development of the child including growth, physical fitness and body physiology; b) development of physical abilities in the child, such as gross and fine motor skills, sensory motor skills, oral motor skills and functional performance and c) background and contextual conditions of development including care-giving environment, perinatal risks as well as health care utilisation.

Healthy children can focus on learning more readily than unhealthy children. Doherty (1997) defines physical well-being to encompass sufficient physical coordination to control tasks like controlling a pencil and turning a page. The child must also have an adequate level

of energy to be able to concentrate on school activities and be able to resist common infections. The lack of physical well-being may result in low self-image and the child becoming withdrawn.

2. Social development

This dimension relates to the child's social interactions with other people such as teachers, peers, parents and other caregivers in the community. A child should be able to interact, cooperate and form sustained relationships in order to enjoy and benefit from the learning activities. These classroom behavioural demands enhance the child's sense of belonging to a peer and peer group thus avoiding peer rejection and alienation, which may lead to rejection of school. Since learning takes place through interactions, the child must have social behaviours such as the ability to take turn, work cooperatively, and show empathy and assertiveness that contribute to positive interactions and engagement in learning.

3. Emotional development and maturity

This pertains to the child's feelings regarding self and others. School readiness requires self-confidence and emotional maturity for the child to be able to defer immediate gratification persist in an important activity and cope with momentary failure without emotional outbursts. Emotional maturity requires a child to have a positive self-concept, sense of self-efficacy and ability to comprehend others' emotions and respond appropriately.

4. Language development

Involves acquisition of linguistic forms and procedures for acts of expression and interpretation. Language is fundamental in communication and critical in cognitive development. Language can be viewed at two levels that is, verbal language and emergent

literacy. Verbal language pertains to the acts of listening; speaking and social use of language, vocabulary and meanings while emerging literacy involve awareness. School readiness demands a child to be able to verbally communicate experience, ideas, wishes and feelings.

5. Cognitive development and general knowledge

Pertains to the ways in which the child perceives, organizes and analyses information provided by the social and physical environment. Adequate cognitive skills are essential for retention and retrieval of information for effective exploration of new experiences. Cognitive skills a child requires in order to be ready for school at age six include, ability to understand similarity and differences between groups of objects, ability to remember and recite back specific pieces of information, symbolic representation and ability to understand the concept of relative quantity. Physical knowledge of objects and social-conventional knowledge are also important. Child's level of cognitive skills prior to school entry predicts later academic success (Doherty, 1997).

6. Approaches toward learning

This concerns the children's inclination to use skills, knowledge and capacities. It is affected by learning style and predisposition. Learning style reflects the child's openness and curiosity about new tasks challenges. Two predispositions that may affect school readiness include gender and cultural patterns. Within African settings the girl child is disadvantaged from birth due to cultural beliefs. In a household where girl education is not valued, the girl is likely to be denied opportunities to learn resulting to dislike of learning.

7. Special needs

This is geared towards identification of children with special problems including disabilities. Marfo and Thorburn (1994) posit that many children with mild, unnoticeable disorders account for a sizeable proportion of children who drop out of school in early grades. These children have mild behavioural, emotional and intellectual disorders that affect their capacity to learn and perform age appropriate skills.

Conceptual Framework for Assessing School Readiness

The National Parent Information Network (2001) perceives school readiness as a process that takes place within a context and encompasses different dimensions. They highlight the pre-requisite conditions for school readiness to include: exposure to consistent and emotionally responsive adults; safe predictable and regular physical environment, routines and rhythms of varied activities, competent peers and materials that stimulate the children's exploratory and enjoyment of the object world. Myers (1993) has also indicated the ingredient characteristics for a child to be considered ready for school to include: physically healthy and well nourished, ability to communicate basic cognitive concepts, ability to communicate on everyday transactions and in the language of the school, ability to relate well with others, psychologically self-assured with good self concept, ability to work independently and motivated to learn. Nyamwaya and Mwaura (1996) have noted the community's perceived school readiness indicators in Kenya to include: alphabetical letter recognition, letter writing, numeral recognition, reading of words, writing numbers, recognition of number value, knowledge of self, ability to socialize, ability to hold a pen and the health condition of the child. The above characteristics highlight the attainment of reading and writing skills, reciting of alphabet, familiarity with shapes, numbers, colours or the skills of hopping, balancing and skipping (Meisels, 1998).

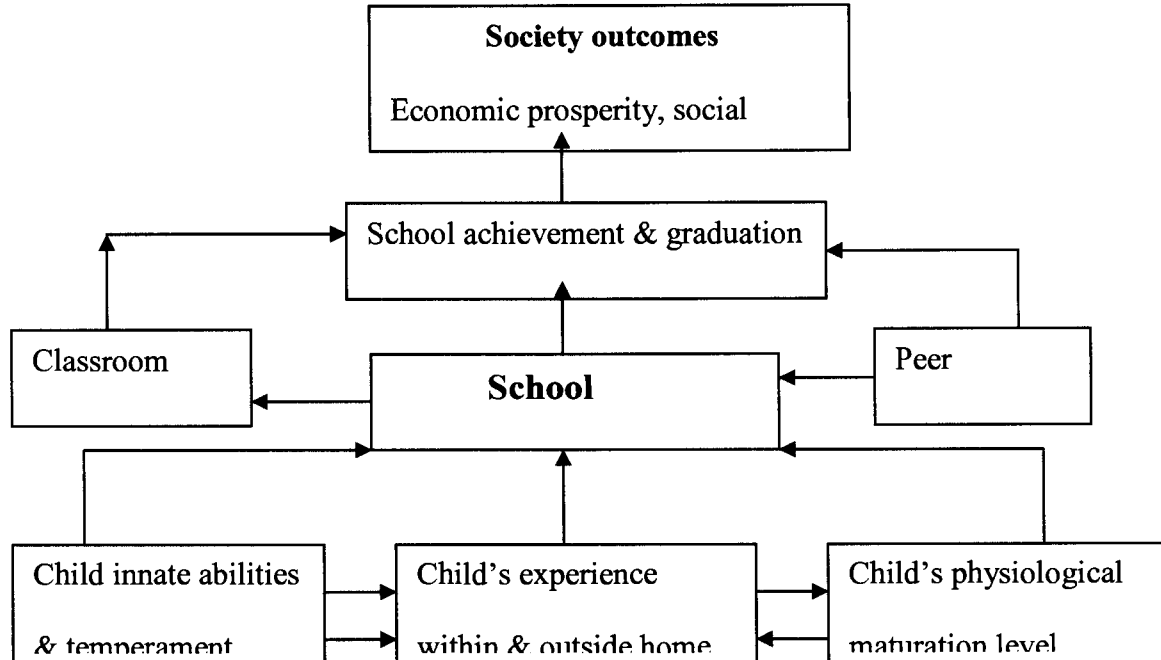
Children have multiple learning environments including the home, pre-school and the neighbourhood. Transiting from one learning environment to another can create a sources of vulnerability, uncertainty and exposes the children to new demands and feeling of stress that may be beyond the developmental capacities for some of them to reconcile the cultural and behavioural expectations (Myers, 1991).

This present research was therefore based on the premise that school readiness can be best understood by addressing the contextual variables within the different learning environments. The bio-ecological model of child development (Bronfenbrenner, 1989), postulates a framework that views child outcomes including school readiness to be influenced by both proximal and distal context created by the interactions of the child with family members, friends and by the neighbourhood or cultural milieu. Further, the theory envisions that children's development is moulded by interaction of the biological disposition and environmental forces surrounding the child. The environment consists of a series of nested structures that extend beyond home, school and neighbourhood settings (Berk 1999). Within this perspective, school readiness is dependent on variables within the different environmental levels. This ecological perspective provides a useful framework for understanding where and how the different stakeholders can support school readiness (Child Trends, 2000). If school readiness is conceived as a context – dependent process, then, the role of pre-school is to provide safe and secure environment that enhances children development and school readiness. It is worthy to note that the quality of services in the pre-school is dependent on the community and parental support, which hinges on the socio-economic status of the community.

Samuel Meisels (1998) advocates for a social constructivist and interactionist theoretical approach in assessing school readiness. Under the social constructivist paradigm, school readiness is viewed as a situational and socially constructed concept. Characteristics of readiness are therefore reflected in the expectations and values of communities. Accordingly, assessment must focus on children as well as the neighbourhoods' variables. The interactionist paradigm incorporates information about the child and the milieu in which the child is reared and instructed. School readiness is therefore seen as a bi-directional concept focusing on the children's learning and school capacity to meet the individual needs of the children. In this respect, school readiness is a product of the child's prior experience, their genetic endowment, maturational status and the range of environmental and cultural experience that the child encounters. Figure 1, below exemplifies the interrelationship of school readiness determinants and the school performance and society well-being of a country.

The figure indicates that, school readiness is directly related to the optimal growth and development of the child, which unfolds through the interactions of genetic endowment, physiological maturation and active engagement with the environment. The diagram shows a feedback loop at a school readiness determinant level. This exemplify the bio-ecological model where by innate abilities influence the child experience as well as child physiological maturation and vice versa. School readiness influences the child's interaction with peers and classroom experiences, which in turn affect the child's school performance and completion. Better school achievements also influence the individual child contribution to society outcomes.

Figure 1: Relationship Between School Readiness and Society Well-being



Adapted and modified from Doherty (1997)

Doherty (1997) views society outcome as a prosperous society in which all citizens have the means to meet their basic needs and a society where there is social cohesion rather than divisions. She further argues that the resultant social stability and economic growth stimulates society willingness and resources to support optimal child development. Each developmental stage is dependent on the preceding stage and the skills and competencies required for adult participation in the society are laid down during the early childhood period.

Principles in the Assessment of School Readiness

Assessment is the ongoing process of observing, recording and documenting the work children do and how they do it, to provide a basis for a variety of educational decision that affect the children (Bredekamp, Knuth, Kunesh, & Shulman, 1992). Marfo and Thorburn

(1994) describe assessment as the process of determining whether the child exhibits a specific problem in development or learning for the purpose of identifying the child's developmental and learning strengths and weaknesses. They distinguish assessment from screening which is the process of identifying a child at risk for an exceptional condition for future diagnostic action on the condition. A similar argument is provided by Hills (1987). He concurs that screening is not interchangeable with assessment; he views screening as the first step in identifying from all the children those who may be at risk of future difficulty in school and those who may have special needs in learning and/or have extraordinary abilities.

Assessment in ECD should be guided by the intended purpose. In this perspective, assessment for instructional planning is embedded in the content of the curriculum. This type of assessment is normally done through observation, sampling of children's work and getting information about the child from informed adults like the teachers and parents. Woodhead (1996) defines curriculum as the organised framework that delineates the content and processes through which children learn to achieve the identified curricular goals, what teachers do to help children achieve these goal and the context in which teaching and learning occur. Assessment can also be geared towards identification of children with special problems including physical and mental disabilities. Screening tools are recommended with a purpose to provide information to the parents for referral and follow-up by specialists. Representative sampling of children is recommended if the purpose of assessment is to inform decision-making concerning the welfare of children and effectiveness of programs. Assessments of school readiness should also take into consideration the inequities in early life experiences and recognize individual child differences (National Association for the Education of Young Children, 1995).

Love (2001) singled out three elements in assessing school readiness. He suggests that assessment should be continuous, comprehensive and designed to measure all the dimensions of school readiness as well as the factors that affect child development. However, comprehensive assessment is hindered by the risk of over intrusion on the children and caregivers' time as well as the lack of valid measures especially in psychosocial development and approaches towards learning. Evans, Myers and Ilfeld (2000) have posited the lack of psychosocial indicators as a limiting factor to school readiness assessment for young children. Different researchers have advocated for a community-based approach in assessing school readiness that considers the family socio-economic status; home environment and the children's developmental dimensions and learning. Henry (2001) notes the need to consider the predictive validity of the measures of a specific readiness dimension. This implies that different measures should not be substituted in order to avoid making invalidated conclusions.

In a study to analyse and compare the learning environment of pre-schools and lower primary schools with a purpose of illuminating the factors hindering smooth transition, Nyamwaya and Mwaura (1996) indicated that lack of process and impact indicators for child and school mutual readiness and the enormous disparity between pre-school and primary school learning environments hinders a smooth transition from pre-school to primary school. The study showed that there is a high dropout rate, repetition and absenteeism in lower primary school classes in Kenya. They also noted that children enter school earlier or later than the legal age. The study utilized multiple data collection methods including: document analysis, in-depth interviews, focus group discussion and observation. They postulated that transition is determined in four probability situations. One is a situation where the child is

ready for school but school environment is not ready for the child. Similarly, the school environment may be ready but the child is not ready or both child and environment are not ready and both child and environment are ready. The research considered child readiness indicators to constitute: child health and nutritional status, child sensory abilities and performance, cognitive performance, physical development, social skills, oral abilities as well as moral and spiritual knowledge including general knowledge and attitudes. Indicators of school readiness for children involve the physical environment, quality of services, child teacher ratios, teachers' characteristics, social emotional climate, learners' behaviour, distance from home to school and language of instruction in the school.

Developmentally based assessments of children and the use of developmentally based instruments have been minimal and regionally varied in Africa. The scarcity of instruments for assessing psychosocial development based on indigenous experience has resulted in the use of assessment tools borrowed from western countries. Application of such western instruments with little or no modification often creates a mismatch between the purpose and use of the instruments (Kagitcibasi and Landers, 1990). To ensure cultural and ecological validity, Love (2001) suggests the following criteria to be followed when choosing readiness assessment instruments: the instrument should reliably measure what it is supposed to measure; it should measure intended purpose reliably and validly under similar field conditions; it should tap important dimensions of children's early development and learning and the conditions supporting development; the instrument should be appropriate for the diversity of children and for the age(s) of the target children of interest; and should be easily available.

Assessing children's school readiness in their earliest years is difficult due to their rapid and episodic growth pattern, which is highly influenced by the nurturing, care and the learning environment. A shortage of appropriate instruments reflecting local environmental and cultural realities, and the inadequacy of the instruments used, pose the greatest problem, especially in the assessment of children with disabilities (Marfo and Thorburn, 1994). Assessment of children's readiness has mostly focused on physical dimensions with little consensus regarding measures of cognitive, social and emotional dimensions or ways to measure the impact of child-rearing environments (Kagiticbasi and Landers, 1990). Goodwin and Goodwin (1996) have highlighted some of the existing instruments for measuring children's development and learning. The readiness tests include the Metropolitan Readiness Tests developed in 1986 by McGauran and Nurs, and the Boehm test of basic concepts. Screening measures includes the Early Screening Inventory (ESI), Minneapolis pre-school, screening instrument, McCarthy Screening Tests, Kaufman Assessment Battery for Children, The Early Development Instrument (EDI) and Nursery Evaluation Scale (NES). Readiness tests are used to determine if a child is ready for instructions and normally combines features of achievement tests by focus on current performance and achievement levels rather than on development potential, (Love, 2001). Most of these instruments have been developed in the Western developed countries and hence their application in sub-Sahara Africa will require modification for local conditions and circumstances.

In this study, children's school readiness was assessed by use of instruments focused on teachers' rating scales. The Early Development Instrument (EDI) developed by the Canadian Centre for Studies of Children at Risk was adapted and modified to suit the Kenya situation.

CHAPTER 3: METHODS

Introduction

This chapter provides information on study area, design, population, sample, sampling method, data collection instruments and the protocol for data collection. It also highlights the procedures of data analysis as well as the measures undertaken to address ethical issues and ensure informed consent.

Description of the Study Area and Population

Nairobi is the capital city of Kenya, with a population of over two million people. With the high urban population growth rate of 5.8%, the city's population is projected to rise to over three million by the year 2005. Socio-economically, Nairobi represents the extremes of Kenyan income groups. That is, while more people are better off than anywhere else in the country, the poorest are worse off than anywhere else. The 1992 household survey data indicated that 74% of the households in Nairobi were in either low or very low-income groups and are therefore characterised as poor (Welfare Monitoring Survey, 1992). In terms of social economic status (SES), three population groupings or neighbourhoods are conspicuously identifiable in the city. These include: low SES neighbourhoods comprising unplanned urban squatter areas and informal settlements, where the majority of the urban poor and low-income group are living. The middle SES neighbourhoods comprises estates for middle-income earners, while the high SES neighbourhoods include estates for the rich and affluent.

A survey on the urban threat to women and children done by Mutuku and Mutiso as cited by Blanc, 2001, found that overwhelming majority of urban children are from poor families living in constantly deteriorating environments. The survey identified the major

problems facing children in urban slums in Kenya to include: lack of decent housing, lack of adequate sanitation and safe drinking water, limited education opportunities including ECD services and limited household income (Blanc, 2001). This environment of economic deprivation inevitably breeds a sense of hopelessness that affects the children's school readiness. Quality ECD program and the social economic deprivation are key determinants of school readiness and that children from different neighbourhoods experience different problems that affect their preparedness for school (Doherty, 1997). Report of the community asset mapping in Vancouver, Canada, showed that there are significant barriers for families living in certain neighbourhoods in accessing adequate and quality child care that may improve children's developmental outcomes. A brief description of the three neighbourhoods sampled for the study is provided below.

Westlands education zone.

Westlands education zone is about four kilometres from the city centre to the west and represented a high social economic status (SES) neighbourhood. The area has a mixed race comprising of Africans, Asians, Europeans and other white expatriate or migrants. Most of the pre-schools are private with Montessori being the prominent model. It had a total enrolment of 1,650 pre-schoolers attending 85 pre-schools. The area has well developed infrastructure and social amenities. Area population represent different occupations and comprise of an elite community.

Buruburu education zone.

Buruburu is a residential neighbourhood about five kilometres to the eastern side of the city with majority of residents being middle-income earners. It represented the middle Social Economic Status (SES) neighbourhood. Private and public DICECE pre-school

models are most common although a few Montessori are also found. It had a total enrolment of 2,664 pre-schoolers attending 88 pre-schools. Teacher are mixed with majority trained.

Mathare education zone

This is a low-income group residence area, eight kilometres north east of the city. It represented the low Social Economic Status (SES) neighbourhood. The area has different strata of income groups and the majority of population are casual workers, small business operators and low cadre civil servants. Majority of the pre-schools are public and private DICECE models. It had a total enrolment of 3,000 pre-schoolers attending 105 pre-schools.

Pre-schools in the three SES neighbourhoods exhibited wide variations in terms of the quality of services. The variations are attributed to level of household income, accessibility to social amenities, perception of the importance of pre-school and level of government support. Ministry of Education, statistics indicated that, there were a total of 57,560 pre-school children attending 1,708 pre-schools in Nairobi. Overall, 80% of the pre-schools in Nairobi are private ventures. These include the pre-schools that are established by private individuals, firms or organisations to provide care and education for young children. In most cases the private centres are established as a commercial venture and may follow government (DICECE) or Montessori curriculum. The majority of the private pre-schools are located in the middle and higher socio-economic neighbourhoods. The public pre-schools are established by local communities and follow government curriculum. Out of the 8,218 pre-school teachers, 49% were trained.

Study Design

A causal-comparative survey research was used to compare school readiness amongst pre-school children from public and private pre-schools located in the three neighbourhoods

in Nairobi city. The research design was selected since it allows investigation without manipulation of variables (Goodwin & Goodwin, 1996). In the study four categories of pre-schools model were considered:

1. Public pre-schools – these included pre-schools established and managed by local communities. The pre-schools follow the government national curriculum guideline (commonly referred to as DICECE model).
2. The private (DICECE) pre-schools – these are pre-schools that follow government national curriculum guidelines but are owned and managed by private individuals, firms, faith-based organisations or companies.
3. Montessori pre-schools – these are kindergartens or pre-schools that follow the Montessori curriculum. They are established and managed by private individuals or organisations.
4. Madrasa pre-schools – these are learning institutions established by Moslem organisations and communities, which combine Koranic teachings and secular pre-school activities.

In the study, private DICECE, Montessori and Madrasa were considered as private pre-school model, and school readiness scores of children attending these pre-schools were compared with those of children attending public model. Empirical research on ECD programs in both developed and developing countries have indicated that quality ECD programs that emphasize on developmentally appropriate practice and responsive care giving enhances school readiness better than lower quality programs with a traditional academic focus (Young, 2002). In this study the level of developmental appropriate practice was assessed through observation and interviewing teachers. It was therefore hypothesized that:

- pre-school children who attend private pre-schools have better school readiness scores than their peers who attend public pre-schools; and,
- pre-school children from different SES neighbourhoods will have different school readiness scores, ranging from highest to lowest in high, middle and lower SES respectively.

Research questions and variables

The independent variables investigated included the type of pre-school a child attends (either private or public) and the type of neighbourhood (low, middle or high SES) the pre-school is located in. The dependent variable investigated in the analysis was the children's school readiness outcomes (scores) in the three different SES neighbourhoods. The research questions for the study included:

1. Do children who attend private pre-school models have a significant difference in school readiness assessment scores compared with children who attend public pre-school model by the time they join primary school?
2. Is there a significant difference in school readiness outcomes (scores) among pre-school children from different socio-economic status neighbourhoods by school entry age?
3. Do children who attend pre-schools with a higher level of developmentally appropriate practice get higher school readiness scores than children who attend pre-schools with low level of developmentally appropriate practice.

Study sample.

The target population included all the pre-school children enrolled in pre-schools in the three education zones. The study sample comprised of a total of 207 pre-school children aged five and six years randomly selected from 27 pre-schools in the three clusters.

Sampling method.

A multi-stage sampling method was used to allow the use of combined sampling methods (Trochim, 2002). Existing government records on pre-schools and admission registers were used to establish a sampling frame. However, taking into consideration that the School Readiness Assessment Instrument was valid for children aged 4.5 and 6.5 years, 207 pre-school children aged five and six years were sampled for the study.

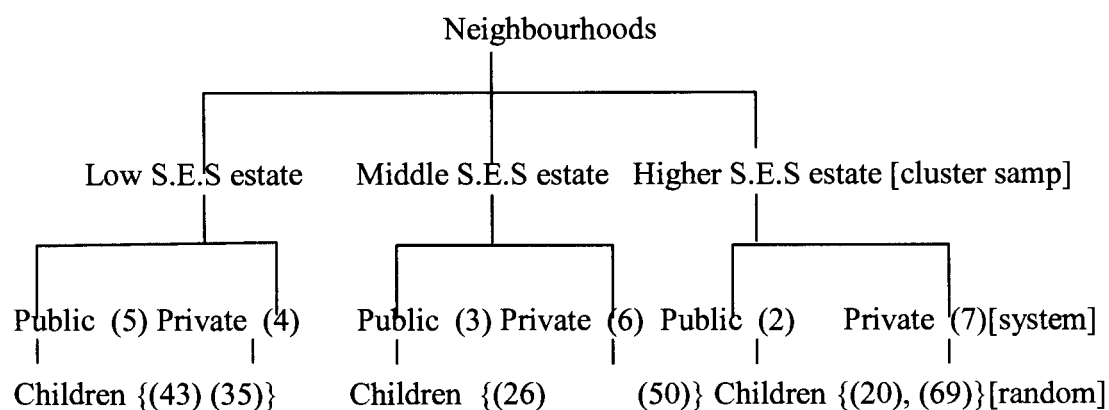
In order to ensure a representative sample of the children, a table of random sampling developed by Krejcie and Morgan (1970) and used by Kathuri and Pals (1993) was used to determine the sample size. Accordingly, taking into consideration that the total enrolment in pre-schools in the three clusters was 7,314 children; the table recommended a sample size of 367 children. However, the sample of 207 children was considered a fair sample for comparative purposes since there was no intended generalisation of the study. First, a purposeful sampling was used to select the three study clusters representing high, middle and low socio-economic status (SES) neighbourhoods. Within each of the clusters, a stratified random sampling was done to select the 27 pre-schools sample as follows:

- Mathare (low SES) – 5 public and 4 private
- Buruburu (middle SES) – 3 public and 6 private
- Westlands (high SES) – 2 public and 7 private

The ratio of public to private pre-schools was used to determine the number of types of pre-school sampled. Montessori, private DICECE and Madrasa represented the private pre-school model in Buruburu and Westlands. In Mathare, there were no Montessori or Madrasa pre-school models.

A systematic random sampling in each pre-school was used to select the 207 pre-school children aged five and six years. To ensure objectivity, all the children in the pre-unit class were assessed, however, the data for children four years and those over six years was filtered out to leave the sample of 207 children. During the random selection of children equal gender representation was not a problem given that the ratio of boys to girls was approximately equal. (See Appendix VI for a list of the pre-schools and number of children). Figure 2 below, shows the sampling procedure for the pre-schools and children sample.

Figure 2: Multi-stage Sampling Procedure



As cited above representation of the type of pre-schools was also based on the ratio of private to public pre-schools in the three clusters, which was 2:1. Since there was no Montessori and Madrasa pre-school in Mathare, only private DICECE and public pre-schools were selected. In Buruburu only one Montessori and Madrasa participated in the study while in Westlands, all the three private pre-school models were represented as indicated in Figure 2.

Data Collection Procedure

A structured observation schedule was used for the direct observation of pre-school learning environment. Structured interview schedules were also used for interview with pre-school teachers and Head teachers. The School readiness Assessment Instrument was used to assess children's level of school readiness.

Data collection instruments

1. School Readiness Assessment Instrument (SRAI)

Selection of the data collection instruments was based on Goodwin and Goodwin's (1996) suggestions for selecting research instruments. These included clarity of purpose, systematic search for the instruments, locating the psychometric evidence and usability features. Using the guideline, the Early Development Instrument (EDI) was adapted and localized to produce a culturally sensitive School Readiness Assessment Instrument (SRAI). The EDI was developed by Drs. Dan Offord and Magdalena Janus of McMaster University and is used for a population wide developmental assessment of kindergarten children and also provides an age appropriate measure for kindergarten children's school readiness in Vancouver, Canada. The instrument is a checklist that is completed by kindergarten teachers after having several months of classroom interactions with the children. The instrument has been normed on over 16,000 children and provides information on both strengths and deficits within specific school readiness dimension (Hertzman, McLean, Kohen, Dunn & Evans, 2002).

In recognising that Canada and Kenya are countries with diverse socio-cultural and socio-economic phenomenon, the EDI was modified to ensure ecological and cultural validity and reliability. Adaptation of the instrument involved simplifying the language to

suit the level of the local pre-school teachers, replacing information that was not relevant to the local environment and rewriting the instrument in away that would allow easier analysis as well as addition of variables under the different school readiness dimensions. Such addition included variables to assess functional level on children's gross and fine motor development as well as items to assess conditions of impairments.

The resultant, SRAI was based on the presumption of an holistic assessment of children's school readiness. The SRAI (see Appendix 1) contained 114 variables for analysis. The instrument was structured into three sections as follows:

- Section A: General information regarding the pre-school which was aimed at gathering data related to type and location of pre-school, name of head teacher and pre-school teachers to be interviewed and conduct the assessment of children as well as language of instruction in the pre-school.
- Section B: Child's general information – Aimed at gathering information with regard to child's sex, age, age at admission, special needs and common language spoken at home.
- Section C: school readiness dimensions – the dimensions included physical development and well-being, language and cognitive development, social and emotional development, and special conditions and learning approaches.

2. Observation and interview schedules

Observation and interview schedules were also developed and used for assessing the level of developmental appropriateness of the pre-schools. The pre-schools' learning environment were rated on the level of developmentally appropriate practice using a combination of physical observation and interviewing of head teachers and pre-school

teacher assessing the children. The ingredients of pre-school learning environment that were assessed included classroom structure (appropriate and effective group size, child-caregiver ratio, composition and safety, supportive administrative services and staff characteristics) and classroom dynamics including positive teacher behaviours (for example, attentiveness, encouragement, engagement, sensitivity and responsiveness); positive child behaviours (for example, interactions with materials, cooperation, joyfulness); and effective teacher-child interactions (for example, teacher responsiveness, verbal interactions, stability and continuity). A structured observation schedule (see Appendix II) was used to ensure uniform and objective observation. A structured interview schedule (see Appendix III) was used for the interviews to corroborate the data captured through observation.

Pre-testing and training of data collectors

Two days orientation training for the pre-school teachers and DICECE trainers involved in the study was conducted before pre-testing of the instruments. The training involved guidance on assessment of children using the SRAI guideline (see Appendix V) and on how to conduct the observation and interview. To ensure usability, relevance, validity and reliability pre-testing of the instrument was done in pre-schools selected from neighbourhood with similar conditions as those of the study cluster areas in Nairobi and Nakuru. A discussion with key ECD practitioners including, pre-school teachers, trainers and other stakeholders was done to collate their perspectives.

Data collection protocol.

Data collection protocol involved initial planning, familiarization and awareness creation visits. During the visits teachers and parents were informed on the importance, goal and objectives of the research study. They were also required to sign consent forms (see

Appendix VI). Actual data collection involved assessing all the children from the sampled pre-schools using the SRAI. Assessment of children's school readiness was done by pre-school teachers through rating children on the SRAI over a period of three weeks. To ensure objectivity, only trained teachers were allowed to assess the children and only after orientation on the instrument. Similarly, the DICECE trainers assessed and rated at least two children in each pre-school apart from conducting the observation and interview. The researcher also assessed one child in each pre-school. These ensured objectivity and made the teacher to give an objective assessment. Rating of children was done through observation of children's work and children's performance of certain tasks provided during the assessment. Direct observation and interview was used corroboratively to assess the learning environment of the pre-schools.

Data management.

This involved organizing the data collected via the SRAI, observation and interviews. First step involved coding and development of a database using the SPSS analysis software. The data entry took one week with assistant of two entry clerks. It was noted that there were several missing or unanswered questions especially from the public pre-schools. This resulted to delay due to the repeated assessments. Coding of the SRAI was such that the rating was assigned points as indicated in SRAI guideline (Appendix V).

Data Analysis and Interpretation

Analysis

Comparative analysis of the various school readiness dimensions was done across the type of pre-school model and locality of the pre-school. Descriptive statistics including frequency distribution and measures of central tendency were used to compare school

readiness variables across the type and locality of pre-schools while One-Way ANOVA was used to compare means of the aggregate school readiness scores across type and locality of pre-school. Given that there were more than two variables, t-test was not used. Spearman correlation coefficient has been employed to show relationship of variables with ordinal data. SPSS (Version 10 for Windows) was used to analyse the data. . among children from different Social Economic Status neighbourhoods and pre-school models. SPSS version 10, analysis program was used to analyse the data.

Interpretation

Interpretation was done at pre-school and neighbourhood level. To avoid negative labelling of children, the data was not analysed at specific child level. However, teachers could make use of the aggregated pre-school data for improvement on and to relate the influence of the early years with school readiness (Janus & Offord, 2000). The SRAI results were interpreted as follows:

- The percentage of children below the 25th percentile cut-off marks in each of the school readiness dimensions in the different neighbourhoods are considered as unready for school.
- Percentages of children above the 75th percentile cut-off mark are considered to be vary ready for school.

In physical development and well-being, children below the 25th percentile had poor gross and fine motor functional skills, were not confident, emotionally disturbed and hence not physically ready for school. In language and cognitive development skills, children below the 25th percentile were considered to have problems in reading, writing, matching, communicating and remembering and are uninterested in school. Similarly, in social and

emotional development, children below 25th percentile had social and emotional problems that hinder them to attain appropriate level of school readiness and were hence not ready for school.

Ethical Issues

Trochim (2002) has pointed out the key ethical issues to be considered in a research. These include: getting participants' informed consent, voluntary participation and confidentiality. To ensure informed consent, discussions were held with the teachers and parents of the participating pre-school children. The purpose of these discussions was to explain the goals, importance and the procedures of the research and to provide assurance of confidentiality. The role of each participating person was clearly explained and the data collection instruments discussed. After these discussion meetings, parents signed consent forms (see Appendix VII) to allow their children to participate in the research. Head teachers also signed consent forms as an acceptance for participation of their pre-schools. The teachers and parents were also assured that information arising from the study would be confidential. Since the research was conducted during normal pre-school activities and that children were familiar with their teachers, there was no psychological or physical damage to the children.

Validity and Reliability of the Study

History and selection threats presented the greatest problem. It was not possible to control variables within the child's home and neighbourhood, which may have had positively or negatively influenced the children's school readiness. It was also not possible to control the differences among the children sample in spite of the random sampling used. Time allocated for completion of the thesis study and the cost implication in selecting a large

sample, influenced selection of a large representative sample. Subjective rating by the teachers due to the comparative aspects of the research might have affected the results thus affecting the internal validity. It was hoped that clear explanation of the importance of and use of the resultant information might have reduced this threat. It was noted that, as expected the School readiness assessment instrument was seen as a better approach compared to the curriculum based assessment. This may have caused novelty effect (Goodwin & Goodwin, 1996) resulting to unreliability of the information. This was more so since the time did not allow repeated assessments as would otherwise have been advisable. It was possible that experimenter expectations (Goodwin & Goodwin, 1996) might have influenced the teachers' objectivity in rating the children.

CHAPTER 4: FINDINGS

Introduction

Data from the study sample of 207 pre-school children drawn from 27 pre-schools (see Appendix VI) was analysed. Nine pre-schools were sampled from each of the three different SES neighbourhoods, namely Mathare, Buruburu and Westlands education zones, representing low, middle and high SES neighbourhoods respectively. First, descriptive and inferential analysis results are provided, followed by analysis of the observation and interview data.

Response Rate

To avoid a situation where some children may feel discriminated against, all the children in pre-unit (class comprising of children expected to join primary school in the following year) were assessed for school readiness. Due to low response rate and fewer number of children aged 5-6 years, the number of pre-schools was increased from the originally proposed 24 to 27 pre-schools to reach the targeted sample. In total a sample of 243 children were assessed. However, 36 children aged 4, 7 and 8 years were filtered out since their ages were not within the age range for the EDI (4.5- 6.5 years). Therefore a study sample of 207 children aged five and six years was used for analysis purposes. Low response rate was particularly noted from Madrasa pre-schools where only two pre-schools with 11 eligible children participated. Accordingly, comparison of results from Madrasa model is therefore not emphasized. DICECE trainers conducted observation and interview for a period of one week. However, assessment of children took a longer time resulting to delay in the study. Table 1 shows the distribution of the children sample by type of pre-school model and SES grouping.

Table 1: Children's Sample by Pre-school Model and SES Grouping

Type of Pre-school	Location of pre-school			% of Total
	Mathare (Low SES)	Buruburu (Medium SES)	Westlands (High SES)	
Public	27 (47%)	22 (32%)	20 (24%)	69 (33%)
Private	30 (53%)	36 (53%)	25 (31%)	91 (44%)
Montessori	-	8 (12%)	28 (34%)	36 (17%)
Madrassa	-	2 (3%)	9 (11%)	11 (5%)
% of Total	57 (28%)	68 (33%)	82 (40%)	207 (100%)

Descriptive Analysis Results

Descriptive statistics including frequencies, measures of central tendency and variance has been used to compare the school readiness data across the type and locality of pre-schools. For comparison purposes, the SRAI also gathered general information related to the child and pre-school. Information regarding the child included gender, current age of child, child's age at admission into pre-school, special needs conditions and the common language spoken at child's home. Information regarding the pre-school included the type and

locality (SES) of pre-school as well as the language of instruction used in the pre-school.

Analysis of these variables is discussed below.

Language of instruction and common language spoken at home

Analysis of data showed that the language of instruction varied across and within type and locality of pre-school. Whereas 76% (n=207) of the children attended pre-schools that used English as language of instruction, 24% used Kiswahili. Only 25% and 64% of children came from households that used English and Kiswahili respectively as the common language of communication at home. Only 11% of children came from households that commonly used first language at home. These households were all located in the low SES neighbourhood (Mathare).

Pre-school children's gender, age and period of pre-schooling

Of the 207 sampled pre-school children, 105 (51%) were girls and 102 (49%) were boys. This shows gender parity at pre-school level. The modal age of children in the study sample was 6 years with a mean of 5.5 years. Table 2 below, shows the children's age at admission by the type of pre-school.

Table 2: Age at Admission in Completed Years by Pre-school Model

Type of Pre-school	Child's age at admission in pre-school (Completed years)					Total
	2 yrs	3 yrs	4 yrs	5 yrs	6 yrs	
Public	5 (7%)	5 (4%)	9 (13%)	46 (67%)	4 (6%)	69

Private (DICECE)	4 (4%)	47 (52%)	28 (31%)	11 (11%)	2 (2%)	91
Montessori	-	17 (47%)	15 (42%)	4 (11%)	-	36
Madrassa	1 (9%)	2 (18%)	1 (9%)	6 (55%)	1 (9%)	11
Total	10 (5%)	71 (34%)	53 (26%)	66 (32%)	7 (3%)	207 (100%)

Table 2 shows that the age at which the children were admitted into the pre-schools varied ranging from 2 to 6 years. Further analysis indicated that 67% of children in public pre-schools started pre-schooling at the age of 5 years while, 52% and 47% of children from private DICECE and Montessori started pre-schooling at the age of 3 years. This implied that children attending Montessori and private DICECE models had a longer period of pre-school experiences compared with children in public pre-schools. Comparison of age of admission in pre-school across SES neighbourhood indicated that, majority (46%, n=57) of children from Mathare stated pre-school at age 5 years, whereas 54% and 33% of children from Buruburu and Westlands started pre-schooling at the age of three years.

Overall, 6% (n=207) children sample were identified as having special needs with 11% of them coming from Westlands zone (high SES). Comparison across type of pre-schools indicated that 14% of children from Montessori had special needs compared with 3% from public pre-school.

Physical development and well-being analysis results

This dimension was assessed through teachers' rating of children's physical developmental milestones and children's general behavioural indicators of well-being. Physical development variables included, independence in washroom habits, specific hand preference, proficiency in holding, manipulating objects, as well as abilities in physical skills and fine and gross motor development. Child's well-being was assessed through observation of the child characteristics including absenteeism from pre-school, mode of dressing, tiredness, lateness for pre-school, signs of hunger, emotional disturbance and the level of energy to perform school tasks. Table 3 shows the number and percentage of children who usually or always exhibited characteristic of poor well-being by socio-economic grouping.

Table 3: Children's Ratings on Physical Well-being by SES

Indicator / location → ↓	Mathare n=57	Buruburu n=68	Westlands n=82
Over/under dressed	38 (80%)	51 (86%)	72 (89%)
Too tired for school work	46 (82%)	51 (72)	79 (89%)
Lateness for school	2 (4%)	6 (8%)	8 (9%)
Hungry in school	16 (29%)	9 (11%)	8 (9%)
Emotionally disturbed	8 (15%)	13 (18%)	14 (16%)

Attendance

Analysis of data on attendance showed that absenteeism ranged from 1 to 120 days with a mean of 10 days for the past six months prior to assessment. However absenteeism was highest among children in public pre-school and in low SES neighbourhoods while it

was lowest in Montessori and high SES neighbourhood. As Table 3 shows, lateness was lower among children from low SES neighbourhood (4%, n=57) compared with those from Buruburu (6%, n=68) and Westland (0%,n=82) respectively. Across different type of pre-school 3% (n=36) of children from Montessori were usually late for school compared with 5% (n=69) from private and 8% (n=36) from public model. Further analysis revealed that 13%(n=69) of children, from public, 12% (n=90) from private and 8% (n=36) from Montessori sometimes came to school hungry. 16% (n=67) of children from public pre-schools sometimes exhibited signs of emotional disturbance compared with 8% each from private and Montessori models. While 15% of the children from Montessori had low level of energy to do school tasks, only 19 % (n=91) of children from private and 18% (n=69) from public model exhibited low energy level.

Manipulating skills and hand preference

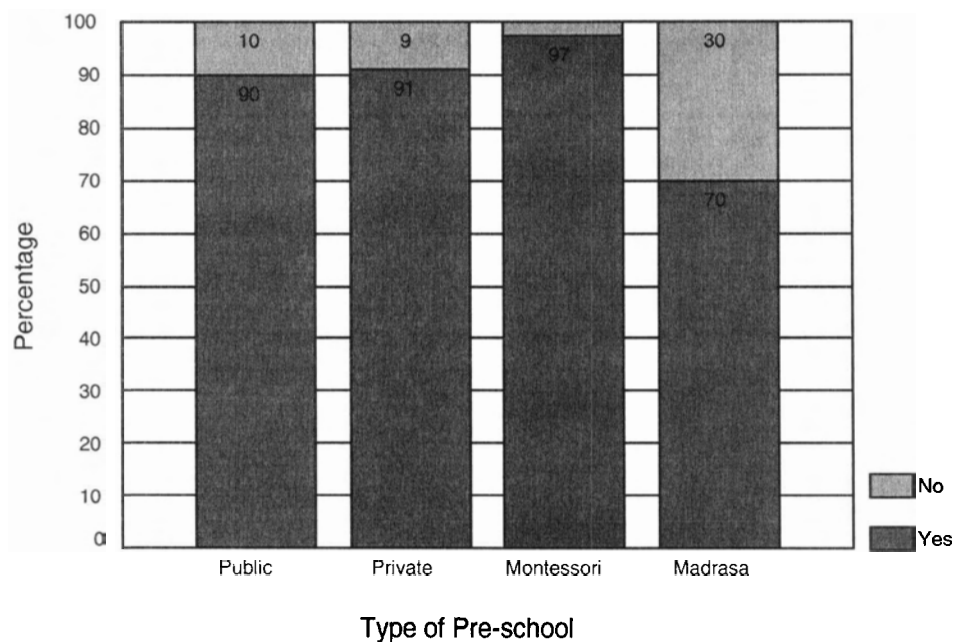
Children were assessed on their ability to handle toys and other materials. Analysis showed that performance in the ability to manipulate objects varied across and within different models of pre-schools and SES grouping. Overall, 10% (n=57) of children from Mathare, 7% from Buruburu and 12% (n=82) from Westland were rated average or poor in ability to manipulate objects. Whereas 13% of children from public and 9% from private were not able to manipulate objects, only 3% of children from Montessori model were unable to manipulate objects. Comparative analysis of data on hand preference in doing things showed that 31% of children from public pre-schools, 21% from private pre-schools and 3% from Montessori pre-schools had no specific hand preference. Comparison across SES neighborhoods indicated that 16%, 35% and 15% of children from Mathare, Buruburu and Westland respectively had no specific hand preference for writing or doing things.

Further analysis showed that 10% (n=57) of children from Mathare and 10% (n=80) from Westland had uncoordinated movement compared with 13% from Buruburu. Comparatively, 16% of children from public pre-schools had uncoordinated body movements compared with 6% and 3% from private and Montessori models respectively. Examination of data showed that 69% (n=36) of children from Montessori were rated excellent in climbing a stair or ladder compared with 53% (n=89) from private, 60% (n=60) from public and 18% (n=11) from Madrasa. More children from public (18%) were unable to climb stair/ladder compared with 11% and 3% from private and Montessori.

Independence in washroom habits

Data analysis showed that 10% (n=69) of children from public, 9% (n=91) from private, 30% (n=11) from Madrasa and 3% (n=36) from Montessori had not attained independence in washroom habits as shown in Figure 3. Analysis across SES indicated that 10% of children from Mathare and Westlands had not attained independence in washroom habits compared with 9% of children from Buruburu.

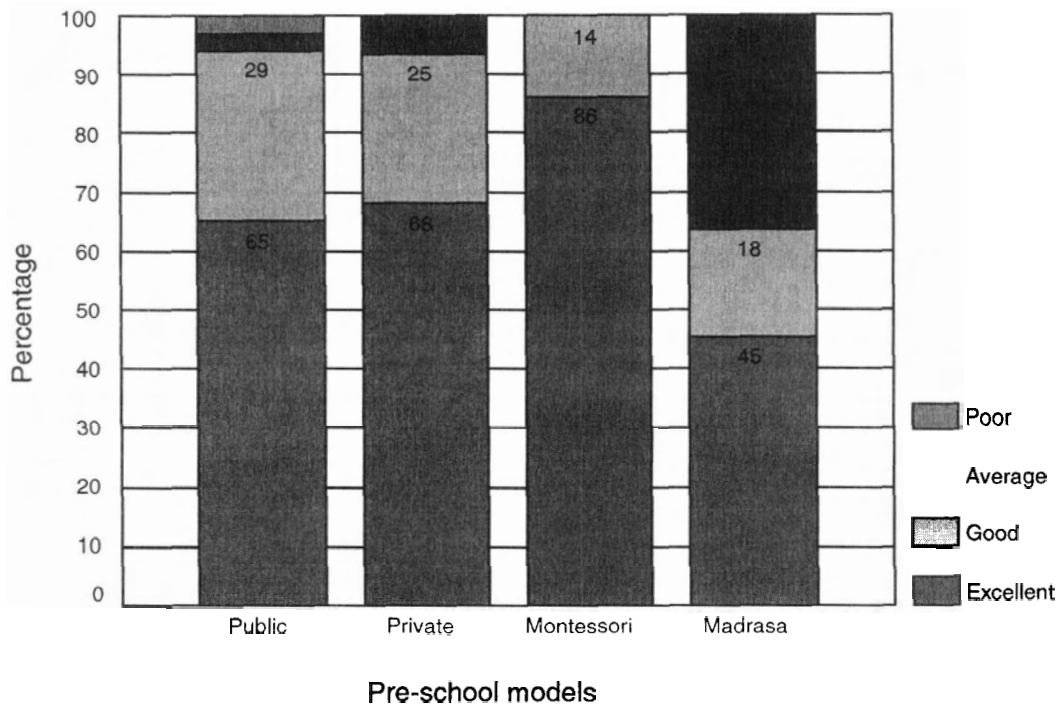
Figure 3: Children's Independence in Washroom Habits by Pre-school Model



Proficiency in holding objects

Comparison across different type of pre-schools showed that while all children from Montessori model were proficient in holding, 6% (n=69) of children from public and 6% (n=91) private pre-school were poor in holding a pen or crayon as indicated in Figure 4. Comparative analysis across different SES showed that, 9% (n=57) of children from Mathare were rated average and poor compared with only 8% (n=82) from Westland and 3% (n=68) from Buruburu respectively.

Figure 4: Proficiency in Holding a Pen by Pre-school Model.



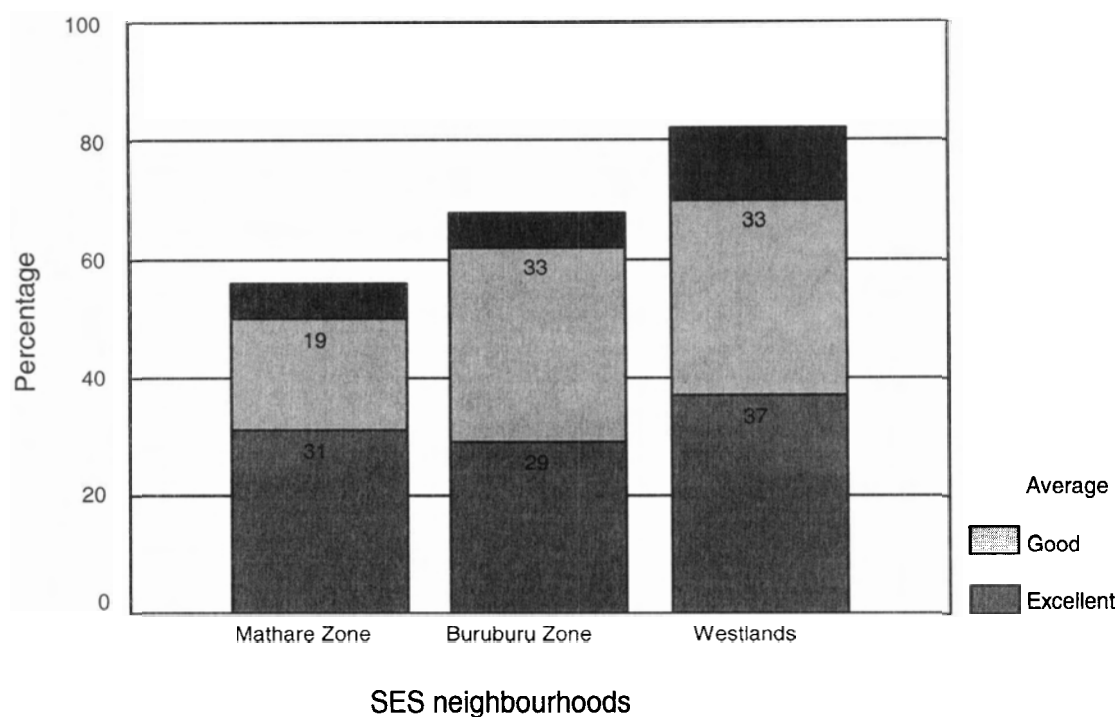
Gross and fine motor development

Gross and fine motor skills assessed included the ability to walk and step heel to toe, jump over a rope 30 centimetres high, standing on one foot, cutting and tearing, pattern writing, modelling and threading. Out of the 207 children sample, only 2% were unable to walk heel to toe. Comparatively, children from Montessori outperformed children from other models, with 61% of children rated excellent and 39% good compared with 18% of children from public and 19% from private DICECE rated poor or average. Comparison across SES indicated 19% of children from Buruburu and 21% from Mathare were rated average compared with 12% from Westlands. Ability to standing on one foot also varied across pre-school models and SES. While no child from Montessori, was rated poor, 3% from private DICECE and 4% from public model were rated poor in ability to stand on one foot. All children from Mathare (low SES) were able to stand on one foot for ten seconds; however,

4% and 5% of children from Westlands and Buruburu were unable to stand on one foot. Analysis of the children's ability to jump over a rope 30 centimeters high showed that 8% (n=207) of all children were able to stand on one foot. Comparison across pre-school models indicated that all children from Montessori (n=36) were rated good or excellent compared with 6% (n=68) from public and 4% (n=91) from private DICECE. Children from Montessori were better in the ability to tear pieces of paper using a pair of scissors. While no children from Montessori were unable to tear, 10% of the children from public and 4% from private were not able to tear. Ability to write a particular pattern varied across types of pre-schools with 6% (n=69) of children from public and 4% (n=91) from private unable to write a pattern, while all children from Montessori were able to write a pattern. Overall, 52 % of children were rated excellent in pattern writing. Ability to model or copy different shapes varied by SES and type of pre-school. Only 10% of children from public and 2% from private were poor in modeling. Mathare (low SES) had the highest number of children 17% rated poor in modeling compared to 14% and 12% from Westland (high SES) and Buruburu (middle SES) respectively. Performance rating on children ability to thread also varied by type of pre-school and SES grouping. Mathare had the highest number of children (11%) who could not thread ten beads in a minute, followed by Buruburu (6%) and Westlands (5%) respectively. Across SES, 12% of children from public and 5% from private DICECE pre-school were also not able to thread. All children from Montessori and Madrasa were able to thread beads. Irrespective of the type of pre-school, gross and fine motor abilities varied across different SES. Figure 5 shows the percentage rating in the overall physical development across different SES neighborhoods. From the figure it can be seen that children from Westland and Buruburu were rated better in physical development and well-

being compared with children from Mathare. Comparative analysis across pre-school models showed that 16% of children from public pre-schools were average in physical development and well-being, compared with 14% from both Montessori and private models.

Figure 5: Overall Physical Development by SES Grouping



Physical development and well-being aggregate scores

The highest possible score in physical development and well-being dimension was 120 marks. As table 4 shows, children from Montessori had higher mean and modal scores compared with children from private and public DICECE models. Across different SES grouping, children from Buruburu (middle SES) had comparatively higher scores compared with children from Westlands (high SES) and Mathare (low SES).

Table 4: Physical Development and Well-being Scores by Pre-school and SES

	Public n=69	Private n=91	Montessori n=36	Madrassa n=11	Mathare n=57	Buruburu n=68	Westlands n=82
Mean	86	88	97	77	86	87	90
Mode	94	86	105	54	91	96	105
Range	55	48	32	42	55	43	56
Highest score	104	105	110	96	104	100	110
Lowest score	49	57	78	54	49	57	54
SD	11.3	9	8.7	13	11	10	11.4
25 th percentile	*17 (19%)	*17 (31%)	*4 (22%)	8	*14 (22%)	*17 (26%)	*15 (25%)

* Number of children below the 25th percentile

Table 4 also shows that 31% (n=36) of children from Private DICECE, 22% from Montessori and 19% from public model were below the 25th percentile cut-off point. These children were considered not ready for school in physical development and well-being. In terms of SES, 26% (n=68) of children from Buruburu, 25%(n=82) from Westlands and 22% (n=57) from Mathare were also below the 25th percentile cut-off point in physical development and well-being.

Language and cognitive development dimension analysis results.

Assessment in language and cognitive development dimension focused on oral language skills (ability of the child to communicate in either English or Kiswahili), reading

and writing skills, phonological knowledge, cognitive abilities like problem solving, spatial understanding of similarities and differences of objects and general knowledge. Rating was based on a continuum as indicated in the SRAI guideline (see Appendix V).

Oral language skills

Analysis of data revealed that overall, 46% (n=207) of children sample were excellent in communicating in English, 35% (n=207) in Kiswahili and 38% in their first language.

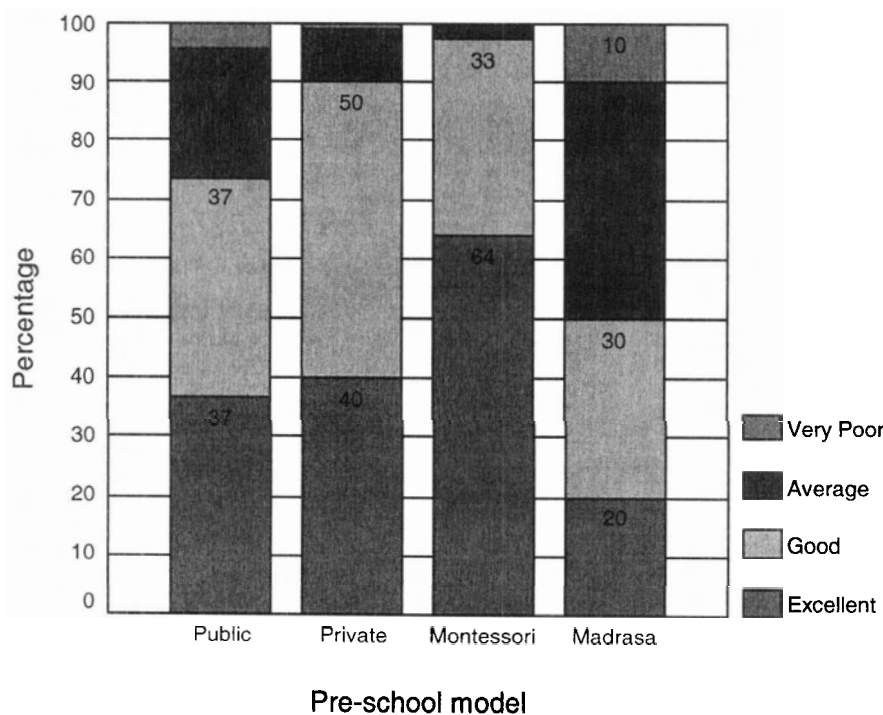
Comparatively, ability to communicate in either English or Kiswahili varied across the different type of pre-schools. Whereas 54% (n=91) of children from private DICECE model were rated excellent in communicating in English, only 33% (n=67) from public and 40% (n=36) from Montessori were excellent in communicating in English. Differences were also noted across different SES groupings, with 2% (n=82) of children from Westlands rated poor in communicating in English compared with 14% (n=67) of children from Buruburu and 20% (n=56) from Mathare respectively.

The ability to tell a story in English or Kiswahili also varied across type and SES grouping. Sixty four percent (n=36) of children from Montessori, 51% (n=91) from private DICECE, 40% (n=67) from public and 27% (n=11) from Madrasa were rated excellent in story telling. Data analysis revealed that 51% (n=82) of children from Westlands were better in story telling than the children in Buruburu (49 %, n=67) and Mathare (43 %, n=56) respectively. Performance in the ability to speak and express oneself followed a similar trend, with 67% (n=36) of children from Montessori, 42% (n=91) from private DICECE and 35% (n=67) from public rated excellent. However, 5% (n=67) of children from public were rated poor in ability to speak and express oneself. Across different SES, 43% (n=80) of children from Westlands, 43% (n=68) from Buruburu and 31% (n=55) from Mathare were

rated excellent in ability to speak and express self. A significant 4% of children from Buruburu (middle SES) were rated poor in speaking and expressing self.

Ability to participate in imaginative play also varied across and within different types of pre-schools and SES groupings. In total, 42% (n=207) of children sampled were excellent in taking part in imaginative play and 3% were rated poor. The majority of children who were unable to take part in imaginative play came from public pre-school model with 4% compared with only 1% from private DICECE model and Madrasa. No children from Montessori were rated poor in taking part in imaginative play. Children from Buruburu were better rated with 49% excellent compared with 43% from Westlands and 34% from Mathare respectively. Figure 6 shows the percentage rating of children's ability to take part in imaginative play by type of pre-school model.

Figure 6: Ability to Take Part in Imaginative Play by Pre-school Model



Communicating own needs

Analysis on the ability to communicate own needs showed that children from Montessori and private pre-schools were better in communicating own needs, with 56% (n=36) of children from Montessori and 47% (n=91) from private DICECE rated excellent. Comparatively, 4% (n=68) of children from public and 9% (n=11) from Madrasa were rated poor in the ability to communicating own needs. Across SES groupings, 52% (n=81) of children from Westlands, 50% (n=68) from Buruburu and 29% (n=57) from Mathare were rated excellent in communicating own needs. Children ability to understand on first attempt also varied from one type of pre-school to another as well as from different SES groupings. 47% (n=36) of the children from Montessori as well as 47% (n=91) from Private DICECE model were excellent in understanding something on first attempt compared with children from public (34%, n=67) and Madrasa (18%, n=11). Comparison across SES grouping showed that 4% of children from Mathare and 3% from Buruburu were poor in understanding on first attempt compared with only 1% (n=82) of children from Westland. Further analysis showed that only 2% (n=207) overall of children were not able to listen and understand on first attempt.

Reading readiness

Table 5 shows the percentage rating of children's performance in various language skills by type of pre-school and SES neighbourhood. As indicated in table 5, the ability of children to effectively handle a book for reading and writing varied across pre-school models and SES neighbourhoods. While all the 36 children from Montessori and 98 % (n=91) of children from private DICECE model were able to handle a book, 10%(n=69) of children from public and 27%(n=11) from Madrasa were not able to handle a book. Comparatively,

9% (n=57) of children from Mathare (low SES) were not able to handle a book while only 1% (n=68) of children from Buruburu (middle SES) and 5% (n=82) from Westlands (high SES) respectively were unable to handle a book.

Table 5: Summary of Children's Ratings in Language and Cognitive Skills

Child is/is able to:	Public n=69		Private n=91		Montes n=36		Madrasa n=11		Total n=207	
	%	%	%	%	%	%	%	%	%	%
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Handle a book	86	10	98	2	100	0	73	27	93	5
Interested in book	93	7	98	2	100	0	82	18	96	4
Distinguish letters of alphabet	87	12	96	4	100	0	82	18	93	7
Attach/match sound to letters	86	13	98	2	100	0	91	9	94	6
Aware of rhyming words	78	20	75	16	100	0	73	27	81	15
Participate in group reading	82	18	93	6	100	-	90	10	91	8
Read simple words	90	9	90	9	100	5	91	9	92	7

Read complex words	86	15	89	10	94	6	91	9	89	11
Read simple sentences	75	25	76	24	94	6	70	30	79	21
Use writing tool	98	2	97	3	100	-	91	9	98	2
Know page eye entry	88	12	94	6	100	-	82	10	93	7
Aware of writing direction	87	13	94	6	92	6	91	8	91	8
Interested in writing	82	18	92	8	97	3	82	18	89	11
Write own name	91	9	93	7	100	-	91	9	94	6
Write simple words	88	12	92	8	100	-	91	9	92	8
Write simple sentences	52	16	62	11	83	-	46	9	61	10

Interest of children to read a new book also varied across type of pre-school and SES neighbourhoods. Overall, 96% (n=207) of the sampled children were interested in books (pictures and print). Comparison across type of pre-school models indicates that all children from Montessori were interested in books compared with 93% and 98% of children in public

and private DICECE models respectively. A significant 7% of children in public and 2% in private DICECE models were not interested in books. Analysis across SES neighbourhoods indicated that 9%(n=68) of children from Mathare were not interested in books compared with 3% from both Buruburu and Westlands. As indicated in Table 5, all children from Montessori were able to recognize letters of the alphabet. Comparatively, 12% and 4% of children attending public and private DICECE models respectively were unable to distinguish letters of the alphabet. Children were also assessed on the ability to match sounds and letters as a prerequisite for later reading skills. Analysis of data showed that, in total, 6% (n=207) of the sampled children were not able to match sounds and letters. However, whereas all the children from Montessori were able to match sounds and letters, 13% and 2% of children from public and private DICECE models respectively could not match sounds and letters. Comparison of results across SES neighbourhoods showed that 9% (n=57) of children from Mathare, 6% (n=68) from Buruburu and 4% (n=82) from Westlands were unable to match sound and letters. While all children attending Montessori were aware of rhyming words, 20% and 16% of children from public and private DICECE models were not aware of rhyming words. Reading abilities varied across different type of pre-schools and SES neighbourhood. As shown in Table 5, children from Montessori and private pre-school models were better in reading than children from public and Madrasa pre-schools. All children from Montessori were able to read simple words, 94% could read complex words and a simple sentence. Comparatively, only 75% and 76% of children from public and private DICECE models were able to read a simple sentence. While all the children attending Montessori were able to participate in group reading, a significant 18% and 6% of children in public and private DICECE models were unable to participate in group reading. Similarly,

15% and 10% of children from public and private DICECE models respectively could not read complex words. Ability to read also varied across different SES neighbourhoods. Mathare had the highest number 26% (n=57) of the children who were not able to read simple or complex words. Public pre-school had the highest number of children (12%, n=69) who were not aware of page eye entry compared with 6% from private DICECE. Across SES grouping, all children from Montessori were aware of page eye entry compared with 18% (n=57) of children from Mathare and 6% (n=68) from Buruburu who were not aware of page eye entry.

Writing readiness

Analysis of results shows that there was no significant difference in ability to use writing tools across the different pre-school models and SES neighbourhoods. While only a small proportion of the children attending public (2%) and private DICECE (3%) models were unable to use writing tools, all children in Montessori were able to use writing tools. Only 5% of children from Mathare were not able to use writing tool compared with 2% and 1% of children from Buruburu and Westlands respectively. As shown in Table 5, awareness of writing direction varied across different types of pre-schools. Among children in public pre-school model, 13% were not aware of writing direction compared with only 6% of children from both Montessori and private DICECE models. Comparison across socio-economic grouping revealed that 15% (n=57) of children from Mathare, 10% (n=68) from Buruburu and 2% (n=82) from Westlands were not aware of writing direction. While all children from Montessori were able to write their own name, 9%(n=69) and 7% (n=91) of the children from public and private DICECE models were not able to write their own name. Within SES neighbourhoods, 13% (n=55), 7% (n=68) and 1% (n=80) of children in Mathare,

Buruburu and Westlands respectively were not able to write own name. Ability to write simple words also varied across SES and type of pre-school model.

Comparison across SES neighbourhoods shows that only 3% (n=82) of children from Westlands were unable to write simple words compared with 21% (n=57) and 5% (n=68) of children from Mathare and Buruburu respectively. All children in Montessori were able to write simple words compared with 12% and 8% of children in public and private DICECE model respectively who could not write simple words. Variation in interest to write was also noted across type of pre-school models as indicated in table 5. Comparison across SES neighbourhoods shows that 16% (n=67) of children from Buruburu had no interest in writing compared with 9% (n=55) and 7% (n=82) of children in Mathare and Westlands respectively that had no interest in writing.

Cognitive abilities

Table 6 shows the percentage of children who were rated excellent and poor in various cognitive skills by type of pre-school model. The table shows that children's ability to remember easily varied significantly across type and location of pre-school.

Table 6: Language and Cognitive Skills by Type of Pre-school Model

Ability of Child to:	Public n=69		Private n=91		Montes n=36		Madrasa n=11		Total n=207	
	%	%	%	%	%	%	%	%	%	%
	E	P	E	P	E	P	E	P	E	P
Remember Easily	55	5	71	4	78	0	46	9	66	5
Name days of week	74	8	81	5	100	0	64	9	81	13
Name position of objects	49	8	61	13	74	0	55	9	59	9
Count 1-20	81	7	90	7	94	0	64	9	86	6
Sequence numbers	88	0	91	6	94	0	64	9	89	3
Know number value	72	6	67	15	86	0	55	9	71	9
Recognize numbers	85	0	90	6	94	0	64	9	88	3
Sort and classify objects	75	5	82	4	91	0	36	9	79	4

Arrange objects in order	62	4	40	12	86	0	46	9	56	6
Interested in mathematics	71	4	77	4	77	0	55	9	74	3
Interested in number game	60	9	51	10	71	0	36	9	57	8
Tell geometric shapes	79	4	76	6	86	0	46	18	77	5
One-to-one correspondence	75	4	80	8	91	0	64	9	79	5
Construct pyramid	45	13	20	21	71	0	36	18	38	14
Time concept	52	7	54	16	86	0	46	9	58	10
*E=Excellent										
+P=Poor										

While 76% (n=82) of children from Westlands were rated excellent in remembering only 61% (n=68) of children from Buruburu and 56% (n=57) from Mathare respectively were rated excellent in remembering. All children attending Montessori were rated excellent in remembering compared with 4% and 5% of children from private and public models respectively who were rated poor. While all children from Montessori were able to name days of the week, only 74%(n=69) and 81% (n=91) of children from Public and private DICECE models respectively were able to name days of the week. Analysis across SES

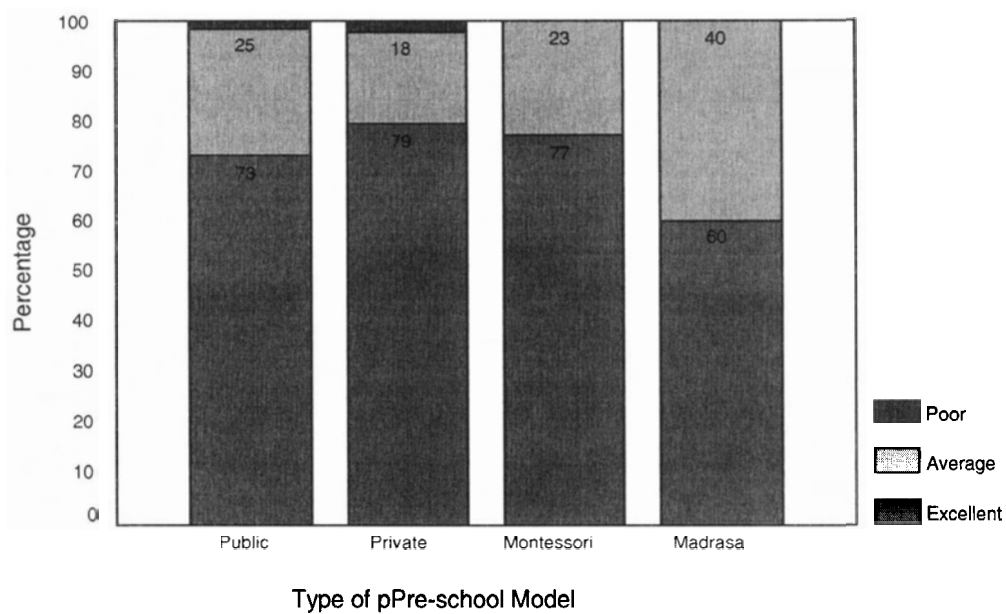
neighbourhoods showed that, 12% of children from Mathare could not name days of the week compared with 3% (n=67) and 3% (n=81) of children from Buruburu and Westlands respectively. Analysis of data on the ability to name position of objects showed disparity within type of pre-school and socio-economic status grouping. While all children attending Montessori were rated excellent in naming position of object, 13% of children in private DICECE and 8% in public were rated poor. Ability to count numbers 1 to 20 varied across type of pre-school as indicated in Table 6. Within SES neighbourhood, 88% of children from Buruburu were rated excellent in counting compare with 87% and 84% of children from Westlands and Mathare respectively. Analysis in the ability to recognize numbers showed that no child in Buruburu was rated poor in number recognition compared with 6% and 4% of children from Mathare and Westlands respectively. Table 6 shows that, while over 90% of children from Montessori and private DICECE were excellent in recognizing numbers, only 80% of children from public were rated excellent in number recognition. Knowledge of number value also varied within SES and type of pre-school models. Across SES, 15% of children from Mathare were poor in recognizing number value compared with 7% and 6% from Westlands and Buruburu respectively. Performance variation in number value within type of pre-school is indicated in table 6. Analysis of the ability in number sequencing indicated disparity in performance across type and locality of pre-school model. As table 6 shows, no children in Montessori and public models were rated poor in number sequencing while 6% of the children in private DICECE model were poor. Comparison within SES neighbourhoods showed that, no children in Buruburu were rated poor in ability to sequence number 1 to 10 in a sequence compared with 6% from Mathare and 3% from Montessori respectively.

Ability to arrange objects varied across different type of pre-school models and socio-economic status grouping. Comparison across different pre-school models showed that private DICECE model had the highest number of children who were poor in arranging objects compared with children from other models as indicated in Table 6. Across SES, 13% (n=68) of children from Mathare were poor in arranging objects compared with 5% (n=57) and 6% (n=88) of children from Buruburu and Westlands respectively.

Interest in mathematics and number game

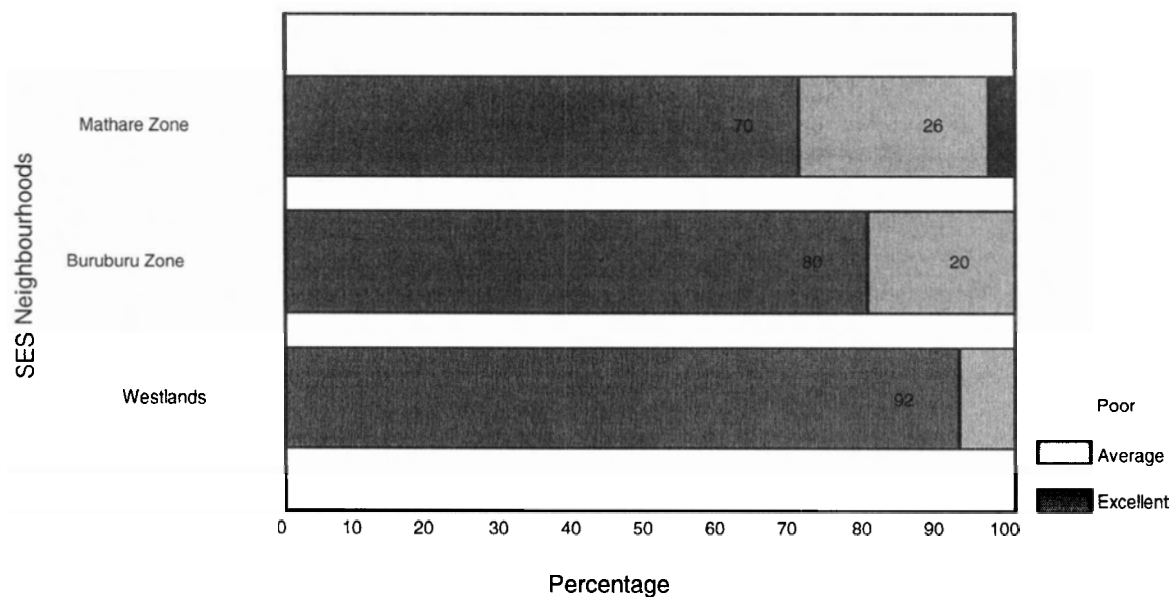
Interest in Mathematics and number game is a prerequisite to mathematical and problem solving skills. Assessment focused on children interest in number work and games such as dominos. Analysis of performance showed disparity across type of pre-school and within SES neighbourhoods. Figure 7 shows that, more children in Montessori and private DICECE models were interested in mathematics compared with children in public model. Similarly, more children from private DICECE were rated poor in number game compared with children in Montessori and public models as shown in Table 6.

Figure 7: Children's Interest in Mathematics by Pre-school Model



Ability to sort and classify objects

Figure 8: Children's Ability to Sort and Classify Objects by SES



As indicated in Figure 8, children's ability to sort and classify objects varied across the SES neighbourhoods. Comparatively, 92% of children from Westlands (high SES) were rated excellent in sorting and classifying compared with 80% and 70% from Buruburu and Mathare respectively. Similarly Table 6 shows that, 91% of children from Montessori were excellent in sorting and classifying compared with 82% and 75% of the children from private DICECE and public model respectively.

Children's ability to use one-to-one correspondence varied across type of pre-school and SES grouping. Table 6 shows the percentage of the children who were rated excellent and poor in the ability to use one-to-one correspondence by type of pre-school models. Within SES groupings, 84% (n=193) of children from Westlands were rated excellent in ability to use one-to-one correspondence compared with 78% from Buruburu and 75% from Mathare respectively.

Ability to construct a pyramid

Children's ability to build a pyramid of ten blocks varied across type of pre-school as shown in Table 6. Within SES neighbourhoods, analysis showed that, Mathare had the highest number of children (26%, n=57) who were rated poor in constructing a pyramid compared with 13% of the children from Buruburu and 9% from Westlands respectively.

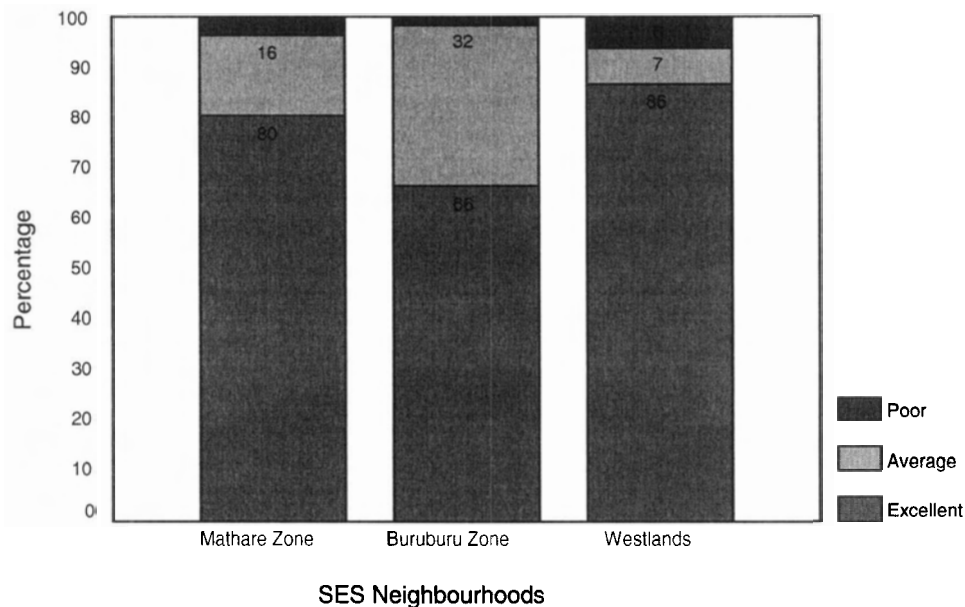
Time concept

Children were also assessed on their understanding of simple time concept such as today, tomorrow, yesterday and lunchtime. Examining performance across different SES neighbourhoods showed that 70% (n=81) of children from Westlands, 68% (n=66) from Buruburu and 30% (n=56) from Mathare were rated excellent in understanding simple time concept. While 86% of children from Montessori were excellent in understanding simple

time concept, only 52% and 54% of children from public and private DICECE models respectively who were rated excellent in simple time concept as indicated in Table 6.

Ability to recognize geometric shape

Figure 9: Recognition of Geometric Shapes by SES Neighbourhoods



Ability to recognize common geometric shapes varied across type of pre-school as indicated in Table 6. Disparity in the ability to recognize geometric shapes was also noted within SES neighbourhoods. Figure 9 shows that, 85% (n=82) of children from Westlands were excellent in recognizing common geometric shapes compared 79% (n=56) and 65% (n=66) of children in Mathare and Buruburu respectively.

Demonstration of special talents

Table 7 shows the ratings of children in special talents in various areas by SES neighbourhoods and type of pre-school models. As indicated in Table 7, children attending Montessori were rated better in numeracy compared with the children from other pre-school models. Across SES neighbourhoods, Mathare had the highest number of children (15%) rated poor in numeracy skills compared with Buruburu and Westlands respectively.

Table 7: Language and Cognitive Development Special Talents

Talent / Skill	Rating	SES NEIGHBOURHOODS			PRE-SCHOOL MODELS		
		Mathare n=57	Buruburu n=68	Westlands n=82	Public n=69	Private D n=91	Montes n=36
Numeracy	Excellent	64%	58%	82%	64%	71%	86%
	Average	20%	34%	11%	26%	18%	14%
	Poor	15%	6%	7%	9%	11%	0%
Arts	Excellent	70%	63%	72%	65%	68%	83%
	Average	21%	31%	23%	30%	22%	17%
	Poor	7%	7%	4%	4%	9%	0%
Music	Excellent	63%	57%	62%	49%	67%	69%
	Average	32%	37%	33%	45%	27%	31%
	Poor	6%	6%	5%	6%	7%	0%
Athletics	Excellent	38%	46%	46%	50%	29%	77%
	Average	55%	45%	46%	41%	63%	20%
	Poor	7%	9%	8%	9%	7%	3%
Problem solving	Excellent	26%	28%	57%	44%	27%	63%
	Average	42%	61%	37%	38%	57%	34%
	Poor	31%	10%	5%	15%	17%	3%
Other talents	Excellent	56%	40%	73%	50%	56%	80%
	Average	29%	30%	18%	28%	24%	20%
	Poor	16%	11%	6%	3%	18%	0%

In Music, children in Montessori and private DICECE pre-schools were rated better in comparison to children in public pre-schools as indicated in the table. Within SES neighbourhoods, the table 7 shows that Mathare had more children rated excellent in music (63%) compared with Buruburu and Westlands. More children in public (50%) and Montessori (77%) were rated excellent in athletics compared with those in private DICECE model (29%). There was minimal difference in the children's athletic talents across different SES neighbourhoods as shown in table 7. While 63% of children attending Montessori pre-school model were rated excellent in problem solving skills such as creativity and solving jigsaw puzzles only 44% and 27% of children in public and private DICECE model respectively were rated excellent. Within SES neighbourhoods, 31% of children from Mathare (low SES) were poor in problem solving.

Language and cognitive development aggregate analysis results.

Table 8: Language and Cognitive Dimension Descriptive Statistics

	Public n=69	Private n=91	Montessori n=36	Madrassa n=11	Low SES	Middle SES	High SES
Mean	199	201	214	179	193	201	208
Mode	225	209	225	62	225	218	227
Range	140	171	131	168	130	135	62
Highest score	235	239	235	230	235	230	239
Lowest score	95	68	104	62	105	95	177
SD	33	34	23.6	47	32.8	30.2	34.9
25 th percentile	*16 (23%)	*18 (20%)	*3 (8.3%)	*6 (54.5%)	19 (33%)	13 (19%)	11 (13.4%)

** Number of children below the 25th percentile (189 marks) considered not ready for school in language*

Table 8 shows the descriptive statistics for the aggregate school readiness scores in language and cognitive development by pre-school model and SES neighbourhoods. The highest possible score in the assessment of language and cognitive development was 240 marks. Table 8 shows that, children from Montessori and private DICECE models had a higher mean, and modal score compared with children from other pre-school models. Comparison across SES grouping shows that, children from Westlands (high SES) and Buruburu (middle SES) scored higher in language and cognitive school readiness dimension compared with children from Mathare (low SES) as illustrated by the higher mean and low range of the scores. Public pre-school model had the highest number of children (23%) below the 25th percentile mark as compared with private DICECE and Montessori models. Comparison across SES neighbourhood shows that Mathare (Low SES) had the highest number of children below the 25th percentile cut-off mark compared with Buruburu (middle SES) and Westlands (high SES) respectively as indicated in Table 8. Overall, 66% of sampled children scored below the 25th percentile cut-off (189 marks) in language and cognitive readiness skills and hence considered not ready for school.

Social and emotional development.

Overall social emotional development

Figure 10: Overall Social Emotional Rating by Pre-school Model.

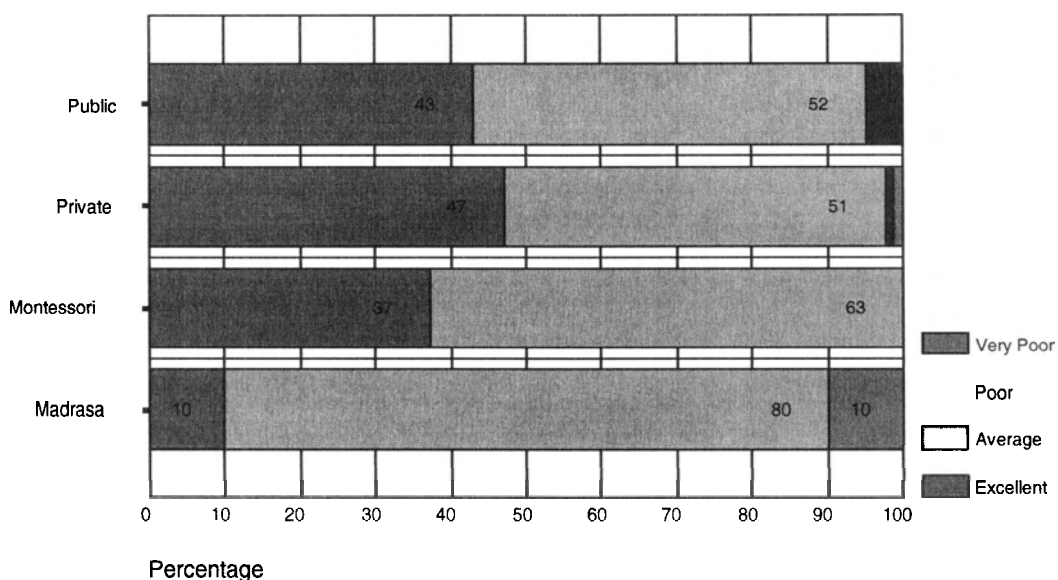


Figure 10, shows that no children in Montessori were rated poor in the over all social emotional development compared with children from other pre-school models, whereby a significant number were rated poor in over all social emotional development. Within SES

Table 9: Social and Emotional Development Rating by Pre-school Model

	Public n=69		Private n=91		Montessori n=36		Madrasa n=11	
	Often %	Never %	Often %	Never %	Often %	Never %	Often %	Never %
Play/work cooperatively	69	2	83	2	80	-	40	10
Play with others	59	3	83	-	86	-	18	9
Follow rules	62	1	89	-	86	-	27	9

Respect property	58	1	88	2	80	-	20	-
Share materials	64	3	79	1	89	-	9	9
Demonstrate self-control	57	1	77	2	63	-	18	9
Demonstrate self-confidence	61	5	80	5	77	3	46	9
Demonstrate respect for adults	75	-	91	2	89	-	55	9
Respect for children	52	2	88	1	89	-	9	9
Accept responsibility	68	3	88	2	80	-	36	9
Listen attentively	65	3	84	1	86	-	18	9
Follow directions in an activity	70	4	83	2	89	-	36	9
Complete work on time	62	13	68	8	71	-	9	9
Work independently	65	7	78	8	77	3	27	9

Work neatly	68	9	71	7	83	-	27	9
Curious	49	12	38	9	83	-	36	9
Eager to play new game	82	-	84	2	91	-	55	9
Play with new toy	84	-	87	4	88	-	36	9
Eager to play with a new book	73	2	78	5	93	-	36	9
Care for materials	72	4	83	6	85	-	46	9

neighbourhoods analysis results shown that only 52% (n=57) of children from Mathare were rated excellent in the overall socio-emotional readiness compared with 39% (n=68) and 37% (n=82) of children from Buruburu and Westlands respectively. A significant number, 4% and 3% of children from Westlands and Buruburu were rated poor compared with 2% from Mathare.

Table 9 shows the percentage rating of children's social emotional readiness indicators by type of pre-school model. Analysis of data on cooperative play showed that, public pre-school model had the fewest number of children (69%, n=69) who were often cooperative in playing and in doing other tasks with children of similar age. Comparison across SES showed that, while 79% of children from Buruburu were often cooperative in play and other tasks, only 74% and 75% of children from Westlands and Mathare respectively were cooperative in play and other tasks. While 89% of children from private DICECE often followed rules, only 86% and 62% of children from Montessori and public models respectively followed rules. Across SES, Westlands had the highest number of

children who often followed rules compared with 75 % and 73% from Buruburu and Mathare respectively.

Analysis further showed that, children's respect of other people and property varied across type of pre-school as shown in table 9. While, 76% of children from Westlands showed respect to property compared with 68% and 74% of children from Buruburu and Mathare respectively. Within pre-school models, 91% of children from private DICECE model and 89% from Montessori often showed respect for adult compared with 75% of children from public model. Table 9, shows that 89% (n=36) of children from Montessori often shared materials with other children compared with 79% from private DICECE and 64% from Public model. Analysis further showed that 3% of children in public never shared materials with others. Across SES, acceptance to share materials also varied with 4% of children from Mathare never accepted to share materials compared with 2% from Buruburu and 1% from Westlands respectively.

Overall, 68% (207) of sampled children demonstrated self-control. However, while 77% of children from private often demonstrated self-control, only 63% from Montessori, 57% from public and 18% from Madrasa respectively who often showed self-control as indicated in Table 9. Within SES, 68% (n=57) of children from Mathare often demonstrated self-control compared with 62% (n=66) and 63% (n=82) of children from Buruburu and Westlands respectively. Respect for other children also varied across type of pre-schools as indicated in Table 9. The rating in self-confidence showed disparities across pre-school models as indicated in Table 9. Generally, children from private DICECE (80%) and Montessori (77%) were better rated in self-confidence compared with those from public (61%) and Madrasa (46%). Comparison across SES localities showed that, 83%(n=57) of

children from Mathare often demonstrated self-confidence compared with 71% (n=68) from Buruburu and 63% (n=82) from Westlands. A significant number (5%) of children from both Buruburu and Westlands never demonstrated self-confidence.

Disparities in acceptance of responsibility were also noted across type of pre-schools as indicated in Table 9. Analysis across SES neighbourhoods showed that, 86% of children from Mathare, 71% from Buruburu and 75% from Westlands often accepted responsibility for their actions. However, 5% of children from Mathare never accepted responsibility.

Attentive listening is an important indicator of school readiness. Children who are inattentive in class are likely to miss out on what is being taught. Data analysis showed that children's level of attentiveness in class among pre-schoolers varied among children in different types of pre-school models as indicated in Table 9. Within SES neighbourhood, analysis showed that 83% (n=57) of children from Mathare, 67% (n=66) from Buruburu and 76% (n=82) of children from Westlands were often attentive. However, 4% of children from Mathare were never attentive. Ability of children to follow directions in an activity varied across type of pre-schools. Comparatively, 82% (n=57) of children from Mathare often followed directions whereas, only 80% and 74% of children from Westlands and Buruburu respectively who often followed directions. Within SES location, 5% of children from Mathare never followed direction compared with 2% from both Buruburu and Westlands respectively.

Independence in work and responsibility-table 9 shows that children from private (78%) and Montessori (77%) models were rated better in the ability to work independently compared with those from public (65%) and Madrasa (27%). Across SES grouping, 77% of children from Mathare often worked independently compared with 72% from Westlands and 63% from Buruburu respectively. Buruburu had the highest number of children (11%) who

were never able to work independently. Children's care of materials and properties varied across type of pre-school models as shown in Table 9. Comparatively, 85% of children in Montessori often cared for school materials compared with 83% and 72% of children from private and public DICECE model respectively. While only 2% and 3% of children from Buruburu and Westlands who never cared for materials, a significant 11% of children from Mathare never cared for materials.

Analysis of data on curiosity showed that, 83% of children in Montessori model were often curious compared with 49% and 38% of children in public and private DICECE models respectively. Table 9 also shows that 10 % of children in public model never showed curiosity. Eagerness to play with a new object or read a book varied across different type of pre-school models as indicated in Table 9. Analysis across SES neighbourhoods showed that, 86% and 83% of children from Buruburu and Mathare respectively never showed eagerness to play with a new object compared with 80% of children from Westlands.

Emotional readiness indicators

Table 10: Social Emotional Development Rating by SES and Pre-school Model

Emotional Indicator	Rating	SES Neighbourhoods			Pre-school models			
		Mathare	Buruburu	Westlands	Public	Private	Montes	Madrassa
Worried	Often	14%	2%	2%	9%	3%	0%	9%
	Sometimes	23%	24%	18%	36%	9%	14%	54%
	Never	64%	73%	18%	35%	87%	83%	36%
Crying	Often	11%	2%	5%	10%	2%	3%	9%
	Sometimes	14%	8%	11%	13%	6%	3%	64%
	Never	75%	91%	83%	77%	92%	92%	27%

Nervous	Often	11%	2%	5%	11%	3%	0%	9%
	Sometimes	28%	21%	16%	30%	13%	8%	64%
	Never	57%	78%	78%	58%	82%	89%	27%
Excessive	Often	12%	3%	2%	15%	0%	0%	9%
Shy	Sometimes	21%	31%	24%	30%	21%	22%	46%
	Never	65%	66%	73%	55%	78%	79%	46%
Suck thumb	Often	12%	0%	1%	10%	0%	0%	9%
	Sometimes	5%	3%	7%	3%	9%	0%	9%
	Never	81%	89%	90%	79%	90%	97%	82%
Temper tantrum	Often	7%	14%	5%	13%	7%	3%	9%
	Sometimes	43%	35%	44%	49%	30%	43%	73%
	Never	50%	51%	50%	38%	63%	51%	18%
Impulsive	Often	7%	8%	1%	7%	4%	0%	9%
	Sometimes	26%	38%	22%	38%	20%	17%	73%
	Never	63%	54%	76%	54%	74%	83%	9%
Difficult waiting turn	Often	12%	15%	2%	7%	10%	6%	27%
	Sometimes	46%	39%	22%	51%	27%	14%	54%
	Never	42%	46%	74%	42%	63%	80%	9%
Inattentive	Often	4%	11%	0%	43%	5%	6%	0%
	Sometimes	25%	17%	22%	28%	15%	9%	73%
	Never	68%	72%	74%	65%	80%	83%	18%
Sadness	Often	9%	5%	2%	9%	3%	0%	9%
	Sometimes	26%	27%	21%	32%	17%	17%	64%

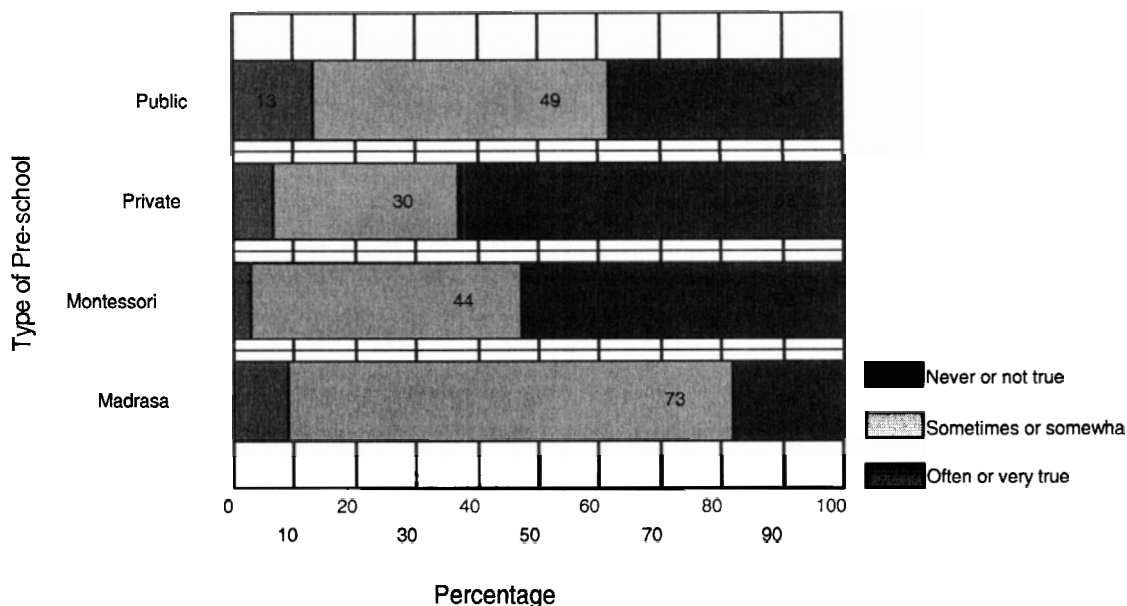
	Never	65%	68%	76%	59%	80%	80%	27%
Anxious	Often	16%	2%	2%	15%	7%	0%	9%
	Sometimes	28%	32%	18%	36%	19%	11%	55%
	Never	56%	67%	78%	49%	79%	89%	36%

Table 10 shows the percentage rating of children in various emotional indicators by type of pre-school and SES neighbourhoods. As the table shows, no child from Montessori who often showed impulsive behaviour, while 7% and 4% of children in public and private DICECE model respectively often showed impulsive behaviour. Within SES neighbourhood, more children from Mathare (7%) and Buruburu (8%) had impulsive behaviour compared with 1% from Wetlands. Sadness and unhappiness are signs of emotional problem. The study found that 7% (n=207) of children assessed were often sad. Table 10 shows that while no children in Montessori were often sad, 9% and 3% of children from public and private DICECE respectively. Number of children who often appeared fearful and worried varied across different type of pre-school models with 15% (n=69) of all children from public model often showing anxiety, 10% appeared worried and crying a lot. Only 2% of children from Montessori and private DICECE who were rated as often crying a lot compared with 10% (n=69) of children from public.

Temper tantrums- analysis of data showed that 9% (n=207) of the sampled children had temper tantrums. Comparatively, 14% of children from Buruburu had temper tantrums compared with 7% and 5% of children from Mathare and Westlands respectively as indicated in Table 10. Public pre-school model had highest number (13%) of children with temper

tantrums. Figure 11 shows the percentage rating of children showing temper tantrums by type of pre-school.

Figure 11: Percentage of Children Showing Temper Tantrums by Pre-school Model



Waiting turn in a game- overall, 56% (n=207) of sampled children had no difficulty in waiting turn in a game. Within SES, Buruburu (middle SES) had the highest number of children (15%, n=68) who often had difficulty in waiting turn compared with 12% and 2% of children from Mathare and Westlands respectively as indicated in Table 10. More children (10%) from private DICECE had difficulty in waiting turn compared with other models.

Nervousness- as indicated in Table 10, majority of the children exhibiting nervousness came from, public model, where 11% of children were often tense compared with only 3% and 9% from private DICECE and Madrasa respectively. No children from Montessori who were often tense. As shown in Table 10 Mathare had the highest number (11%) of children who were often nervous. Ability of children to make decision in a situation varied across type and socio-economic status neighbourhoods. While no children from Montessori were unable to make decision in a situation compared with 3% and 10% of

children from private DICECE and public models respectively. Most children rated as incapable of making a decision in a situation came from low SES neighbourhood as indicated in the Table 10. A Correlation coefficient of 0.168 ($r=0.168$, $p< 0.01$) was obtained showing a positive relationship between ability to make decision and locality of pre-school.

Shyness - children who are shy have a negative temperament that makes it difficult for them to adjust in a group tasks in school. Whereas there were no children from Montessori and private DICECE who were often shy, 15% of children from public pre-schools often exhibited excessively shyness. As Table 10 shows, majority of the children who exhibited shyness were from Mathare (12%) compared with 3% and 2% from Buruburu and Westlands respectively.

Thumb sucking- thumb sucking is a behaviour that may lead to malocclusion (a condition that affect eating since child cannot chew food properly). Children should therefore be discouraged to drop the habit by the time they enter school. Analysis of data showed that while there were no children from Montessori and private models who often sucked thumb, 10% ($n=68$) of children from public and 9% ($n=11$) from Madrasa often sucked thumb. Within SES, most children who often sucked thumb were from Mathare (low SES) as indicated in Table 10.

Social and Emotional Development Aggregate Scores

Table 11 shows descriptive statistics for the aggregate school readiness scores for social and emotional development dimension calculated based on the total possible score in social emotional skills of 170 marks. As the Table 11 indicates, children from Montessori had the highest mean score (130) while those from Madrasa had the lowest mean score (108). Further the table shows that performance across SES varied with children from Buruburu

scoring lower than children from Westlands and Mathare respectively. Westlands had the least number of children 16% who scored below the 25th cut-off mark compared with 22% of children from Buruburu (middle SES) and 18% from Mathare who scored below the 25th percentile (115 marks) cut-off mark. On aggregate, children from private DICECE model had better social emotional readiness scores compared with other models. Overall 37 children out of the study sample of 207 scored below the 25th percentile and hence considered unready in social and emotional development school readiness dimension.

Table 11: Social and Emotional Readiness Scores by Pre-school and SES

	Public n=69	Private n=91	Montes n=36	Madr n=11	Low SES n=57	Middle SES n=68	High SES n=82
Mean	123	130	130	108	128	124	128
Mode	115	136	144	81	143	135	144
Range	59	76	127	49	63	129	63
Highest score	144	148	144	130	148	146	144
Lowest score	85	72	17	81	85	17	81
SD	13.5	14	22.1	15.4	13.4	19.4	15.7
25 th percentile	*17	*11	3*	7*	10	15	13

* Number of children below 25th percentile (115 marks) considered unready for school in social development.

Children with special need

Table 12 shows the percentage of children in special need conditions. Within the different SES grouping, the table shows that Westlands had the highest number of children with physical disabilities (difficulty in walking, standing and pick objects) compared with

Mathare and Buruburu respectively. Comparison across type of pre-school shows that private DICECE model had more children with physical disabilities compared with public and Montessori models as indicated in Table 12. Montessori had the highest number of children with vision difficulties compared with public and private DICECE models. Similarly, Private DICECE had more children with hearing impairment compared with other models. More children from public pre-schools had speech and learning difficulties compared with children from Montessori and private DICECE models as indicated in Table 12.

Table 12: Percentage of Children with Handicaps by SES and Pre-school Model

Indicator		SES neighbourhood			Pre-school model			
		Mathare	Buruburu	Westlands	Public	Private	Montess	Madrasa
		n=57	n=68	N=82	n=69	n=91	n=36	n=11
Difficulty in walking	Yes	4%	0%	8%	2%	8%	0%	0%
	No	94%	100%	92%	98%	92%	100%	100%
Difficulty Standing	Yes	2%	0%	13%	0%	8%	6%	18%
	No	98%	100%	86%	100%	92%	94%	82%
Able to pick things	Yes	84%	93%	93%	89%	92%	93%	88%
	No	14%	7%	7%	11%	7%	7%	16%
Difficulty See far objects	Yes	16%	8%	12%	13%	9%	20%	0%
	No	82%	92%	88%	87%	90%	80%	100%
Difficulty See small objects	Yes	16%	8%	11%	15%	7%	20%	0%
	No	82%	92%	87%	85%	92%	80%	100%

Difficulty	Yes	16%	3%	13%	10%	7%	21%	9%
See near objects	No	82%	97%	87%	91%	92%	79%	91%
Can hear both ears	Yes	55%	63%	86%	79%	56%	89%	60%
	No	45%	37%	14%	21%	44%	11%	40%
Child Stammers	Yes	9%	9%	11%	12%	8%	7%	20%
	No	89%	91%	88%	88%	90%	93%	80%
Learning Difficulty	Yes	15%	15%	10%	18%	14%	0%	20%
	No	84%	85%	90%	82%	85%	100%	80%

Descriptive statistics for special needs assessment- Table 13 shows the descriptive statistics for special needs conditions by type and location of pre-school model. The calculations are based on the aggregate score of 80 marks. A high score indicates more cases of children with special needs.

Table 13: Descriptive Statistics for Special Conditions

	Public n=69	Private n=91	Montes n=36	Madra N=11	Mathare n=57	Buruburu n=68	Westlands n=82
Mean	32	35	28	27	31	35	34
Mode	30	40	39	27	30	40	39
Range	42	40	15	19	47	32	38
Highest score	45	50	40	37	50	47	48
Lowest score	3	10	25	18	3	15	10
SD	8	9.5	4.2	5.4	10	7.3	7.8

The table shows that, children from private DICECE model had higher high mean (35) and modal (40) scores compared with Montessori and public models. This implies more cases of children with special needs. Further analysis indicated that, 44 (21%) children out of the 207 scored above the 75th percentile (70 marks) and hence were considered special need cases. These children had impairing conditions in hearing, speech, vision, behavioural and learning that may affects their learning in school.

School Readiness Inferential Statistics Analysis Results

The School Readiness Assessment Instrument contained 114 items. The highest possible total score a child would get was 600 marks, distributed as follows: Physical development and well-being - 110 marks; Language and Cognitive Development- 240 marks; Social and Emotional Development –170 marks; and Special Conditions 80 marks. Table 14 and 15 shows the Analysis of Variance (ANOVA) calculated based on the aggregate scores by socio economic status neighbourhoods and type of pre-school models respectively.

Table 14: ANOVA for School Readiness Scores by SES

		Sum of Squares	df	Mean Square	F	Sig.
Aggregate score for physical development and well-being	Between Groups	736.185	2	368.093	3.113	*.047
	Within Groups	24124.259	204	118.256		
	Total	24860.444	206			
Aggregate score for language and cognitive development	Between Groups	8077.798	2	4038.899	3.742	*.025
	Within Groups	219095.527	203	1079.288		
	Total	227173.325	205			
Aggregate score for social and emotional development	Between Groups	766.564	2	383.282	1.412	.246
	Within Groups	55105.460	203	271.455		
	Total	55872.024	205			

Table 14 shows the F-statistics for language and cognitive development scores $\{f(2,204) = 3.742, p < 0.05\}$ and for physical development and well-being $\{f(2, 204) = 3.113, p < 0.05\}$ are significant at 0.05 level of significance. However, the F statistics for social and emotional development $\{F(2, 203) = 1.412, p > 0.05\}$ is not significant at 0.05

confidence level. The results indicates that the locality (either from low, middle or high SES) from which the child came from, had a significant influence in the child's school readiness scores in physical development and well-being as well as in language and cognitive development while, the locality had no significant influence on the social and emotional school readiness scores. This results support the hypothesis that locality of pre-school significantly influences the children's school readiness outcomes as postulated in the study hypothesis.

Table 15: ANOVA for School Readiness Score by Pre-school Model

		Sum of Squares	df	Mean Square	F	Sig.
Total score for physical development and well-being	Between Groups	4093.777	3	1364.592	13.339	.000
	Within Groups	20766.668	203	102.299		
	Total	24860.444	206			
Total score for language and cognitive development	Between Groups	11785.271	3	3928.424	3.684	.013
	Within Groups	215388.055	202	1066.277		
	Total	227173.325	205			
Total readiness score for social emotional	Between Groups	6371.454	3	2123.818	8.667	.000
	Within Groups	49500.570	202	245.052		
	Total	55872.024	205			
	Within Groups	13563.042	202	67.144		
	Total	14475.262	205			

Table 15 shows, one-way ANOVA for aggregate school readiness scores by type of pre-school. The table shows, F statistics for physical development scores that is large compared with the set 0.05 significance level. These show that, the type of pre-school a child attended had a significant influence in the physical development and well-being school readiness scores, $\{F(3, 203) = 13.339, P < 0.05\}$. The F statistic for language and cognitive development dimension was also significant at 0.05 significance level, $\{F(3, 202) = 3.684, p < 0.05\}$. This shows that the type of pre-school a child attended had significant influence in language and cognitive readiness scores. Similarly, F statistics for social and emotional development, $F(3, 202) = 8.667, p < 0.05$, imply that type of pre-school child attended had a significant influence on the social and emotional development readiness scores. These support the hypothesis that 'Children who attended private pre-school models had better school readiness scores compared with children who attended public pre-school model'.

Table 16 shows the Pearson correlation of the various school readiness dimensions. Comparatively, the Table shows a positive correlation between language and cognitive development and physical well-being $\{r = 0.478, P < 0.01\}$ as well as with social emotional development $(r = 0.519, p < 0.01)$. The result exemplifies the interrelationships of the school readiness dimensions such that better performance in physical development and in socio-emotional development will result to better language and cognitive development.

Table 16: Pearson Correlations for School Readiness Aggregate Scores

		Aggregate score for physical dev. and well-being	Aggregate scores for language and cognitive development	Aggregate score for social emotional development
Aggregate score for physical dev. and well-being	Pearson Correlation	1.000	.478**	.392**
	Sig. (2-tailed)	.	.000	.000
	N	207	206	206
Aggregate scores for Language and cognitive development	Pearson Correlation	.478**	1.000	.519**
	Sig. (2-tailed)	.000	.	.000
	N	206	206	205
Aggregate score for social emotional development	Pearson Correlation	.392**	.519**	1.000
	Sig. (2-tailed)	.000	.000	.
	N	206	205	206

** Correlation is significant at the 0.01 confidence level (2-tailed).

Observation and Interview Results

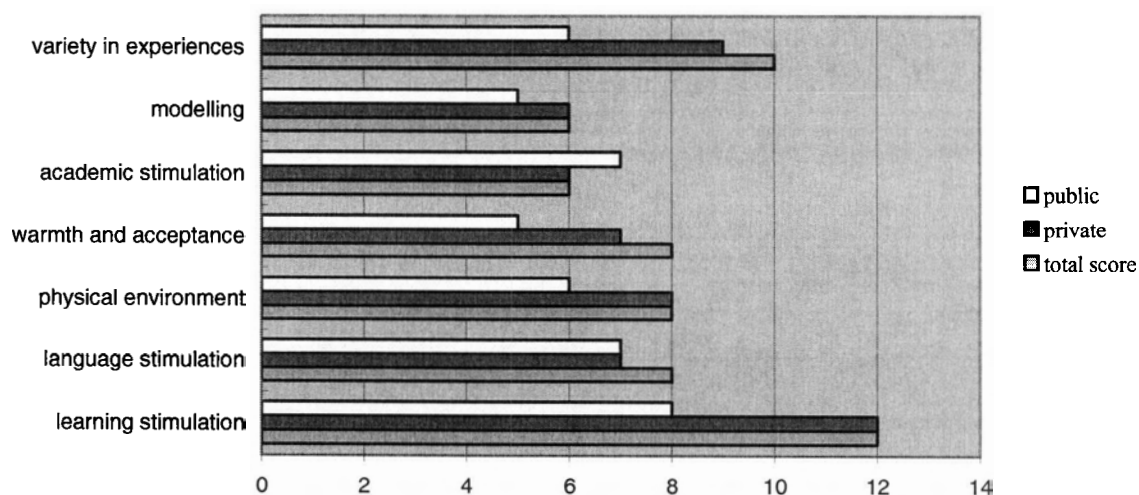
Direct observation of the pre-school physical and learning environment was done in all the twenty-seven pre-schools sampled. Twenty-seven pre-school teachers and head teachers were interviewed. Interview data showed that, most of the teachers' (78%) were within the age ranged of 18 to 45 years. Only 34% of teachers in Mathare had post secondary education compared with 58% and 96% from Buruburu and Westlands respectively. 54% of the teachers in public pre-schools had secondary level of education while over 70% from private DICECE and Montessori had secondary level of education. Whereas, 65% of the teachers in private and Montessori had experience of five years and over, 56% of teachers from public pre-schools had experience of one year or less. All teachers assessing children were trained, 70% under the Government two years in-service training for pre-school teachers and the rest Montessori training. 88% of teachers from private and Montessori pre-schools were paid salary of over Kenya Shillings 5,000 compared with 58% of teachers from public who are paid between Kenya Shillings 1000 and 2000. Whereas payment was high and regular in private pre-school, it was very low and irregularly paid in most of the public pre-schools. Teachers identified, sickness as the main cause of absenteeism in all the pre-school models. Teachers in Montessori pre-school are able to cover over 60% of the set curriculum, while teachers from public pre-school covers only 48%. Whereas parents and the school administration provide the learning and play materials in private and Montessori, teachers provide them in public pre-schools.

The teacher to pupil ratio in private and Montessori pre-schools was on average low (1: 16) compared with 1: 36 in public pre-schools. Head teachers identified, ability to read and write, artwork including drawing and age of child as the main indicators of school

readiness. While some use oral assessment teachers confirmed the use of academic testing as 60% used them to assess the children. Attendance of meetings and regular discussion between parents and teachers was better in Westlands than in Buruburu and Mathare.

Observation of learning environment revealed that there was inadequate outdoor play space in all pre-schools visited. However, the general cleanliness and safety was good except in some public pre-schools. 79% of the private DICECE model had very inadequate play space for children. Whereas, 80% of the private and Montessori pre-school had many varieties of play and learning materials only 47% of public pre-school had adequate variety of materials. All Montessori and private DICECE pre-schools had adequate writing and sitting facilities compared with only 46% of public preschools. However, only 74% over all had appropriate facilities. Parental education level varied from primary school to University. Occupation also varied across the pre-school model and SES grouping with 80% of parents from Montessori and 69% of those from private had secondary level of education.

Figure 12: Pre-school Learning Environment Characteristics



Classroom dynamics also varied across type of pre-school and SES. On average, private pre-schools had higher scores in terms of structural and classroom dynamics. The private pre-school had smaller group size, lower child-teacher ratio, appropriate care giving activities as indicated by the feeding programs and adequate play learning materials. Teachers in private pre-school exhibited more responsiveness and attentiveness to children compared with the teachers from public pre-school. Children in private pre-school showed higher positive child behaviours such as: active child-child interaction, child-teachers interactions and interaction of child with materials. In terms of teacher-child interactions, teachers in private were more responsive and sensitive to child needs and had better verbal interactions. Figure 12 shows the ratings of the learning environment and dynamism. As the table indicates, on aggregate, private pre-schools had better learning environment compared with the public pre-schools.

CHAPTER 5: DISCUSSION

Introduction

Understanding the level of school readiness among pre-schoolers in Kenya remains a critical issue. The lack of clear conceptual definition of what constitute school readiness and the interrelatedness of the developmental process that comprises school readiness has impeded the efforts for holistic school readiness assessment. This chapter discusses the findings of this study in relation to the cited literature and ongoing activities in Kenya. The discussion therefore focuses on the school readiness outcome for the 207 children sampled as assessed through the SRAI. First a discussion of the descriptive analysis, followed by inferential analysis is provided.

Discussion on Descriptive Analysis Results

Although the official age for formal school entry in Kenya is six years, the study showed that children join primary school not only at different ages but also at different levels of school readiness. Noting that majority of children who joined pre-school at older age were from low SES neighbourhood while those joining at tender age are from middle and high SES neighbourhood. The period of pre-schooling seemed to influence the attainment of school readiness. As the study findings show, children in private DICECE and Montessori had a longer period of pre-school experience and this might have contributed to their superior performance compared with children in public pre-school model. Since age is used as a school readiness determinant, there is need therefore to ensure children from all SES neighbourhoods in the city join primary school at the appropriate level of school readiness. This implies instituting government and community efforts to address the factors that influence the age differences in formal school entry. The findings also indicated variation in

school readiness scores for children of different ages. Since there was no significant difference in school readiness for children five and six years, use of age, as a criterion for school placement might be misleading. There is need therefore to focus on other school readiness dimensions instead of using age as the only school readiness criteria. The study also showed that, children from low SES were relatively older than their counter part in middle and high SES. This implies that disadvantages at household level influences the age at which children start school. Given the social economic disparities within different neighbourhoods, use of age for primary school entrance may not be followed and hence not a good measures for readiness. Household disparities will essentially affect any optimal age for readiness. Although the study did not show gender significant difference in school readiness among the pre-schoolers, cultural factors may limit access to pre-schooling, especially to the girl child and in households where pre-school education is not valued. However, cultural beliefs, child labour and neglect might deny the girl child opportunity for pre-schooling especially in urban low SES neighbourhoods.

Although the pre-school guideline encourages the use of first language at pre-school level, the study found that, majority of pre-school use English as the language of instruction. Use of first language is difficult in urban areas where the children are multi-ethnic. In high and middle SES, where there was the common language spoken at home and the instructional language were the same, the children's had better scores in oral language skills. This point to the importance of the home environment in supporting and fostering mastery of language, which in essence improves the child's language skills. The academic level of parents from low SES was low in comparison with parents from both middle and high SES. This scenario may be in essence a limiting factor in the use of English at home.

Physical development and well-being.

Assessment of school readiness on physical development and well-being focused on the child's physical abilities and the state of child well-being. The state of child well-being can only be conclusively addressed through diagnostic assessment of the child, which was beyond the scope of this study. The child's level of well-being assessed in this study focused on the factors that directly affect learning processes including, pre-school attendance characteristics and general child appearance and characteristics including: emotional imbalance, hunger, lateness and tiredness as well as the general level of energy to do school work. Frequent absenteeism from pre-school and lateness reduces the hours in which the child is engaged in actual pre-school experiences. Absenteeism and lateness may also be a proxy indicator for other problems within the child or emanating from home environment. The interviews pointed that, the child may be absent due to sickness or lack of parental support for child to attend pre-school. Children who come to school too tired and or hungry are also likely to be inattentive and less cooperative in school tasks, thus limiting their proper physical and emotional development. Inability to socialize with other children may result to the child becoming withdrawn and hence fail to attain the appropriate level of social emotional and physical skills. In the same light, children who are usually emotionally disturbed will not concentrated on schoolwork. Since there is no provision for primary school teachers to give remedial instructions, children who join school with these emotional disabilities will not only start school disadvantaged but may ultimately fail. Pre-school should therefore endeavour to address such problems with the parents before the child joins formal schooling.

Physical functional abilities

These include the ability to manipulate, hold and use tools including writing tools, independence in toileting as well as body agility in walking, running or jumping.

Independence in washroom habits is an indicator of the child's autonomy and ability to control his/ her impulses, which is important as the child joins primary school. Children who wet themselves in school may be ridiculed by others and feel ashamed which may result in lack of interest in school. This means that the children who are not independent in washroom habits will have problems in school unless they are assisted to develop the habits. Findings of this study show that children who attended public pre-school model were rated poor in washroom habits compared with those in private pre-school models. Pre-schools should enhance identification of children who may have health problem affecting their ability to have independence in toileting for referral purposes. Developing hand preference in writing or doing other things is an indicator of the child's fine motor development.

Gross motor development involves body agility as the child gains better body coordination. By age six children should be able to walk securely with increased speed, skip, hop, jump over, throw and catch small objects (Berk, 1999). Children who have not attained appropriate level in these motor skills are likely to have problem in performing schoolwork. Fine motor skills involve ability to use finger muscles and eye hand coordination and are an indicator of sensory-motor coordination. Sensory-motor abilities are important in writing; reading and manipulating of objects and children with inadequate sensory motor coordination will not attain appropriate levels of school readiness.

Development of fine motor skills help the child to acquire self-help skills such as ability to dress-up, feed self, toileting, tying shoe laces and using tools including; a pen,

pencil, crayon or books. Attainment of these skills help the children to gain autonomy and self-independence required in primary school, it is also an indicator of sensory muscle coordination. The findings in this study shows that comparatively children in private pre-school models were rated better in gross and fine motor development compared with those in public pre-school model. The difference in the level of gross and fine motor coordination as exhibited by the results imply that some children join primary school when they have not attained appropriate level of motor development and skills. The system that focuses on assessment of abilities in cognitive aspects only will fail to identify these physical development difficulties. In this light, there is need for refocusing the assessment system to identify early enough, children who may have hidden physical development problems. Pre-school should provide a safe and stimulating environment to enhance physical motor development. Activities such as manipulating crayon, Cray, painting or writing should be encouraged in order to enhance children motor skills. Pre-school should also provide opportunities for physical exercises, adequate and safe play space and a variety of appropriate and adequate learning and play materials. Children should be encouraged to exercise through running, drawing, walking, construction and modelling to enhance development of their fine motor skills. Analysis of the observation and interview data showed that, Montessori and private DICECE pre-schools had more stimulating and child friendly classrooms compared with the public pre-schools. This could explain the difference in the physical development school readiness scores. The result showed that public pre-schools and especially those in low SES had low level of developmental appropriate practice compared with Montessori and private pre-schools.

The majority of children with low school readiness scores in physical development and well-being came from the public pre-school model and low SES neighbourhood, which had over 20% of the children falling below the 25th percentile cut off point. Although the low scores could be attributed to variables within the pre-school environment, the score also depicts relationship between socio-economic gradient, quality of pre-school learning environment and school readiness outcome. This relationship creates an uneven start for children from low SES neighbourhoods as children start formal primary school education.

Language and Cognitive Development

Language is fundamental in learning. It is also critical in cognitive development as it provide a means of conveying concepts. For children to be ready for school they must be able to communicate in a language, which they understand. The child's ability to listen, speak, express feelings and fears is important for the child to be able to handle schoolwork. By the time children enter primary school they should have acquired basic language and cognitive skills, which help them to adjust in the new environment and be ready to learn. These important school readiness language indicators include: ability to recognize alphabet letters and sound; ability to speak, awareness of the print, phonological awareness, interest in books, ability to write, read, handle a book, know page eye entry, awareness of writing directions, knowledge on positions of objects, number recognition, number value, one-to-one correspondence, counting and other special talent in arts, music, problem solving, science and environmental activities.

Children must be able to converse in a language for them to understand what is being taught and also be able to interact with teachers and other children. English is the language of instruction in primary school and hence by the time children join primary school they should

be able to at least understand and respond when they are spoken to in English. They should be able to express themselves by communicating their needs, answering or asking questions and being able to participate in a game. Result of this study indicated that pre-school children ability to communicate and express self in English or Kiswahili varied significantly. The children falling below the 25th percentile cut-off were rated poor in communicating in English or Kiswahili. Such children would require remedial coaching in order for them to catch-up with their peers. In most cases primary school teachers may not provide this coaching hence the children may remain disadvantaged in language throughout primary school. The ability to tell a story or recite a poem is an indicator of better memory and thought synthesis. Story telling not only indicates the child's mastery of grammar and vocabulary in a language but also a demonstration of self-confidence. It also helps children to use learned words in a social context, thus helping the child to gain ability in verbal exchanges, increased interaction and improve memory. Children who cannot tell a simple story at age six may have problem in their mental development. They are also likely not to be able to take part in imaginative play or activities that require long attention period. Ability to take part in imaginative play is important for the intellectual development of the child. By age six children should be able to take part in make-believe plays. These play help in improving mental abilities, increased attention span and improve the verbal language of the child. General play also promotes children's respect, following of rules, autonomy and cooperation.

In order to enhance their development, pre-school environment should provide enough time and space as well as enough materials for children to use in their plays. Recognition of children interest and curiosity provides motivation and foster love for

learning, attention and self-direction. The study showed that while most children from Montessori and private DICECE models were rated excellent, children from public model were poor. It can be inferred that, private pre-school models enhances story telling and imaginative play in pre-schoolers better than public pre-schools. This situation may be as a result of the availability of many and varied play and learning materials found in the private pre-school models. Parents of children in private pre-schools had better occupation and higher academic qualifications. Such parents are likely to provide more language support to their children compared with majority of parents in the public pre-schools.

The ability to read and write depends on the child's ability to handle a book, interest in pictures and printed material, ability to know and recognize alphabet letters, ability to associate letters with sound, recognizing common words by sight and reading words in context. While many of the children assessed had acquired proficiency in the cited skills, a big proportion of children especially those from public DICECE model and from low SES were below the pass mark of 25th percentile. By the time they enter school, children should be able to turn pages of a book properly without tearing, keep the book in right position and be able to write and read from a left to right position. A child who is unable to handle a book or a pencil is also likely not aware of writing and reading direction. Such children cannot participate in reading or writing tasks. They may also fail to take part in a group reading. They are likely to be discriminated against by teachers or other children leading to frustration. Enthusiasm and curiosity to read pictures and print material help the children to improve their mastery of language. Lack of interest may result to inability to read or write. Ability of child to write own name reinforces a sense of self-esteem and increase interest in writing. Recognition of alphabet letters is an important starting point in reading and writing.

Letter recognition is an indicator of adequate perceptual abilities that depend on brain maturation and experiences. By the time children leave pre-school, they should be able to recognize letters, which are similar in shape as well as those, which are of mirror image. This study findings has indicated that, children from Montessori and private DICECE models outperformed those from public model in these abilities. This may be attributed to the richer learning environment of the Montessori and private DICECE pre-schools.

By the time they join primary school pre-school children should have acquired general cognitive skills such as the ability to use symbolic representation, understand similarities and differences between groups, remember information, develop interest in number game and explorative ideas. Findings from this study showed that, children from public pre-schools had lower scores in cognitive tasks such as, interest in mathematics, number games, arranging objects, one to- correspondence, counting and number recognition, number value as well as the ability to recognize geometric shapes. Children who cannot recognize or understand number value have difficulty in arithmetic work in school. Interest in mathematics and participating in number game encourages a child to persist and tackle tasks that involve thinking and problem solving. Children who are not interested in numbers work have difficulty in mathematics activities and may develop dislike for subjects that involve calculations later in school. Pre-school should therefore endeavour to foster this interest in number game and mathematics during the pre-school years. Ability to sequence numbers, arranging objects in order and classifying by colour or shape enhance children's mastery of number values and understanding of similarities and differences. Children should also be able to count and assign values to numbers through one-to-one correspondence. Children who cannot perform this task mean they have not grasped the concept of number

value. While majority of children from high and middle SES were rated excellent in these cognitive skills, children from low SES were rated poor or average. Majority of children below the 25th percentile were from public model and low SES. These children had difficulties in number recognition, geometric shape recognition, counting and ability to arrange objects in order.

There is need to enhance acquisition of language and cognitive skills during pre-school years. Whereas the level of cognitive abilities predicts later learning success in primary school, oral language skills, at school entry is related to later reading abilities. Special skills in art, music and athletics should also be identified and enhanced early during pre-school years. The findings of this study indicated that children from Montessori and Private DICECE outperformed the children from public model in all language and cognitive development skills assessed. Inadequate language skills by the time children join school may result in: learning difficulties, frustration, poor academic achievement, grade repetition, failure and drop out from school. On the same note, a child who cannot effectively communicate with teachers and peers may develop disruptive behaviour in school. This disparity in language and cognitive skill readiness can be effectively addressed if the government and communities improve the conditions in public pre-schools and also address the familial factors within the home environment especially in households from low SES neighbourhoods in the city.

Aspects of the pre-school environment that has been shown to enhance language acquisition in pre-school include: frequency and quality of teacher-child interaction, adequate and appropriate reading materials, group reading, one-to-one conversation and phonologically based and phonic instructions in the pre-school (Child Trends, 2000).

Comparison of the learning environment of the different pre-schools revealed disparity in the above factors. Private and Montessori pre-schools were comparatively better in the above aspects compared with public pre-schools. Government and communities should support public pre-schools especially those located in the low SES neighbourhood so as to provide adequate stimulation for children's language development. Such support may be in terms of teacher training and skill upgrading, ensuring good teacher- parent relationship, lowering the teacher-child ratio and improving the pre-school teachers remuneration. Transforming the pre-school to an integrated, child centred with stimulating learning environment with a variety of learning materials will enhance children cognitive development.

Social and Emotional Development

Social development relates to the child's social interactions with other children and adults. Emotional development pertains to the child's feeling state regarding self and others. Learning in school takes place through social interactions between the teachers and children as well as other people in the school. By the time children join primary school they should have developed age appropriate social skills and knowledge that will enable them to adjust and move along with others in the new school environment. They should be able to: understand other people's intentions using social cues, interpret and influence others' emotional reactions, express empathy, show morally relevant rules and behaviours, respect others, work independently, take care of materials, have curiosity, be eager, explorative, accept responsibility, show self esteem and confidence, follow rules and instructions, play and work cooperatively with others and control tempers. They also need to have self-confidence, be assertive, inquisitive, empathetic and self-controlled. These social emotional self-life skills should be learned during early childhood through early socialisation with parents and family

members. Pre-school teachers should ensure the social skills and emotional balancing are fostered and enhanced through encouragement, responsive interaction with teachers, play activities and exposure of children to new social environments.

Social competence is seen as the ability to interact and cooperate with peers and the ability to form and sustain relationships. A child who is able to cooperate with others will be able to form and maintain friendship, is liked by teachers and peers and hence is motivated to learn. Attentiveness is important as it help the child to persist in difficult tasks. Children who are curious are likely to learn new knowledge through their explorative nature. As the findings in this study has shown, children from public pre-schools had lower school readiness scores compared with children from Montessori and private DICECE model. These means that the majority of children from public pre-schools join primary school disadvantaged in terms of social and emotional readiness. Current entrance test administered to children for placement in primary school do not assess these socio-emotional aspects of school readiness. Several reasons could account for the differences in socio-emotional readiness among children from different pre-school models. First the high teacher-child ratio in public pre-schools may not allow responsive interactions. The low teachers' motivation in public pre-school due to low and irregularly paid salaries may affect their interaction with children and parents. Shortage of play and learning materials in the public pre-school also limits their social interaction in play. The study findings indicated that children from low SES, had relatively better social emotional readiness scores compared with children from middle and high SES. This was a departure from the expected results from the study. Several reasons could be advanced to explain the situation. First, there may be a problem in the home that affects the children's social emotional development. Since the children come from home

where the parents are most of the time away from their children this may affect their emotional development. Over emphasis on academic (cognitive) performance in the pre-schools located in this areas due to parental expectations for children to pass the primary school entrance tests. The poor conditions children live in the low SES may be resulting in the development of resilience among the children.

Children's emotion and behavioural problems are key indicators of school readiness. Several research findings have indicated that children who are depressed show maladaptive social behaviour such as poorer problem solving and conflict resolving skills. Similarly children whose parents are depressed are at a higher risk of developing depression. Pre-school could enhance social emotional development in pre-school children by encouraging activities that promote social play, problem solving skills, make-believe plays, emotion self-regulation and self-esteem. It is also important to realize that it may be impossible to compensate for development that failed to occur during a critical period (Doherty, 1997). The critical period for peer social skills is between 3 and 6 years and that of emotional control is between 1 and 5 years.

A part from acquiring skills in language, cognitive, social and emotional, children require to develop the right attitudes, enthusiasm and inclinations to use the skills, knowledge and capacities for learning. This may be affected by the predisposition of the child including, gender, cultural beliefs or environmental factors. The child's temperament, curiosity, inquisitiveness, task persistence attentiveness in class and acceptance of responsibility are inclinations that influences child learning behaviours. Parents and pre-school teachers should encourage children to develop these attitudes through encouragement and social support.

Children with Special Needs

Early identification of children with special needs is important in enhancing children's school readiness. This study attempted to identify observable impairment, disability or handicap. Specifically the categories of disabilities addressed included, visual, physical, speech, behavioural and learning disabilities. Reliability of data on the assessment of special needs may have been affected by pre-school teachers lack of adequate skills in this area. However, the findings indicated that 48 out of the 207 children sample had one form of disability / impairment or another. Although there were more children with impairing conditions from low SES and public pre-schools, handicaps cut across all children irrespective of type or locality of pre-school. The variation in the type of handicap noted within the type and locality of pre-school might be related to specific causes and hence the need to identify these causes. This calls for an adequate assessment of children to identify disabilities. This could be done when children enter pre-schools.

Discussion on the research hypothesis

The study attempted to test the following research hypotheses.

1. Pre-school children who attended private pre-school models (private DICECE and Montessori) have better school readiness scores compared with their peers who attended public pre-schools.

The findings indicated that, out of the 207 children, 46, 43 and 38 children scored below the 25th percentile cut-off mark in physical and well-being, language and cognitive and social and emotional dimensions respectively. These children were not ready for school in the various school readiness dimensions. They could not communicate and express themselves in

English or Kiswahili, could not handle a book appropriately, match letters to sound, not aware of rhyming words, had problem in reading, writing and naming positions. They also had problem in recognizing numbers and number value, sort and classify objects, sequence or arrange objects. Under physical development and well-being the children had poor overall physical development, poor or average abilities in gross and fine motor development. They usually or always attended school over/under dressed, too tired, late or hungry. The children also had poor social skills, not cooperative, unable to follow rules, lack self-confidence and control and could not work independently. The children could not manage their emotions; they were anxious and impulsive, inattentive and less caring. The children will have difficulties in primary school tasks and hence start school disadvantaged.

2. Pre-school children from low SES neighbourhoods will have lower school readiness assessment scores than their peers from middle and higher SES neighbourhoods.

The findings also showed that, most of the children who scored below the 25th percentile cut-off mark were from low socio-economic neighbourhood supporting the second hypothesis.

Worthwhile to note is the socio-emotional scores whereby, children from low SES outperformed those from middle and high SES in some aspects of social emotional readiness. However, this study is not able to provide conclusive reasons for this disparity.

Influence of SES on School Readiness Outcomes

Pre-school program that emphasizes quality care has been shown to enhance the physical, language and cognitive, emotional and social development of children making them ready to handle schoolwork. This study finding indicated a relationship between the school readiness scores and the type and location of pre-school such that children who attended pre-

schools located in high and middle SES had better school readiness scores compared with children who attended pre-schools in low SES neighbourhood. The pre-schools in high and middle SES neighbourhood also had higher level of developmental appropriate practice as indicated by the lower teacher child ratio, better classrooms and sitting facilities and more motivated teachers. Correlation of school readiness score and the quality of pre-school showed that pre-school with a better developmental appropriate practice had better school readiness scores. Although the study did not assess the familial and societal factors that may hinder or promote school readiness, these factors were implied by the location of the pre-schools. It was assumed that different SES neighbourhoods exhibited clear disparity in educational level, occupation and income of the parents hence defining the type of household the children came from. These familial factors may influence the child school readiness outcomes through the support provided to the pre-schools and child. Report of a study by Coley (Child Trends, 2002) on the influence of family and societal effects on learning, indicated a direct relationship between being able to recognize letters of the alphabet and SES. The findings of this current study alluded to similar results.

The influences of the parental and societal factors on child outcomes including school readiness could be explained in terms of the collective socialization and neighbourhood resources theories suggested by Chase-Lansdale et al. (1997). A study by Duncan et al., as cited by Doherty (1997), showed that presence of more affluent neighbours was associated with higher IQ scores and that the presence of poor neighbours was associated with more externalising problem behaviours at age five. However, this does not explain the large number of children from low SES who had better social emotional readiness scores compared with children from middle and higher SES in this study. The home environment

plays a key role in determining the readiness of the child for school. Some of the factors that have been cited to affect school readiness include: perinatal conditions, care giving environment and the health and nutritional risks during early years. The level of poverty in a community influence school readiness in several ways including: increased risk of debilitated growth and development of the child that affect later learning processes. Children born with low birth weight have a risk in brain development. The social effect of poverty such as overcrowding and lack of basic needs affects the way a family provides for and cares for the child. Competition for scarce resources in the low SES neighbourhoods affects the care of children from this areas including how the pre-schools are equipped and managed. Children from low-income families are therefore more likely to show low school readiness scores as this study conforms compared to children from relatively better of families. These conditions can only be addressed though an integrated approach that not only address the structural and dynamic aspects of the pre-school but also on health and nutritional needs of the children. Addressing the inadequacies in childcare at the household level through support to poor parents and training of caregivers (ayahs / childminders) would help to alleviate the factors that may limit attainment of school readiness.

School readiness is enhanced by good nutrition, warm and supportive relationship with the primary caregiver as well as opportunities for exploration. In conditions of Poverty, parents tend to meet the survival demands often neglecting the psychosocial care for their children. Children of parent of parents with higher education level also tend to continue with and complete education. Poverty may also result in parental stress and depression, which result to poor parenting. This is characterized by: parent child interaction, irritable and harsh parents, authoritarian, hostile parent and child abuse. Parental stress may ultimately result to

child stress affecting school performance. Household income also influences school readiness outcomes. The findings of this study indicated that children attending pre-schools in low SES neighbourhoods had lower school readiness scores compared with children attending pre-schools in middle and high SES neighbourhoods.

Fostering a developmentally appropriate practice

The quality of day-to-day care is mediated by the beliefs, expectations and practices of the caregiver (Gakuru & Koech, 1995). This implies that teachers in a pre-school play a very important role in fostering growth and development of the children. Teachers bring with them their internal working model, which is transferred to the children. Pre-school teachers must therefore be well motivated and trained in order to provide appropriate care for the children and foster school readiness. The findings in this study support the idea that, a developmentally appropriate practice will significantly improve the children's level of school readiness. The principle of a developmentally practice is based on:

- Recognition of the children's physical, safety and security needs
- Understanding that, children construct knowledge through dynamic interactions with the environment and other children and adults.
- Children learn through social interactions.
- Children learn through play.
- Play helps children to develop their imagination and creativity

Assumptions and Limitations of the Study

The study assumed that public and private pre-schools in different socio-economic status neighbourhoods vary in quality. It was also assumed that majority of children in public pre-schools in urban areas come from low social economic status households. Other factors

that affected the study included: Shortage of enough time and limited financial support affected the selection of a bigger representative study sample. In this respect, there was no assessment of household socio-economic status and other familial and societal factors. Only a small a purposeful sample of pre-schools was studied, hence it is not possible to generalise the findings. The teachers did not have enough time to assess the children for more than one time as would be best recommended to ensure validity of the data. Some of the rating might have been subjective since they were based on only one assessment. It was also noted that some teachers did not fully understand the SRAI and would have required more training. As mentioned in chapter 3, historical events emanating from the home environment were not controlled. It was also not possible to control subjective rating given that teachers from the different models might have preferred their children performing better than others. Teachers reported that, the assessment instrument was long and required more time. Given the time limit this might have affected assessment of children. Expectations for financial reward might have also affected the assessment. Administrative factors might also influence the reliability of the findings given that there was no enough time for follow-up and teachers assessed children on their own. This was minimized by assessment of at least one child in each centre by the DICECE trainers collecting the data. As mentioned earlier, subjective scoring by teachers and DICECE trainers is likely to result in scoring error and hence affect the reliability of the findings. It was also not possible to control intra-individual factors among the teachers and children.

CHAPTER 6: CONCLUSION

The purpose of this study was to illuminate the extent to which different type of pre-school models influence pre-school children's school readiness within the context of socio-economic status neighbourhood. The aim was to generate data that can support an integrated and holistic pre-school program that can adequately enhance the ability of children to be ready to learn by the age of six years. Study parameters included the physical, emotional, social, language and cognitive skills required by a child to be able to handle the formal school curriculum. The study postulated the need for an holistic and developmentally based assessment of children's school readiness within the perspectives of integrated ECD model. Since the primary role of pre-schools in Kenya has been to prepare children for primary schooling, understanding the conditions of children as they enter primary school is therefore critical. This understanding can provide clues to help the primary school teachers understand the performance of the children they receive, how to provide individualized attention and also enable parents to improve the conditions of children before school entry. However, to adequately prepare children for school, there is need to transform the pre-schools to address holistic aspects of children growth and development.

Readiness at age six has been shown to be a good predictor of the child's ability to benefit from instructions in lower primary school and hence enhancing the child's academic performance. Better performance in lower primary school determines the type of secondary school the child will join and in effect higher education and training. This study confirms the assertion that, children start primary school at different levels of school readiness. Since not every child attends pre-school, the disparity in school readiness at the time of entrance into primary school is even bigger. Whereas this disparity may be attributed to familial factors,

better quality pre-schools would be the best intervention to enhance school readiness among children irrespective of their socio-economic background. The study findings indicated that children from Montessori and private DICECE models are better prepared for school compared with children from public (lower quality) pre-schools. Similarly, children from pre-schools located in middle and higher SES neighbourhoods have better school readiness outcomes compared with children from low SES neighbourhoods. The study also indicates that children who attended pre-schools with higher level of developmentally appropriate practice had better school readiness scores compared with those who attended pre-schools with a lower developmentally appropriate practice. There was a relationship between the level of developmentally appropriate practice and SES.

The study suggested the need to address the disparities in quality of the pre-school services with the aim of improving and integrating services in order to enhance children development and school readiness. The study showed that the type of pre-school the child attends has a significant influence in the child's level of school readiness by age six. Basically, the DICECE (government) and Montessori models emphasize a child centred approach. The study indicated that a better quality DICECE model resulted in better readiness scores as was exemplified by the performance of children in the private DICECE model. This points to the fact that, what matters is not the type of pre-school but the quality of services offered in the pre-school. The study also pointed to the fact that household level and community support not only result in better quality pre-schools but also improved school readiness outcomes. This calls for government and private sector intervention to improve the quality of pre-schools in low SES neighbourhoods as well as assisting the needy households in these areas.

The information from this study shows that there is need to identify children who may require special attentions at an early age in order to improve their school readiness and learning. Early identification of impairments and learning disabilities at pre-school level will enable parents and government to institute appropriate interventions and referral. As the study has shown, 6% of the children assessed required special attention to improve their school readiness. If their conditions are not addressed, it may result in their school failure.

From this foregoing, the following conclusions are inferred:

There is need to address the inequalities in school readiness before children start formal schooling. This calls for interventions to make pre-school child centred and provide quality services. The study therefore advocates for an integrated approach in pre-schooling.

There is need to institute an holistic, age appropriate and developmentally based assessment of children's school readiness. This assessment should not be used for placement but rather for providing a linkage between pre-school and primary school. The purpose of assessment would be to provide information on school readiness to the primary school teachers so that they can provide appropriate instructions to help those children who are at a lower school readiness level to catch-up with the rest.

There is need to address the issues which might be affecting children school readiness at the home environment. There is also need to address the familial and societal factors that may be affecting children's school readiness before they join pre-schools. The findings support the need for a child centred and stimulating ECD centres (pre-school), which can be enhanced through provision of adequate learning and play materials and motivating the teachers to provide responsive care giving.

The findings showed that children from low SES neighbourhood had better social emotional scores compared with children from middle SES. This might be attributed to resilience among children from low SES neighbourhoods. Also exposure of children from middle and high SES neighbourhoods to external influences such as television might be affecting their emotional control. Lack of proper early attachment by children from well to do families, might also affects the children's social development. Similarly the situation may be explained by family related social problems such as maternal depression and coercive parent-child relationship that might be fostering a deviant behaviour.

The findings of this study support the need for a caring environment that supports optimal development of the child. Optimal development of a young child requires an organized environment that ensure gratification of all physical needs, provision for health and safety, frequent child-adult contact, positive emotional climate, varied but appropriate and patterned sensory inputs, adequate and appropriate materials for learning and play as well as a warm and responsive caregiver. It is imperative therefore to ensure the pre-school provide opportunity for optimal child development to improve school readiness. In conclusion, it is important to appreciate the wide variability in the rate of children growth and development. Assessment of school readiness therefore should focus on the purpose of instructional planning rather than for placement.

CHAPTER 7: RECOMMENDATIONS

This study has highlighted the importance of quality pre-school in enhancing school readiness among pre-school children. Lack of school readiness may result to lack of ability to cooperate with others and to communicate feelings and wishes in an appropriate verbal fashion. Children who lack such skills result into behaviours such as physical aggression and bullying. This in return results to peer rejection that may lead to low self-esteem and dropout from school. Follow-up Research in America has shown that lack of school readiness at the time of entry into school is one of the predictors for delinquent behaviour in early adolescence. Lack of school readiness may result in school dropout through: child failure to master the basic skills as a result of deficient language and cognitive skills, poor classroom skills, frequent absenteeism, repeated difficulty performance leading to low self-esteem and reluctance to try new things. The benefits of school readiness to the society ranges from, reduced loss of revenue from special coaching, to human capital development. From these foregoing and in line with the findings from this study, the following recommendations to promote school readiness among pre-schoolers are proposed.

- i. To address the disparities in school readiness, there is need for the government to address the familial and social conditions that may hinder early learning within the home environment. In this regard further study on the influence of cultural variation and income on school readiness is recommended.
- ii. Increase access to quality pre-school for children from disadvantaged households through provision of learning and play materials to make them child-centred and developmentally better.

- iii. Government should put in place a systematic procedure for school readiness assessment at pre-school level. A national and localised standard for school readiness should be established and used instead of academic testing.
- iv. Establish a workable, regular and periodic assessment of school readiness in order to establish trends in levels of school readiness for various regions and use the data for targeted interventions.
- v. Integrate measures for health and nutritional status in the school readiness assessment procedures
- vi. Government to discourage academic testing for placement and instead promote continuous and developmentally based assessment for school readiness
- vii. Use assessment to identify children who require special attention for referral and specialised learning needs.
- viii. Encourage collaboration and participation of parents, teachers, school committees and school inspectors in the assessment of children school readiness.
- ix. Conduct social mobilisation to advocate for holistic assessment and change the parental and societal perception of role of pre-school and assessment of school readiness.

Further recommended research

1. Research on the impact of at risk family support on promoting school readiness
2. Research on the impact of cultural variations and income on school readiness
3. Study on parental work stress on early childhood development and school readiness among employed parents
4. Study to compare readiness among children from rural and urban settings.

5. Research on the impact of inadequate household childcare for orphans on their school readiness.
6. Research on the readiness for primary schools to receive children.

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APPENDIX 1: SCHOOL READINESS ASSESSMENT INSTRUMENT

SCHOOL READINESS ASSESSMENT INSTRUMENT (SRAI)

(To be completed by pre-school teachers after assessing the children in * pre-unit in primary schools during normal class activities)

Information collected through this instrument is for academic purpose only

Instrument Number

/ /

A. Pre-school information

1. Name of pre-school _____

2. Name of Head Teacher _____

3. Name of teacher assessing the child _____

DD MM YY

4. Date of completion:

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5. Type of pre-school:

1. Public 2. Private 3. Montessori 4. Madrasa

6. Location of pre-school: *

1. LSES (Mathare) 2. MSES (Buruburu) 3. HSES (Westlands)

7. Language of instruction: 1. English 2. Kiswahili 3. + First language

B. Child's general information

1	Child's assessment code (child's sequential number of assessment)	(Refer to serial no of child) (Enter in the box)	<input style="width: 40px; height: 20px;" type="text"/>
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2	Sex of child	1. girl 2. boy	<input type="checkbox"/>
3	Child's date of birth in birth certificate	DD__MM__YY__	
4	Child's present age in completed years	(Enter number of years in box)	<input type="checkbox"/>
5	Child's age at admission in pre-school (Completed years)	(Enter number of years in box)	<input type="checkbox"/>
6	Child's common language of communication at home	1. English 2. Kiswahili 3. First language	<input type="checkbox"/>
7	Considered exceptional / special needs (Has any observable physical or mental problem)	1. Yes 2. No	<input type="checkbox"/>

* LES = low social economic status, MSES = Middle social economic status, HSES= high social economic status

+ First Language = language commonly spoken at home [mother tongue or language of catchment's area (ask the child)]

* Pre-unit = children who are to join primary class one following year.

Section A: Physical Development and Well-Being

1. About how many days has this child been absent from pre-school since beginning of school this year?	Number of days <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>					
Since the beginning of school this year, how often has this child arrived: (put x in app. Box/ space)	1 Never	2 Rarely	3 Sometimes	4 Usually	5 Always	6 Don't know
2. Over or under dressed for school activities						
3. Too tired to do school work						
4. Late						
5. Hungry						
6. Emotionally disturbed e.g. crying, angry						
7. Would you say that this child: (Mark by a cross X in appropriate box/space)	1 Yes		2 No		3. Don't Know	
8. Is independent in washroom/toileting habits most of the time?						
9. Shows a specific hand preference in writing or doing things (right v/s left or vice versa)						
10. Is well coordinated (moves without running into or tripping over things)						

11. How would you rate this child's (Mark by a cross X in appropriate box/ space)	1. Excellent	2. Good	3. Average	4. Poor	5. Very poor	6. Don't know
12. Proficiency at holding a pen, crayon, or brush						
13. Ability to manipulate objects/ rolling tyres						
14. Ability to climb a stair or ladder						
15. Over all physical development						
16. Level of energy throughout the school day (child is active most of time and eager to handle a new task)						
Gross and Fine motor development* How would you rate this child's ability to:	Excellent	Good	Average	Poor	Very poor	Don't know
17. Walk and step heel to toe						
18. Stand on one foot for ten seconds						
19. Jump over a rope 30 centimetres high						
20. Tear simple shapes using a pair of scissors						
21. Write a particular pattern						
22. Copy or model three particular shapes						
23. Write the letters F, A & E						
24. Thread 10 beads in a minute						

Section B. Language and cognitive skills

How would you rate this child's: (Mark by a cross X in appropriate box)	1. Excellent	2. Good	3. Average	4. Very Poor	5. Don't Know
	^	^	^	^	^
23. Ability to communicate in: (general communication to ask, request something or say something- complete for the three levels below) <ul style="list-style-type: none"> English Kiswahili Other language 					
24. Ability to listen in English (Can respond when talked to)					
25. Ability to tell a story in either Kiswahili or					

English					
26. Ability to take part in imaginative play (E.g. hind and seek game)					
27. Ability to communicate own needs in a way understandable to adults and peers					
28. Ability to understand on first attempt what is being said to him/her					
29. Ability to speak and express oneself without sound substitution					
For part 7 – 21, would you say that this child: (Mark by a cross X in appropriate box)			1. Yes ^	2. No ^	3. Don't know
30. Know how to handle a book (e.g. turn a page properly from right to left orientation)					
31. Is generally interested in books (pictures and print)					
32. Is interested in reading (Inquisitive / curious about the meaning of printed material)					
32. Is able to identify & distinguish letters of the alphabet (e.g. b, d, N, Z, M, W, p, q, u, v)					
34. Is able to attach / match sound to letters					
35. Is showing awareness of rhyming words					
36. Is able to participate in group reading activities					
37. Is able to read simple words (syllable) e.g. two letter words like in, on, an					
38. Is able to read complex words, e.g. three letter words (cat) or three letter sound (the)					
39. Is able to read simple sentences e.g. read 10 word sentence					
40. Is able to use writing tools e.g. pen, pencil, crayon					
41. Know the page eye entry in reading i.e. top left to bottom right oriented.					
42. Is aware of writing directions in English (left to right, top to bottom)					
43. Is interested in writing voluntarily (not only under teacher's instructions/direction)					
44. Is able to write his her own name correctly (at least one name)					
45. Is able to write simple words like cat, cup, pen, bed					

How would you rate this child's: (mark by a cross X in appropriate box)	1. Excellent	2. Average	3. Poor	4. Very poor	5. Don't know
46. Ability to write simple sentences e.g. this is a cup					
47. Ability to remember things easily e.g. retelling characters of story					
48. Ability to name days of the week in order					
49. Ability to name position of objects e.g. cup is on / under the table					
50. Interest in mathematics (enjoy simple number work like addition / subtraction of numbers, objects)					
51. Interest in number games such as dominos					
52. Ability to sort and classify objects in colour, shape, character etc					
53. Ability to arrange objects according to width and length					
54. Ability to use one-to-one correspondence (e.g. two for two cups, sticks)					
55. Ability to count to 20 without fail					
56. Ability to recognize numbers 1-10					
57. Ability to put numbers 1-10 in a sequence					
58. Ability to say which number is bigger of the two e.g. 5 & 8					
59. Ability to pick a specific number of objects e.g. six matchboxes					
60. Ability to recognize geometric shapes (triangle, circle, square, rectangle, diamond)					
61. Ability to build pyramid of ten blocks					
62. Understanding of simple times concepts (today, yesterday, tomorrow, bedtime)					
63. Demonstration of special numeracy skills or talents e.g. take a way and putting together in short time					
64. Demonstration of special skills / talents in arts e.g. colouring, drawing, modelling					
65. Demonstration of special skills/talents in music e.g. singing a song in class					
66. Demonstration of special skills/talents in athletics/dance e.g. Running, ball kicking, catching a tennis ball by one hand.					
67. Demonstration of special skills or talents in problem solving in creative way e.g.					

completing a simple maze or jigsaw puzzle					
68. Demonstration of special skills or talents in other areas (specify)-----					

Section C – Social and Emotional Development

How would you rate this child's: (Mark by a cross X in appropriate box)	1. Excellent ^	2. Average ^	3. Poor	4. Very poor	5. Don't know
69. Overall social emotional development (child active, sociable and control tempers)					

Below is a list of statements that describe some of the feelings and behaviours of children. For each statement, please fill in the circle that best describes this child NOW or within the PAST SIX MONTHS

Would you say that this child: (Mark by a cross X in appropriate box/ space)	1. Often or very true	2. Sometimes or somewhat true	3. Never or not true	4. Don't know
70. Plays and works cooperatively with other children at the level appropriate for her / his age				
71. Is able to play with other children (same age/different age, known, not known)				
72. Follow rules and instructions given by an adult				
73. Respect the property of others				
75. Share materials for play with others				
76. Demonstrates self-control				
77. Shows self confidence (can tell a story, poem / sing in front of class)				
1. 78. Demonstrates respect for adults				

79. Demonstrates respect for other children				
80. Accepts responsibility for actions (i.e. child is honest)				
81. Listens attentively in class or when given instructions				
82. Follows directions in activities				
83. Complete work on time				
84. Works independently (can accomplish given task alone)				
85. Takes care of school materials				
86. Works neatly and carefully				
87. Is curious about the world (know some current affairs/ news)				
88. Is eager to play with a new toy / material				
89. Is eager to play a new game				
90. Is eager to play with/ read a new book				
Would you say that this child: (Mark by a cross X in appropriate box/ space)	4. Often or very true	3. Sometimes or somewhat true	2. Never or not true	1. Don't know
91. Has temper tantrums (cry uncontrollably, withdraws, get angry)				
92. Is impulsive, acts without thinking				
93. Has difficult awaiting turn in games or groups				
94. Cannot settle to anything for more than a few moments				
95. Is inattentive (day dreaming)				

96. Seems to be unhappy, sad or depressed				
97. Appears fearful or anxious				
98. Appears worried				
99. Cries a lot most of the time				
100. Is nervous, high-strung or tense in				
101. Is incapable of making decisions in a situation				
102. Is excessively shy				
103. Sucks a thumb most of the time				

Section D – Special conditions and learning approaches

For the part below please base your answer on available/ reported medical record and your observation	1. Yes	2. No	3. Don' t Kno w
104. Physical motor disability: (mark appropriately in box /space) Compared with others does child have difficulty in: <ul style="list-style-type: none"> ▪ Walking, ▪ Sitting down ▪ Standing 	Yes	No	Don' t
105. Is the child able to pick things up by hand?			
106. Visual impairment: Compared with others does this child have difficulty in: <ul style="list-style-type: none"> ▪ Seeing black board from the back corners of classroom? ▪ Seeing small objects / letters ▪ Near object /letters 			
107. Does child have any other observable problem in eye(s) / eye sight?			

108. Hearing impairment <ul style="list-style-type: none"> ▪ Can child here with both ears? ▪ Hear with only one year ▪ Any noticeable problem in the ear(s) / hearing? 			
109. Speech impairment <ul style="list-style-type: none"> ▪ Does child speaking in stammering / stuttering? ▪ Any other problem with speech 			
110. Compared with others does the child have difficulty in: Learning?			
111. Emotional problem?			
112. Behavioural problem?			
113. Home environment/problem at home?			
114. Other (specify below, please print)			

APPENDIX II: PRE-SCHOOL OBSERVATION CHECKLIST

Observation Checklist For ECD Centres (Pre-schools)

Observation schedule number _____

Date of observation _____

Name of pre-school _____

A. Physical environment	1. Yes	2. No	3. N/A
Is the outdoor play space			
1. Adequate? (Refer to manual)			
2. Safe for children's play? (Refer to manual)			
3. Clean? (Refer to manual)			
4. Are the following outdoor equipments available? (Put an X in appropriate box /space)			
a. Swings,			
b. Climbing frame/tyres			
c. Fixed tyres			
d. Rings			
e. Water play			
f. Sand pit/box			
g. Beam balance			
5. Are the out door play equipments adequate			
6. Appropriate? (Refer to manual)			
How would you rate the indoor learning environment	Good Poor N/A		
7. Clean and in good repair (consider Floor, wall, roof)?			
8. Well ventilated? (Refer to manual for explanation)			
9. Lighted?			
10. Prevented from windy conditions?			
Are the facilities for sitting and writing	Yes	No	N/A
11. Adequate? (Compared with number of children)			
12. Appropriate?			

13. Are the learning corners richly equipped with materials? (Blocks, science, puzzles, books, art work, cards)			
14. Teachers' teaching materials (guidelines and activity books) adequate?			
Are children in the class grouped by (ask the class teacher and mark in box/ space)			
15. Age?			
16. Ability?			
17. Both age and ability?			
Caregiver / pre-school teacher characteristics	Yes	No	N/A
18. Does the teacher/caregiver show self-confidence in work?			
19. Does teacher/caregiver interact freely with children and other caregivers in the pre-school?			
20. Does caregiver / teacher shows some skilfulness in adequate handling of children?			
21. Does caregiver use local materials to prepare teaching aids (creativity)?			
Caregiver – child interactions	Yes	No	N/A
22. Is the child – teacher ratio? (Mark in appropriate box /space)			
i. 20:1 or Lower			
ii. (20 – 30): 1			
iii. (Over 30): 1			
23. Does the teacher/caregiver-child interaction encourage self-expressive language skills? (Assess by the frequency of talking, discussion, questions) refer to manual.			
24. Please rate the caregiver / teacher response to children's needs (Refer to manual)			
Responsive			
Adequate			
Not adequate			
25. Is the teacher/ caregiver to child interaction affectionate? (Refer to manual)			
26. Does caregiver praise/ acknowledge behaviour (positive guidance techniques) (Refer to manual)			
27. Does the child – caregiver interaction encourage independent play? (Refer to manual)			
28. Does the child – caregiver interaction encourage co-operative play? (Refer to manual)			
29. Does the caregiver reasonably handle child-child conflict? (Refer to manual)			
Total score			

APPENDIX III: INTERVIEW SCHEDULE FOR PRE-SCHOOL TEACHERS

Interview Schedule For Pre-School Teachers Assessing The Children

Interview schedule number _____

Date of interview _____

Name of Head Teacher _____

Name of *Pre-unit Teacher _____

Name of ECD centre _____

1. Please indicate your age in years (write number for the appropriate response in the box on the right)

1= below 18 yrs, 2= 18-45 yrs, 3= Over 45 yrs

2. Please indicate your experience as a pre-school teacher?

1= Less than one year, 2= 1 > 5, 3= over 5 years

3. What is your highest academic level?

1=below primary, 2= primary, 3= secondary, 4=post secondary

4. Have you had any professional training in pre-school education (ECD)?

(1=yes, 2= No)

5. What type of training?

A. 2 years in-service DICECE course

B. Montessori

C. Kenya Headmistress Association

D. Other training, specify _____

5. What other kind of training in ECD have you received over the past one year?

A. Seminar / workshop

B. Refresher course

C. Others, specify _____

11. Please indicate your salary range in Kenya shillings?

1. Less than 1000/=

2. 1000- 2000/=

3. 2000- 5000/=

4. Over five thousand

12. How regularly is the salary paid?

1. Monthly regular

2. Monthly irregular

3. Others specify _____

Teaching characteristics

14. What is the average daily attendance for: (record number in appropriate box)

Boys _____?

Girls _____?

15. What is main cause of absenteeism?

1. Sickness

2. Fees

3. Others, specify _____

17. What percentage of the ECD curriculum are you able to cover during the year?

1= 30%-45%, 2= 46% - 60% 3= Over 60%

19. What teaching aids/ materials do you require but are not available?

List down

20. Who provides MOST of the learning/play materials?

1= Yes, 2= No

a. Parents

b. Older siblings

c. Children

- d. Community
- e. Teacher/caregiver



APPENDIX IV: INTERVIEW SCHEDULE FOR HEAD TEACHERS

Interview Schedule For Head teachers only

1. How many children do you have in the pre-school? _____
2. How many teachers? _____
3. Number of school parents _____
4. What would you say is the longest and shortest distance children are coming from
Longest _____, Shortest _____
5. What would you consider as qualities for a child who is ready for primary school?
6. How do your teachers assess whether the children have attained these qualities?
7. What type of curriculum does your Pre-school follow?
8. Why do you prefer this type of curriculum?

9. How often do you hold meetings with the staff and parents?

Staff _____

Parents _____

10. On average how many parents attend meetings when you invite them?

Men / Fathers _____

Women / mothers _____

11. Do you keep record on parents' professional qualifications and job?

1. = Yes, 2. = No (record correct number in the box)

If yes, from your records what is the

a) Age range of the parents'/ guardian? Youngest

Eldest

b) Educational level of parents?

(Enter in the box alongside, the number of parents with educational level

indicated)

1. University/ post secondary

2. Secondary

3. Primary

4. Below primary

12. What % of the parents in the pre-school:

- a. Regularly pay the school fees as required? _____ -
- b. Pay with constraints? _____
- c. Unable to pay? _____ -

13. How would you say the parents and surrounding community assist in the ECD work?

14. What is the main source of finances for the centre?

1= yes, 2= No

A. School fees

B. Donation

C. Others, specify _____

APPENDIX V: SRAI GUIDELINE

Physical development and Well-Being

1. Number of days absent

10 & below.....	5 mks
10-20.....	4 mks
20-30.....	3 mks
30 +.....	2 mks

Number 2 to 6 (children should be rated on the various items accordingly as below)

Never = not a single day or time.....	5
makes	
Rarely – less than 5% of the time.....	4
Sometimes= uneven occurrence or over 30% of the time.....	3
Always = most of the time.....	1
Usually = most of the time, over 80% of the time.....	2
Don't know = teacher has no information regarding the child.....	0

Numbers 7 to 9

Yes = imply child can definitely perform the task.....	5 mks
No = child has unable to performing the task.....	0
Don't know = child can not perform the task.....	0

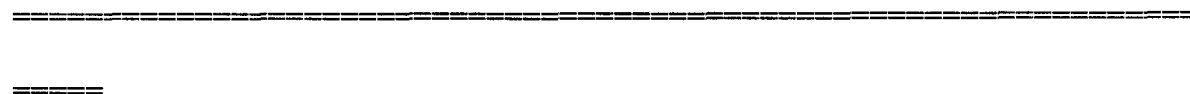
Questions 10 to 22

Excellent = imply child is perfect in the activities/task.....	5
Good = imply the is able to do the task / activity with very few problems.....	4
Average = child performs the task at average level or middle point.....	3

Poor = imply child is below average in task.....2

Very poor = child has a lot of difficulties in task.....1

Don't know = child cannot perform task at all.....0



Language and cognitive development

Excellent = is very good in task / performs exceptionally good.....

5 mks

Good = child can do / perform task with very few difficulties

.....4 mks

Average = child is at half-way

performance.....3 mks

Poor = child can do / perform task but with a lot of

difficulties.....2 mks

Don't know = child is totally not able to perform / do the

task.....0

Questions 30- to 45-

Yes = child is able to perform task without

difficulty.....5 mks

No = child has some

difficulties.....0

Don't know = child is not able to perform at

all.....0

Questions 46 to 68

Excellent = child perfect in

task.....5 mks

Average = can perform the task but with some

difficulties.....4

Poor = can perform the task with

difficulties.....3

Very poor = child performs, is interested in task but with a lot of difficulties

/problems.....2

Don't know = child is not able to perform the task or is not interested in task at

all.....0

Social and emotional development

Questions –69-103

Overall social development = rate the child as follows

Excellent= child is social, talkative, cooperative, relating and not shy but inquisitive

.....5 mks

Average = child is as above but not so

pronounced.....4

Poor= child has some difficulties in certain aspects like shyness, talking, relating,

.....3

Very poor = child has observable problems in relating/ cooperating/

.....2

Don't know = teacher can not rate the

child.....0

Question 70-103

Often/very true.....5 mks

Sometimes / somewhat true.....4

Never /not true.....3

Don't know.....0

Special conditions (Q-104-114)

Children were rated as follows

Q104

Yes = indicate a positive response/ demonstrate a difficulty -----

5 mks

No = child can not perform tasks-----

-0

Don't know = teachers is unable to judge the child.-----

-0

Q105

Yes----- -0 mks

No.....5

Q106

Yes = indicate a positive response/ demonstrate/ performs tasks-----

-5 mks

No = child can not perform tasks-----

--0

Don't know = teachers is unable to judge the child.-----

-0

Q107

Yes-----0 mks

No.....5 mks

Q108

Yes = indicate a positive response/ demonstrate/ performs tasks-----

5mks

No = child can not perform tasks-----

-0

Don't know = teachers is unable to judge the child.-----

0

Q109

Yes = indicate a positive response/ demonstrate/ performs tasks-----

-5mks

No = child can not perform tasks-----

--0

Q 110 – 114

Yes = indicate a positive response/ demonstrate/ performs tasks-----

-5mks

APPENDIX VI: LIST OF PRE-SCHOOLS AND CHILDREN SAMPLE

S/NO	NAME OF PRE-SCHOOL	TYPE	NUMBER OF CHILDREN
1	Mercury Junior Academy	Private	10
2	Marura Baptist	Private	10
3	St. Christopher's Primary	Private	10
4	Clara Academy	Private	10
5	St. Immanuel's Academy	Private	10
6	Green Meadows	Private	10
7	Alimus Learn Field Academy	Private	10
8	White Cottage	Private	12
9	Menengai P	Private	8
10	Chania	Private	8
11	Happy Land Preparatory	Private	10
12	Our Lady Visitation	Montessori	8
13	Waridi Day Nursery School	Montessori	10
14	Hopes	Montessori	10
15	Brainstorm Academy	Montessori	9
16	Mathare North	Public	10
17	Daniel Comboni	Public	8
18	Kilimani Primary School	Public	10
19	Westlands	Public	10

20	St. Michael Primary	Public	10
21	Ofafa Day Nursery	Public	6
22	Mboteladay Nursery	Public	10
23	Canon Apolo	Public	10
24	M.M Chandaria	Public	6
25	Drive-In	Public	9
26	N. Muslim Academy	Madrassa	10
27	Mauladad Nursery	Madrassa	2

APPENDIX VII: INFORMED CONSENT FORMS

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

Telegrams: EDUCATION", Nairobi

Telephone: 334411
When replying please quote

REPUBLIC OF KENYA

JOGOO HOUSE
HARAMBEE AVENUE
P. O. Box 30040
NAIROBI

Ref: PE 18/ 17/VOL.VII/24

21 June 2003

To

.....
P. O. Box.
NAIROBI.**RE: INTRODUCTORY LETTER FOR ECDVU FIELD RESEARCH**

Early Childhood Development Virtual University (ECDVU) is a distant learning programme for leadership and capacity building in Africa offered through the University of Victoria, Canada. The three-year programme lead to a Master of Arts Degree in ECD. Participating students must be working in Early Childhood Development (ECD) field from Sub-Saharan African countries. To qualify for the award of the degree, students are required to undertake a field research on a topic of their choice, which should contribute towards meeting the goals of their employing organisation.

Mr. Samuel Ngaruiya, Senior Education Officer for ECD in the Ministry of Education, Science and Technology is participating in the ECDVU programme from Kenya sponsored by the World Bank Supported ECD project. He has been authorized to undertake his filed research that focuses on ' assessing the influence of ECD programmes on children's school readiness in Nairobi Province'. This particular research is important to the Ministry of Education as it will provide information that can be used for making informed decisions with regard to provision of ECD services in the province. However information for this research is purely for academic purpose and will no be use for any decision regarding the institution or programme.

Your pre-school is one of the sampled centres for this research. In order to carry out the research, the school must be willing to participate and allow the children and teachers to take part in the research. You are formally requested to give your consent and acceptance by signing the attached form.

CONNIE O. MOGAKA (MRS).
FOR: PERMANENT SECRETARY

ECDVU FIELD RESEARCH: HEAD TEACHER'S CONSENT FORM

This research involve assessing school readiness for children in the pre-school who are in their last year before they join primary school. The assessment will involve:

- Pre-school teachers rating of the children using School Readiness Assessment Instrument (SRAI)
- The SRAI is a developmentally based and measure children on the following domains- physical development and well being, social knowledge and competence, emotional maturity, language and cognitive development, general knowledge and special abilities and conditions.
- Assessment of pre-school will be by observation and interview with Head teacher. The observation will focus on teachers' responsiveness and acceptance of child, organization of learning environment, provision of appropriate play/learning materials, and teacher involvement with children, physical environment and the variety of stimulation for children. A semi-structure interview schedule will be used to conduct interview with the Head teacher focusing on pre-school dynamics and management.

Assurance

- The collected data will be confidentially treated and will not be availed to other people rather than the pre-school staff on request.
- A number to avoid information leakage will identify children and pre-school participating.

Consent

We/I agree to pre-school participation in the research in reference to above information and assurance.

Name of pre-school _____

Name of Head teacher _____ Signature _____

Date: _____

ECDVU FIELD RESEARCH: PARENT'S CONSENT FORM

This research involves assessing school readiness for children aged FIVE and SIX years in the pre-school who are preparing to join primary school. The assessment will involve:

- Rating of children using School Readiness Assessment Instrument by their pre-school teachers.
- The assessment instrument is a developmentally based and measure children on the following domains- physical development and competence, child health and well being, social knowledge and competence, emotional maturity, language and cognitive development, general knowledge and special abilities and conditions.
- Teachers will be trained on how to fill in the instrument and provided with a simple short guide.
- Assessment of pre-school conditions will be done through observation and interview with Head teacher. The observation will focus on teachers' responsiveness and acceptance of child, organization of learning environment, provision of appropriate play/learning materials, and teacher involvement with children, physical environment and the variety of stimulation for children. A semi-structure interview schedule will be used to conduct interview with the Head teacher focusing on pre-school dynamics and management.
- District Centre will conduct observation and interview for Early Childhood (DICECE) trainers who will be inducted prior to data collection.

Assurance

- The collected data will be confidentially treated and will not be availed to other people rather than the pre-school staff on request.
- Children and pre-school participating will be identified by a number to avoid information leakage.

Consent

I / we agree to participate in the research in reference to above information and assurance.

NAME _____
 SIGNED _____
 DATE _____

HUMAN RESEARCH ETHICS COMMITTEE

Office of Vice President Research

University of Victoria

Room 424, Business & Economics Building

Victoria, BC V8W 2Y2

Tel: (250) 472-4362 Fax: (250) 721-8960

ETHICS Email: ovprhe@uvic.ca

Date: July 7, 2003

Notice of Ethical Review

PRINCIPAL INVESTIGATOR: Samuel Ngaruiya (Alan Pence Class Project)

TITLE: Assessing the influence and implications of different ECD models on child readiness for schooling in Kenya

The Committee has reviewed and approved the protocol for your proposed study. You may commence your research, and you will receive a *Certificate of Approval* via regular mail.

Dr. Janet Storch
Chair, Human Research Ethics Committee
ovprhe@uvic.ca

Monica Blais, MA
Human Research Ethics Facilitator
hrethics@uvic.ca