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CHAPTER 1

INTRODUCTORY ORIENTATION

1.1 BACKGROUND

In order for children to flourish, the development and enhancement of their maximum capabilities and potential, as well as making the most of their period of existence, are of the utmost importance. The early years of a child's life are years of rapid development and change (De Witt and Booysen, 1995: p10; Gonzalez-Mena, 2011: xvii). According to Ilifa Labantwana in *The Essential Package* (2013, p31), there are various facets of a child's development, namely the sensory-motor, social-emotional, language, cognitive and physical domains. McAfee and Leong (2007: p36), include normative and spiritual as additional areas of growth.

A child should, by the age of three, have a strong foundation for his/her physical development, have developed the basis of his/her language skills, and should be starting to develop an understanding and reasoning ability in regard to the surrounding world. Most children at this age are ready and willing to learn. They thrive on knowledge; and they eagerly develop their skills, and are eager and willing to develop new abilities (De Witt, 2009: p11; Lindberg & Swedlow, 1985: p181).

According to the Education White Paper 5 on Early Childhood Development (2001: p2), *'Approximately 40% of young children in South Africa grow up in conditions of abject poverty and neglect... [These children] are most at risk of infant death, low-birth weight, stunted growth, poor adjustment to school, increased grade repetition and school dropout.'* Unless the lifestyles of South Africa's neglected, under-stimulated and malnourished children are rectified, they are at risk of irreversible brain damage and stunted physical growth.

According to Penn (2004: p11 – 12), two fundamental studies have been implemented in the United States of America, which have proven to be beneficial by way of early intervention programmes. These studies include: The Perry High Scope and the Abecedarian. These studies indicate that children who have been exposed to some form of early intervention programme perform better in the long term. Such children tend to stay away from imprisonment and teenage pregnancy, thereby minimizing the expense of implementing corrective measures.

Under-age and under-prepared learners, who have proven to be the most at risk in terms of school failure and drop-out, would certainly be reduced through the process of providing thorough early intervention and stimulation, as well as the laying of foundational concepts before they enter formal schooling (Kostelnik, Soderman & Whiren, 2004: p7).

South Africa has committed to eight key Millennium Development Goals. These are fundamental issues, which South Africans face daily, and aim to have eradicated before the 2015 deadline. In a preface to the Millennium Development Goals: Country Report 2010 (2010: p4), the South African President, Jacob Zuma, declared that the responsibility of implementing the Millennium Development Goals is a national and global effort.

When referring to Development Goal 2 – Achieving Universal Primary Education – he stated: *‘We are aware that we have a massive backlog of skills and ... we remain aware that the quality of our education holds back our route to development.’*

According to the Millennium Development Goals for South Africa (by 2015), *‘Children everywhere, boys and girls alike, will be able to complete a full course of primary schooling.’* Primary schooling includes Grades 1 – 7, and refers to children between the ages of 7 and 13 years old.

A survey done by the United Nations Statistics Division (February 2007) states that in 1999 no more than 64.8% of South African children who had started formal schooling in Grade 1, managed to remain in the system until Grade 5. By 2001, this percentage had risen to 86% of children remaining in school from Grade 1 to Grade 5. In 2004, the statistics had dropped to 84.1% of children who had begun formal schooling in Grade 1 remained in the school system until Grade 5.

Although an increase in literacy, numeracy and life-skill abilities has been noted in South Africa over the past decade, the focus on early intervention has increased, and decisions have been made to equip learners from a younger age – laying foundational concepts and ensuring ‘formal’ school readiness. Grade R plays an imperative role in early childhood development. One of the key aspects of this Millennium Goal is to improve the access of 5-year old children to Grade R (<http://www.southafrica.info/about/social/mdg-050805.html>: 10/1/2012; <http://www.undp.org.za/millennium-development-goals>: 9/1/2012).

This newly acknowledged importance is being realised for Early Childhood Development and adequate primary school teaching. According to the Millennium Development Goals: Country Report 2010 (2010: p41), intervention in South Africa is fundamental in building a foundation for a better South Africa. The importance of enhancing young children's cognitive abilities and capacities – by empowering and equipping teachers and parents with knowledge and understanding of how children learn and develop – is fundamental. And according to Penn (2010: p12), this is seen as a way of combating child poverty. Penn believes that '*poor educational performance, low aspirations and inequality can thus be addressed in a society where, theoretically, success is open to all, but where there is deep-rooted poverty*' (2010: p12).

The South African skills policy is related to the country's history. The Apartheid regime promoted many inequalities, especially for the black South Africans during the time of 'Bantu Education'. This resulted in many black South Africans becoming obliged to take up various forms of unskilled labour, limiting their ability to excel in further education.

Most western children in South Africa, as elsewhere, are exposed to some form of stimulation from birth, and are constantly exposed to people discussing things from their environment, including shopping, shapes, numbers, age, sequence, and more (Seefeldt & Barbour, 1998: p452-453). Although the child may be exposed to different concepts through their experiences, it cannot be assumed that the child has developed an overall understanding of concepts (Seefeldt & Barbour, 1998: p452-453).

In this research project, the researcher will deal with the impact that practitioner-education and skills training can have in the underprivileged sector of South Africa, and how developing a deep understanding of ways in which children learn could impact the nation in a great way.

1.2 PROBLEM ANALYSIS

Prior to identifying the problem, the analysis of the problem needs to first be presented. This analysis illuminates some surrounding issues, and clarifies the context of the study. It is a stepwise process, consisting of exposition, exploration – and the formal statement of the problem (http://www.idrc.ca/en/ev-56596-201-1-DO_TOPIC.html, 16/05/09).

1.2.1 Exposition of the problem

Most parents, practitioners, centres and schools want the best for their children; and they want to see their children succeed and excel. Gordon & Brown. (2008: p596), stated that, ‘*When a society values its children, it takes the responsibility for providing a quality of life for them*’. Parents, practitioners, caregivers and families are the child’s first educators; they not only teach language and day-to-day concepts, but also instill values, morals, religious beliefs, and ethics (Gordon & Brown., 2008: p307). According to an article by DG Murray Trust, *Locating Early Childhood Development in South Africa: Key Environmental Factors* (2013: p4), ‘*the early years of a child are marked by rapid transformations in physical, cognitive, language, social and emotional development*’. It goes on to state the evidences of the rapidity in which children grow and develop and how this lays foundations for future learning potential (2011: p4).

In the South African context, it seems that many parents, care-givers and practitioners are unaware of the developmental levels and steps in the development of children; and thus, they are ill-equipped and unable to effectively stimulate and enhance their children’s development (Gordon & Brown., 2008: p315). A South African press release, *South Africa: Child Gauge 2012 – Parliament Must Debate the State of Children* (2012), states that there are approximately 50 000 child headed households in South Africa, with 1.1 million children that are dependent on social assistance. The communities, institutions, schools, teachers, families and practitioners dealing directly with children have an incredibly important role in providing opportunities for children to learn and gain understanding of concepts.

According to a recent publication, *South Africa’s Progress in Realising Children’s Rights: A Law Review* (Ed. Proudlock: 2014), there are four key elements which result in South Africa having the worst education system of all middle-income countries, and in some instances, performing worse than low-income African countries. The four key elements contributing towards the poor education results in South Africa are ‘*availability, accessibility, acceptability and adaptability*’ resulting in the majority of children in South Africa achieving poor educational outcomes (Ed. Proudlock: 2014).

The state of the South African education system, together with the realities of poverty that many families face in South Africa, leaves the nation with a collective responsibility to warrant that children are provided with the necessary provision and intervention which can afford children with opportunities to live a valuable and impactful life.

Although South Africa has one of the highest rates of expenditure on education in the world with R232.5 billion in 2013 (UNICEF: 2014: p105), the state of children's ability levels is still poor.

Through observing a number of early childhood centres in the underprivileged sector in the South African context, many day-care centres, crèche's, play schools, baby homes, Grade R schools and safe havens are developed with the sole purpose of 'entertaining' or 'babysitting' children; but because of a lack of teacher-education and skills training, a great lack of an educational understanding of children's development and growth takes place.

The educational level of the teachers themselves was weak which restricts the teachers opportunities in terms of training. Another challenge that teachers which have an opportunity to receive training encounter is the quality of the training that they receive and whether they are able to implement this in their centres in a hands-on approach.

1.2.2 Preliminary exploration of the problem

The principal aim of this study is to gain a comprehensive understanding of the effects of practitioners' skills training in underprivileged South African Early Childhood Centres. Practitioners will take part in an eight-month Early Inspiration Training Programme, which is designed specifically for current or prospective practitioners who deal directly with children from birth to six and a half years, who need to acquire skills, which would enhance their overall development. Practitioners include those working in early childhood centres, day-care centres, crèches, baby-safe homes and orphanages; but for the purpose of this study, we will deal specifically with Grade R practitioners teaching children between the ages of five and six and a half years.

The highly interactive Early Inspiration Training Programme is run over eight months; but it requires a maximum of between one and three days in the training classroom at any given time, thereby providing the practitioners with an understanding of young children's development, as well as acquiring the competences and new skills needed to enhance the development of young children.

In addition, an accompanying mentoring programme ensures that these practitioners are supported and guided throughout the eight-month programme, equipping them with skills for enhancing young children's development, assessing abilities, enhancing community

involvement, writing, reading and understanding texts, as well as interacting with other young children. This mentoring programme will be in the practitioner's mother tongue, and will be in the form of support and guidance for practitioners.

A number of on-site observations will take place throughout the eight-month training programme, where Early Inspiration staff will provide support and guidance for the practitioners in their early childhood centre.

The Early Inspiration Programme not only creates an awareness of what to teach children, but it develops an understanding of how children learn in order to promote the development of foundational concepts. This is done by means of educating and empowering practitioners and care-givers, as well as strengthening national resources and capabilities.

The Early Inspiration Training Programme will also empower practitioners and parents in ways whereby to meet their child-rearing responsibilities by being provided with simple activities and expectations in each age-group.

The effectiveness of the Early Inspiration Training Programme will be ensured by means of a literature study, as well as an empirical investigation.

It is important to have a full understanding of the individual development of children in their early childhood, referring specifically to the development of cognitive concepts. Theories explaining the importance of teaching these concepts to the young child, and what early cognitive stimulation entails will be critically reviewed. The development of early learning, the promotion and implementation of what has been learned through the Early Inspiration Training Programme, as well as processes and strategies will all need to be evaluated as a basis for early learning.

This will be done, in order to create an integrated developmental approach and programme to promote early learning.

In order to fully understand the effects and results of practitioners being trained and mentored by the Early Inspiration Training Programme, focusing specifically on the impact and growth seen in the development and growth of young children, the purpose of this study will be to examine the effects of concepts taught during the training and implementation in the classroom, resulting in the stimulation and development in the young children, and enhancing their development in totality.

This study will be conducted:

- To gain a comprehensive understanding of the effectiveness of practitioners' training in underprivileged early childhood settings in the South African context, specifically that of the Early Inspiration Training Programme
- To assess the validity of the Early Inspiration Training Programme impacting on the child's development in totality; and
- To establish the reliability of the application of such a programme, focusing on equipping, empowering and educating unskilled practitioners dealing with young children.

1.2.3 The research question

After interrogating the research problem by using the preliminary literature study, it became apparent that there is a great demand in South Africa for effective skills-training programmes – training practitioners in dealing with young children on the basic domains of development as well as providing them with a deep, yet practical, understanding of children's development, expectations that can be placed on children at different levels, and activities which can be implemented within the various age groups.

Thus, the research question for this study can be formulated as follows:

- *What are the effects of the Early Inspiration Training Programme on the young children of South Africa?*

The research will provide confirmation on the effectiveness of the programme, showing the importance of stimulation in the early childhood years, and the envisaged long-term effects of this stimulation. Thus educators, primary care-givers, teachers and parents that are dealt with in this study, will become more aware of the importance of early childhood care and the long-term effects and their implications, thereby developing an understanding of the key concepts dealt with during the programme.

Once an understanding of the effectiveness of the Early Inspiration Training Programme has been developed, further secondary questions will arise, such as:

- *What is the child's ability to learn and develop numeracy and mathematical concepts, literacy and language development, general knowledge, and life skills development, preventing repetition of grades and school drop-out?*
- *How can the various cognitive concepts be provided for in the early childhood programme, preventing early drop-out rates and repetition of grades?*
- *What can teachers and parents do to enhance their children's mathematical, language, life skills and general knowledge ability?*

An understanding of the stimulation and development of cognitive abilities in the young child will provide an understanding of the different developmental levels and methods of learning, as well as the ability of the young child to learn and develop abstract ideas and knowledge. It could further add to the body of knowledge with regard to what should be done by teachers and parents, in order to enhance the young child's development.

1.2.4 The aim of the study

The primary aim of this study will be:

- To assess the effectiveness of the Early Inspiration Training Programme in early childhood centres in underprivileged sectors of South Africa.
- To test the validity and effectiveness of sending practitioners on the eight-month training and mentorship programme.
- To assess the growth and development in young children's development over the eight-month period, in order to examine the effects of the stimulation concepts in young children;
- To indicate how such concepts can be provided for in the early childhood centre.

1.3 RESEARCH DESIGN AND METHOD

This study employs the quantitative approach to explore the effects of the training of practitioners working in early childhood centres within the underprivileged sector of South Africa. In quantitative research, researchers are aware of the outcomes they are expecting, and strive to remain objectively separated from the subject matter being researched. 'Designing quantitative research involves choosing subjects, data-collection techniques (e.g.

questionnaires, observations, or interviews), procedures for gathering the data, and procedures for implementing treatments' (McMillan & Schumacher, 2006: p117).

All aspects of the study will be carefully designed before the data are collected and analysed.

An outline of the literature study, the empirical research and the research instruments used to conduct this study, will be furnished in this section. Quantitative research involves an analysis of numerical data. The reason for this study being quantitative is because the aim is to determine the relationships between one phenomenon (independent variable) and another (dependant variable) in a population. (McMillan *et al.*, 2006: p117–119; <http://www.socialresearchmethods.net/tutorial/Abrahams/sbk16.html>, 10/10/09)

1.3.1 The literature study

The primary reason for doing a literature study is because it compares any new research with previous research in the same field. It can be used to create awareness of the topic, to shed light on already-existing knowledge, on the theoretical paradigms, which have already been developed and previously researched. The literature review is educative; it enables one to identify areas of uncertainty, differences, and any confusion within the field of study. It also provides for a scientific discussion of the deductions from the literature.

Many sources, including published books, journal articles, and electronic sources from the Internet, will be employed to obtain an in-depth understanding of the nature and meaning of the problem in this study on cognitive development (McMillan *et al.*, 2006: p75-77).

1.3.2 The empirical research

The effects of the implementation of concepts learned during the Early Inspiration Training Programme, enhancing the stimulation of total child development in the early years, can best be described in quantitative terms. Therefore, in order to understand the practitioners' responses and personal opinions, it is necessary that questions be posed to provide quantitative descriptions (McMillan *et al.*, 2006: p10).

The research will be performed by means of the 'True Experimental Design', whereby the subjects will be measured before and after the treatment. It is believed that the True

Experimental Design is ‘the preferred method of research’. It provides the highest degree of control over an experiment, enabling the researcher to draw causal inferences with a high degree of confidence’. (http://www.socialresearchmethodsnet/tutorial/Abrahams/sbk_16.htm, 10/10/09)

This is the only design that can effectively determine the cause and effect of the study, as it involves a control group and an experimental group (McMillan *et al.*, 2006: p24).

All subjects who take part in this research will be assigned to either the control group or the experimental group – by way of probability sampling, based on randomisation. All subjects in the population (isiXhoa Grade R classes from Port Elizabeth schools or centres) have the same chance of being selected. The subjects will be selected by systematic random sampling, where each individual has an equal chance of being selected.

Systematic sampling selects subjects from a population by firstly selecting only one case randomly, by using a random table with each individual representing a number. All subsequent subjects will be selected, according to a particular interval (http://conflict.lshtm.ac.uk/page_35.htm, 15/6/2013).

1.3.3 Research design and methodology

The research design will be a quantitative method of capturing and analysing the data. It will be an ongoing process of working with children and gaining a deeper understanding of their development as individuals. The emotional, physical, social, language, play and cognitive development of each child will form part of this investigation, as the child always needs to be seen as a whole, and there is no way of separating the child from the environment.

The literature will be reviewed, in order to identify the cognitive activities, which assist in the stimulation of young children; and the most suitable ones will be included in a battery of tests. The programme will cover all concepts and elements of development, including physical-motor, social-emotional, cognitive, play and speech, and language development, which are applicable to the young learner.

In order to determine the validity of the test, 800 subjects will be selected from 30 Grade R classes; and these will be assigned to either the experimental or the control groups through random selection.

Both groups of children between the ages of five and six and a half years will undergo age-specific initial testing, which will determine their understanding and knowledge of the physical-motor, speech and language, cognitive, play and social-emotional concepts, as well as other skills and abilities. Thereafter, for eight months, both the experimental and control-group practitioners will undergo their normal daily programmes.

In addition to this, the experimental group's practitioners will undergo monthly Early Inspiration Training Programme training and mentorship sessions.

After the eight-month intervention programme, both groups of children will again undergo a post-test to determine their understanding and knowledge of the five domains of development, including the concepts and skills learnt.

The following analysis of the data will be employed:

1. Single variable descriptive statistics (mean, standard deviation and frequency distributions) will give insight into the pre- and post-intervention scores.
2. The reliability of the scores for the pre-test and post-test procedures will be determined by item analysis comprising the calculation of Cronbach's coefficient alpha (McMillan *et al.*, 2006: p54, p185-186).
3. T-tests will be carried out, in order to determine the level of statistical significance of the differences between the control and experimental groups, as well as to compare the two groups' mean scores.
4. The level of statistical significance of the study will be determined by the p-level or level of probability (McMillan *et al.*, 2006: p292). A critical value at the five-percent level of significance ($p \leq .05$) is required for statistical significance.
5. The practical significance will be assessed, and a conclusion will be determined 'by an effect size statistic', which will then indicate whether the research would be practically important and would contain useful information, which could impact on current policy or ways of life.
(<http://www.utexas.edu/academic/ctl/assessment/iar/glossary.php#p>, 09/09/13). If the results show statistical significance, then practical significance is achieved, according to Cohen's D, where statistical tests related to the mean value fall above the interpretation levels.
6. The level of improvement in the scores, as a result of the intervention programme will be tested by conducting Analysis of Covariance, using the statistical software package

program Statistica – with treatment of the grouping variant and the pre-test score, as well as the covariant (McMillan *et al.*, 2006: p165).

A number of hypotheses will be postulated. These will be dealt with in detail in Chapter.

1.3.3.1 Ethical measures

In order to ensure that this research meets the necessary ethical requirements, the required ethical clearance will be obtained from UNISA, the relevant Education Department (if necessary); and then the parents and practitioners will be provided with a letter explaining in detail the aims and objectives of the research and the method to be used to achieve these. Full confidentiality will be guaranteed at all times, as the wellbeing of the children is of paramount importance.

The process of conducting this research will in no way put the child at risk (Neuman, 2006: p340).

1.3.4 Reliability

‘Reliability refers to the consistency of measurement – the extent to which the results are similar over different forms of the same instrument or occasions of data collection’ (McMillan *et al.*, 2006: p183). If the instrument does not show much error, then it is taken to be reliable. If the instrument has a great number of errors, it is seen as being unreliable.

Validity, according to McMillan *et al.* (2006: p188), suggests truthfulness, and refers to how the investigation fits into the greater reality of day-to-day occurrences. Reliability is essential for validity to be assured; and these two are often seen to complement one another. Reliability and validity can, however, sometimes conflict with one another (McMillan *et al.*, 2006: p196-197).

There are five types of reality, namely: Stability, which refers to the consistency of test scores over a period of time; equivalence, which occurs when two or more measures prove a common result in a test at roughly the same time. Equivalence and stability occur when the measures show a common interest over a period of time. Internal Consistency is used to measure a single trait or aspect by means of comparing specific measurements. Agreement on

the reliability is dependent on the consistency of the ratings and the findings (McMillan *et al.*, 2006: p183; Neuman, 2006: p188-190).

An acceptable range of reliability for most instruments is 0,7 to 0,9. This is normally the permissible range for the Cronbach alpha reliability coefficient (using the split-halves method). (Reliability can be 0,65 for personality tests, 0,8 for achievement tests, and 0,5 for exploratory tests) [McMillan *et al.*, 2006: p183].

1.3.5 Method

The following methods will be used to obtain the information required for this study:

i.) Sampling

For the purpose of this study, all the participants in the 30 selected Grade R classes dealing with children between five and six and a half years will be included in the study. The 30 centres will be selected by means of systematic random sampling, where each centre has an equal chance of being selected. Systematic sampling selects subjects from a population by firstly selecting only one case randomly, by using a random table with each individual representing a number. All subsequent subjects will be selected, according to a particular interval (Neuman, 2006: p230).

The participants in this study will be isiXhosa speaking Grade R children between the ages of five and six and a half years old that attend one of 30 Early Childhood Centres in Port Elizabeth.

ii) Data collection

The data will be collected by means of pre-testing and post-testing. All the participants will undergo a pre-test, and under the same conditions; after the eight-month period of stimulation, the post-test will take place. Practitioner interviews and questionnaire forms will also be completed.

1.4 DEMARCATION OF THE STUDY

This study will entail a quantitative investigation of the effects of cognitive development in children in their early childhood. It will involve a large group of 800 learners between the

ages of five and six and a half years old. The research will take place in 30 selected Early Childhood Centres in Port Elizabeth. Both boys and girls will be evaluated.

1.5 THE RESEARCH LAYOUT

This study will contain eight primary chapters, each consisting of sub-sections and headings, which will include an **Introduction**, which covers a basic introductory outline of the work. This will include a clear statement of the problem, the significance of the study, the various aims of the study, the research hypotheses and the limitations of the study. It will also highlight the importance of cognitive development and stimulation in early childhood.

The **Literature Review** will include Chapters 2 which explains the framework of the importance and understanding of early childhood development, Chapter 3 deals with the elements of mathematics, literacy and life-skills in the South African early childhood context. Chapter 4 explains the situation of early childhood development in the South African context, including the effects that poverty has on learning in South Africa, long-term effects, the lack of stimulation, and the teacher's role in the stimulation of the child, the importance of parental involvement, possible problem areas between parents and teachers, and suggestions on how to enhance parental involvement in the school or community will also be reviewed.

The **Conceptual framework** will provide a basic outline of the influential theories in the history of education. A focus will be placed on those theories, which comprise the foundation and cornerstone of the intervention programme used in this study. The intervention programme will be discussed in detail – focusing on the different themes and primary developmental concepts as well as explaining the Early Inspiration Training Programme, the method of training and the concepts dealt with, in addition to the elements of early cognitive development.

The **Research Design and Methodology** chapter will report on a deeper investigation and study of the effectiveness of the Early Inspiration Training Programme on young children in the underprivileged sector of South Africa. This comprises a programme to enhance the cognitive development in the early childhood, and the reasons for the approach taken. This chapter will also include the ethical research approach, and the reasons for using this approach, as well as the various instruments used and the reliability and validity of the study.

Reference will be made to the sampling strategies, the demographic details of the group, and a data analysis of the study. Close examination through a process of exploration will be conducted, using those methods considered most suitable to the development of intelligence in early childhood.

The seventh chapter will include an **Analysis of the data** and the findings, and a discussion thereof. It will also include a design and description of the study methods used. The eighth chapter will culminate in the **Conclusion** of the study, including various recommendations based on the findings of the study.

1.6 DEFINITIONS AND EXPLANATION OF IMPORTANT CONCEPTS

It is necessary that the concepts occurring frequently in this dissertation be defined before commencing with the literature study. These principal concepts are:

1.6.1 Early childhood

According to Gordon & Brown. (2008: p8), early childhood refers to children from birth to eight years old. For the purpose of this study, early childhood will refer to children in the age group from conception to five years old.

1.6.2 Stimulation

Stimulation refers to different concepts and exercises that one can do with children, in order to enhance their abilities and understanding. It involves time and effort, and is a long-term and ongoing process. Stimulation is a process of constantly challenging children to think and reason more deeply, and to become creative thinkers. (<http://extension.oregonstate.edu/catalog/pdf/ec/ec1301-e.pdf>, 23/07/08)

During the contact time between researcher and participant, the child will be stimulated cognitively in three aspects, namely: literacy, mathematics and life skills. Various exercises will be done with the children. These exercises will challenge their way of thinking and broaden their horizons.

1.6.3 Mathematical development

Mathematical concepts are those, which need to be developed, in order to take part in day-to-day activities. Mathematical concepts are in the world around us; and children need to develop an understanding of these concepts, and to be able to manipulate and effectively work with them (Metlina, 1991: p1-2, Levey and Polirstok, 2011: p104).

‘It is believed by neuropsychologists that humans are born with “number sense”, or an innate ability to perceive, process, and manipulate numbers. It is an intuitive ability to attach meaning to numbers and number relationships, in order to understand the magnitude of numbers, as well as the relativity of numbers, and to use logical reasoning for estimation’ (<http://s22318.tsbvi.edu/mathproject/ch1.asp>, 18/03/2009).

1.6.4 Language development

The development of language concepts is a process that begins very early in life. Humans are constantly communicating with one another; and frequently language development results. ‘When a person begins to acquire language by learning, it is as it is spoken and by mimicry’. (http://en.wikipedia.org/wiki/Language_development, 15/03/2009)

As with anything, the child’s language development moves from simple to complex. According to the article in http://en.wikipedia.org/wiki/Language_development (15/03/2009), language usually starts off by means of recalling simple words that are commonly said or heard. These words generally have no meaning to the child, but as the child grows older, so the words acquire meanings; and connections between these words are formed. Sentences are then formed to create logical meaning; new meanings are associated with words, and the vocabulary is extended and increased.

1.6.5 Life-skills development

According to http://www.selfgrowth.com/articles/Definition_Life_Skills.html (18/03.2009), life skills can be defined as the ‘abilities for adaptive and positive behaviour that enable individuals to deal effectively with the demands and challenges of everyday life’. Life skills prepare and equip the child to deal with day-to-day challenges. They educate the child as to how one should act and react; life skills teach morals and values, and also represent the

psycho-social skills, which develop reflective skills, such as problem-solving and critical thinking, as well as developing self-awareness and enhancing positive self-esteem and self-actualisation, and sociability. They also they equip children to deal with other people (Ball, Bindler and Cowen, 2010: p562).

1.6.6 Cognitive development

According to Woolfolk (2007: p22), children from the ages of three to eight years old develop a number of cognitive concepts. These include: time, speech, reading and reasoning. Piaget has developed a theory that embraces the different stages of cognitive development, which he believes all children develop. Children do, however, go through the stages at different rates.

1.7 SUMMARY AND CONCLUSION

This chapter has offered a background to the research. It has stated the research problem at hand and described the study's aims and objectives. The research methodology, which the researcher plans on using to implement the research, has also been stated. The terms that will be used in the following chapters have been clearly defined, and the demarcation of the study has been briefly clarified. Lastly, the study layout has been provided.

Chapter Two will focus on the literature review relevant to the impact of stimulation on cognitive development in early childhood.

CHAPTER 2

AN UNDERSTANDING OF EARLY CHILDHOOD DEVELOPMENT

2.1 THE IMPORTANCE OF EARLY INTERVENTION AND STIMULATION

Early intervention is imperative; parents and care-givers need to be speaking, communicating and encouraging their children from a very young age. Practitioners need to ensure rich curricular activities and challenging opportunities for children, while valuing enquiry and thoughtfulness (Leseman, 2002: p4; Hendrick & Weissman, 2007: p275; Eliason, 2008: p190).

Leseman (2002: p4) believes early childhood to be a '*rich, silent, cultural-psychological phenomenon*'. He believes that children learn and develop through interactions and encounters that they face, as well as through observational learning and social interactions.

Gonzalez-Mena (2011: xvii) clearly explains the importance of quality early intervention programmes, interactions and care – where children not only gain foundational knowledge needed for school and beyond, but also start to develop a sense of community – by understanding how to interact in co-operative ways with one another. Gonzalez-Mena goes on to state the long-term effects that high quality early childhood intervention has on the economy and society. This investment is extended from generation to generation (2011: xvii).

Naudeau, Martinnez, Premand and Filmer (2011: p10) state that there is substantial evidence that delays in cognitive development during the early years lead to negative consequences in the short and long term. A lack of adequate early intervention affects children's school readiness and performance, and can have a long-term impact through reduced employability, productivity and overall wellbeing. These same children are also more likely to have ill-health, to engage in hazardous behaviour, such as substance use, abuse and addiction, risky sexual behaviour and even criminal and violent activities, as they get older. This can have a negative effect on any country.

The learning of concepts forms the structure and foundation of knowledge. It equips children, enabling them to organise and categorise information. During early childhood, children are constantly acquiring fundamental concepts and learning fundamental process skills. Haydon (2006: p6) believes that education, both at home and in the school situation, should be seen as

a route to the spiritual, moral, social, cultural, physical and mental development of the child; and it therefore, influences the wellbeing of the individual.

Children begin the process of learning from a very young age, and move from one stage of cognitive development to the next, where they are constantly being stimulated by their environment and the happenings therein (Leseman, 2000: p8; Gordon & Brown., 2008: p456; De Witt, 2009: p159 & p277; Walker, 2011: p115; McDevitt, 2013: p13). Cognitive development, according to Maxim (1992: p91), refers to *'the changes in mental structures that occur as children explore the world around them'*.

Developing and encompassing an understanding of children's thought patterns, their understanding and reflections are essential aspects of teaching and educating (Gordon & Brown., 2008: p456). Although each child is born with his/her own capacity and intelligence, the circumstances and situations into which one is born play a vital role in the child's development and advancement as human beings (Eliason., 2008: p45; McDecitt, 2013: p12).

2.1.1 Understanding how children learn and develop

Parents, care-givers and practitioners need to be equipped and educated on children's development in totality. This includes how to stimulate the child, various symptoms that may need to be recognized, basic developmental steps, which need to be reached, as well as programmes and activities, which enhance cognitive development (Aubrey, 1997: p21, Leseman, 2002: p4).

According to Seefeldt and Barbour (1998: p456-459), the value of learning, as well as the ability to become active in any understanding of concepts learned, and confident in facing new challenges, the active involvement of young children takes place by means of the following four key elements:

i) First-hand experiences

Case and Okamoto (1996) (as in Seefeldt *et al.*, 1998: p455) stated, *'Because mathematical knowledge is a relationship constructed by the mind, direct teaching alone will not build it. Children have to develop or construct it for themselves through their own experiences and reflections on them'*. The practitioners' and parents' roles are vitally important in teaching

any cognitive concepts. The child needs to experience the concepts being taught, in order to truly understand them. Children cannot learn by rote; but rather, they need to develop an understanding of the concepts being learned (Seefeldt *et al.*, 1998: p455 - 456).

Eliason (2008: p191) state that language is the primary vehicle of understanding – it forms the basis for all other learning and development. '*Language is the instrument of thought, personal expression, and social communication*' (Eliason, 2008: p191).

Language cannot be seen in isolation; it is to be seen as the tool, whereby children are able to translate their experiences into understanding, and to create meanings. As experience broadens and also deepens, so language acquires meanings. These meanings result in deeper learning – and in further meaning taking place (Hendrick & Weissman, 2007: p270).

Children begin the learning process slowly; and they only gradually begin to develop and enhance their thinking through day-to-day dealings and by means of language. Children develop understanding through their exposure to everyday life and through daily experiences. Knowledge is gained through interaction, and acquired through the physical world, as well as incidents of reflection within the physical world. This interaction enhances understanding and logical thought (Seefeldt *et al.*, 1998: p456; Denno, Carr & Hart Bell, 2010:p114).

Dewey's (as in Metlina, 1991: p2) focal point is that children should not be taught knowledge by memorizing lessons and activities, but rather through experiences, and by being challenged, by gaining skills and knowledge, which they can incorporate into their daily lives. With advances in technology and the rapid direction of change, the curriculum design and ways of implementing the curriculum, need to be analysed critically and effectively.

ii) Interaction with others

The school and its curriculum, as well as the society and cultures of the learners and their families that are a part of the school body, all have an apparent link; and they implicate one another directly (Ornstein & Hunkins, 2004: p167). The social contribution is to make educators aware that education exists in a social context, and that it has an influence on the culture of people. Social interaction begins at birth, and is evident daily in the lives of all people through interaction with one another (Morrison, 2011: p175).

It is important for parents, practitioners and care-givers to realise that the school, as well as the learners' culture, both have an equal impact on the learner. The role of the educator

should be to prepare learners for the future by providing them with the knowledge and values they will need, in order to make wise decisions within their context (Ornstein & Hunkins, 2004: p167). According to McDevitt (2013: p15), children learn through taking part in activities; and they gradually develop from ability-level to ability-level, through interaction and participation. It is just as important for children to interact with practitioners and parents, as it is for them to interact with their peers.

iii.) The use of language

Language is vital in the learning process. It provides a basis and framework for children to grow and develop. Children are constantly communicating; throughout their day they are talking and responding (Seefeldt *et al.*, 1998: p458; Fellowes & Oakley, 2010: p 4; Levey & Polirstok, 2011: p10). Language development is initiated from birth until adulthood, and is an aspect of development that is constantly growing and developing. Great importance needs to be placed on the development of language acquisition, as toddlers and young children need to be exposed to a language-rich environment, in order for them to develop the necessary literacy skills (Morrison, 2011: p186).

It is of fundamental importance to incorporate educational concepts into the general conversation throughout the day.

According to Seefeld *et al.* (1998: p458), '*The processes of speaking and listening are the first steps in the representation of mathematical ideas through language*'. These authors are of the contention that the use of language helps the child organise his/her thinking and experiences. Children can put into words what has happened; and if they have a question or misunderstanding, this problem can be solved through language and communication.

These assist in their understanding of the abstract world, in the development of problem-solving strategies, and with the understanding of mathematical, literacy and life-skill concepts (Gordon & Brown., 2008: p471).

The relationship that exists between language and cognition is important as language is our means for understanding the child's thinking patterns and thoughts. '*Cognition and language generally become more interdependent when development progresses*' (Gordon & Brown., 2008: p457).

iv) Reflection

Reflection is a key component in the understanding of all cognitive concepts, as it provides a means for the child to reflect on his/her experiences, and to develop an understanding of abstract concepts (Seefeld *et al.*, 1998: p459). Clements quotes a famous statement by Dewey (<http://www.edunators.com/index.php/becoming-the-edunator/step-5-reflecting-for-learning/the-importance-of-reflection-in-education>, 26/7/2013), '*We don't learn from experience. We learn from reflecting on experience*'. The ability to look at interaction time and decipher what was taught and learned is a key aspect in monitoring and evaluation and assessing effectiveness. According to Clements (<http://www.edunators.com/index.php/becoming-the-edunator/step-5-reflecting-for-learning/the-importance-of-reflection-in-education>, 26/7/2013), reflecting on one's work is an imperative aspect of the learning process, as it enables children (and teachers) to determine what has been learned, as well as how learning takes place.

Providing opportunities for the child to experience mathematics, languages and life-skills would be ineffectual without the ability to reflect and develop an understanding at a later stage. '*To reason, solve problems, to see mathematical connections, children think about their actions in the world. They need to reflect on the things that they have experienced and to draw abstract patterns, and see regularities from these experiences*' (Seefeld *et al.*, 1998: p459). Practitioners and parents should recall occurrences and instances in a child's life, so as to remind him/her of any learning that has taken place.

Children's language development is one of the most important aspects of learning that takes place in the early years of a child's life. As the child develops, the ability to express himself/herself by means of words, as well as to show understanding, are ways whereby communication is made possible. Early intervention should comprise activities, such as verbal interactions with people of all ages, story-telling, reading books, singing, playing games, and early stimulation (Eliason, 2008: p191).

Language development directly influences academic and social abilities (Hendrick & Weissman, 2007: p271). Therefore, a child's language skills and abilities should be recognised and stimulated from a young age, since these skills will positively affect their scholastic abilities and social successes later on in life. The rate of a child's language development, as with any other development, takes place at his/her own pace, and in his/her own particular manner (Eliason, 2008: p193).

2.1.2 The five domains of development

According to Hendrick and Weissman (2007: p 2-3, p71), each child consists of five ‘selves’ or domains. These exist for the child in the context of his/her family and environment, as opposed to mere subject matter in the objective world around them. The five selves include the physical, emotional, social, creative and cognitive facets of selfhood. These five domains need to be viewed in conjunction with one another, as all domains affect and influence one another, resulting in the importance of the child being viewed in totality (Hendrick & Weissman, 2007: p2-3, p71).

Five fundamental elements, which need to be highlighted include the development of the child as a whole. This includes focusing on the Physical-Motor, Cognitive, Language and Speech, Play and Social-Emotional development of each child *simultaneously* and in an integrated manner (Gordon & Brown., 2008: p100). It is vital that practitioners and teachers have a deep understanding of children’s development and the developmental process. This ensures that activities are developmentally appropriate, that children with special needs and learning barriers may be identified and effectively remediated (Kostelnik, *et al.*, 2004: p39).

It is, therefore, important to have a clear understanding of the domains of development, including the expectations that can be placed on children at different ages. An understanding of the domains of development is vital for effective learning to be provided and for development to take place. It is also important that the domains of development are not seen in isolation, as each domain complements another; and they need to be seen in an integrated manner (Kostelnik, *et al.*, 2004: p39).

i.) Physical-motor development

Physical development enhances and promotes the changes in brain structure and function in young children. It is essential to ensure sensory development, through physical activities, which assist in the growth and development of the nervous system (Kostelnik, Soderman & Whiren; 1999: p398; Gordon & Brown., 2008: p435-436; Laudry, 2008: p69; De Witt, 2009: p90).

ii) Social-emotional development

Social-emotional development refers to the child’s relationship that he possesses with himself, as well as the way in which he relates to his peers, practitioners or teachers, parents,

and others, with whom he may be in contact. It also refers to the child's self-concept, self-esteem and the ability one has to express oneself on how one may be feeling (De Witt, 2009: p21 & p27; Gordon & Brown., 2008: p100; Laudry, 2008: p71).

Social-Emotional development, life-skills and general knowledge refer not only to knowledge, which the child possesses, but also to their view on self, life itself, and those in their milieu. According to Gordon and Browne (2007: p526), there are four primary areas with which children struggle that cater for their affective development: 1) They are unable to control their emotions; 2) They are unaware of the importance of developing good social skills and etiquette; 3) Children have a deep creative urge that needs to be satisfied; 4) Children need to acknowledge their Creator and have an understanding of where they are from, how they are loved and why they are here.

These concepts of development take place in the context of personal identity and encompass self-concept, self-esteem, body image and identity (De Witt, 2009: p119 – 120).

iii) Play development

The importance of play in the education of young children is universally appreciated (Eliason, 2008: p25; Gordon & Brown., 2008: p167). According to Eliason (2008: p25), however, play in early childhood is reflected by the practitioner's knowledge and understanding of play. The environment and curriculum will be a clear representation of the practitioner's understanding, or the lack, of play in a developmentally appropriate curriculum.

Creativity and play go hand-in-hand, and Wright (2010: p3) quotes Sternbery and Lubart, who explain the process of creativity as one where original and innovative ideas are generated and then brought to life. Play is a vehicle by which children explore their environment and mimic their surroundings in creative ways (Wright, 2010: p21).

iv) Cognitive Development

Cognitive development, according to Gordon & Brown. (2008: p457), refers not only to the development of the mind, but also to all areas of the child's growth, including changes in mental structures that occur as children discover and interact with the world around them. There are a number of elements involved in cognitive development, including perceptual development, thinking, problem-solving, creativity and language (Anselmo *et al.*, 1995: p225).

After much research in the 1980s, a conclusion was reached by Harris and Cooper (1985; in Cooper & Levine, and Presseisen, 2008), that teaching practices need to be adapted, and more focused on ‘concept development, cognitive development, reasoning, thinking, higher-order comprehension skills and advanced subject matter. Cognition is the mental process, which is used by children to acquire knowledge, where they exercise skills, such as conscious and critical thinking, problem-solving and memory (Gordon & Brown., 2008: p456; Laudry, 2008: p72; De Witt, 2009: p20).

Cognition, including mathematics, is a part of our daily lives, and it helps to develop logical thinking; it also requires a sense of drive and motivation. Mathematics has an appeal for children and adults, because there is a cognitive or aesthetic response. This feeling of satisfaction will drive children to deepen their knowledge and ability and should assist educators in their understanding of the processes associated with learning and understanding the development of skills (Lindberg *et al.*, 1985: p181-182; Metlina, 1991: p2).

In early childhood, children should be taught and given an opportunity to experience numbers and abstract concepts, in order to provide them with an understanding, as well as to develop their thinking and reasoning abilities. According to Woolfolk (2007: p37), Case (1992, 1998) suggests that children develop in phases and within specific fields, such as numerical concepts, spatial perception, social tasks, story-telling, reasoning about physical objects, and motor development. As children practise these phases and become more familiar with them, achieving the tasks requires less time and attention.

Brody (in Kyllonen, Roberts & Stankov, 2008: p71) justifies the teaching and learning process by stressing the importance of the development of intelligence, ‘*What is learned (self-evidently) depends on what is taught. Individuals with the same intelligence may acquire different levels of expertise and knowledge if they are taught in different ways*’.

v) Language and speech development

The development of language and speech is imperative to the overall development, as all learning needs to take place *via* language and communication. The ability for children to understand and speak a language is, therefore, vital (Gordon & Brown, 2008: p100; De Witt, 2009: p98).

Cunningham and Stanovich (1997, in Dockrell and Messer, 2004: p35) state that, *‘Vocabulary knowledge is a strong predictor of academic success, and it plays a central role in cognitive development’*.

It is fundamental that a holistic approach to children’s development is adopted and that a deep understanding of each domain is determined. It is vital that an understanding of how these domains work together in an integrated manner can provide the child with optimum opportunity.

2.1.3 Development in children

Development takes place in one of two processes, namely continuous development or discontinuous development (Berk, 2006: p7). Continuous development is a process whereby development and growth occur from infancy to adulthood. This takes place by means of gradually adding *‘more of the same types of skills that were there to begin with’* (Berk, 2006: p7). It is a smooth, continuous and ongoing process.

Discontinuous development is a process of development and growth, which takes place at specific times – from infancy to adulthood, by the development of new ways of understanding and responding to the world (Berk, 2006: p7). According to Berk (2006: p7), *‘Children develop rapidly as they step up to a new level of development and then change very little for a while. With each step, the child interprets and responds to the world differently’*.

Figure 2.1 is a clear representation of the differences in development from infancy to adulthood.

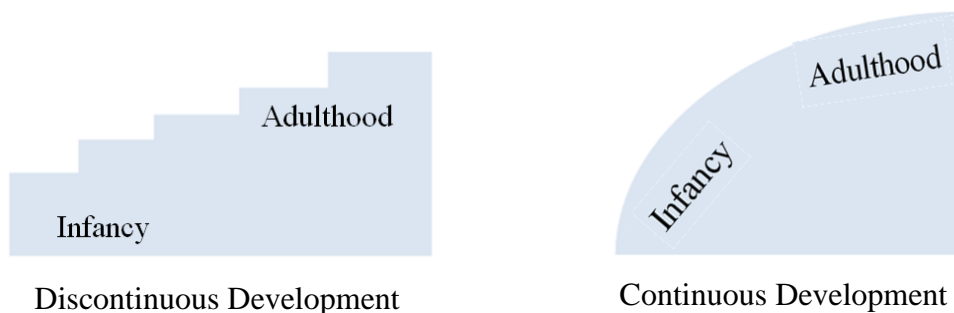


Figure 2.1 Continuous and discontinuous development from infancy to adulthood

(Berk, 2006: p7)

De Witt (2009: p98) quotes McConnell and Rabe (1999: p2), when she maintains that early literacy can be described as: *'The skills, competencies and attitudes that precede, but directly influence, a child's beginning to read'*. Reading and literacy need to be things that are enjoyable for children from a young age. The roles of the parent and family are enormous in developing a healthy literary experience for the young child, which would prepare him/her for future language development. Lilly *et al.* (2004: p36), believe that the role that families play in laying a groundwork for a future of successful reading and writing is imperative.

In my view, the enjoyment of learning, predominantly through play in the early childhood, is determined by the environment in which the child lives. Children living in communities where both parents work, single-headed households, large numbers of siblings, little quality time is spent on interaction between parent and child. The reality in underprivileged settings, moreover, is that with a lack of monetary resources, providing children with learning opportunities such as puzzles, books, crayons, games, etc is not at all a priority, thus handicapping the children and their potential to learn, grow and develop.

According to Soderman and Farrell (2008: p108), open communication between parents and practitioners is absolutely mandatory. The development of language starts from a very young age, even before children begin speaking. According to Soderman *et al.* (2008: p9), children that have been exposed to the practicalities of a print-rich environment – with good stimulation from a young age, are able to distinguish patterns and correlate sounds with intangible symbols more efficiently. Receptive and expressive language form major portions of language development and understanding.

Receptive language underpins the understanding of words and their meanings, and expressive language is the child's ability to express himself vocally (Lilly *et al.*, 2004: p16). According to Lilly *et al.* (2004: p16), *'Children's receptive language learning is usually several months ahead of their expressive language.'* This is clear with a young child – they are able to follow instructions and can understand what is being said to them long before they are able to express themselves properly.

Young children determine their own concepts of words, alphabet letters, and the meaning of words; they are able to be creative and imaginative if provided with effective strategies in enabling them to think this way. Over time, these concepts become increasingly more predictable and conventional, due to repetition and encouragement. The journey of a child in becoming a mature reader and writer is very important. In order for one to understand the

child's reading and writing, knowledge of the journey and conceptual development are both critical (McGee & Richgels, 2008: p11).

2.1.4 Intelligence

'Intelligence is the ability to understand and manipulate facts and ideas using language and mathematics' (Spillane, Ed. Presseisen, 2008: p139). Intelligence is an indispensable part of human development, which determines individual differences (De Witt, 2009: p147). Sternberg (2008: p65) also states that intelligence is a vital aspect of cognitive development, and something that schools should be zoning in on – focusing not only on knowledge to be learned, but also on being able to apply knowledge and skills to real-life situations, and in everyday life (Sternberg, 2008: p65).

Intelligence is not only about having knowledge, but rather about being able to use and utilise the knowledge and intelligence that one gains (Spillane, 2008: p140). According to Spillane (2008: p141), *'A curriculum that teaches for intelligence must provide many opportunities for students to use what they have learned, in order to investigate, understand, discuss and comment on significant matters.'* By providing children with the ability to solve problems, relate learning and think critically, key characteristics and life-skills, that are fundamental in the adult-working world, are being instilled.

The education process is not only one of imparting knowledge, but rather one of equipping and enabling young children to use their skills and abilities in life-situations (Hendrick, 1986: p308; Berk, 2006: p314; Spillane, 2008: p140; Sternberg, 2008: p65).

Through an intense research study done by Rosenzweig (1966) and Krech (1969), a conclusion was drawn that not only did the environment impact intelligence and abilities; but they also found that these changes are consistent with the levels of intelligence developed in the children (Whitmore, 1986: p6). The impact of a stimulating environment has been found to directly affect the growth of the brain in a significant way.

According to Kostelnik *et al.* (2004: p9), *as early childhood educators, we are becoming increasingly aware that in addition to what children learn, we must consider how children learn, so that we can best promote the development of these core abilities (Slentz & Krogh, 2001a).*

IQ is seen as an important aspect of intelligence, but educators are also aware that there are other characteristics, which reveal intelligence, such as: *'perseverance, reasoning ability, motivational level, ingenuity, originality, fluency, good concentration ability, the ability to work with acquired insight, good powers of retention and the ability to generalise'* (De Witt, 2009: p148).

In 1992, Bredenkamp and Rosegrant (as quoted in Eliason, 2008: p319) suggested that a learning style that is repetitive is necessary for early childhood teaching. This comprises four phases: awareness, exploration, enquiry and utilisation. Awareness is the ability to recognize people, objects and events. This facility is developed from the child's experiences. Exploration is the ability to observe, investigate, discover and create meaning. Enquiry is the ability to refine and create understanding, through investigating, examining, comparing and generalising; and Utilisation is the ability to apply prior knowledge to new situations.

According to De Witt (2009: p147), there are different aspects of intelligence, whereby it can be defined:

- The ability to adapt to the environment in which one finds oneself;
- One's ability to learn;
- One's ability to think abstractly, working with symbols and problem-solving;
- Holistically, developing an understanding of the child in his/her totality;
- One's verbal and language abilities, memory skills, problem-solving and dealing with the demands of day-to-day experiences.

2.1.5 Giftedness

Giftedness refers to children who may be *'exceptional, superior, brilliant, geniuses, talented, keen-witted and a quick learner'* (De Witt, 2009: p145). There is a group of children that is very often overlooked in the school situation (Woolfolk, 2007: p148). Gifted children have special needs – they thrive in a classroom situation that is enriched; one that does not look down on the extremely talented child. A study done by Tomlinson-Keasey in 1990 (in Woolfolk, 2007: p149) states that more than one-half of all gifted children do not achieve in school at a level equal to their ability.

Every opportunity needs to be taken to encourage the understanding of gifted children, as well as to equip educators and care-givers to enhance the development of each child

individually, irrespective of their level of intellect or their abilities. Giftedness forms a great part of cognitive development – one that can no longer be overlooked and ignored.

According to Slater and Bremner (in De Witt, 2009: p145), giftedness is generally a term used to describe a person with high cognitive abilities, as seen through verbal abilities, memory, problem-solving skills, and the daily demands of life. Kokot (In Landsberg, Kruger & Nel, 2005: p470) gives her interpretation of giftedness from a South African perspective. She believes that: '*giftedness is biologically rooted in the child and develops as an expression of a system of interrelated influences within the child's inner and outer environment*'.

Accordingly, giftedness can be explained in terms of an interrelated system. Children may be born with the genetic potential for giftedness in one or more fields in the neurological structures, but it is necessary to nurture this potential to full fruition, in order to create the best opportunities for the child.

2.1.6 Development of the Brain

The brain is an extremely complex and comprehensive part of the human body (Morrison, 2011: p173; Music, 2011: p85). Brain cells are formed within the first three weeks after conception; and they play an indispensable role in the development of the child, with between 100 and 200 billion neurons or nerve cells to be developed (De Witt. 2009: p78-79). According to Brierley (1994: p5), the brain has full control over the body and its functions. The brain is made up of many parts, all of which play a different, yet vital, role in the day-to-day functioning of a human being (Brierley, 1994: p6).

The brain is encased in a bony structure called the skull, which is incredibly resilient and flexible during the first year of a child's life. According to Levey *et al.* (2011: p106-107), the brain consists of two halves, namely: the right brain and the left brain, which communicate continually with one another. The right brain is concerned predominantly with '*processing emotional nuances and visuo-spatial tasks*' (Levey *et al.*, 2011: p107). These are tasks, which utilize visual perception and spatial relationships. The left side of the brain is concerned with language and verbal reasoning, according to Levey *et al.* (2011: p107).

Pre-natal brain development is an important process. According to Johnson (2011: p48), about five weeks after conception, three key elements of the child's brain become evident, the

first being the cortex, the second being the thalamus and the hypothalamus, and the third is the midbrain, cerebellum and medulla. Within these three regions, the brain cells begin to *'proliferate (are born), migrate (travel) and differentiate (change form)* into particular types (Johnson, 2011: p48).

According to Johnson, (2011: p47), *'prior to birth, neurons are generated in the developing brain at a rate of more than 250,000 per minute.'* The formation of neurons within parts of the brain is an incredibly intricate and sensitive process (Johnson, 2011: p49). Figure 2.2 is a clear representation of the embryonic and foetal development of the human brain, representing the forebrain, midbrain and hindbrain (Johnson, 2011: p48).

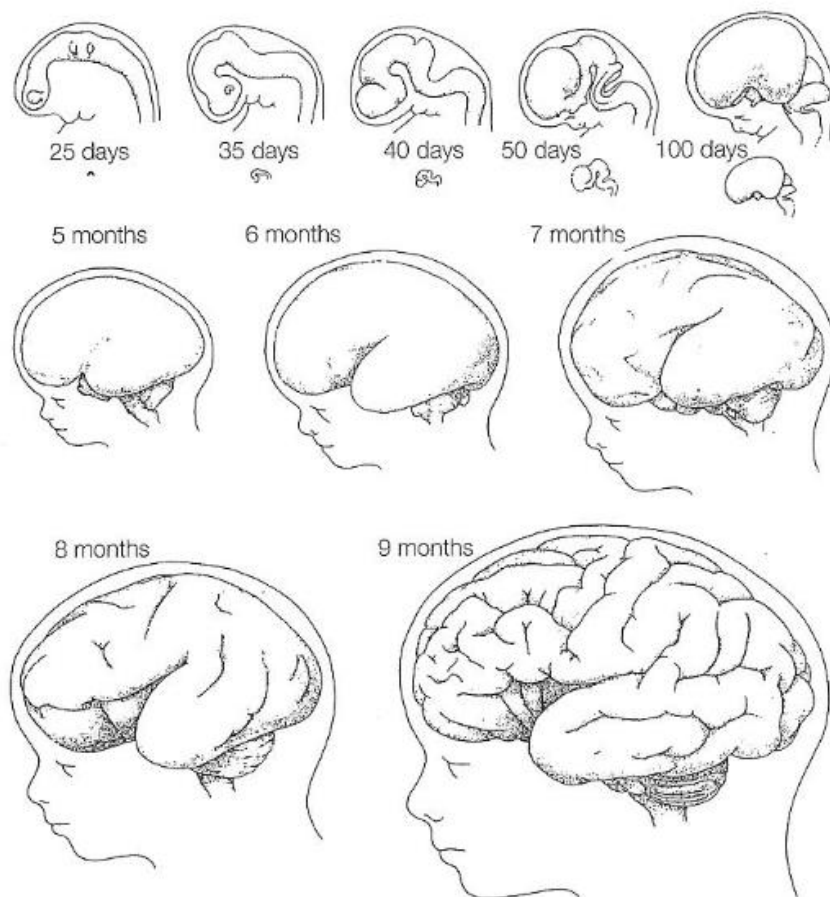


Figure 2.2 Embryonic and foetal development of the human brain

Johnson, 2011: p47

The amount of brain growth that takes place after birth has an immense impact on children's ability level (Johnson, 2011: p49). Every sight, sound, touch, smell and thought leaves an imprint on specific neuronal circuits and pathways, altering and transforming the way future sights, sounds, smells and thoughts will be registered. According to Eliot (1999: p4), '*Brain hardware is not fixed, but living, dynamic tissue that is constantly updating itself to meet the sensory, motor, emotional, and cognitive demands at hand*'.

Figure 2.3 is a clear representation of some of the important parts of the brain.

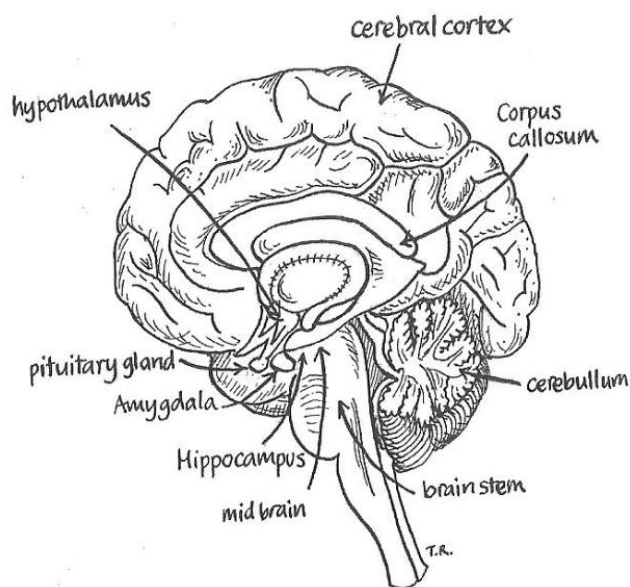


Figure 2.3 Some of the key areas of the brain

(Music, 2011: p85)

The child becomes aware of its environment and surroundings by means of the most complicated system in its body: the nervous system. The child's senses and muscles create awareness and allow it to adjust to its milieu (De Witt. 2009: p77). Brain growth and development are incredibly integral and fastidious processes, whereby '*neurons grow new axons, sprout new dendrites, form new synapses, and modify the strength of some established*

connections, while eliminating others selectively over time. The impacts of varied experiences are also reflected in observed differences in the brain's blood supply, its cellular (glial) support systems, its intercellular insulation (myelin), the neurochemicals that it produces, and the specific receptors that recognise each individual substance (Shonkoff & Phillips, 2000: p23).

Neurons have a very specific function: they 'make connections with other neurons through synapses (connections) and transmit information in two directions: (a) From the brain to the body; and (b) from structures and organs in the body back to the brain' (Levey et al., 2011: p105). The function of neurons is to enable the brain to 'process information and store memories, experiences, information and learning' (Levey et al., 2011: p106).

Figure 2.4 is a representation of what a neuron may look like, consisting of the dendrites, nucleus, cell body and axon.

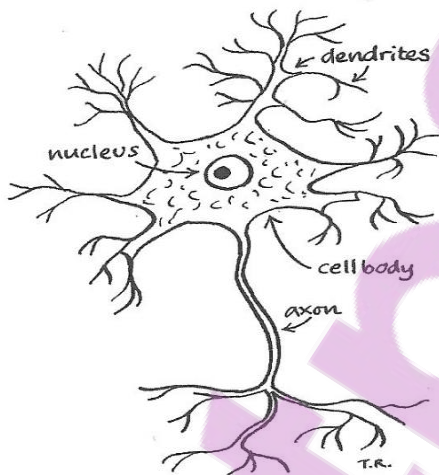


Figure 2.4 A neuron
(Music, 2011: p86)

According to Shonkoff and Phillips (2000, in Leseman, 2002: p8), there is much neuroscientific evidence, which has identified the importance of the social and cultural environment, and attempted to create an awareness by protecting children against stressful experiences, which could harm potentially healthy brain development in the emotional

domain. Not only does this impact on children's emotional development, but it also has a positive influence on their cognitive and social-cognitive domains (Leseman, 2002: p8). Much of the early emotional learning that takes place in the first year or so of a child's life is procedural learning.

According to Music (2011: p84), Freud's view that a great deal of mental processing occurs in a non-conscious way has been confirmed through neuroscience. We now understand that initial learning that takes place requires a great deal of effort and concentration, but as a skill develops and understanding is prevalent, less conscious thought is needed (Music, 2011: p84).

Additionally, Subiaul (in 2010: p270) states that studies have confirmed that observational learning has independent neurobiological circuits. Subiaul (2010: p270) goes on to explain the two key differences between observational learning and novel imitation: observational learning requires only learning, not copying, so learning takes place through observation. Novel imitation requires observational learning and copying, so an involvement in the learning process is evident here.

There were a number of very influential pioneers in child development. Gesell (1925, 1929) believed that genetics plays a major role in determining children's potential and expected outcomes; while others, such as Watson (1928), believed that the child's environment is a determining factor (Shonkoff & Phillips, 2000: p23). Over time it became increasingly clear that neither of these theories was the formula for understanding children's development, when seen in isolation; but rather than when integrated, a deeper understanding of the complex human nature was required.

It is now understood that nature and nurture both exert an influential role in determining the child's development and growth (Morrison, 2011: p172; McDevitt 2013: p4-5). According to Shonkoff *et al.* (2000: p24), *'The influence of nature is deeply affected by these environments and, in turn, shapes how children respond to their experiences'*.

According to Eliot (1999: p439), past research has shown that on average 40 per cent of people's memory skills can be attributed to their genetic formation; 60 per cent of a child's memory ability and skills is shaped by experience. Memory improves with practice and through repetition, especially with deliberate efforts to acquire and retain new information.

According to Walque (2011: 85), *'developmental experiences determine the organizational and functional status of the mature brain'*.

While genetics plays a major role in the sequence of neural development, the quality and eminence of development is formed by environmental factors (Eliot, 1999: p9). The primary role of the nervous system is to 'control, integrate and co-ordinate' the responses to stimuli, which enhance the child's ability to acquire learning and language (Hendrick & Weissman, 2007: p10-11; De Witt. 2009: p78).

The role of culture in rearing children is fundamental; and it includes elements, such as *'values, aspirations, expectations, and practices'* (Shonkoff & Phillips, 2000: p25). Understanding the value of the environment in children's growth and progress is fundamental in determining how brain growth and culture share a joint influence on the process of development.

Gordon and Browne (2008: p460) believe that, *'During the first three years of life, an infant's brain creates an estimated 1000 billion synapses – providing thereby quality experiences and relationships, which will create lasting effects on how the brain gets wired... Indications are strong that children's brains need to be stimulated for the network of connections to grow, and be protected from being discarded.'*

The fact that during the early stages of a child's life there is such a vast growth in the synapses, which affect the development and advancement of the brain, makes it clear that young children need to be invested in, so as to protect and enhance the synapses.

According to Eliot (1999: p29), brain-wiring and development evolve and advance in an intricate relationship between nature and nurture. Gonzalez-Mena states that the updated brain research shows very clearly that optimal development of the brain and the cognition of the child depend largely on occurrences prior to the child's birth (2011: p31). Morrison (2011: p173) endorses that high-quality experiences and interactions are necessary, and contribute to children's educational ability and developmental level.

Gordon & Brown. (2008: p460) state that: *'Indicators are strong that children's brains need to be stimulated for the network of connections to grow and be protected from being discarded'*. It is clear that dendrites and synapses are being formed rapidly during a child's early years (Eliot, 1999: p28).

According to Levey *et al.*, (2011: p104), ‘an important executive function of the brain is self-regulation’. This is the child’s ability to ‘guide, monitor and direct his or her performance in a task’ (Levey *et al.*, 2011: p104). This ability enables children to develop an understanding of their competencies, challenges, problem-solving strategies, outcomes and goals, as well as their ability to monitor their own achievements and implement self-evaluation (Zimmerman (1989, in Levey *et al.* 2011: p104).

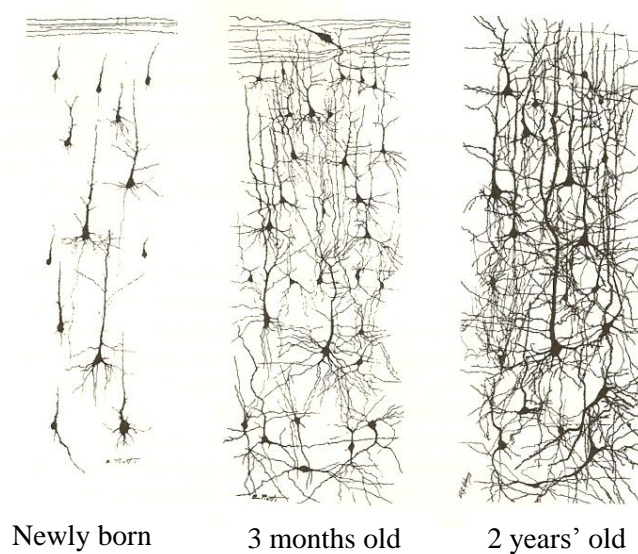


Figure 2.5 Representation of cellular growth in the cerebral cortex during the first two years of a child’s life (Eliot, 1999: p29)

2.1.7 Cognitive development among young children in low-income families

According to Mead (2011: p8), there is great importance of high-quality intervention in the early years, and the boundless effect that these programmes have on children’s academic and social skills, which in turn, help to build the foundation for success in the early school years.

The intervention discussed here, in my view, does not only relate to educational subject matter, but more importantly developing a passion for learning, engaging with children in a manner which is developmentally-appropriate and specific to their particular needs. This intervention would need to be supportive in terms of children’s abilities and should stimulate thought-provoking conversations, encourage critical thinking and problem solving strategies

while at the same time develop life-long learners that are able to transfer knowledge and skills and adapt to various environments.

The same article, Mead states that the large number of children from low-income families who do not encounter quality early education are already developmentally behind their peers at the age of only five years (Mead, 2011: p8).

Ball, Bindler and Cowen (2010: p562) state that *'basic financial stability is a protective factor that contributes to the general health and wellbeing of children'*. Naudeau *et al.* (2011: p9) confirm the evidence that developmental and cognitive delays in the early years are more common in poor families, and that there is a strong correlation between cognitive development and socio-economic status.

According to Polakow (2010: p67), poverty is a global crisis, which is currently impacting approximately 1.2 billion people daily. Polakow (2010: p67) stresses the importance of direct and purposeful support for families, focusing on social protection measures, which would, in turn, promote family stability and economic survival, emphasizing the role that childhood plays in the development of human capabilities; since these shape the national human capital.

According to Penn (2010: p51), *'human capital theory is about the economic productivity of individuals over time and the situations in which it might be maximized. Human capital theory has undoubtedly contributed to a rethinking of macro-economic policies for education, and – in particular for early education'*. One of the key questions asked, which expands this thought is not which kinds of intervention are most important, but rather who should deliver the intervention, and how the effectiveness of the intervention is to be measured (Penn, 2010: p54).

In order to measure this effectiveness, an 'early childhood-development (ECD) calculator' has been developed by the World Bank, which enables countries to calculate the profits of investment (in early childhood development) in programmes per 1000 children.

According to the World Bank (<http://go.worldbank.org/KHC1NHO580>, 27/06/2013), *'The ECD Calculator allows you to calculate the Net Present Value of an ECD program that results in increased school enrolment and improved school-achievement of a cohort of 1000 new-borns. It is assumed that the ECD program improves the survival chances, the nutritional status, and/or the cognitive development of the target group'*.

Numerous studies have been done using this model; and they have had staggering results, including one implemented by UNICEF, according to Penn (2010: p55): Every dollar invested in early childhood intervention and ensuring children the best start yields between four and eight dollars return in the long run to children, their families and the taxpayer. This, in turn, develops human capital and supports economic growth.

Penn (2010: p58) discusses the situation of children living in extreme poverty-stricken situations, as one where HIV/AIDs is often prevalent, in child-headed households, or where grandparents care for children with no, or very little, financial support. Although there is a great focus on children's rights worldwide, the implementation of these rights is often poorly implemented, and the execution is not evident in developing countries.

Penn (2010: p59) goes on to state that: *'If every child has basic entitlements, all children should have access to basic facilities, such as education, health care, shelter, clean water and sanitation'*. All children should have a quality education.

Naudean *et al.* (2011: p10) state that a low level of performance in early childhood sets the pace for school accomplishment and the expectations placed on the individual. Under-age and under-prepared learners, who have proven to be the most at risk in terms of school failure and drop-out, would certainly be minimized through the process of providing thorough early intervention and stimulation, as well as the laying of foundational concepts before children enter formal schooling (Education White Paper 5, 2001: p4). The poor quality of intervention and situation in poverty-stricken communities in the South African context is disturbing based on the large amounts of money being ploughed into the education system in these marginalized communities (UNICEF, 2014: p105). It is important that longitudinal assessments are implemented in communities so as to assess the benefits of funding being ploughed into education. Funding provision needs to tie in with policy and research that has been implemented in the education space. Public spending and brain development needs to become more synchronized and in line with international standards.

According to Naudean *et al.*, (2011: p13), there is great importance in the documentation of the significance of early childhood development and the delays thereof in low-income countries. Through this, well-designed, effective, sustainable interventions should be designed, in order to combat the lack of effective early education in low-income households.

According to Friedman *et al.* (2011: p38), Bradley and Corwyn state that *'one of the major risks to skill formation in children is poverty. Conditions associated with poverty are, in turn, associated with worse physical health, psychological health, and cognitive outcomes observed in children.'* Over 200 million children globally, under the age of five years old do not reach their cognitive development potential, as a result of such factors (Friedman *et al.*, 2011: p53).

There is a recognisable correlation between the mental and physical health of children and education outcomes. According to de Walque (2011: p85-88), the impact that ill health, conflict, violence and trauma has on children is profound, and directly affects their emotional, behavioral, cognitive, social and physical functioning, which in turn impacts on children's education and learning potential. Walque (2011: 88) goes on to state that studies have been done which prove the impact that trauma, violence, poor early education and ill-health have on children; and that in many cases, increased aggression and a decrease in pro-social behaviour is evident.

According to Penn (2010: p56), *'The more a parent can afford, the better the quality of provision; the less the parent can afford, the worse the quality'*. In the South African context, this is an incredibly concerning statement and one which rings true to evidences within the education space as many classroom situation in poor South African early childhood centres is to fit many children into a small room with few carers (often which are unskilled), and with scarce and few resources to encourage learning (Penn, 2010: p65-66).

Early Childhood Education in the Eastern Cape has recently been targeted as a priority sector. There are 4.4 million babies and young children in South Africa; and according to the Education White Paper 5 on Early Childhood Development (2001: p2), in 2001 about 40% of the young children in South Africa are exposed to harsh living conditions, neglect and a lack of stimulation. Due to the neglect, poor living conditions and the lack of stimulation in the early years, when children enter formal schooling in Grade 1, the foundational concepts of learning are not developed, causing children to drop out of school, and in many cases to repeat grades.

Most parents, practitioners, centres and schools want the best for their children, and want to see their children succeed and excel. Gordon & Brown. (2008: p596) stated that, *'When a society values its children, it takes the responsibility for providing a quality of life for them'*. Parents, practitioners, caregivers and families are the child's first educators; they not only

teach language and day-to-day concepts, but also instill values, morals, religious beliefs, and ethics (Gordon & Brown., 2008: p307).

In the South African context, many day cares, crèches, play schools, baby homes and safe havens are developed with the sole purpose to ‘entertain’ children, but because of a lack of education and skills training, they seriously lack in any educational understanding of children’s development and growth.

It seems that many parents, care-givers and practitioners are unaware of the developmental levels and steps in the development of children, and thus are ill-equipped, and unable to effectively stimulate and enhance their children’s development (Gordon & Brown., 2008: p315). Practitioners and parents dealing directly with children have an incredibly important role to play in providing opportunities for children to learn and gain understanding of concepts.

2.1.8 The role that culture plays in development

According to Ball *et al.* (2010: p567), *‘the community in which a child lives may support the child’s development or, conversely, expose the child to hazards’*. Schools, early childhood centres, church groups, community gatherings and events are becoming more and more diverse, which means that curriculum, teaching interventions and strategies need to make the same shift (Denno *et al.*, 2010: p106).

Heine (2012: p2) describes culture as *‘some kind of symbolic coding – that is, of having a set of signals, icons, and words that refer to something else that most members of that culture recognise’*. It is vital that children’s culture and beliefs are understood and respected. According to Music (2011: p72), children across the world are brought up differently, and this is as a result of various cultures with differing beliefs about how to rear children. Children are exposed to different stimuli and experiences, which as a result, leads to varying brain development (Music, 2011: p80).

Cultural groups also explore different nutritional practices, and as a result, the rate of growth in children may be influenced (Ball *et al.*, 2010: p145). Language development and social interaction have an impact on children’s development, as various cultural groups have

different rules regarding patterns and norms relating to social interaction (Ball *et al.*, 2010: p145).

2.1.9 Lack of Stimulation

According to a web address dedicated to the wellbeing of young children (<http://www.childwelfare.gov/pubs/focus/earlybrain/earlybraina.cfm>: 07/07/08), there are major negative effects that result from a lack of stimulation in young children. Konczak (2012: p12) states the importance of neuronal development, and that it is dependent on an organism's interaction with the environment. Children will only learn if exposed to stimuli in their environment. Konczak (2012: p12) also states that, *'the plasticity of the nervous system, as well as the development of the efferent and afferent projections is time-critical'*.

The critical periods of brain development imply that the timing of intervention is important, and that the failure of such intervention and stimulation would negatively affect the later functioning of the brain.

According to Perry (1998: http://www.childtrauma.org/ctamaterials/biolo_relativity.asp, 10/7/08), at the age of three, the brain has reached 90 per cent of its adult size; and the child's emotional, behavioural, cognitive and social foundation is in place for the rest of the individual's life (Perry, 1998: http://www.childtrauma.org/ctamaterials/biolo_relativity.asp, 10/7/08).

Whitmore (1986: p7), also believes that, *'prior to conception, the health of the mother can directly support or limit the growth of the child. Studies from third-world countries have shown that, when severely deprived, it will take three generations of both proper nutrition and stimulation to return the human brain to a normal level of cognitive growth'*. This is an alarming fact, especially in a country like South Africa, which has a large number of children living in poverty.

There are an unlimited range of external factors, which impact on the development of children, according to their general framework of development. Some of these factors include genetics, external environment, nutrition, health, parental input, and learning experiences. According to Nadeau *et al.* (2011: p10), genetics influences only about half of the development of cognitive ability. Other areas of potential risk include that of *'less responsive*

parenting, less stimulating learning environments, higher incidence of maternal depression and stress, lack of access to adequate nutrition, higher incidence of intrahousehold violence, poor housing, dangerous neighborhoods, and pollution, among others' (Nadeau *et al.*, 2011: p11).

Walker (2011: p115-117) states that not only does the exposure to early education, but also the quality of the children's environment, nutrition and health play a role in brain development. When children are exposed to harsh living conditions and a lack of appropriate early experiences, these children are placed at a distinct disadvantage in their cognitive ability level at school entry, as well as being at risk of poor school progress (both short- and long-term) and lower educational attainment.

According to Nadeau *et al.* (2011: p11), in 2007 there were approximately 219 million children globally, under the age of five, from disadvantaged backgrounds. Disadvantaged children are often exposed to a number of risk factors, including a lack of access to clean water and basic sanitation infrastructure, access to quality health-care services, inadequate nutrition, parents with low education levels, and a lack of access to quality early childhood care.

According to Helmers and Patnam (in Friedman and Sturdy, 2011: p38) state that there is an increasing amount of evidence, which shows that *'improved parental education and skill are subsequently related to improved child survival, health, nutrition, cognition and education.'*

According to Starkey and Klein (in Saracho & Spodek, 2008: p270), if sufficient cognitive enrichment is not provided during the early years, a gap in the child's knowledge and ability to cope with life takes root. A detrimental result of a lack of stimulation is when the neuronal pathways wither and die. This has devastating effects on young children, as they may not be able to achieve any further development and growth (Brierley, 1994: p6; <http://www.childwelfare.gov/pubs /focus/earlybrain/ earlybraina.cfm>: 07/07/08; De Witt. 2009: p78-79).

The lack of stimulation in the child can negatively affect the child physically, permanently disabling the child and detrimentally affecting his/her progress and growth. Children need to be exposed to learning situations repeatedly, in order to ensure and build the brain circuitry, which would enable the young child to develop normally (Gordon & Brown., 2008: p460).

Educational neglect, according to Regoli *et al.*, (2011: p269) is defined when parents continually prevent or hinder children from being included in the school system, failing to enrol children in a school and a lack of interest in the child's schooling. The following type of drastic neglect can have detrimental effects on the child. The extreme neglect of stimulation can cause the neuronal pathways, whose primary objective is to provide for learning, to narrow and eventually disintegrate, causing permanent dysfunction (<http://www.childtrauma.org/ctamaterials/neuros~1.asp>, 14/06/09).

Music (2011: p202) advocates the theory of Renee Spitz' (1945), which emphasises that '*a lack of basic nurturing can lead to serious psychological, emotional, and physical delay, and even death.*' According to Music, (2011: p93), those parts of the brain, which are concerned with logical thought tend to shut down when a child is faced with neglect or trauma. Music (2011: p93) believes that '*this may be an explanation for why many children from highly stressful or abusive backgrounds often do not achieve well academically. They have learnt to cope either by being hyper alert to danger, which impedes ordinary relaxed concentration, or they can go into a shutdown dissociative mode, in which the thinking part of the brain becomes inactive.*

Severe neglect and trauma can lead to parts of the brain withering and wasting away, which, in turn, causes developmental delay, as well as serious deficits in the ability to empathize, regulate emotions, manage intimacy and ordinary social interaction (Music, 2011: p93).

Intelligence is both a result of genetic activity, and of stimulation. Even in children with high genetic cognitive abilities, a lack of stimulation can be severely detrimental to their development, resulting in a permanent cognitive disadvantage:

(<http://www.childtrauma.org/ctamaterials/neuros~1.asp>, 14/06/09, http://www.childtrauma.org/ctamaterials/brain_II.asp, 14/06/09).

Figure 2.6 is a representation of two children, both aged three, one of whom was stimulated from childbirth, and the other, who was not. According to Perry (<http://www.childtrauma.org/ctamaterials/neuros~1.asp>, 14/07/09, Music, 2011: p92-93), the images illustrate the negative impact of the developing brain. The image from the CT scan on the left is one of a healthy three-year-old child, with an average head size. The image on the right is that of a three-year-old child suffering from severe sensory deprivation and neglect.

The physical size and development of the cortex is abnormally small:
<http://www.childtrauma.org/ctamaterials/neuros~1.asp>, 14/07/09).

Three-year-old children

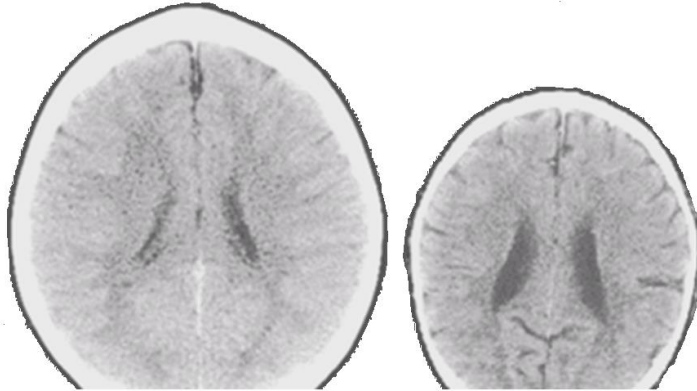


Figure 2.6 A comparison of two three-year-old children, one of whom was stimulated, and one that was not. Taken from:
(<http://www.childwelfare.gov/pubs/focus/earlybrain/earlybraina.cfm>:
07/07/08)

2.2 CONCLUDING REMARKS

The need for early childhood development and intervention has proven to be of great importance, and one that plays a fundamental role in the total development of the child. The child needs to be seen in his/her totality, focusing on the cognitive, physical-motor, social-emotional, language and speech, spiritual and play development (Seefeldt *et al.*, 1998; De Witt, 2009; Eliason, 2008; Gordon & Brown., 2008; Sternberg, 2008).

In conclusion, with an understanding of the importance of early intervention, the rapid brain growth which takes place in the early years as well as the long-term effects that early intervention and stimulation can have on young children, the responsibility that each citizen has is huge. South African citizens, wanting to provide the best for future generations need to collaborate, work together, share ideas, educate and support one another so as to develop a strong foundation in terms of early education and development.

With an understanding of the impact that a lack of stimulation can pose for children and the challenges they are likely to encounter later on in life, surely the significance of intervention and effective teaching and learning is made a priority and that the necessary steps are taken to ensure quality early education for all in South Africa.

CHAPTER 3

FOCUS AREAS IN THE SOUTH AFRICAN CONTEXT OF EARLY CHILDHOOD DEVELOPMENT

The Curriculum and Assessment-Policy Statement (CAPS), which was implemented in January 2012 in South African schools, places the focus mainly on Languages, Mathematics and Life-skills in the early years (Curriculum and Assessment-Policy Statement, 2011: p8).

The cornerstone of the South African Curriculum (called the Curriculum and Assessment-Policy Statement: CAPS) functions on implementing skills, attitudes, knowledge and values in ways that are meaningful to young children (CAPS, 2011: p5). This CAPS Policy is fundamentally for formal schooling, but the pre-school age is the foundation for learning to come. It is, therefore, important that literacy, mathematics and life-skills form part of collaborative teaching and learning, and that the various domains of development are always seen in totality (CAPS, 2011: p8). The Early Inspiration Training Programme includes fundamental elements explained in this chapter dealing with implementing mathematics, literacy and life-skills in the Grade R classroom through integration with the 5 domains of development; Physical-motor, Cognitive, Language and Speech, Social and Emotional and Visual Perceptual skills. It is fundamental that the understanding of language, mathematics and life-skills is included in the early years so as to provide the child with foundational knowledge, concept knowledge and an introduction to these concepts which they will encounter throughout formal schooling. It is important that the three elements discussed below are incorporated in the Grade R class in an integrated, informal manner. These concepts are dealt with in detail in the Early Inspiration Training Programme and provide practitioners with a deep understanding of integrating the three key elements into the Grade R classroom.

These three elements will be discussed in detail.

3.1 MATHEMATICS

Numeracy and numbers are all around us; every day, practitioners and care-givers have the opportunity to enhance and encourage each child's mathematical abilities, so as thereby to enhance the young child's cognitive skills and development, and to prepare the young child

for future formal learning structures. *'Children's early mathematical experiences play an enormous role in the development of their understanding of mathematics, and serve as a foundation for their cognitive development'* (Tudge, in Perret-Clermont, 2004: p21).

Mathematics plays a great part in cognitive development, and an understanding of mathematics is an indispensable foundation for the teaching of concepts.

According to De Witt (2009: p184), concepts form the foundation for reasoning, interpretation and thinking. These concepts help form the groundwork of a learner's understanding of maths and science, and should be developed from the very beginning of childhood.

In an article written by Swets and Zeitlinger (2002: p252), early numeracy is defined as *'the acquisition of mathematical knowledge and skills, which can be viewed as a developmental process that starts long before the beginning of formal mathematics education in the primary school.'*

In the years prior to the formal schooling in Grade 1, children are exposed to simple mathematical concepts, especially those that are interested in numbers and facts about numbers. They develop understanding of shapes, colours, patterns, counting in sequence, groups, and comparing objects (De Witt, 2009: p184).

Saracho and Spodek (Ed. Saracho, O. & Spodek, B. 2008 : p viii), stated that children *'build considerable informal knowledge of mathematics before entering school, and can extend their knowledge if provided with appropriate experiences at all ages'*.

Swets *et al.* (2002: p250) have categorized this type of learning as, *'informal mathematical concepts;'* and these authors believe they are developed and enhanced over a period of time, based on children's experiences with numbers – both in school, as well as in their day-to-day experiences. Saracho and Spodek (2008: p1) believe that mathematics not only includes numbers, but also geometry, measurement, algebra and patterns.

In early childhood, practitioners and parents should enhance the development of these mathematical notions by creating learning situations through spontaneously occurring situations, which may seem unintentional, yet can be planned and systematic educational activities (Swets *et al.*, 2002: p250).

According to Brooks-Gunn (Ed. Chase-Lansdale, Kiernan, Friedman. 2004: p295), all children have the potential to develop mathematical concepts, and the amount of development that occurs before formal teaching begins varies from child to child. In an article written by Dockett and Perry (2007: p871), these authors state that through thorough research, it has been recognised that young children are capable of learning mathematics, as well as of developing a deep understanding of mathematical concepts, and in turn, then relate them to their current life situation.

Swets *et al.* (2002: p250) believe that there are three major views on mathematical concepts in early childhood, which can be distinguished. They include the following:

i) Logical mathematical foundations

The concept of logical-mathematical foundations was greatly influenced by Piaget. He believed that the development of numerical concepts and early mathematical skills that can be envisaged as the amalgamation of the logical operations of number conservation, classification and seriation (Woolfolk, 2007: p26-28). *‘A child who has acquired these logical operations, has a true understanding of what numbers are, and is ready to start to do mathematical operations with them in a meaningful way* (Swets *et al.*, 2002: p251).

According to the Numeracy Handbook for Foundation Phase Teachers: Grade R-3 (Department of Basic Education, 2009: p5), the concepts of physical knowledge, social knowledge and conceptual knowledge, including logico-mathematical knowledge, need to be implemented in an integrated and supported approach.

In an article written by Swets *et al.* (2002: p251), Piaget (1965) is quoted as stating his belief in the development of logical operations. He believed that the development of these operations is a direct reflection on the child’s contact and relations with the concrete materials in his/her environment. Piaget believed that the development of mathematical concepts may be attributed to one experiencing the number, interacting with mathematical concepts, and for mathematical concepts to be constant in their environment and surroundings, so that mathematics becomes a regular part of a child’s daily life.

In Swets *et al.* (2002: p251), Piaget also stated that teaching a child to count by rote is not of vital importance – “it would in no way aid in his/her development and understanding of numerical concepts”.

Although rote-counting is important, and may provide us with a familiarity on number names and the sequence of numbers, it does not provide us with any understanding of numbers, number concepts and abstract ideas. Piaget (1952) blatantly stated that: '*Counting has no operational value*' (Swets *et al.*, 2002: p251).

ii.) Children's counting skills

In contrast to Piaget's previous statement, the importance of developing children's counting skills is also stressed as an indispensable part of the development of mathematical concepts. This contradicts Piaget's logical operations theory. According to those that support this view, counting skills are essential, and also aid in the development and understanding of the numbers concept. The repetition of counting by rote reinforces the child's ability to memorise sequences and sounds, even if done without any profound understanding (Eliason, 2008: p325).

According to Swets *et al.* (2002: p251), '*Frequent and varied experiences with counting are considered to be necessary for the development of the concept of numbers, and of the concepts of addition and subtraction*'.

For children to fully gain an understanding of numbers and to have numerical sense, they need to continually experience numbers in the world around them.

iii) Synthetic approach

The idea of the synthetic approach integrates the ideas of the Logical Mathematical Foundations approach and the Children's Counting Skills approach into one synthetic model. Here, both theories are to be considered vital in the development and understanding of early numeracy, mathematical concepts and abstract notions. Swets *et al.* (2002: p252) maintain that eight closely knit aspects of numeracy were devised by Van de Rijt (1996).

These eight aspects include the following, and will be dealt with in more detail later on:

- * Concepts of comparison;
- * Classification;
- * One-on-one correspondence;
- * Seriation;
- * The use of number words;
- * Structured counting;

- * Resultative counting;
- * General understanding of numbers.

According to De Witt (2009: p106), Piaget was originally of the opinion that language development and cognitive development go hand-in-hand and work simultaneously. He also stated the notion that thinking develops before language does. Vygotsky believed that language development and cognitive development are usually seen in isolation – until the child reaches the age of two years – when a sudden spurt in development occurs.

3.1.1 What early numeracy should entail

Children are exposed to some form of numeracy from birth. The child is constantly exposed to people discussing things from their environment, including: shopping, shapes of objects, numbers, ages and sequences. Numeracy is all around us. Although it cannot be assumed that the child has developed an understanding of numbers, merely because he has encountered numbers and counting, the child does acquire mathematical concepts through experiencing the numbers in various context (Swets *et al.*, 2002: p251-252).

Often parents and families think that because their young child can count to 50 by rote and write the number's names they have a deep understanding of mathematics. This is most definitely not the case; before a child truly understands abstract numbers and concepts, he/she needs to have experienced numbers through his/her senses in a concrete format. Only then would the concepts begin to be understood.

According to Lansdown and Walker (1991: p312), during the early stages of children's lives, they '*need to understand words like more, less, several and some; then come bigger, biggest, taller, heavier, between and so on*'.

There are six major aspects of early numeracy teaching and learning that are important in the understanding of mathematical concepts in early childhood (Wright 2002: p35). These include:

- * Children need to have a deep understanding of mathematics, through identifying strategies and a conceptual knowledge of numbers.
- * Early childhood practitioners and workers need to be provided with an explanatory model and guide to young children's number development.

- * The guides and explanatory models can be used by practitioners to observe and assess the child's early-number knowledge.
- * The models and guides can be used across a broad range of schooling systems, stimulation centres, and communities.
- * Together with learning frameworks, instructional frameworks are also available. The instructional frameworks and learning frameworks go hand-in-hand to enhance the learning experience.
- * Practitioners and professionals need to undergo development courses, which would enable them to effectively implement the learning and teaching frameworks and gain positive results in the development of children.

In a study done by Griffin (2004: p175-176), to note the effects and to develop an understanding of numerical sense, the following guidelines need to be taken into consideration when implementing a mathematics programme for young children. This would enable the child to use his/her existing knowledge, as well as to construct new knowledge on the next level, so as to enhance his/her thinking abilities.

Each individual child's needs should be met, by means of the following:

- * The child's current knowledge should always be noted and taken account of, so that progress and development can be assured.
- * Activities should be multi-leveled, so that children with different basic knowledge can take part in activities and the programme at hand, with an understanding of the activities, thereby ensuring that all the children would benefit from the exposure to concepts (Griffin, 2004: p 175-176).

3.1.2 The elements of early numeracy

Although young children may not be doing mathematical sums and equations, they are still developing mathematical concepts and gaining valuable insights into numeracy – by way of playing. From their earliest days, children are exposed to numbers, shapes, colours and structures in their daily lives. Practitioners and educators thus need to ensure that children are gaining the best possible insights from the world around them.

According to an article written by Sophian (2004: p59), although mathematics instruction for young children should be age-appropriate, in both format and content, it should at the same

time prepare the child conceptually for the kind of mathematics to which they will be exposed in the future.

i.) Counting

There are many ways in which we can include counting in the development of mathematical concepts, so that counting is not merely a memory activity, but so that children may develop an understanding of numbers and extend their concept of understanding (Young-Loveridge, 2002: p37). Counting is a very important aspect of mathematics. It is the foundation for all future mathematical knowledge; and it is part of daily life (Clarke, Clarke & Cheeseman, 2006: p83-84; De Witt, 2009: p184; Tudge *et al.*, 2004: p21, Numeracy Handbook for Foundation Phase Teachers: Grade R -3; 2009: p24-25).

We are surrounded by counting and mathematics every day (Clarke *et al.*, 2006: p84).

If learners merely recite numbers, and learn the names of numbers by rote, they are not gaining anything; and later on in their mathematical careers they could experience deprivation in this area. According to McDermott and Rakagokong (1996: p51), the ability to recite numbers does not mean a child can count. Counting skills are skills that are learned gradually, and only after a great deal of counting experiences.

Counting involves the following aspects (Mc Dermott *et al.*, 1996: p51):

- The ability to distinguish a selection of objects.
- The ability to connect a number name to a collection of similar objects representing the total number of objects in that collection.
- The ability to know that the last number name used in counting represents the number of that specific arrangement.

There are many stories and poems that refer to numbers and counting. Stories such as, ‘The Three Little Pigs’, ‘Snow White and the Seven Dwarfs’, and poems such as, ‘One, Two, Three, Four, Five, once I caught a fish alive... Six, Seven, Eight, Nine, Ten, then I let it go again’. These could all be used when teaching children the concept of counting.

ii.) Classification

Classification is an important aspect in the development of mathematical concepts; and according to Micklo (1995; as in Seefeldt *et al.*, 1998: p469), it deals directly with ‘*putting*

together things that are alike or that belong together'. Classification occurs when one groups together objects, or things which belong together. Classification helps the young child to develop the concept of numbers (De Witt, 2009: p186; Eliason, 2008: p240, 332).

Throughout children's first year, infants use their senses to sort and classify their experiences (Gordon & Brown., 2008: p463). In order for a child to be able to sort and classify objects by placing them in groups, they first need to be able to observe an object, identify similarities and dissimilarities, and thus compare characteristics (Hendrick & Weissman, 2007: p225). This also implies noting specific attributes and characteristics, which are associated with purpose, position, appearance or location (Seefeldt *et al.*, 1998: p469). Children should constantly be encouraged to take note of the similarities between the things they see, and those with which they interact throughout their day.

Children should also be encouraged to collect things – rocks, shells, marbles, flowers, money and creatures. This should be performed as a fun activity, so as to encourage learning in a fun environment (Gordon & Brown., 2008:463).

Seefeldt *et al.* (1998: p470), firmly believe that the classification process is segmented into the following stages:

- Sorting into collections without any plan in mind;

Children will begin the sorting process without a plan in mind; but as they 'play', they realise that they are sorting objects, and will continue. There is no reason behind the sorting. It was by chance that the sorting process took place (Seefeldt *et al.*, 1998: p469; Lindberg, 1985: p185).

- Grouping with no apparent plan;

Children have their own idea of grouping, often unable to be seen by the adult, but when explained by the child, there is a deeper understanding of the child's reasoning (Seefeldt *et al.*, 1998: p469).

- Sorting on the basis of some criterion;

Children are often by the age of three able to sort objects according to one criterion, but often struggle to sort more than one. All the green things, or all the round things go together; but

not all those objects that are green and round necessarily go together (Gordon & Brown., 2008: p463; Seefeldt *et al.*, 1998: p469).

- Sorting on the basis of two or more properties;

Once children have mastered, by the age of four, the technique of sorting, according to one criterion, they are then able to create groupings on the basis of two or more criteria, putting together all the green and round objects in a group or category (Eliason, 2008: p332; Swedlow, 1985: p185).

- Sorting on the basis of function, use or concept.

Finally, children are able to sort objects or events, according to their function, use or concept (Seefeldt *et al.*, 1998:469).

iii.) One-to-one correspondence

One-to-one correspondence is an ability that a child develops, which enables them to match an object to a number. One-to-one correspondence is the most important element in the concept of numbers. One-to-one correspondence is a deliberate way of counting, and would only become evident in the child's mathematical ability, once they have developed the concept of this counting technique (Clarke *et al.*, 2006: p94; Eliason, 2008: p325; Gordon & Brown., 2008: p464; McDermott *et al.*, 1996: p52, Numeracy Handbook for Foundation Phase Teachers: Grade R -3; 2009: p24-25).

According to Benigno and Ellis (2004: p17), *'Reciting strings of numbers, pointing, and emphasising the final count are likely to reinforce pre-schoolers' understanding of number sequence, one-to-one correspondence, and cardinality.'*

By developing a link between the number and the number of objects that are being counted, the child begins to develop an understanding of this concept, which later allows children to match the number of objects to the numbers' names. One-to-one correspondence would be evident and understood: should a child have five sweets in front of him; he counts them, and as he counts them, he touches each sweet, counts it only once, and can state that there are five sweets in front of him.

Should the child count the sweets, but counts one sweet twice, doesn't count one, skips one out or counts beyond the number of sweets that there actually are, the concept of one-to-one

correspondence has most likely not yet been acquired (Eliason, 2008: p325, McDermott *et al.*, 1996: p52). Counting with understanding has thus not yet been established.

Counters are a great teaching aid to use whilst demonstrating one-to-one correspondence, as they are concrete objects that the learners can feel and touch (Eliaso., 2008: p325). This is easy for them to comprehend, as the counters are physical, tangible objects in front of them. The number chart is also a very important teaching aid, as it is very multifunctional, and can be used in many activities to reach different outcomes.

Counting pictures is a semi-concrete teaching aid, whereby the learners can count the numbers of a specific type of object. This is also a great teaching aid, for the younger and earlier days of mathematics, as one is still introducing numbers and numerical concepts to the learners (Seefeldt *et al.*, 1998:469).

iv.) Sequencing and seriation

In Gordon & Brown. (2008: p464), Geist (2001) states that '*Seriation is the ability to put an object or group of objects in a logical series based on a property of those objects.*' This involves being able to identify objects from the biggest to the smallest, tallest to shortest, fattest to thinnest, darkest to lightest, and so on (Clarke *et al.*, 2006: p86; Eliason, 2008: p332; Hendrick, 2007: p339). Before a child is able to put objects in a sequence, s/he first needs to be able to order objects by evaluating them, according to some form of contrast and similarity (Althouse, 1981: p124).

v.) Geometry

'*Geometry is the area of mathematics that involves shape, size, space, position, direction, and movement, and describes and classifies the physical world in which we live.*' (<http://www.ed.gov/pubs/EarlyMath/whatis.html>, 2/10/08). The ability of young children to have an understanding of shapes and structures is imperative (Clements & Sarama, 2008: p184; Eliason, 2008: p335). A simple exercise, such as taking a small box apart and putting it back together again, is a momentous achievement if a young child can do it.

Children need to be exposed to shapes and different dimensions, so that their abstract thinking and their understanding of representation may be enhanced. There are so many aspects of geometry and shapes that can be learnt in our daily lives – including angles,

shapes, and solids – by merely observing the world around us (Gordon & Brown., 2008: p465).

According to Clements *et al.*, (2004: p187), *‘Geometry and patterning are foundational for mathematics learning’*.

3.2 LITERACY

Early literacy and language development begin with experiencing language through verbal interactions, books, rhyming, activities, storytelling, singing and games (Eliason, 2008: p191). Language is a means of expression, a way in which people can communicate and interact with the world around them (Fellows and Oakley, 2010: p4, De Witt, 2009: p5). Communication and language are the cornerstones of cognitive learning and development. *‘Language is thus the device through which raw experiences are translated into meaningful symbols that can be dealt with coherently and used for both thinking and communicating’* (Eliason, 2008: p191).

In an article by De Witt, Lessing and Lenayi (2008), a statement by Al Otaiba and Fuchs (2002) is endorsed, stating that, *‘Given the pivotal role reading plays in and out of school and the cumulative long-term cost of literacy, early literacy intervention is critical’*.

As a child’s experience intensifies, his/her language obtains meaning; and therefore, further growth and learning become achievable, also allowing for children to express their feelings and emotions. Language is a fundamental concept for further development and learning (De Witt, 2009: p5; Eliason, 2008: p191). According to Gordon & Brown. (2008: p505), successful readers are able to note an association between the spoken language and the written word; they are aware that language is formed with a number of sounds and symbols, and are thus able to make the connections between the spoken word and the written word.

According to Estes (1975), McKenna and Kear (1990) (in Cunningham, 2008: p20), a child’s attitude to reading and language play a vital role in establishing a love for literacy.

Between 19 months and four years, the child has an intrinsic and natural ability available for language learning, called the Language-Acquisition Device. According to Kostelnik, Soderman and Whiren (2004: p315), *‘During this period, the environment of the child must*

be rich in language experience.' The child should be exposed to as much verbal interaction, communication, reading, reasoning, learning poems and songs and make-believe as possible.

Cunningham (2008: p28) believes that it should be every practitioner, administrator, reading specialist and care-giver's role to promote and encourage children to love language, as well as encourage a passion for literature and books, thus creating a lifelong reader. Arnold Gesell (1925) was the chief proponent of a theory that compared cognitive maturation to physical maturation. This was called the Maturationist Movement; and it maintained that children were ready to read once they had developed certain prerequisite skills and abilities (Gordon & Brown., 2008: p155; Lilly *et al.*, 2004: p2).

The Behaviorist Theory is one that is still used in some school situations today. It is teacher-centered and fast-paced, where children learn through repeating words and sentences that have been constructed by their practitioners (Gordon & Brown., 2007: p138, 174; Lilly *et al.*, 2004: p2).

The Connectionist Theory functions on the cornerstone that literacy knowledge is built on a series of skills and experiences. The alphabet, reading words and fluency are all taught; and an emphasis is placed on the mastery of these techniques (Lilly *et al.*, 2004: p3). The Social Constructivist Theory is based on Vygotskian principles, and is largely based on the child's environment from a cultural perspective. The cornerstone of this theory is that parents and care-givers should model language, so that children could acquire knowledge through their experiences with more experienced peers or adults (Gordon & Brown., 2007: p149, 174; Lilly *et al.*, 2004: p3).

The Critical Theory encourages developing a deep understanding of each child, their environment and home situation, and in supporting a multi-cultural approach to teaching. It addresses issues of social justice, poverty, malnutrition, non-violence; and it helps children to become creative and critical thinkers and readers (Higgs & Smith, 2006: p66; Lilly *et al.* 2004: p4).

Emergent literacy involves the formation of literacy concepts through informal experiences, where skills, knowledge and attitudes are developmental indications to conventional forms of reading and writing (Berk, 2006: p300-301; Gordon & Brown., 2008: p506). Emergent literacy forms the building blocks for future learning, reading and writing. It is developed

from birth, through interactions with people, participation with adults and peers – and through both non-intentional and intentional stimulation (Lilly *et al.*, 2004: p4).

Some of the important characteristics of language, according to De Witt (2009: p100), include:

i.) Language is a means of communication

In order for children to communicate with other humans in the world around them, there needs to be a common ground and understanding of words, symbols and expressions, in order to make verbal or non-verbal communication possible. Verbal interaction and communication take place through language (De Witt, 2009: p100; Hoff, 2005: p254; Lilly *et al.*, 2004: p10, p126).

ii.) Language is a means of socialisation

Language is the cornerstone of communication and interaction. It is also important for maintaining and sustaining interpersonal relationships and communicating morals, values, attitudes and beliefs through sensitivity, understanding and clear communication (De Witt, 2009: p100; Lilly *et al.*, 2004: p124).

iii.) Language as a means of exploration

Children explore and gain insight by asking questions, by examination and through discovery. This expands their insight and knowledge (De Witt, 2009: p49, p100, Levey *et al.*, 2011: p13).

iv.) Language is a medium of thought

We think and reason in our minds through language. Without vocabulary and words, we would not be able to form cognitive thought patterns (De Witt, 2009: p100, Levey *et al.*, 2011: p11).

v.) Language is a medium of learning

Language is a means of learning and gaining understanding, not only through verbal explanations, but also by gaining access to culture, daily occurrences and learning possibilities (Lilly *et al.*, 2004: p124). Engelbrecht *et al.* (in De Witt, 2009: p5), believe that '*Many learning problems are a result of the child's language problems: the child is taught*

through the medium of language; he must understand processes, and [be able to] memorise information through language; and he must also [be able to] give answers in his language’.

vi.) Language as a medium of expression

Language is the way whereby children are able to express themselves, their feelings, thoughts, ideas and beliefs (De Witt, 2009: p100).

vii.) Language is culture-bound

In South Africa, we are faced with a number of cultures, races, and 11 official languages. Wright (2010: p15) quotes Rogoff (2003) by explaining the definition of a cultural community as a group of people with common goals, beliefs, customs and ethnic identity. Each culture has its own, preferred ways of communicating, its language preferences, pronunciation, and dialects (De Witt, 2009: p100; Lilly *et al.*, 2004: p128). Nkuna (2010: p27), quotes Ngugi (1986: p13) when he says, *‘Language, any language, has a dual character: it is both a means of communication and a carrier of culture.’* According to Fellowes *et al.* (2012: p26), this poses a huge challenge for teachers and schools when deciding on which language to implement teaching. Confidence levels, pride, strength in personal identity are all elements, which can be affected should children not learn in their mother tongue and be exposed to a variety of rich social contexts, where genuine communication and support are provided, in order to develop the language.

3.2.1 Elements of early language and literacy development

Language is a slow and in-depth process, which the child is expected to master (De Witt, 2009: p101). There are various theories that exist as to how children acquire knowledge of languages; but according to De Witt (2009: p101), language is developed and learned through trial and error, and by repetition of what has been heard. Over time, children will learn sentence composition, correct sentence structure and grammar. According to CAPS (2011: p10), the focal elements in Grade R (five to six-year old children) are: a) Listening and speaking; b) Reading and phonics; and c) Writing and handwriting. These all fall under the integrated model where children need to implement listening, speaking, reading and writing.

These are various facets of language and literacy, which develop progressively (De Witt, 2009: p101). These include:

- Vocabulary (expressive and receptive language)
- Oral language (speech and listening)
- Reading
- Writing

i.) Vocabulary

Vocabulary is the '*development of stored information about the meanings and pronunciation of words necessary for communication*' (Barone, Mallette and Hong Xu, 2005: p208). Levey *et al.* (2011: p6), describe expressive language as an '*ability to express ideas and needs in a meaningful manner that is understood by listeners*'.

According to Barone *et al.* (2005: p208), there are four types of vocabulary. They include:

- Listening vocabulary refers to the knowledge of words, which ensures that children are able to understand what they are hearing. This is usually more advanced than the speaking vocabulary (De Witt, 2009: p99).
- Speaking vocabulary is the knowledge of words when used in speaking.
- Reading vocabulary refers to the words needed to understand what one is reading.
- Writing vocabulary is the knowledge of words used when writing.

Verbal or expressive language is the language that is spoken vocally. According to Gormly and Brodzinsky (in De Witt 2009: p99), these are those words that are used vigorously by the young child when speaking. Non-verbal or receptive language is similar to the listening vocabulary, as it refers to the words that the child understands, but does not yet actively use in speech (Berk, 2007: p248; Hoff, 2007: p348, McGuinness, 2005: p280, Fellowes, 2010: p38).

ii.) Oral language (speech and listening)

Oral language consists of two elements, namely speech and listening. Speech refers to the ability of a young child to express himself/herself effectively in an audible manner. Listening is an indispensable aspect of communication, as language and interaction would not be possible without listening (Levey *et al.*, 2011: p3, De Witt, 2009: p99; Hoff, 2007: p160, CAPS, 2011: p13).

According to Jordaan and Jordaan (1989, in De Witt 2009: p99), there are three skills that need to be mastered, in order to be able to understand other people's linguistic messages, as well as produce understandable linguistic messages of one's own. These include:

- The child needs to be able to relate speech sounds with their respective meanings,
- Associating words with the symbols,
- Mastering the rules of the language structure, so as to create a level of understanding.

iii.) Reading

When learning about reading, young children's reading not only refers to the written language, but to books, print and illustrations (Barone *et al.*, 2005: p9). Emergent reading occurs in the early years of development; it refers to concepts, such as colour, shape and sound (Levey *et al.*, 2011: p7). According to Eliason (2008: p216), children need to have numerous reading experiences, which sharpen their visual and aural perceptions, before they would be able to develop a reading facility. It is important that when children begin the reading process, they first develop an understanding of reading, why we read, and what we read (Berk, 2006: p300; Hoff, 2007: p454).

When starting to read, children are unaware that each page follows on from the previous one. They merely observe the illustrations on each page. After a while, they would begin to realise that the book carries a storyline and that each page follows on from the previous one (Barone *et al.*, 2005: p9). According to Barone *et al.* (2005: p9), '*As young children develop, they begin to read a book by using book language*'.

According to Raines and Canady (1990: p5, in Eliason, 2008: p216), the reading process is no longer considered as a '*word-by-word decoding process designed to unlock the meaning embedded in the print.*' They state, rather, that comprehensive literacy teachers view reading as a process '*of constructing meaning from interacting with the print, relating the information on what one already knows, and teaching specific skills*'.

Once children have developed an understanding of the alphabet and letter sounds, they are able to gradually begin the reading process in a more in-depth way. According to Barone *et al.* (2005: p11), there are three dominant reading behaviours, which are portrayed by

beginning readers. Firstly, they begin by reading aloud; by hearing the words out loud, it helps them decipher and de-code the words. Secondly, children often use their finger as a pointer at the words they are reading. Thirdly, children begin by reading word-by-word, and often have no understanding and meaning of what is being read, they are merely de-coding the words (Levey *et al.*, 2011: p8).

iv.) Writing

Since Clay (1975) and Read (1975) completed their research in the 1970s, we have come to understand the importance of children's writing from a young age. They helped practitioners and parents to understand the development of writing in young children, emphasising the importance of scribbles and early writing (Gordon & Brown., 2008: p511; Barone *et al.*, 2005: p33, Levey *et al.*, 2011: p8). Research done by Labbo (1996), Rowe (1994) and Dyson (1992) has shown the importance of the social context in the writing situation (Barone *et al.*, 2005: p33).

Scribbling is the first form of writing that emerges in the young child (Gordon & Brown., 2008: p511). These scribbles progress through a series of developments, beginning at uncontrolled scribbles, which refer to random marks on the paper. Figure 3.1 is a clear representation of uncontrolled scribbling. This representation of scribbling clearly shows that there is no 'order' to the picture. By looking at the picture, we would not be able to recognise the image as a green frog. The figures below show a comprehensible illustration of the stages of writing that children go through, starting at scribbling, before, moving on to writing with meaning and purpose. Children have an idea in mind when scribbling and they can often name the scribble, although this frequently changes each time the child is questioned (Barone *et al.*, 2005: p33-37).



Figure 3.1 Uncontrolled scribbling, a green frog (Barone *et al.*, 2005: p27)

Following uncontrolled scribbling there is controlled scribbling, where the child is able to show objects in a more systematic manner. Figure 3.2 is a representation of a green goblin. Children's images at this stage gradually become more noticeable and recognisable. Distinctions are also able to be made between their drawing scribbles which are larger, and their writing scribbles, which are smaller. Figures 3.3 and 3.4 are representations of a child's desire to write.

They are a child's representations of letters, gradually developing. Once children have left the scribbling phase, and are using letter strings for writing, they often learn how to write their names. Figure 3.5 is a representation of the Eiffel Tower with the letters PRS, which stand for Paris (Barone *et al.*, 2005: p33-37).



Figure 3.2 Controlled scribbling, a green goblin (Barone *et al.*, 2005: p34)



Figure 3.3 writing with circles

Controlled scribbling and

(Barone *et al.*, 2005: p35)

SCDWED

Figure 3.4 A letter string

(Barone *et al.*, 2005: p36)



Figure 3.5 The Eiffel Tower, and a child's representation of PARIS, written as PRS
(Barone *et al.*, 2005: p36).

3.3 LIFE-SKILLS

Teaching children the value of life may seem too much to comprehend, but through a broken-down approach and step-by-step programme, one is able to educate them in terms of the basic attitudes and values of life (Hendrick & Weissman, 2007: p166). Life skills and concepts aid in the overall development of the young child. Concepts of being and belonging, as well as encouraging enquiry and intrigue, questioning, social interaction, self-esteem and self-worth, all play an important role in the development of the child in totality.

According to CAPS (2011: p9), life-skills have been divided into four key areas, namely: '*beginning knowledge, personal and social wellbeing, creative arts and physical education*'.

This is done to ensure that foundational skills and knowledge are learnt in the early years, so as to support learning in later grades (CAPS, 2011: p9).

As in mathematics and literacy, the development of life skills needs to take place from a very young age; and they therefore comprise a basic component of the curriculum for young learners.

Each child needs to be seen as an individual, with specific needs and abilities. It is imperative that all children be catered for, and that each child is seen as a whole. According to Cameron, Talay-Ongan, Hancock and Tapanya, research over the past 40 years has confirmed that caring, nurturing, loving relationships in the early years, all lead to a healthy and positive development of one's self (2010: p80).

Life skills and basic concepts are important in the cognitive development of children. This aspect of cognitive development plays a significant role in the development of the child in totality.

Children have a desire to learn and gain knowledge and abilities; this zest often increases as the child matures. It is imperative to preserve the child's desire to learn, by providing learning situations, fostering curiosity and allowing for inquisitiveness in young children (Eliason, 2008: p41).

A developmentally appropriate practice is one that is suitable for young children. It ensures the provision of a curriculum and environment that are right for the developmental needs of children, characterised by their age, gender, personalities, abilities, likes and dislikes (Hendrick & Weissman, 2007: p9). Gordon & Brown. (2008: p50-51), state that a Developmentally Appropriate Practice (DAP) is one that is based on young children's development, after observing their interests, abilities and needs.

Education is then provided for in an activity-based learning environment, which is learner-centered, practitioner-directed and facilitated; it promotes academic preparation, and is focused on the development of skills and abilities.

Some essential aspects of development in early childhood include the following, which need to be developed and encouraged in early childhood, in order to assist in enhancing life skills:



i.) Experiences

Because early childhood education forms such a strong foundation for future learning, the need for experiencing and understanding is paramount. Children learn through experiencing; they need to use their senses and gain insight by means of touch, taste, sight, smell and sound (De Witt, 2009: p122; Gordon & Brown., 2008: p567). Concepts need to be taught, using different methods of explanation. Repetition is the key to enhancing deep understanding and insight (Eliason, 2008: 41-42).

According to Eliason (2008: p42), children need experiences that encourage them to manipulate, explore, use their senses, build, create, discover, construct, take apart, question and understand the world in which they live.

Experiences allow for a child to interpret, understand, conceptualise and categorise through active, engaged and involved learning.

ii.) Choices and decisions

An important aspect of development and 'growing up' involves the ability to make decisions through critical thinking and analysis. By allowing children to make a limited number of decisions, this engages them in the learning process, as well as giving them responsibility and accountability. According to Eliason *et al.* (2004: p42), Glasser (1997) suggests that practitioners should not place too much emphasis on the young learners, but rather on the curriculum. Glasser proposes that at least one block period should be set aside each day, in which children can choose how they want to spend their time.

According to Hendrick & Weissman (2007: p244), encouraging children to make their own decisions fosters creativity. Creativity needs to be engineered from within a child, rather than the child being told what they need to do and when. By the child being able to make his/her own decisions, the practitioner is not only empowering the child, but also allowing for the child's creativity and personality to shine through.

iii.) Curiosity and questioning or enquiry

Children are inquisitive beings; they thrive on gaining knowledge and understanding of how things work and gaining insight into the unknown. Most people are born with a curiosity to learn, explore and understand the world (De Witt, 2009: p113; Eliason, 2008: p43). Teachers, care-givers and carers can enhance and encourage children's curiosity by encouraging them

to answer any questions, which the children may have. Exploring their surroundings can also be useful in raising their levels of curiosity and intrigue (De Witt, 2009: p115).

Through exploration and enquiry, the attention span of a child increases (Gordon & Brown., 2008: p462). There should be many concrete, tactile, sensory experiences, which children can encounter and use to make sense of their world (Gordon & Brown., 2008: p462). Adults should always encourage children to think creatively and concretely about any challenges they may encounter, supporting children when their ideas fail, encouraging them to pursue the challenge and enhance their critical thinking (Eliason, 2008: p43).

iv.) Modelling

Modelling is an aspect of teaching and learning which is vital, as it enables the practitioner to model concepts that are yet to be understood, as well as the correct use of language (De Witt, 2009: p218; Gordon & Brown., 2008: p139; Woolfolk, 2007: p233). Practitioners not only model knowledge that is to be taught to the learners; but they also model good skills, attitudes and values, which the learners observe and adopt (Gordon & Brown., 2008: p196; Eliason, 2008: p45). Often children are able to understand concepts and ideas more effectively once having had the concept demonstrated to them (Gordon & Brown., 2008: p139; Eliason, 2008: p45).

v.) Rich socio-cultural heritage

According to New (1999 in Eliason *et al.*, 2004: p45), '*Cultural habits and traditions in homes and communities serve as contexts for children's development; they also provide content, as well as opportunities for learning.*' The way in which young children learn and what they learn would depend on their environment, their culture and their life-experiences. Each family and culture has its own specific traditions, norms, beliefs and way of doing things. These all need to be considered when dealing with young children.

Diversities need to be seen as a positive attribute in children, as they can teach and educate others in terms of their own heritage (Eliason 2008: p45; Gordon & Brown., 2008: p462).

vi.) Interaction with others

Through interaction, children learn from one another. This enhances their affective and cognitive perceptions and abilities. Oral and listening abilities are enhanced through interaction; children learn to become sensitive to one another; they learn basic life skills; and

they learn what is acceptable and what is not. This is an important aspect of development for the young child in his/her totality (Eliason *et al.*, 2004: p45; De Witt, 2009: p227-228).

3.4 CONCLUDING REMARKS

CAPS has targeted the following three elements as priorities in the South African education system:

- Mathematics
- Literacy
- Life skills

Each of the above aspects has been dealt with in detail regarding effective and valuable elements of stimulation which influence development. Literacy, mathematics and life skills should not be seen in isolation. The Early Inspiration Training Programme trains teachers on educating, an integrated approach needs to be taken focusing on the combined elements of each aspect. This same importance placed on literacy, mathematics and life-skills needs to be a key element in practitioner training, and is the cornerstone and fundamental element of the Early Inspiration Training Programme, which will be implemented as part of the empirical research.

With a deep understanding of these fundamental elements to education, practitioners are provided with a much more intense idea of the impact that their teaching can have on children, having great influence in their formal schooling years.

CHAPTER 4

EARLY EDUCATION IN THE SOUTH AFRICAN CONTEXT

4.1 INTRODUCTION

Education is considered a major contributing factor in transforming a country and adding to the progress and growth of a nation (Choudhary, 2012: p62). According to an article by The World Bank, initiated by UNICEF (2007: p1), early childhood development is an element of children's growth, which is vital; and one that should take place in a nurturing, caring and safe environment, which enables children to live, be healthy – mentally and physically – and to be alert and emotionally secure with a high level of social skills and an ability to learn.

Luneta (2011: p16) states that there is evidence demonstrating that teachers who have been properly trained and prepared are more successful in enhancing children's developmental abilities, when compared with teachers that have little or no training. The Presidency of The Republic of South Africa issued a Situation Analysis of Children in South Africa in 2009 (xvi). This states that early childhood development *'encompasses all the processes that enable emotional, cognitive, sensory, spiritual, moral, physical, social and communication development of children from birth to school-going age'*.

According to Sahlberg (Ed. Darline-Hammond & Lieberman, 2012: p1), Finland is regarded as one of the world's most literate and well-educated countries, with considerable research and evidence indicating a nation of excellent teachers, resulting in a high level of education. The practitioner, although unqualified, in any educational context, is of great importance in the stimulation and development of the child in totality (De Witt, 2009: p211; Gordon & Brown., 2008: p192). According to The Guidelines for Early Childhood Development Services in South Africa (2006: p9), the term 'Practitioner' refers to a person working in early childhood development, including those qualified by their experience and involvement in the sector – and providing early childhood services from homes, centres and schools.

Teaching and learning are unique and exclusive tasks that need to be adapted year in and year out, according to children, their circumstances, and other external factors, in order to make a significant difference and impact on the children's development and learning (Eliason, 2008: p19; Ornstein & Hunkins, 2004: p23).

Because of the uniqueness of every child, the approaches that individual children take, as well as their reactions and perspectives, are different from one another; the ways in which they learn are different, and the entire ethos in the classroom is experienced differently from child to child. These all need to be accounted for. Leinhardt (2001: p334) believes that teaching '*is specific with respect to task, time, place, participants, and content, and that different subjects vary in those specifics*'.

According to Black (2011, p17), research has been done, which shows that having well-planned programmes, which cater for young children, help them to master reading and mathematics later on in life. Not only are the cognitive abilities enhanced, but also the child's ability to interact socially, develop self-regulating skills, as well as a deep motivation and determination for success from within. The same article by Black, (2011: p17-18) states that the success of early intervention programmes depends on a range of important elements, which require dedication, time, effort and passion. These elements include:

- A school, or early childhood centre, which is organized and well-managed, with a strong sense of principal leadership
- Well-trained, qualified teachers
- Classrooms, which are well designed and cater for interactive learning
- A planned curriculum and its implementation
- Assessment and accountability systems for teachers and administrators
- Family and community involvement and support

A practitioner (a person working with young children) needs to have an understanding of the children in their class, and needs also to be aware of their thinking patterns.

4.2 EDUCATION IN SOUTH AFRICA

4.2.1 History of Education in South Africa

According to Soudien (in Changing Class, 2004: p89), when we look at a country like South Africa and discuss issues, such as community, integration and the nation, we need to have a liberal approach, considering the history of the country, and in the case of this study, a history of the education system in South Africa. The importance of effective development strategies in education has been targeted as a priority sector – since the establishment of the

Government of National Unity in 1994 – in an attempt to compensate for the injustices of Apartheid (OECD, 2008: p3).

A number of key changes have taken place in terms of teacher-training since 1994, namely: the shift from teacher education colleges to higher education institutions (Universities), and the change in curriculum, types of qualification, accreditation systems and norms for educators (Soudien, 2004: p248).

Prior to 1994, education was run with the cornerstone being the Apartheid Government's efforts to segregate racial groups, thereby causing inequality amongst South African citizens. According to Khumalo (<http://www.southafrica/info/about/education/oecdedu-081008.htm>, 2008: p1), *'the post-apartheid government inherited an education system beset by a host of problems, a fundamental issue of which was the structures of inequality that were embossed in the system'*.

The South African apartheid education system failed to address democratic principles based on access, full participation and equity (Msila, 2007: p1, <http://www.southafrica/info/about/education/oecdedu-081008.htm>, 2008: p1). According to Msila (2007: p1), *'education as a means of undemocratic social control created individuals who were not only short-changed, but were also compartmentalised along racial and cultural lines'*.

Since 1994, the focus has been placed on creating a unified national education system, increasing access to schooling across South Africa, dispersing school governance and management, revising the national education curriculum, improving higher education, and adopting funding policies for rural areas (OECD, 2008: p19).

Since the change in the South African Government in 1994, early childhood development has been recognised and identified as a priority sector in South Africa, and a number of national policies and programmes have been developed; these aim at eradicating poverty through education (Situation Analysis of Children in South Africa, 2009: p. xiv). The development of young children is proving to have social and economic effects on the country; and therefore, transformation and development are imperative.

Schooling has now been made compulsory for all children from the year in which they turn seven to the end of the year in which they turn 15 (NELDS, 2009: p7; OECD, 2008: p19).

Although the post-apartheid era encouraged inclusivity in education, reports show that the number of children enrolling in the education system are declining annually, as children were not able to keep up with the work load as a result of weak foundational development and prior-education (OECD, 2008: p19-21). The South African Constitution (Act 108 of 1996) requires education to be *‘transformed and democratised, in accordance with the values of human dignity, equality, human rights and freedom, non-racism and non-sexism, and guarantees the right to basic education for all, including adult basic education’*.

In the South African Constitution (Act 108 of 1996), huge emphasis was placed on *‘democratic values, social justice, improved quality of life for all, equality and protection of all citizens.’* This same document explains the importance of parental responsibility in ensuring that children are protected, and that enhanced development and self-identity are ensured. The importance of developing skills, knowledge, values and positive attitudes in young children have now become key issues, together with ensuring an integrated and inclusive curriculum practising equality for all (NELDS, 2009: p7).

Zepeda (2012: p1) explains that the role of a teacher/practitioner, is one whereby they *‘grow, evolve, and emerge as professionals through the long-term and day-to-day work they do, and that is why job-embedded learning opportunities need to be the focal point of all professional development efforts’*.

According to Maaga (UNICEF, 2008: p3), children who have undergone early intervention programmes have taken part in follow-up studies, which have shown *‘better academic performance, decreased rates of criminal conduct, and higher adult earnings’* in children that had early intervention, compared with those that did not.

In 1997, Curriculum 2005 (C2005) was launched and implemented in phases (and adaptations since then) from 1998. C2005 was developed in line with the values of the South African Constitution (Act 108 of 1996); but insight was gained from international curriculum developments, thereby ensuring that C2005 was learner-centred and grounded in outcomes-based education (OECD, 2008: p79-80). There were a number of challenges faced with C2005; so in 2002, a Gazette was published by the Department of Education in South Africa called The Revised National Curriculum Statement (RNCS).

The RNCS also embodied all the values and requirements of the 1996 Constitution. The RNCS *‘aims to develop the full potential of each learner as a citizen of a democratic South*

Africa (Revised National Curriculum Statement, 2002: p1). Like C2005, the RNCS was also grounded on a learner-centred, outcomes-based approach to teaching and learning consisting of three learning areas, namely: Literacy, Numeracy and Life-Skills (OECD, 2009: p23, 81; RNCS, 2002, p1).

The Children's Amendment Act (2005) explores the definition of early childhood development in the South African context. The Act (2005), according to an article by World Vision South Africa, (<http://www.worldvision.co.za/campaigns-projects/early-childhood-development-ecd/>, 7/7/2013) explains that '*successful early childhood development is a joint effort between parents, the community and the government, and to which many individuals in the community must contribute*'.

The same article goes on to state the importance of implementing comprehensive approaches to policies and programmes, as well as ensuring the active participation of parents and caregivers (<http://www.worldvision.co.za/campaigns-projects/early-childhood-development-ecd/>, 7/7/2013).

The National Early Learning and Development Standards for children from birth to four years (NELDS) (2009: p11) states that early childhood development in South Africa is defined as '*a comprehensive approach to policies and programmes for children from birth to nine years with active participation of practitioners, their parents and other caregivers*'. NELDS is a curriculum-related policy, based on the South African Constitution (Act 108, 1996), which has been implemented placing great focus on early childhood development from birth to four years. Important developmental indicators and ideas are listed in the NELDS, which empower parents on ways in which they can support their young children, as well as enhancing their development and unleashing their potential (2009: p11).

In an address by Tshidi Maaga, the Chairperson of the Inter-departmental Committee for Early Childhood Development at the Early Childhood Knowledge-Building Seminar, hosted by UNICEF in 2008, Maaga stated that early childhood is not only a service that needs to be offered to South African children, but more importantly, it is an investment in our country (UNICEF, 2008: p3). As a result of the low quality of education evident in standardised assessments, OECD (2009: p47) states that the key focus for the South African education system is to improve the quality of education outcomes and reduce wastage in the system.

According to Britto, Boller and Yoshikawa (2011: p3), the solution to strengthening early intervention in South Africa lies in not only providing access to early childhood centres, but in providing quality care and intervention, ensuring that children's developmental needs are met. In the Situation Analysis of Children in South Africa (2009: p. xviii), a statement is made which suggests the poor quality of early education in South Africa, '*Overcoming weaknesses in the quality [of early education] is imperative*'.

The NELDS aims at ensuring that the expectations and norms in children's growth and development are achieved. The national goals for NELDS include the following (NELDS, 2009: p9):

- Assessing and monitoring the progress of learning programmes designed for children from birth to four years on a national scale;
- Improving early childhood development: teaching and learning experiences;
- Supporting parents with skills programmes and training;
- Assisting with care-giver training and preparations for teaching and interaction;
- Improving the knowledge and understanding of the importance of early childhood development;
- Ensuring sufficient tools are available for the testing of school readiness;
- Supporting and improving the early childhood curriculum;
- Evaluating and assessing learning programmes.

According to the Human Sciences Research Council (2008: p1), the South African Government has made significant changes and expansion of services for young children in the Reception Year (five-years old) in preparation for formal schooling. The Education White Paper 5 on Early Childhood Development (2001: p2) states that about 40% of the young children in South Africa are exposed to harsh living conditions, neglect and a lack of stimulation. A more recent study by Ilifa Labantwana (2013: p1) states that approximately 60% of the 18.5 million children in South Africa are born into poor and vulnerable families. As a result, when children from these underprivileged environments enter formal schooling in Grade 1, the foundational concepts of learning are not yet properly developed, causing children to repeat their grades, and in many cases, to drop out of school.

Under-age and under-prepared learners, who have proven to be the most at risk in terms of school failure and drop out, would certainly be minimised through the process of providing thorough early intervention and stimulation, as well as the laying of foundational concepts before children enter formal schooling (Education White Paper 5, 2001: p4).

Penn (2010: p2) explains the different forms of early childhood development in South Africa, namely: 1) School-based nursery education, which caters for children aged three to six years, delivered by trained teachers; 2) Community-based preschool or playgroups, which mostly amount to part-time volunteer teaching for teachers; 3) Centre-based childcare, where teachers are untrained; and this includes the parents' work hours; and 4) Home-based childcare, which is delivered by unskilled teachers from their own homes.

Opotow in Johnson, (Ed. Paulson, 2011: p107), believes that for any reconciliation to take place in South Africa, we need to face the injustices experienced, and ensure that a mobilisation of institutions is available, which would ensure fairness and justice to all. According to the Millennium Development Goals for South Africa (2013: p14), by 2015 '*children everywhere, boys and girls alike, will be able to complete a full course of primary schooling.*' Primary schooling includes Grades 1 – 7, and refers to children between the ages of 7 and 13 years. According to ECD Guidelines for Early Childhood Development (2013: p53), the goal of providing access for all children to receive primary education has been met; but the focus is now on strengthening the capacity of the educator, and on ensuring that quality teaching is being delivered.

Britto, *et al.*, (2011: p1) state that '*equity can be conceptualized relative to two components, access and quality*'. When dealing with early intervention, quality is a key measure, as low-quality results in the unlikelihood of reaching the desired educational outcomes (Britto *et al.*, 2011: p1). Britto *et al.* (2011: p1) maintain the flip-side, that quality intervention is fundamental, and could result in meaningful, sustainable education for children and their families.

The Integrated Strategic Planning Framework for Teacher Education and Development in South Africa (2011: p1) states that one of the primary outcomes of education in South Africa is to '*improve the quality of teacher education and development, in order to improve the quality of teachers and teaching.*' It was also noted that factors, such as poor subject-matter knowledge and pedagogical content knowledge are important indicators in terms of education and imparting knowledge and understanding.

In 2011, the Minister of Basic Education adopted the new National Curriculum and Assessment Policy Statement (CAPS) approach for South African schools. As of January 2012, the implementation of The National Curriculum and Assessment Policy Statement (CAPS) approach to teaching and learning came into effect in foundation-phase classrooms.

According to the National Gazette (2011: p3), the Minister of Basic Education, Angelina Matsie Motshekga declared in the National Education Policy Act 1996 (Act no. 27 of 1996) the acceptance of National Curriculum Statement Grade R – 12, as being the national education policy.

Motshekga (2011: p3) was clear in stating that the National Curriculum Statement Grades R – 12 comprises the following documentation and policy:

- The Curriculum and Assessment Policy Statement (CAPS) for Grades R – 12
- The National Policy Pertaining to the Programme and Promotion Requirements of the National Curriculum Statement for Grades R – 12, as well as
- The National Protocol for Assessment in Grades R – 12

CAPS specify and instruct policy on the curriculum and assessment in the schooling sector of South Africa, as well as aiming to alleviate problems and challenges that were faced with Curriculum 2005 and NCS. The CAPS model focuses particularly on teacher-training and subject-area content (Curriculum and Assessment Policy Statement, 2011: p4; http://www.scibono.co.za/home/index.php?option=com_content&view=article&id=106&Itemid=113, 17/01/2012).

4.2.2 The current situation of Education in South Africa

Britto *et al.* (2011: p2) maintain that, according to the 2011 UNICEF report entitled Tracking Public Expenditure and Assessing Service Quality in Early Childhood Development in South Africa (2011: p1), a great deal has been invested in early childhood development in South Africa. The focus is now placed on reflecting on the progress and growth evident in the early childhood sector, to assess the competence and impartiality of public-expenditures in the sector, as well as to assess the quality of the services rendered to children.

Grade R in the public sector '*appears relatively well-organized; and many matters are well-institutionalized*'. According to the report, the Grade R practitioners and teachers are

relatively well-experienced, and have an adequate level of ECD training and qualifications. Grade R is largely funded by the Department of Basic Education and Pre-Grade R by the Department of Social Development. Internationally, this approach lacking ownership has proven to be problematic; and it has led to the needs of young children not being met, and therefore, providing poor service delivery resulting from a lack of co-ordination and collaboration between the governmental departments, NELDS, (2009: p11).

Broadly speaking, according to policy, the situation in South African Grade R classes reflects a moderate teacher-pupil ratio, fair training and experience of teachers, moderate planning activity and programme quality. A growing concern, however, amongst others is that not enough effort is placed on the development of young children (UNICEF, 2011: vii, 17). This raises huge issues, as the development of young children is one of great priority – the laying of foundational concepts and understanding the growth and development of children is fundamental (Zepeda, 2012: p1).

The Strategic Plan released by the Department of Education aimed to achieve, by 2014 (2007: p37-44); and this was later extended to 2018:

- **Together with the Provincial Departments of Education to ensure quality Early Childhood Development opportunities in poor communities**

The performance measures aimed at 60% of 5-year old learners to be enrolled into Grade R classes in 2007; and 85% to be enrolled in 2010, with quality early childhood centres being implemented with a strong support programme in place. The Department of Social Development plays an imperative role in the provisioning of access to early childhood programmes (Situation Analysis of Children in South Africa, 2009: p.69).

According to the Situation Analysis of Children in South Africa (2009: p73), '*Qualification of educators working in the ECD sector is essential for [the] provision of good quality services*'. According to a Situation Analysis of Children in South Africa (2009: p68), early childhood development programmes are provided in three different areas:

- 1.) Registered sites with the Department of Social Development and the Department of Education;
- 2.) Community-based sites (traditionally not formally registered, but this has since changed, ECD Guidelines, 2013: p41);
- 3.) Home-based sites (not formally registered).

According to ECD Guidelines (2013: p41), there are now a range of minimum standards, which need to be met in terms of the management, infrastructure, layout, registration and implementation of ECD Centres in South Africa. With reference to the practitioners, '*All practitioners must be trained and must receive on-going training in early childhood development and the management of programmes and facilities for young children*' (ECD Guidelines, 2013: p41).

With reference to practitioner training, the goal was to have 40% of practitioners in registered early childhood sites to be trained in early childhood basics, and by 2011 to have all practitioners in ECD sites being trained with appropriate skills (2007: p39).

- **The aim is to ensure that the curriculum is implemented effectively, which would improve learning outcomes and results.**

The goal by 2009 was to have all schools receiving support, and therefore, ensuring effective implementation of the curriculum in schools.

Another goal was to implement resources in poor schools, ensuring that effective teaching and learning could take place (2007: p39).

- **Improving access and the quality of education for learners with special educational needs**

According to The Strategic Plan 2007 – 2011, the Department of Education's aim by 2007, was to authorise the resourcing of schools to incorporate Inclusive Education into the system. As many as 60% of all mainstream schools should have been resourced with the abovementioned norms and standards by 2011(2007: p40).

- **Attracting and ensuring appropriately qualified and competent teachers in all learning areas at all levels, with special focus on scarce skills**

An audit implemented in 2000 found that only a quarter of the teachers working in the early childhood sector had received some form of training (Situation Analysis of Children in South Africa, 2009: p68). This was identified as a priority in the Department of Social Development and the Department of Education (Situation Analysis of Children in South Africa, 2009: 68). In 2007, a national bursary programme was made available for student teachers in the priority areas of South Africa. The goal was to place and capture detailed information on teacher

shortages and priority areas across the various provinces in 2008, as well as to implement accredited teacher training programmes, which focus on the development of critical skills.

In 2009, bursaries were to be awarded, according to the results from the 2008 study, hoping thereby to ensure that skills development in the specific areas would improve the teaching and learning situation.

According to Berry, Jamieson and James (2011: p21), there are specific requirements in place for staff working with children in early childhood. The regulations state that people working in these centres need to have the following training:

- *'The National Certificate in Early Childhood Development at National Qualification Framework (NQF) Level 1 to 6 of the South African Qualifications Authority*
- *An appropriate ECD qualification; OR*
- *A minimum of three years' experience implementing ECD programmes'.*

According to Government Gazette no 34667 of July 15, 2011, a document entitled The Minimum Requirements for Teacher Education Qualification replaced the Norms and Standards for Educators (NSE) in February 2000. This decision may have had far-reaching consequences for Grade R practitioners, as it determines that a NQF Level 6 qualification is a minimum requirement. Many practitioners working in early childhood settings do not meet the educational requirements to be accepted into an NQF Level 6 training programme.

While all staff, whether paid or volunteer, should be screened against the National Child Protection Register (NCPR), and the Sexual Offences Register, there is also a set of norms and standards with which the staff need to comply (Berry *et al.*, 2011: p33, www.collegesa.co.za/early-childhood-development-vs-college-sa-child-care-studies.co.za,4/7/2013). These include:

- Staff need to have training in early childhood development and to be able to implement ECD programmes;
- Staff need to be equipped with the basic knowledge and skills to identify various illnesses and know an adequate intervention;
- Staff need to be trained in first aid.

According to a publication by Ilifa Labantwana (2011, p. 9), ‘municipalities are responsible for ensuring that ECD centres comply with [the] Municipal Health and Safety By-Laws’ Each municipality takes the responsibility of ensuring that the correct procedures and protocol are followed. Harrison (2013: p4) explains the current challenge with regard to registering early childhood centres with Department Social Development; the practitioners running the centres do not have the resources or finances to improve the infrastructure, and thus are unable to meet the requirements and minimum standards mandatory for registration.

The fees paid by parents are spent on providing food for the children, so teachers are receiving a small stipend – but only when this is possible. Figure 4.1 is a representation of the domino effect that Harrison (2013: p4) believes the early childhood centres in South Africa face.

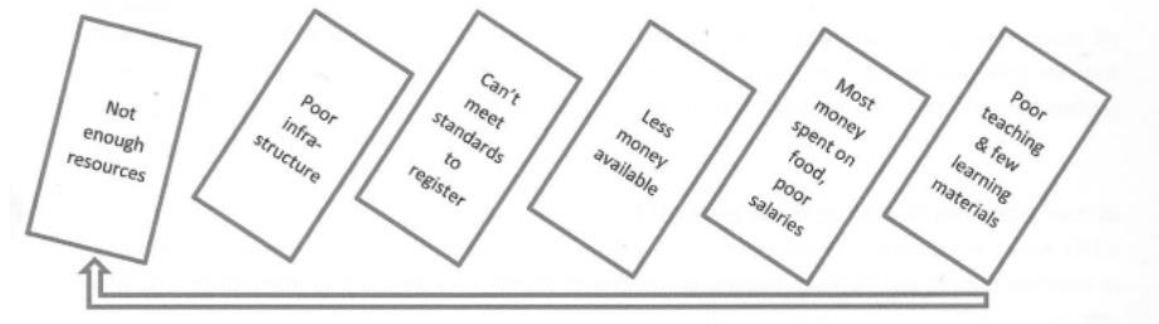


Figure 4.1 The Domino effect of unattainable standards for ECD facilities in poor communities

According to Biersteker (2010: p6), ‘the issues of wages and service conditions for ECD practitioners of all kinds need to be addressed’. It is essential that clear and reasonable remuneration is available for practitioners working in early childhood sector, so as to attract and retain good quality practitioners (Biersteker, 2010: p6).

- **Ensuring effective professional leadership at school and district levels of the system.**

In 2007, research was done to ensure adequate support for formal primary schools was made available. In 2008, all the provinces were to allocate adequate resourcing within the education

districts, ensuring that by 2010, 70% of all primary school education districts would be able to function effectively and appropriately (2007: p40-41).

4.2.3 Educational challenges that South Africa faces

Early childhood in South Africa is confronted with many challenges, resulting in an intensified national focus being placed on the sector (Maaga, UNICEF, 2008: p4; Desmond, 2012 in Harrison, 2013: p1). The increasing number of unregistered early childhood centres that have untrained and unskilled practitioners engaging with children daily is a threat to the education system. There is a desperate need for practitioner-training programmes, which focus on governance and management, nutrition, principles of learning and teaching.

The poor infrastructure, as well as the lack of equipment, together constitutes another Goliath threat, amongst others. Desmond (UNICEF, 2008: p7) also raises the challenge of a lack of formalised training and support for practitioners working in the early sector. Harrison (2013: p3) makes a bold statement, intimating that the quality of intervention in early childhood needs to be viewed as a package, which includes, *'nutrition, parenting and psychosocial support, cognitive and language stimulation, literacy and numeracy development, and access to health and social services.'*

In South Africa, the birth to four-year old age-group is the responsibility of several government departments, namely: the Department of Social Development, and the Department of Basic Education (Samuels, UNICEF, 2008: p40). This lack of ownership over the age group could lead to neglect and abandonment in the sector.

According to an article in the Mail and Guardian, published on 6 May 2013, the mail headline reads, *'Teachers can't teach, report shows'*. This article continues to explain the results from the first-ever evaluation of Grade one, two and three children, and how weak the children's ability to read and write was shown up. The same article, (Mail & Guardian, 06/05/2013) states that *'many teachers did not know how to inculcate problem-solving and analysis skills, and concluded that billions of rands spent on teacher training and development in the past 10 years had failed to produce results in the classroom'*.

In a statement by Nick Taylor, the Department of Education's Head of Development stated that *'the teacher's poor subject knowledge was arguably the fundamental problem in the*

school system'. This goes to show that the level of teacher training and implementation has a detrimental effect on the quality of children exiting the school system in South Africa.

Harrison (2013: p6) believes that *'in a society where families are so fragmented and parents themselves poorly educated, early childhood development is key to breaking the cycle of underachievement'*.

According to research and the literature studied, there is a direct correlation between poverty, nutrition, education, crime and a good work ethic. Figure 4.2 depicts the current cycle many South African families face daily.

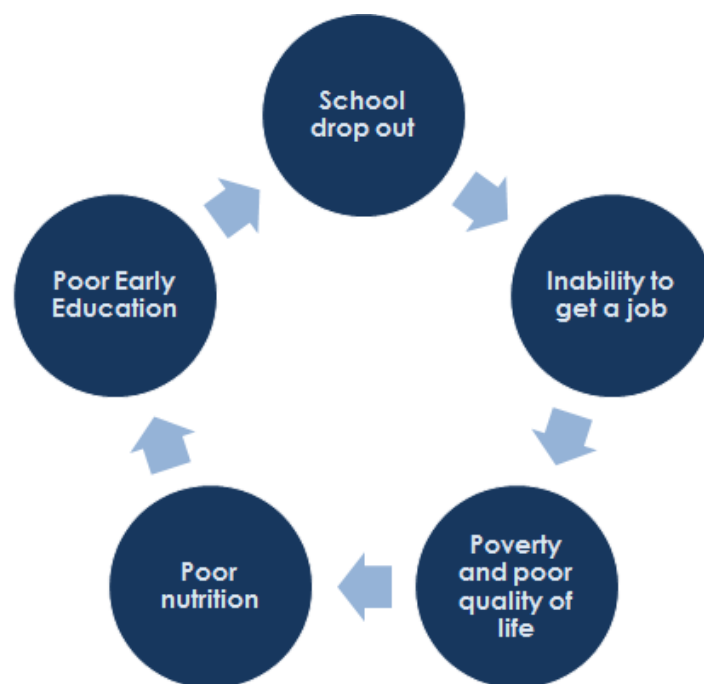


Figure 4.2 The current cycle of poverty that many South African families face daily

According to Nores and Barnett (2010), in Ilifa Labantwana's *'The Essential Package* (2013: p31), *"Evidence from across the world, including low-income countries, demonstrates that access to early learning stimulation in the preschool years significantly enhances the ability of children from impoverished backgrounds to benefit from schooling. It also reduces the likelihood that they will drop out, and [it] increases the probability that they will be employed as adults."*

By eliminating the element of ‘Poor Early Education’ and providing children with quality early intervention, ensuring that the foundational concepts of learning are met, school drop-out rates decrease, as children would be able to cope with the level of work expected of them. Children that are not provided with adequate early intervention are unable to cope in school, which leads to school drop-outs, and an inability to get a job – thereby continuing the cycle of poverty, poor nutrition, and poor early education.

Harrison (2013: p6) believes that a ‘*quantum leap in the provision of quality services for those children who need it most*’ is fundamental in impacting society in a meaningful, sustainable manner.

The practitioner: child ratio in many early childhood centres is high – resulting in classrooms where there is one practitioner trying to educate between 60 and 80 children. In many such cases, the classrooms are small and there are not enough resources, teaching apparatus, tables and chairs for children to learn effectively. Many of the children attending these early childhood centres have walked for kilometres to get to school each day, often with very little food in their system. Children with special needs, or specific learning difficulties, are often overlooked, or labeled as ‘incompetent’.

Not only do such children and practitioners face physical and infrastructural challenges, but very often there is a serious lack of support and input from parents and caregivers. Many parents are unaware of the great responsibility they have, their role in the child’s education, as well as the support and guidance that these children so desperately require.

4.2.4 Goals for Education in South Africa

NELDS (2009: p11) states that: ‘*The country’s vision for ECD is to protect children’s rights by providing environments and resources for the development of a child’s full potential in all aspects of growth and development: cognitive, emotional, social, physical and moral*’. According to Ilifa Labantwana (2013: p1), a local South African organisation focused on early childhood development, and the promotion of an effective early childhood sector in South Africa is reliant on a united action across government sectors, development agencies and private institutions – in order to develop a common understanding and shared commitment in early childhood development.

Action Plan to 2014: towards the Realisation of Schooling 2025 (2011: p1), released by the South African Department of Basic Education, describes the vision for South African education by 2025:

- *'Learners attend school on time, every day, and take their school work seriously. They have access to computers, a good meal, sporting and cultural activities. They have respectful relationships with their friends and dependable teachers.'*
- *Teachers are confident, well-trained, and continually improving their capabilities. They are committed to giving learners the best possible education, thereby contributing to the development of the nation. They enjoy job satisfaction because their conditions of service are decent and their pay comparable to that of other professions.'*
- *School principals ensure teaching takes place, as it should, according to the national curriculum. Through responsible leadership, they promote harmony, creativity and a sound work ethic within the school community and beyond.'*
- *Parents are well-informed about what happens in the school, and receive regular reports about how well their children perform against clear standards that are shared by all schools. They know they are listened to, and any concerns will be dealt with by education authorities at all levels.'*
- *Learning and teaching materials are in abundance and of a high quality. Learners and teachers know how to use computers in the school to access information they need.'*
- *School buildings and facilities are spacious, functional, safe and well-maintained. Learners and teachers look after their buildings and facilities, because they take a pride in their school.'*

It is clear that the Department of Basic Education in South Africa has a goal and vision for education. The implementation and roll-out of this plan is, however, crucial. According to Ilifa Labantwana's *The Essential Package* (2013), although South Africa has developed a key policy in terms of early childhood development, management and structures being implemented, many of the enabling mechanisms for effective service provision are not in place, and the provision of early childhood development is still not assigned to one authority

agency. This, therefore, affects the integration, implementation and provision of early childhood support and services to the children that need it so desperately.

4.3 THE PRACTITIONER'S ROLE IN EDUCATION

According to Seefeldt *et al.* (1998: p479), the role of the practitioner is to organize and position the child's environment and conditions of learning, to enable the child to develop formal knowledge. Vygotsky (in Hendrick & Weissman, 2007: p314) believes that the practitioner's role is to be a sensitive observer and guide. By doing this, the practitioner needs to be aware of the child's abilities and current developmental level, as well as the future potential development and learning that are going to take place, and how to conceptualise this learning, in order to create a real learning experience for the child (Hendrick & Weissman, 2007: p314). Parimala (2011: p4) states how prior research has caused stakeholders in education to agree on the feasibility of training teachers and enabling them to teach in a multi-cultural society. According to an article by Neugebauer (2007: p58), '*general educations come from experiences, interests, and knowledge of nature in an environment which offers space for wonder, asking questions, and finding answers*'. It is imperative that teachers understand how children learn and are trained in a way which enables children to learn through experience.

Early childhood education consists primarily in aiding the movement from the lower mental functions to the higher mental abilities. This educational activity needs to be facilitated by the practitioner, by providing leading activities (Hendrick & Weissman, 2007: p314). Haydon (2006: p6) states that education should be viewed as a: '*route to equality of opportunity for all, a healthy and just democracy, and productive economy, and sustainable development.*'

According to the 'Policy for Early Childhood Development Centres' in the Western Cape, an ECD Centre (Early Childhood Development Centre) is any '*building or premises maintained or used for the care of children*' (2003: p2). Early Childhood Development Centres include playgroups, crèches, aftercare centres, pre-schools and nursery schools (ECD Centre Policy Document, 2003: p2).

The National Curriculum Statement gives a clear and detailed outline of what the Council of Education Ministers desire to see happening in modern South African classrooms regarding teaching and learning. This, however, refers to the formal schooling situation, from Grade 1.

The National Curriculum Statement (2002: p9) envisages teachers and practitioners who are "*qualified, competent, dedicated and caring, and who will be able to fulfil the various roles outlined in the Norms and Standards for Educators*" (Government Gazette No 20844, 2002: p9).

Teachers are envisaged as '*mediators of learning, interpreters and designers of learning programmes and materials, leaders, administrators and managers, scholars, researchers and lifelong learners, community members, citizens and pastors, assessors and learning area/phase specialists*' (NCS, 2002: p9).

With regard to the envisaged learner in the modern classroom, the curriculum aims to develop the maximum potential of each learner, encouraging and ensuring effective and active citizens of South Africa (Ornstein & Hunkins, 2004: p24). It also aims to create lifelong learners who are confident and independent, literate, numerate and multi-skilled, who are also compassionate and respect their environment (NCS, 2002: p8). This is such wonderful news, that it should be the cornerstone of the leaders in this country: to develop future leaders who are educated and equipped to make a difference in this nation.

By stimulation and development from an early age, one can aid in the developmental level of children, and effectively make a difference for them in the future (De Witt, 2009: p211; Gordon & Brown., 2008: p192).

The National Curriculum Statement (2002) builds on the vision and values of the Constitution and Curriculum 2005. These fundamental values of the Constitution (later replaced by CAPS) include the following (NCS, 2002: p7):

- Social Justice and Equity;
- Democracy;
- Non-racism and non-sexism;
- Ubuntu (human dignity);
- An open society;
- Accountability (responsibility);
- Respect;
- The rule of law; and
- Reconciliation.

The curriculum can play a vital role in creating awareness of the relationship between human rights, a healthy environment, social justice and inclusivity. In particular, the curriculum attempts to be sensitive to issues of poverty, inequality, race, gender, age, disability, and HIV/AIDS (NCS, 2002: p8).

The White Paper on Education and Training (1995: p6) explained the importance of an integrated approach to education and training. An integrated approach to education and training implies: *'a view of learning, which rejects a rigid division between 'academic' and 'applied', 'theory' and 'practice', 'knowledge' and 'skills', 'head' and 'hand'* (The White Paper on Education and Training, 1995: p6). The integrated approach to teaching and learning is set to encourage creative work in the design and implementation of the planning and curriculum, as well as a recognition of all the different levels of learning and achievement.

The IQMS is an Integrated Quality Management System that consists of three programmes, which are aimed at enhancing and monitoring performance in the South African Education system. According to:

<http://www.elrc.co.za/UploadedDocuments/IQMS%20Training%20Manual.doc> (10/07/13), the three programmes, which work in an interrelated manner with each other include:

- **Developmental appraisal**

This exists to appraise individual educators in a transparent manner – with a view to determining their areas of strength and weakness, as well as to draw up programmes for individual development. According to Nolan and Hoover (2012: p6), teacher evaluation and assessment are also important, as they provide an overall understanding of the quality of teaching that is taking place: whether teachers are carrying out their assigned duties, and an indication of the professionalism of the staff.

- **Performance measurement**

The purpose of performance measurement is to evaluate the individual educators and practitioners for salary progression, grade progression, affirmation of appointments, and rewards with incentives: (<http://www.elru.co.za/UploadedDocuments/IQMS%20Training%20Manual.doc>,10/07/13, Zepeda, 2012: p17).

- **Whole-School Evaluation**

This is to evaluate the overall effectiveness of a school, as well as the teaching and learning that take place in the school (<http://www.elrc.co.za/UploadedDocuments/IQMS%20Training%20Manual.doc>, 10/07/13). According to Zepeda (2012: p21), evaluation is *'a process in which data are collected and analyzed for the purpose of rendering a ... judgment on the quality of a given initiative'*.

In the case of evaluating schools and teaching, a judgment is made on the quality of the education system, the school management and structure, as well as the teacher's input.

For many years, teachers and practitioners in South African Schools have had no accountability processes in place; and so, scholars' unsatisfactory results have increased dramatically. The IQMS exists to benefit the school and the day-to-day effectiveness of efficient education (Cele, 2008: p35; Howard, 2005: p4). The IQMS aids educators, teachers, schools and district offices to receive support and aid – should they have any needs, since they believe that the practitioner is fundamental in the procedure of educating and stimulating young children; and therefore, a performance-based teacher assessment and evaluation system is critical in improving the teaching and learning process (<http://www.elrc.co.za/UploadedDocuments/IQMS%20Training%20Manual.doc>, 10/07/13).

Whether this performance-based teacher assessment and evaluation system would be implemented in South African early childhood centres is a matter that only time will tell.

The cornerstone of the IQMS programme is *'The performance of educators is the foundation for achieving the goal of increased learner achievement. Evaluation of programmes and practices is essential to any ongoing effort to improve any profession. Evaluation is not apart from, but is a part of the educational process'*.

The IQMS also exists to support and to promote accountability, so that the weight of educating not only lies on the shoulders of the practitioner, but that they have accountability processes in place (<http://www.elrc.co.za/UploadedDocuments/IQMS%20Training%20Manual.doc>, 10/07/13).

The monitoring of the institution or school's overall effectiveness is also an important facet of the IQMS, as well as the evaluation and assessment of the educator's performance and successes (Hayward, 2006: p4).

In doing this, it is vital that the IQMS should ensure fairness, as well as seeking to maximize transparency, so that the schools do not put on a show of teaching, but that their day-to-day lessons and processes are of a high standard. There needs to be a spirit of excellence and professionalism, as well as consistency in the schools (Hayward, 2006: p4).

According to Lindberg *et al.*, (1985: p190), there are three primary roles of the teacher:

- i.) 'To create a climate conducive to investigation';

The attitude of the teacher towards the child and his/her abilities is one of great importance. The practitioner needs to be continually observing and to be taking note of what the child is experiencing (Gordon & Brown., 2008: p193). The practitioner needs to be aware of the developmental level of the child regarding his/her cognitive understanding and abilities, as well as to make provision and gain access to more resources and stimuli to keep the child entertained and enthralled (De Witt, 2009: p220).

- ii.) 'To observe cognitive comprehension in children's play';

It is very important for the practitioner to observe the child during play and general day-to-day activities, in order to see how s/he deals with problem-solving. Practitioners and parents should never interfere immediately when seeing a child struggling to complete a task (Lindberg *et al.*, 1985: p190). Children need to try, try and try again. There needs to be some form of a fight and determination for children to attempt new tasks. After a while, when the practitioner can see that the child has struggled and is now becoming frustrated, the practitioner can then aid, support and advise the child.

The practitioner should never tell the child what to do, but should merely provide the child with suggestions, and allow the child to make all the final decisions. It is imperative to support the child emotionally; s/he needs to feel safe and secure. Praising the child, giving him/her responsibilities and helping the child realise his/her strengths would all aid in the development of independence (De Witt, 2009: p215).

- iii.) 'To ask questions to heighten a child's awareness'

Very often when children complete a task, they are unaware of how they have actually completed the task; what steps they took to achieve the success; and in the same way, often children that complete a task unsuccessfully are unaware of why they are not succeeding. The role of the practitioner in such an instance is of great importance, as it is the practitioner's

strategic questioning that could assist the child in understanding any concepts and principles (Lindberg *et al.*, 1985: p190).

It is the role of the practitioner to ask the child how the task has been completed. Why did you do it that way? What made you think that would work? Do they have any advice for their peers? And what had they tried prior to the success? (De Witt, 2009: p218)

4.3.1 An integrated approach to teaching and learning

According to Gibberd (2007: p2), an integrated performance model discusses the balance between infrastructure, programme and people. The classrooms and schools should be a place where children are provided with shelter from the weather; they must be structurally sound, have low operating costs, and provide adequate resources and space for effective teaching and learning. The programmes implemented need to provide children with adequate, age-appropriate and relevant information, sourced from current curriculum and the preferred modes of teaching and learning. It is imperative that the people involved in the implementation of teaching programmes are trained, comfortable, healthy and meet the children's educational needs (Gibberd, 2008: p2). Figure 4.3 below is an illustration of the relationship between infrastructure and programme implementation in the integrated performance model.

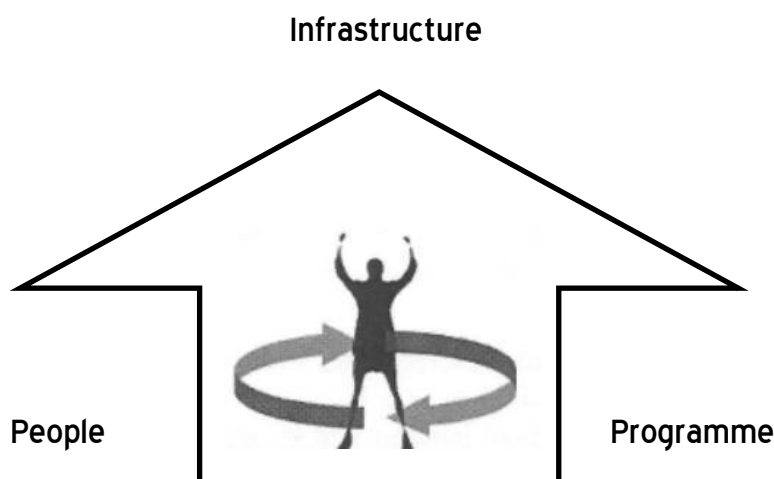


Figure 4.3 The Integrated Performance Model

(Gibberd, 2007: p2)

4.3.1.1 Infrastructure and Materials

Environments, which are believed to be learning-rich environments, are those that enhance and emphasise the learning experience and allow for development and awareness. According to Mc Gee et al. (2008: p149-175), there is a series of guidelines, which aids in the enhancement of learning-rich environments and classrooms. These guidelines would be the ideal situation in early childhood settings in South Africa. This is, unfortunately, frequently very far from being the case.

The guidelines include the following:

i.) The physical arrangement of the classroom

The layout and arrangement of a classroom are important as regards the atmosphere and ambience of the room; they also set a level of expectation. The amount of literacy and mathematics visible in the classroom would set the scene, and would be a guide as to how much learning could be taught in the classroom, and the importance thereof. Classrooms that are cluttered, untidy and seem old and tired do not tend to encourage and motivate young learners, but rather serve to discourage and de-motivate them (Gordon & Brown., 2008: p328).

Children love bright colours, which are attractive and inviting. The arrangement of the work area is also important, whether children will be doing group work, working individually, or in teams. All such issues play a part in the child's literacy expectations (Mc Gee et al., 2008: p149-155).

According to McGee et al. (2008: p155), in literacy-rich classrooms a library centre, writing centre and computer centre are important, and play a significant role in enhancing the child's literacy abilities.

ii.) Materials

According to Roskos and Neuman (in McGee et al., 2008: p159), in each classroom there needs to be an abundance of materials, which are diverse, wide-ranging, authentic, accessible and located in areas where they will be utilised. The materials in a classroom should grab the young child's attention; they should intrigue them and hold their interest. Materials should be age-specific, and should meet the child's developmental level, the areas of interest and the instructional needs (Lilly et al., 2004: p84-85; McGee et al., 2008: p159).

The various elements of early development need to be accounted for. Thus provision needs to be made for the child's literature and the materials needed for early writing and mathematics. According to Chomsky (1972, in McGee et al., 2008: p160), the child's language development is directly proportional to the child's experience with literature. According to a study done by Morrow (1992, in McGee *et al.*, 2008: p160), children that are exposed to good quality, and varied literature tend to have a higher level of reading achievement.

4.3.1.2 Programme and Curriculum

The curriculum consists of a programme for learning, related to the disciplines of '*language arts and literature, including reading, writing, spelling, social studies, science, mathematics, art, music, health and physical education*' (McGee *et al.*, 2008: p168). The curriculum needs to be integrated, working together for overall achievement. Units of education and teaching are pre-arranged around a broad theme that incorporates learning concepts across the curriculum (McGee *et al.*, 2008: p169-171, Zepeda, 2012: p31).

i.) Daily schedule and routine literacy activities

The daily schedule, and the amount of time each day that the children are exposed to learning greatly influences the child's development. Learning activities can take place in three, equally important structures, namely: small groups, whole-class interaction or one-to-one (McGee *et al.*, 2008: p162-166).

ii.) Continuous assessment

Assessment is critical in determining each individual child's abilities. All children learn and develop in their own way, and at their own pace. Practitioners and parents assess children, in order to find out the child's level of development, the way in which the child learns, various skills and behaviours, and whether the educational goals are being met (McGee *et al.*, 2008: p167, Wittmer *et al.*, 2013: p45).

According to Hills (1993) and others, (in Gordon & Brown., 2007: p246), the purpose of assessing children is primarily for:

- Planning education (DAP) and communicating with the parents;
- Identifying children with special needs;
- Programme evaluation and accountability.

Monitoring a child's development and learning are important aspects of assessment in early childhood (Wittmer *et al.*, 2013: p49). Zepeda (2012: p31) explains the importance of effective evaluation and how short-term and long-term objectives should be explored.

iii.) Developmentally appropriate curriculum

The programme that is being used for any child needs to be appropriate to the child's level of development, abilities and needs. The ways in which focus areas, such as literacy, mathematics and life skills develop also need to be considered (Gordon & Brown., 2008: p333-336; McGee *et al.*, 2008: p172-173, Wittmer *et al.*, 2013: p6, Penn, 2010: p15).

According to McGee *et al.* (2008: p173), there are three critical roles of practitioners, in helping children achieve challenging goals:

- Practitioners need to be knowledgeable about the range and variety of development;
- Practitioners need to be able to assess individual children, and establish their position in the range of development;
- Practitioners need to be able to devise goals and prepare instruction that would help children reach their goals.

4.3.1.3 People and Teacher training

Choudhary (2012: p63) states that quality teachers are the single most important educational source and driving factor in any country. According to Sahlberg (Ed Darling-Hammond, *et al.*, (2012: p8), in schools with high levels of education in young children, teacher education is a key focus, with the specific focus on *'the balanced development of the prospective teacher's personal and professional competences. Particular attention is devoted to building pedagogical thinking skills, enabling teachers to manage instructional processes in accordance with contemporary educational knowledge and practice'*.

According to Dever and Falconer (in Govindasamy, 2010, p41), there are a number of accredited colleges and universities, which offer programmes and courses that are reliable, because they are research-based with up-to-date content. Zepeda (2012: p49) states that in order for learning to be sustainable in adults, the topic needs to be relevant, linked to concrete tasks, organized and encourage problem-solving; it needs to be endorsed by credible research, sustained over a period of time – and most importantly – implemented in daily practice.

Wittmer *et al.*, (2013: p5) believe that professionalism and competence in the teacher-education sphere are the result of well-educated teachers coupled with experience in the field. It needs to be a priority for teacher training to provide a ‘*broad-based curriculum, which ensures that newly prepared teachers possess well-balanced knowledge and skills in both theories, and in education from several perspectives, including education psychology and sociology, curriculum theory, assessment, special needs education and didactics in specific subjects*’ (Sahlberg [Ed Darling-Hammond, *et al.*], 2012: p9).

Zepeda (2012: p51) has devised a diagram, which depicts the process of adult teaching, including elements, which need to be intertwined and integrated throughout the teaching and learning model. In Figure 4.4, you will notice the key elements of adult teaching being ‘climate conducive to learning, participatory planning, specific goals and objectives, varied learning activities, implementing new or refined practice, feedback and support, evaluation and results, and lastly assessing adult learners’ needs’. Zepeda (2012: p51-52) explains the importance of an integrated, complementary approach to practitioner teaching.

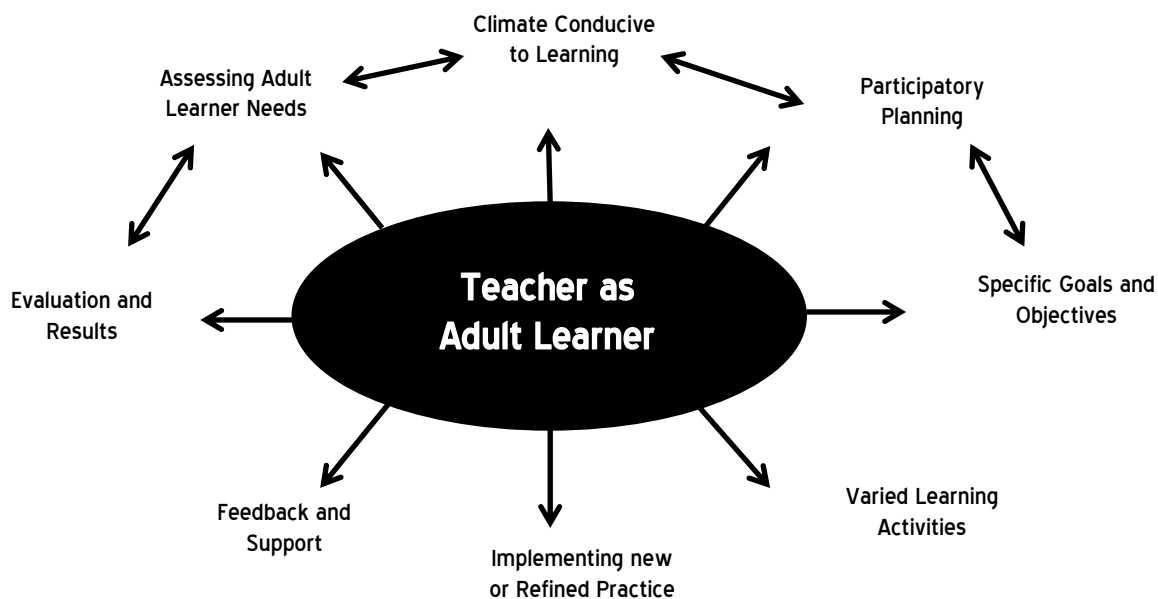


Figure 4.4 Adult learners and professional development

(Zepeda, 2012: p51)

Luneta (2011: p10) suggests that there should be greater emphasis placed on the practical side of training, ensuring authenticity and effectiveness through practical experience and implementation in the classroom situation.

4.4 THE PARENTS' ROLE IN EDUCATION

Ball *et al.* (2010: p144) emphasise the importance of how families into which children are born can impact their existence. Family life, parental involvement and dynamics all play a huge role in determining children's outlook and worldview (Ball *et al.*, 2010: p145, Malaviya, 2012: p74, Morrison, 2011: p34). Parents have specific rights and responsibilities in terms of directing, caring for and educating their children. They are also mediators and legal guardians who act on behalf of their children. According to the Children's Act 38 of 2005 (2005: p25), there are a range of parental responsibilities and rights, specifically dealing with early childhood education. According to Malaviya (2012: p82), a lack of parental support and involvement, as well as an inability to provide for children are key factors in school drop-out rates.

In an article written by De Witt (2007: p2), it was stated that, from previous research, it has become clear that *'the participation and involvement of the caregiver contribute to the quality of the implementation'* of the intervention. The role that parents play in their child's development is enormous; and it has great implications on the child in his/her totality, including the cognitive, physical, emotional, social and spiritual development (De Witt, 2009: p106).

As part of parents' duties, they are required to take care of and sustain their children by maintaining their physical, emotional, cognitive and social wellbeing. For this, meticulous care and support need to be implemented. The basic provision of their physical and emotional needs in the form of protection, nourishment, physical set-up, education and security is necessary (Carr, 2006: p4; Meier *et al.*, 2007: p143, Malaviya, 2012: p74).

Finn (1998, in Eliason) has devised four parental interactions, which he believes have an influence on the child's achievements:

- The child's time needs to be structured and monitored. The child cannot merely be left in front of the television all day. They need to have boundaries and set times for different activities, while also allowing time for freedom, exploration and discovery.
- The child needs to be assisted with his/her homework. Children need guidance and support. They need to be assured that they are on the right track, and also appreciate their parents' input and direction.

- It is important that parents discuss school matters with their child. These include communication about activities at school, what the children are learning, friends and basic day-to-day happenings.
- A fundamental foundation of cognitive development and academic success is the child developing a love and desire for reading. Reading in the home should be seen as a fun activity that children and parents both enjoy.

As indicated in Abraham Maslow's Hierarchy of Needs (Figure 4.4), physical survival needs are basic necessities in development and wellbeing, as well as forming the foundation of human needs (<http://www.pateo.com/images/maslowmaster4ts.gif>, 10/8/08). Without that basic foundation, further development and encouragement would not be possible, and the need for safety and security could not be met. Should this need for safety and security not be met, the child would not be able to have any sense of belonging and acceptance. They would, therefore, have a low level of self-esteem and sense of worth, with their need for self-actualization not being adequately met (<http://www.pateo.com/images/maslowmaster4ts.gif>, 10/8/08).

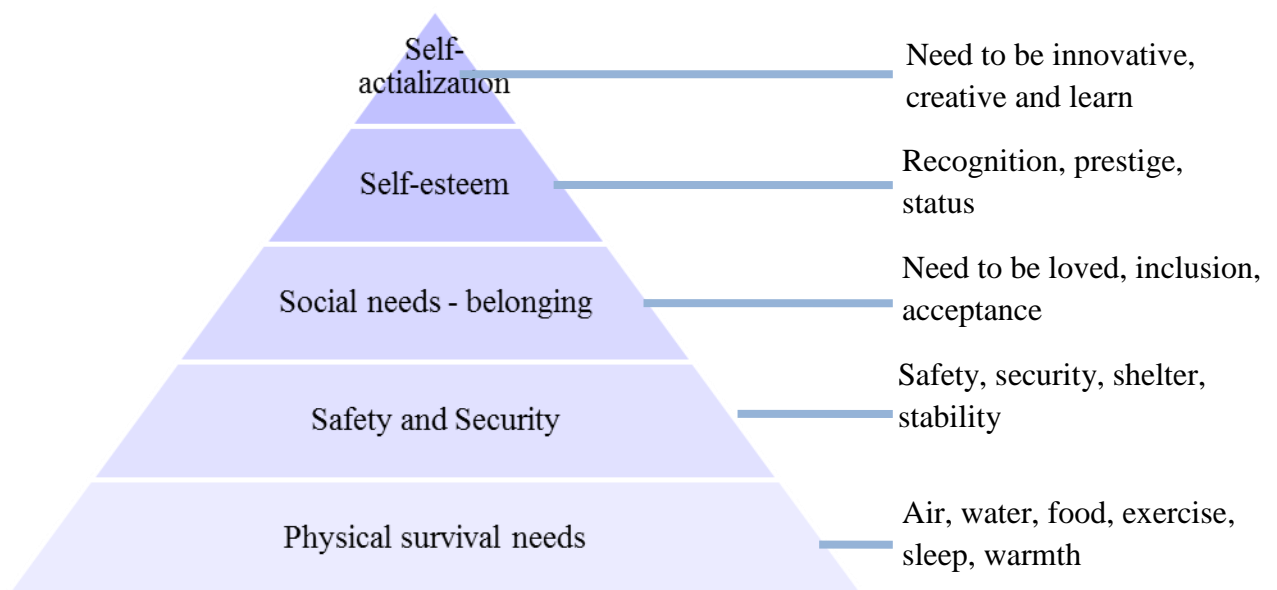


Figure 4.5 Maslow's hierarchy of needs (<http://www.pateo.com/images/maslowmaster4ts.gif>, 10/8/08; <http://www.ruralhealth.utas.edu.au/comm-lead/images/Maslows-needs-Pyramid.jpg>, 24/06/09; <http://www.omafra.gov.on.ca/english/rural/facts/96-001f1.gif>, 24/06/09)

In South Africa, some form of education is compulsory from the age of 7 to 15 years (<http://www.southafrica.info/about/education/education.htm>, 11/6/09). This is, however, not sufficient and would not be able to provide the best opportunities for future leaders should they only begin their learning careers at the age of seven. The effects of parental involvement in South Africa, together with classroom education have been recognised – not only to have a positive influence on the child, but also to be a necessity (<http://www.southafrica.info/about/education/education.htm>, 11/06/09).

Awareness needs to be raised regarding the importance of parental involvement and interest, as well as equipping parents on their child's developmental levels and expectations. Very often the parents' role in stimulation is not seen as important, but research shows that there is a clear long-lasting benefit from parental involvement in the education system (Eliason, *et al.*, 2004: p49).

i.) Benefits of parental involvement for children

- Their reading ability increases
- Children have a much more positive attitude towards school and education
- Children have a higher rate of class attendance
- Their homework habits are healthy
- Good home-school communication
- Children see their parents as an important part of the education system

ii.) Benefits of parental involvement for parents

- Parents that are involved are more willing to help children with homework and extra activities
- Parents have a more positive attitude towards school activities
- Parents tend to appreciate teachers and their efforts more, and show more support and encouragement towards teachers
- Parents are more familiar with the curriculum
- Parents also have more confidence in their parenting abilities
- Parents have a deeper understanding of their child, their child's development and their expectations of the child.

iii.) Benefits of parental involvement for teachers

- Teachers appreciate parental involvement
- Teachers gain respect for parents and develop a deeper understanding of the child
- Teachers feel more respected by parents
- A more harmonious environment for all can be created.

According to Meier *et al.* (2007: p143), parental involvement in the School Governing Body is imperative, as various issues that affect children are brought to the light. Parents need to be seen as active partners in education. They do not merely pay school fees; but, they also need to interact and to be a part of the school process. Investment in early childhood development from the parents needs to commence at birth, and to be incorporated with health care, nutrition and attention to both the cognitive and the social aspects of child development.

This would enable the children to deal with the transition into Grade 1 and beyond (Meier *et al.*, 2007: p143).

According to the Department of Education (1997: p2) in Meier *et al.*, (2007: p143), with the implementation of, what was then called, Outcomes-based Education taking place in our schools, a greater level of parental involvement and participation is required, in order to develop a productive education system, as parents and practitioners are expected to share the responsibility of their children's education. An increasing level of parental involvement is closely linked to greater academic achievement, as well as in implementing positive perceptions on parenting skills.

This includes maintaining a good relationship between the child and the parent, ensuring emotional security for the child, as well as a strong connection of trust (Eliason, 2008: p54; Gordon & Brown., 2008: p322). Although a strong working relationship between parents and practitioners is envisaged; sometimes, it is not quite so easily implemented. Often parents and practitioners have uninformed misperceptions about one another; and these, more often than not, tend to hinder the development of a harmonious parent-practitioner relationships (Kostelnik *et al.* 1999: p240).

As practitioners are dealing with little lives and their futures, the role they play is not merely a job, but an ongoing continuous process that not only involves the child's cognitive, but also his/her emotional, social, physical and spiritual development (McAfee *et al.*, 2007: p36).

As a result of South Africa being such a diverse country with many cultures, races and ways of doing things, practitioners need to be aware of each individual child's family set-up and subsequent ways of life. Practitioners need to be sensitive to the decisions that parents implement, and not have judgmental attitudes, as a result of their culture. Poverty is a serious factor that affects families in South Africa, especially in single-parent families. Often in single-parent families there is little time to get involved in the school, as the parent's primary focus is on earning a sustainable income to support their family. *'Parents can feel burdened by their parenting and work roles and may feel they do not have time to get involved in their child's school activities'* (Eliason *et al.*, 2007: p55; Meier *et al.*, 2007: p144).

According to Eliason (2008: p55), teachers should follow the same set of guidelines when interacting with parents, as they would when interacting with the children. These guidelines include: *'Be positive, supportive, interested, caring, objective, friendly, and warm. Work hard, using a variety of techniques to motivate, teach, build and strengthen'*.

In conclusion, it is the teacher's, as well as the parents' responsibility, to provide learning opportunities for children. Parents need to become involved in their children's schooling, forming partnerships with teachers and educators (Eliason *et al.*, 2004: p49; Morrison, 2011: p34). According to Vygotsky (in De Witt, 2009: p106), adults and caregivers play a major role in the learning of each child. Adults aid the child in constructing meaning and understanding, which in turn assist in the process of discovery.

CHAPTER 5

THE CONCEPTUAL FRAMEWORK

5.1 INTRODUCTION

The theoretical framework or compilation of interconnected notions and theories serves to direct the research, in order to determine the relationships and concepts to be measured. According to McMillan *et al.* (2006: p424), concept analysis involves: ‘*Clarifying the meaning of a concept by describing its essential meaning, different meanings, and appropriate use*’. This helps us to understand various theories pertaining to education, the way people educate, and the thinking behind the theories – thereby illuminating personal opinions and ensuring that the study remains unbiased.

5.2 THE CONCEPTUAL METHOD

McMillan (2006: p131) states that there are three major aspects of development; these consist of minor sub-sections. Figure 5.1 is a clear representation of the interrelated aspects of human development.

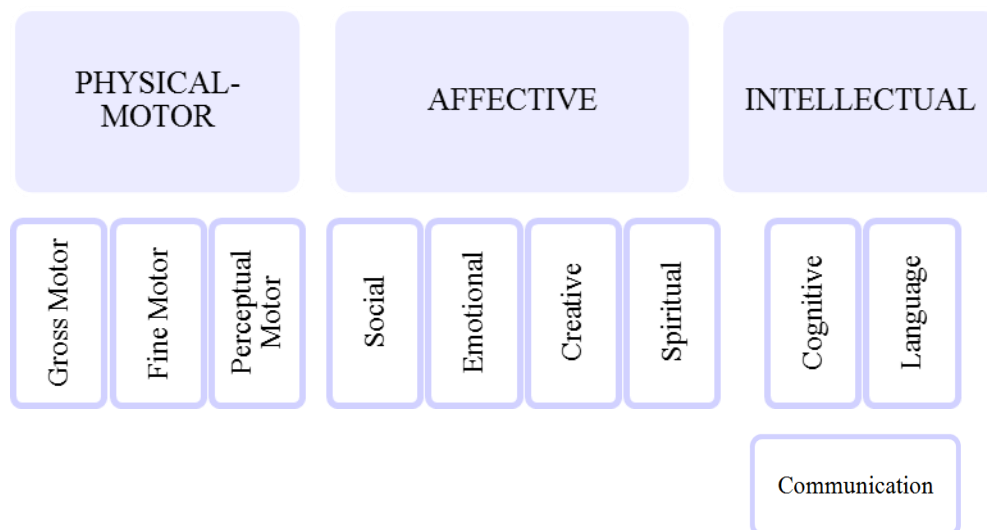


Figure 5.1 The developmental areas, which capture the concept of the child in his/her totality

(Gordon & Brown., 2008: p131)

Gordon & Brown. (2008: p131) explain the major processes of development, which parallel the above-mentioned developmental areas. They include:

- Biological processes, which describe the changes in one's body;
- Cognitive processes, which describe the changes in thought, intelligence and language;
- Socio-emotional processes, which intimate any transformations in the individual's relationships with other individuals, emotions and personality.

5.3 THEORIES AND MODELS

According to Warner and Sower (2005, as in Meier *et al.*, 2007: p24), there are key theories to teaching and learning in early childhood. These theories, which will be examined include the Psychodynamic or Psychosocial theory, consisting of work by Sigmund Freud and Erik Erikson; the Behaviorist theory, including the works of educationists, such as Skinner and Bandura; the Cognitive theory, which includes the theories of Piaget. The Sociocultural theory, including the works of Vygotsky, the Ecological theory, the Multiple-intelligences theory of Gardner, the Maturation theory, which includes the work of Gesell; and the Humanistic theory (Gordon & Brown., 2008: p133-157; Meier *et al.*, 2007: p24-25); www.ncrel.org/sdrs/areas/issues/students/earlycld/ea7lk18.htm, 19/9/09). A critical analysis of the theories will determine the understanding of the foundation of the study as well as the approach to the Early Inspiration Training Programme intervention and a link between theories will be determined to add credibility to the investigation.

5.3.1 The Psychodynamic theory

The Psychodynamic theory includes the work of Sigmund Freud, together with Erik Erikson's theory of human development. The psychodynamic theory focuses on personality development and emotional problems, internal drives and unconscious issues, which influence and alter human thinking, behaviour and the challenges which children face (Berk, 2006: p18; Berk, 2007: p15; Gordon & Brown., 2008: p134; Meier *et al.*, 2007: p24).

Freud, a medical doctor, was interested in the irrational side of human behaviour. He was particularly interested in the personality of humans and those factors that influence personality development, such as relationships (Gordon & Brown., 2008: p134). According to De Witt (2009: p23), Freud believed that '*emotions derive from social relationships.*' Erik

Erikson further developed and refined Freud's theory, having a huge impact and influence on the theory of early childhood development (Gordon & Brown., 2008: p134).

Erikson's theory of human development states that life is a series of stages, through which each person passes, and with each stage growing and expanding on the previous stage, continuing throughout life. Erikson proposed eight stages of psychosocial development, with each stage representing a critical aspect of growth (Gordon & Brown., 2008: p135; Woolfolk, 2007: p67). Woolfolk (2007: p67) describes the psychosocial theory as the '*relation of the individual's emotional needs to the social environment*'.

5.3.2 The Behaviorist theory

The Behaviorist theory includes the works of educationists, such as Skinner and Bandura, and the theory describes both learning and development (Gordon & Brown., 2008: p138). According to Woolfolk (2007: p206), behavioural learning theories are '*explanations of learning that focus on external events as the cause of changes in observable behaviours*'. Gordon & Brown. (2008: p138) state that the cornerstone of Behaviorism is that each child is born with a 'clean slate', on which they expand and grow. According to Berk (2006: p19), in Behaviorism the focus of learning is on stimuli and responses.

Skinner developed a doctrine, which states that a person can be compared with a vessel that needs to be filled by carefully designed experiences. Therefore, the environment controls all experiences and all learned behaviour (Gordon & Brown., 2008: p139).

Bandura has developed another type of learning theory known as social learning, which refers to the socialisation of the young child (Berk, 2006: p20; Gordon & Brown., 2008: p139). This theory observes the ways whereby the environment influences how children learn; and then they implement what has been learnt in their peer groups, specifically. According to De Witt (2009: p30 & p230), a principal way for children to obtain new prototypes of social behaviour is through observational learning, where children learn vast amounts of new social reactions simply by observing the actions of other people in their environment.

These responses are then stored in their memory in the form of mental images.

There are three primary types of learning, which occur, according to the theory of behaviorism, namely: classical conditioning, operant conditioning, and observational learning or modelling.

i.) Classical conditioning

This theory, discovered by Ivan Pavlov in the 1920s, focuses on the acquisition of involuntary emotional or physiological reactions, such as fear, muscle tension, salivation, sweating, which are all automatic responses to stimuli (Woolfolk, 2007: p208). Shaffer and Kipp (2007, in De Witt, 2009: p53) describe classical conditioning as '*a conditioned reflex.*' Classical conditioning trains humans to respond involuntarily to stimuli, through association (Gordon & Brown., 2008: p139).\

ii.) Operant conditioning

In operant conditioning, a connection is produced between two incidents, where the subject learns that if he does something he can acquire a particular outcome (De Witt, 2009: p53). Woolfolk describes operant conditioning as '*learning in which voluntary behaviour is strengthened or weakened by consequences or antecedents*'. Should the subject act in a specific manner, he would either receive a reward or be punished. This behaviour is reinforced through rewards, where the subject would learn that should they desire a specific result, a specific action needs to first take place (De Witt, 2009: p53).

iii.) Observational learning or modelling

According to Gordon & Brown. (2008: p141), modelling is '*a special kind of observational learning; children learn from a teacher (another human) how to use materials and how to behave in group settings*'.

5.3.3 The Constructivist theory

In contrast to the behaviourist theory, which encourages learning in a stimulus-response manner with learning by association, the Constructivist theory is based on the ideas of Dewey, Piaget and Maria Montessori. Although the notions of these theorists vary greatly, each expresses a comparable framework for learning and development (Gordon & Brown., 2008: p146).

Hunt (1969) believed that the theorists are '*consistent in their belief that learning and development occur when young children interact with the environment and people around them*' (www.ncrel.org/sdrs/areas/issues/students/earlycld/ea7lk18.htm, 19/9/09). The Constructivist theory views children as being active participants in the learning process –

through interaction and participation (Ornstein & Hunkins, 2004: p117) – where through learned adaptation, what the children learn or adapt to is directly influenced by the people, materials and situations with which they come into contact (Gordon & Brown., 2007: p147).

5.3.3.1 Dewey

Dewey firmly believed that education was not merely the passing on of knowledge about specific historic events or the biology of a plant, but rather the learning of skills and knowledge that children could incorporate into their daily lives through the integration of education and life, and so develop integrity (Gordon & Brown., 2008: p22).

5.3.3.2 Piaget

Jean Piaget, after close interaction and dealings with children, stated that people progress through four stages, which occur in sequence. Piaget believed that only when a child reaches the age of 15, and has progressed into the 4th and final stage of development, would the child be able to reason like an adult (Berk, 2006: p21; Berk, 2007: p233; Carr, 2006: p14; Gordon & Brown., 2008: p143; Hendrick, 1986: p303).

Generally, there are ages that are assigned to these stages. These are not definite, as children grow and develop at different paces, but they serve as good guidelines (Ornstein & Hunkins, 2004: p109).

The four stages of cognitive development, as stated by Piaget, are in accordance with the brain's major developments in growth, as the brain is constantly growing throughout childhood, and even sometimes into early adulthood (Berk, 2006: p21; Gordon & Brown., 2008: p143; Ornstein & Hunkins, 2004: p109; Seefeldt *et al.*, 1998: p453; Woolfolk, 2007: p28).

The four stages of cognitive development are: the sensorimotor; the pre-operational; the concrete operational; and the formal operational stage. Piaget stated that there are periods where a person may show various characteristics from more than one stage in different situations (Formanek & Gurain, 1981: p5; Gordon & Brown., 2008: p143).

A child in this age group of early childhood would be in the pre-operational stage of cognitive development, where the child is usually between the ages of 2 to 7 years. They begin to talk by applying the knowledge gained over the past two years. The child begins to

use symbols to represent objects, but generally has difficulty conceptualising and understanding the concept of time.

The child also has a very egocentric viewpoint, where he feels that others see everything from his viewpoint. His thinking patterns are influenced by fantasy (Berk, 2006: p252; Gordon & Brown., 2008: p143; Hendrick, 1986: p305; Ornstein & Hunkins, 2004: p109; Seefeldt, *et al.*, 1998: p453).

5.3.3.3 Montessori

Maria Montessori was the founder of the Montessori Method of teaching and learning; and she assisted in the revival of education in the early childhood stage. Montessori was experiencing incredible outcomes and great feedback, working with poor and mentally disabled children (Meier *et al.*, 2007: p22). The Montessori approach takes on and encourages the individual to be free and creative in his/her choices of materials and activities (Gordon & Brown., 2008: p18-19; Meier *et al.*, 2007: p22).

The child is not expected to be able to achieve any task or to master any skill, should his/her development not allow for this. The work and tasks are adapted for each child, so that he/she is allowed freedom, and not pressurised to develop, but can rather develop at his/her own pace (Gordon & Brown., 2008: p18-19). Basic life-lessons and practical experiences are dealt with in a Montessori school, which educates the child on how to deal with real situations and teaches them good values and principles.

The learning and teaching technique focused on in the Montessori classroom is that of stimulating the child's senses through various materials and resources (Gordon & Brown., 2008: p19). Children work at their own pace, and are encouraged to develop and grow as individuals. *'It stresses the importance of adapting the child's learning environment to his or her developmental level, and of the role of physical activity in absorbing academic concepts and practical skills'* (<http://en.wikipedia.org/wiki/Montessori>, 10/10/09).

Children are given the freedom to decide for themselves, which materials they will use. Independent and responsible, self-correcting attitudes are encouraged in a warm and loving, peaceful environment. Children need to be creative in their choice of materials. Practical life tasks and activities are learned, such as the cleaning of hands, clothes and tables, doing specific tasks, such as lacing their shoes, or doing up buttons and zipping.

All objects and equipment in a Montessori classroom are child-centred, as they are the perfect size for children. This encourages independence in the child (Gordon & Brown., 2008: p422-423).

The role of the teacher is to observe the children as they learn *via their own experience*. Instruction on how to use materials is generally given by teachers, but children still decide for themselves on the materials, which they will use and what their outcome will be after choosing those materials (Gordon & Brown., 2008: p423).

5.3.4 The Socio-cultural theory

The sociocultural theory is one, which sees children as a fundamental aspect of development – children in the learning environment are very important, and are seen in their totality (Berk, 2006: p20 & p25; Berk, 2007: p234-235; Gordon & Brown., 2008: p149; Meier *et al.*, 2007: p24). Teachers, families and parents play an essential role in the development of young children's language abilities through observation and parents' scaffolding of the learning with guidance and support (Gordon & Brown., 2008: p149; Meier *et al.*, 2007: p24).

According to De Witt (2009: p55), social or observational learning may be described as '*a synthesis of the most important elements of the different types of learning*'. Vygotsky's work is called socio-cultural, because it focuses on the deep connection between culture and development, specifically targeting the interpersonal connection between the child and other people. According to Gordon & Brown. (2008: p149), Vygotsky believed that the child is planted in a specific family and culture of his society and community, which results in much of a child's development being defined, according to his/her culture.

The sociocultural theory also focuses on how children's values, attitudes, skills, traditions and beliefs are passed on from one generation to the next (Berk, 2006: p259; Gordon & Brown., 2008: p149; De Witt, 2009: p55). Vygotsky believed that adults and people in the child's surroundings have the authority to aid and refine children's language knowledge, by preparing their external environment (Meier *et al.*, 2007: p24).

According to De Witt (2009: p55), Vygotsky's theory is not merely a theory of learning, but also one of teaching and instruction. Children rely greatly on the adults in their milieu to extend knowledge, and thus to facilitate their understanding.

5.3.5 The Ecological theory

The ecological theory is one which, like the socio-cultural theory, is based on the assumption that development is significantly influenced by external forces outside the child, and in their environment (Berk, 2006: p26). Physical factors, such as climate, space, home, school and the social environment, including family, culture and the larger society, all play a large role in the development of the young child (Gordon & Brown., 2008: p152).

Bronfenbrenner designed a general theory of human development, which includes an amalgamation of environment and person (Gordon & Brown., 2008: p152). The model describes four systems, which impact and influence human development. The four circles in the centre represent the four primary areas of influence in the young child's life, namely: family, school, peers and religious setting. The mesosystem, microsystem, exosystem, macrosystem, and chronosystem are all intertwined, and have a great influence on one another (Berk, 2006: p27-29; Gordon & Brown., 2008: p152; Woolfolk, 2007: p72-73).

According to Gordon & Brown. (2008: p152), the values of the community (exosystem) and the influence of the social conditions (macro-system) can, in turn, be influenced by the individual family or programme (micro-system).

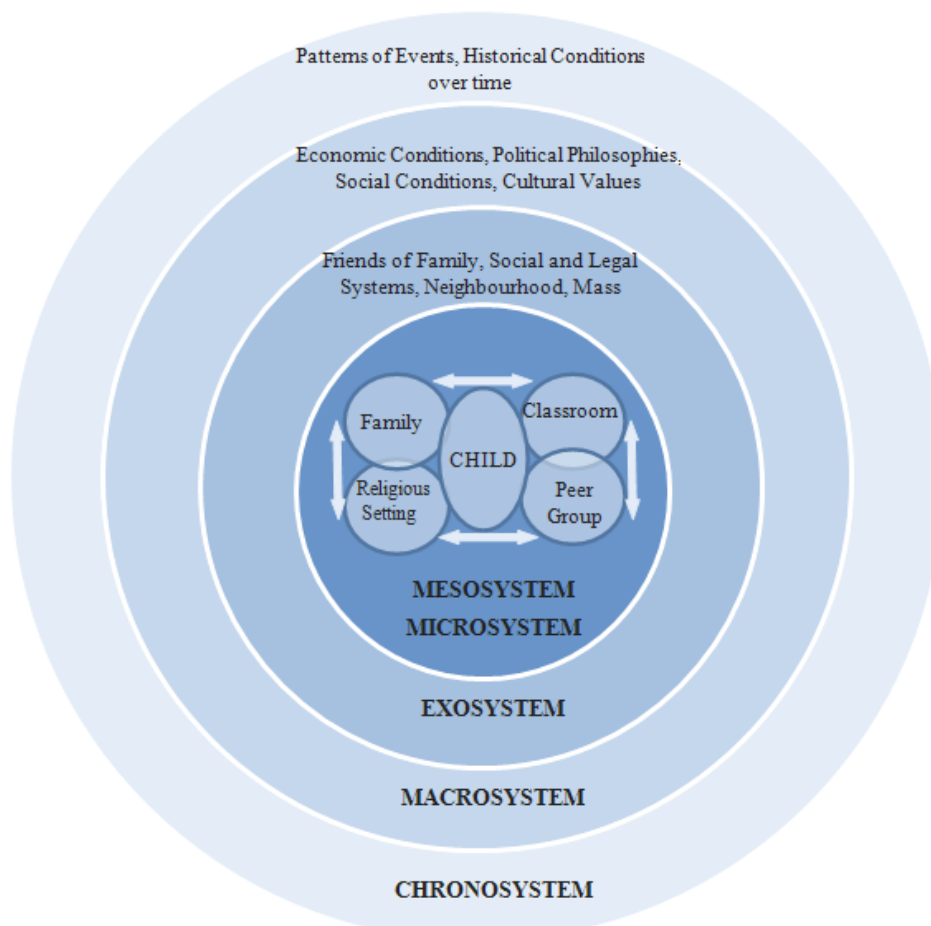


Figure 5.2 The Ecological theory shows the different factors, which influence the child's development

(Berk, 2006: p28; Gordon & Brown., 2008: p152; Woolfolk, 2007: p73)

5.3.6 Multiple-intelligences theory

Howard Gardner's theory of Multiple-intelligences was greatly influenced by the works of Piaget and Bruner. The theory purports to *'distinguish whether intelligence is a single, broad ability (as measured by an IQ test) or is a set of specific abilities (more than one intelligence)* (Gordon & Brown., 2008: p153). Gardner emphasises that there is reliable confirmation and verification from brain-based research, and from the study of genius, that there are a minimum of eight basic different intelligences (Gordon & Brown., 2008: p153).

Intelligence is developed as the ability to solve problems or to create a product in the particular cultural setting. So, the child's area of development depends largely on his/her external environment and context (Gordon & Brown., 2008: p154; Woolfolk, 2007: p114).

The eight areas of intelligence, as stated by Gardner, include (De Witt, 2009: p14 & p148; Gordon & Brown., 2008: p154; Woolfolk, 2007: p114):

1. Musical intelligence

2. Bodily-kinesthetic intelligence
3. Logical-mathematical intelligence
4. Linguistic intelligence
5. Spatial intelligence
6. Interpersonal intelligence
7. Intrapersonal intelligence
8. Naturalist intelligence

5.3.7 The Maturation theory

The Maturation theory was primarily devised by Arnold Gessell. Gessell was concerned with the ways in which children grow and mature from a medical point of view; and he viewed this as an imperative and crucial aspect of development (Gordon & Brown., 2008: p30). According to Gordon & Brown., (2008: p30) maturation may be defined as the '*process of physical and mental growth that is determined by heredity.*' And Woolfolk (2007: p22) defines maturation as '*genetically programmed, naturally occurring changes over time.*'

According to Hunt (1969), <http://www.ncrel.org/sdrs/areas/issues/students/earlycld/ea7lk18.htm> (19/9/09), maturationists believe that a child's development is a biological process, which occurs automatically; it is conventional, and consists of a series of sequential stages, which occur in due course. The cornerstone of this theory is based on the assumption that when children are healthy, their development in totality would normally take place when the child is biologically ready to develop and grow (www.ncrel.org/sdrs/areas/issues/students/earlycld/ea7lk18.htm, (19/9/09).

The parents' role in stimulating and aiding the cognitive development and ensuring that the child is school-ready include: teaching the foundational concepts for future learning, by equipping the child to recite the alphabet and to be able to count by rote (www.ncrel.org/sdrs/areas/issues/students/earlycld/ea7lk18.htm (19/9/09).

5.3.8 The Humanistic theory

The humanistic theory is one which exists to explain what motivates people (Gordon & Brown., 2008: p156). It is a theory, which is centred on people's goals, ambitions, desires, needs, successes and the urges, which motivate and drive people (Gordon & Brown., 2008: p156, Ornstein & Hunkins, 2004: p124).

5.3.9 The Environmentalist theory

According to www.ncrel.org/sdrs/areas/issues/students/earlycld/ea7lk18.htm (19/9/09), the environmentalist theory is one which stresses the importance of the child's milieu and environment, and how it shapes and affects the child's learning and behaviour patterns.

5.4 THEORIES, METHODS AND MODELS USED IN THIS STUDY

Although the theories described provide credible insight into the ways in which children grow, learn and develop, a critical analysis needs to be examined in order to identify which are most aligned to this study and the central relationship between the concepts and the participants of the study in South African underprivileged early childhood settings.

The psychodynamic theory reflects important elements to be considered when interacting with children and practitioners from underprivileged settings, people that may be exposed to violence, crime, hardships and challenging social situations. This theory may have significant credibility in terms of understanding and supporting the intervention of this study and portraying an open-minded outset.

In the behaviorist theory as, environmentalist theory as well as the ecological theory, the child's behavior in terms of exposure to the environment is a key element and one which does in fact dictate behavior and insight through exposure to social settings and environments. Although it is important not to exempt a child from excelling and developing effectively based on their exposure to stimulation and a pleasant environment, it is important that a deep understanding and reasoning to behavior is developed from child to child.

A fundamental challenge that is encountered when portraying the constructivist theory as well as the socio-cultural theory in underprivileged settings is that, with the limited resources and generational gap in understanding the learning and development of young children, provision is often not made and therefore children are not exposed to effective learning and the impact of development, if based on these theories, are limited. The cornerstone of the constructivist theory does, however, prove beneficial in that the child is the center of the learning environment, but effective knowledge and insight into the learning situation is fundamental in terms of educational provision.

The multiple-intelligence theory is one which provides a thorough understanding and explanation of the various intelligences and how these are impacted. It is vital that children are provided with opportunities to develop the abstract understanding of learning. Again, this poses challenges when interacting with children from underprivileged settings with teachers and parents that have themselves, not received effective education and are often not equipped to understand their role of stimulation and exposure in the early years. The humanistic theory also deals with the notion that motivation is a key contributing factor behind specific behavior and work ethic or drive. This again, would be more effective when dealing with societies that provide this exposure and opportunity for children and with an extensive knowledge base. The maturation theory provides a number of credible ideas in terms of children's development and the impact that this can have on growth. It is important to note that, although health and nutrition plays a vital role in development, the exposure to environment, stimulation, social settings, internal drive and ambition play a fundamental role in supporting the maturation theory. Often in the case of underprivileged communities, the exposure is not always beneficial and may, in fact, pose further threats and challenges.

The theories, methods and models used in this study include the constructivist theory, based on the work of John Dewey as well as the multiple-intelligences theory which encourages critical thinking and problem solving strategies so as to expose children to developmentally appropriate interactions. The following section examines the development of the research tool, the Early Inspiration Training Programme Intervention and Assessment Tool as well as the work done by Dewey and the Multiple-intelligence theory.

5.4.1 The approach used for the purposes of this research

The primary cornerstone of John Dewey's view of education was that a greater amount of effort and emphasis should be placed on enhancing and strengthening the child's intellect and mental understanding, and stimulating and challenging the problem-solving and critical-thinking skills, so that learners could develop and learn to stand for their own opinions and views on issues (Gordon & Brown., 2008: p22; Meier *et al.*, 2007: p26). This view of education is Dewey's focal point, and one that the Early Inspiration Training Programme adopted, which prevents children from learning and gaining knowledge by memorising lessons and activities, but rather through experiences, and being challenged with concrete experiences in a child-oriented and child-involved situation (Pellegrini, Symons & Hoch, 2004: p7; Meier *et al.*, 2007: p23,25).

Read and Paterson (1980, in Gordon & Brown., 2008: p24), state that Dewey believed that '*real objects and real situations within the child's own social setting*' should be used.

According to Gordon & Brown. (2008: p22-23), Dewey believed that schools should focus on the nature and uniqueness of each child, with education becoming an integrated aspect of life, training and equipping young children. The Early Inspiration Training Programme therefore highlights this and focuses on creating an interest and awareness of the child's world, through co-operative living, encouraging experimentation and group work under adult supervision and intervention, all play important roles in the teaching process (Woolfolk, 2007: p385).

An important document (Gordon & Brown., 2008: p22) written by Dewey entitled, *My Pedagogic Creed* (1897) states five primary aspects of his theory.

1. '*I believe that only true education comes through the stimulation of the child's powers by the demands of the social situations, in which he finds himself.*' This ensures that children learn to manage themselves in groups, to make and share friendships, to solve problems, and to co-operate. The encounters and situations that children face help to shape and mould their development.
2. '*The child's own instinct and powers furnish the material and give the starting point for all education.*' We need to create a place that is child-centred, a place that values the skills and interests of each child and each group.
3. '*I believe that education is a process of living and not a preparation for future living.* Prepare children for what is to come by enriching and interpreting the present to them. Find educational implications in everyday experiences.
4. '*I believe that... the school life should grow gradually out of the home life... It is the business of the school to deepen and extend the child's sense of the values bound up in his home life.*' This sets the rationale for relationships between teachers and parents. Values established and created in the home should be enhanced by teaching in the schools. This shows the importance of parental and community involvement.

5. *'I believe, finally, that the teacher is engaged not simply in the training of individuals, but in the formation of a proper social life. I believe that every teacher should realise the dignity of his calling.'* This shows that the work teachers do is both important and valuable.

They teach more than academic content; they must also teach how to live.

Dewey's overall outlook on teaching, and the emphasis he placed on the importance of the individual child, is vital in the development of young children. According to Gordon & Brown. (2008: p23), as Dewey began to implement this method of teaching and learning, not only were children's social skills developed, but they also started acquiring skills, such as reading, science and mathematics. This was a key contributing factor when designing the Early Inspiration Training Programme; that the broader scope would focus on the impact that intervention can have on young children and their acquisition of skills, keeping account of external factors which could impact on children's development. The multiple intelligences theory contributes towards the intellectual elements in development and instils strategies which support children with critical thinking, problem solving and 'out of the box' thinking. This is fundamental in terms of providing children with critical life-skills which will equip them for challenging situations they may find themselves in as well as ways in which to deal with conflict, problems and pressure.

Reflecting back to the problem statement where the number of children in South Africa that drop out of school in the early grades poses a threat to the education system and economy, one of the solutions to combatting poor education would be through intervention in the early years by training and equipping teachers with effective teaching strategies and approaches to the teaching and learning environment, so providing children with fundamental knowledge through a deep understanding of the growth and development of the young child.

Due to observations of early childhood centres in the underprivileged sector in the South African context where many day-care centres, crèche's, play schools, baby homes, Grade R schools and safe havens are developed with the sole purpose of 'entertaining' or 'babysitting' children; but because of a lack of teacher-education and skills training, a great lack of an educational understanding of children's development and growth takes place.

The inclusion of these approaches to education aim to

- To gain a comprehensive understanding of the effectiveness of practitioners' training in underprivileged early childhood settings in the South African context, specifically that of the Early Inspiration Training Programme
- To assess the validity of the Early Inspiration Training Programme impacting on the child's development in totality; and
- To establish the reliability of the application of such a programme, focusing on equipping, empowering and educating unskilled practitioners dealing with young children.

The role that the teacher plays is indispensable, as it provides continual support, participation and encouragement (Woolfolk, 2007: p417). According to Gordon & Brown. (2008: p22), Dewey believed in the innate goodness of young children; and he views children as valuable, and an integral aspect of human life, with childhood being an important phase. The focus that is placed on the child and his/her development in totality is crucial, and is also the focus in this study.

The Early Inspiration Training Programme used to train practitioners in this study places great focus on the child being the centre of the learning situation, and was devised, in accordance with the Constructivist theory, which focuses on the learning and development of the young child in the context of his/her environment, and stresses the importance of young children being active participants in the learning process (Gordon & Brown., 2008: p24).

5.4.2.1 Early Inspiration Training Programme

The Early Inspiration Training Programme has been designed and aligned predominantly with the Constructivist theory and the Multiple-intelligences Theory where the focus is on supporting growth and development in young children, based on their development of skills, knowledge, understanding and implementation while at the same time emerging intelligences which support critical thinking and problem solving strategies.

The Early Inspiration Training Programme was developed specifically to empower unskilled practitioners working in the underprivileged sector of South Africa to provide them with knowledge and understanding of how children develop, and the ways in which to enhance growth and provide a stimulating environment, unleashing young children's potential.

The Early Inspiration Training Programme is designed specifically for current or prospective practitioners who deal directly with children aged birth to six years, who need to acquire skills which would enhance their overall development. Practitioners include those working in early childhood centres, day cares, crèches, baby-safe homes and orphanages.

This highly interactive Early Inspiration Training Programme is run over 8 months; and it requires a maximum of three days in the classroom at any given time, providing the practitioners with an understanding of young children's development, as well as acquiring the competencies and new skills needed to enhance the development of young children.

In addition, an accompanying mentoring programme ensures that practitioners are supported and guided throughout the eight-month programme, equipping them with skills for enhancing young children's development, assessing their abilities, enhancing community involvement, writing, reading and understanding texts, as well as interacting with other young children. This mentoring programme is performed in the practitioner's mother tongue, and is a form of support and guidance for practitioners.

A number of on-site observations take place throughout the eight-month training programme, where Early Inspiration staff can provide support and guidance for practitioners in their early childhood setting. Children are assessed, according to a set of criteria set out by Early Inspiration prior to the training intervention, and again after the eight-month training programme.

The Early Inspiration Programme not only creates an awareness of what to teach children, but it develops an understanding of how children learn, in order to promote the development of foundational concepts. This is done by means of educating and empowering practitioners and care-givers, as well as strengthening national resources and capabilities.

The Early Inspiration Training Programme also empowers practitioners and parents on ways in which to meet their child-rearing responsibilities by being provided with simple activities and expectations.

The implementation of the Early Inspiration Training Programme is a team-driven project involving a number of key role-players which together provide for a valuable contribution to the practitioners understanding of children. Role-players include the following:



- Training Facilitator

The role of the training facilitator is to share knowledge on the subject matter. This facilitator is an expert in the field of early childhood development and the information which is being passed on to the practitioners. This facilitator has a deep understanding of children, their developmental framework, expectations and expertise. The training facilitator meets with a group of 10 - 11 practitioners at a given time and teaches them various concepts, as outlined in the overview of the programme.

- On-Site Assessor and Support

On-Site assessment and support are implemented by the training facilitator or manager who has a deep understanding of the classroom situation, teaching and learning, expectations of young children and ways in which to implement effective interactions with children. This on-site support is provided to ensure the correct and effective implementation of concepts that were taught during training.

- Mentor

The role of the mentor is to provide additional support in the practitioner's mother tongue. This is an imperative element of the training programme and takes place at least once monthly, depending on the needs of the practitioner; it can take place more frequently. During mentorship, practitioner and mentor meet at the school and discuss elements of their portfolio, challenges they may be facing, any questions which may have arisen, or just to build relationships and an element of support amongst the practitioners and staff.

- Principal

Principals of the early childhood centres have an important role in the development of the practitioners, as they need to provide support, guidance and leadership. Principals need to be involved in the process of development of the practitioners and are involved in assessing the practitioners teaching lessons and assisting the management of children.

- Peers (other practitioners)

Practitioners provide one another with support, encouragement, ideas and motivation.

- Assessor

The role of the assessor through the Early Inspiration Training Programme is to assess the Portfolios of Evidence. This takes place through formative and summative assessments where practitioners need to reflect knowledge as well as an understanding of the implementation of this knowledge in the classroom and ensuring that through this, the children learn, grow and develop accordingly.

The assessor also uses the pre- and post- on-site assessments of practitioners teaching their lessons to determine growth in terms of teaching and planning of lessons.

- Moderator

The external moderator will review a sample of the Portfolios of Evidence and ensure that a fair assessment has taken place.

- Verification Agency

The verification agency, ETDP SETA, ensures that the management of Early Inspiration, the implementation of the training programme, the fairness of assessments, and the implementation of contact is done in a manner which is fair and effective. Each practitioner which exits the Early Inspiration Training Programme is reviewed by the ETDP SETA.

Each of the above roles are implemented by various team role players. For the purposes of this study, the Training Facilitator, On-Site Assessor and Assessor were all implemented by the researcher. The roles of mentor and on-site support were implemented by Early Inspiration staff members in isiXhosa, while the External Moderation and Verification were initiated by external sources, ETDP SETA.

a.) Vision Statement

The vision Statement of The Early Inspiration Training Programme is to enhance young children's intellectual development by means of practitioner-training, parent workshops, one-on-one intervention programmes, and enabling children to reach their developmental goals.

b.) Mission Statement

The mission of Early Inspiration is to enhance the development of young children in South Africa by providing appropriate stimulating activities, while in the early childhood stage. This would be achieved through providing quality educational and training opportunities by empowering practitioners with an understanding of early childhood development and the knowledge and skills needed to enhance the growth and development of young children.

c.) Values

The core values of the Early Inspiration Training Programme include: honesty, integrity, Ubuntu, equality and a passion for the people of South Africa. Each human being should have the opportunity to develop to his/her full potential. James Agee (<http://www.goodreads.com/quotes/564954-in-every-child-who-is-born-under-no-matter-what>, 13/09/13) writes, '*In every child who is born, under no matter what circumstances and of no matter what parents, the potentiality of the human race is born again*'. It is important that every child be provided with an opportunity to learn, grow and develop to his/her maximum potential.

d.) Strategic Objectives

Early Inspiration has established strategic planning initiatives considered critical to achieving its Mission and realizing its Vision. These initiatives are:

- Being a vessel where quality teaching and mentoring services foster student learning and long-term success.
- Investing in people through professional development and acknowledgment.
- Linking hands with various organizations in South Africa to help children succeed.
- Developing systems of continuous improvement and accountability.

e.) Intended Outcomes and Objectives

The Early Inspiration Training Programme aims and objectives include:

1. To empower unskilled practitioners working in the early childhood sector with the skills and knowledge on how to plan and implement appropriate programmes for their learners.

2. By providing practitioners with skills training, their chances of suitable remuneration for teaching are made possible.
3. To mentor the practitioners with correspondence, assessments and follow-up visits, which would monitor the implementation of the programmes, and assess the effectiveness of the learners' results?
4. To equip practitioners with skills and knowledge to be able to assess learners' progress and give feedback to their parents.
5. To equip, involve and empower unskilled practitioners by providing them with practical material, which provides basic skills knowledge and principles applicable to the education of their children.
6. The overall goal is to ensure that the foundations for childhood development are enhanced from a young age, developing the core concepts of learning and understanding, and so improving the chances for school success – when the learners move into the formal school.

f.) Early Inspiration Course Overview

The Early Inspiration Training Programme has been accredited with the ETDP SETA (Education Training and Development SETA) with Education in the Early Childhood being the primary objective. This ensures that the Early Inspiration Training Programme is recognizable across South Africa.

Early Inspiration offers an NQF Level 02 skills programme, which is weighted at 38 credits, comprising six Unit Standards, as well as an NQF Level 04 qualification, which is 170 credits. The NQF Level 02 skills programme was implemented in this study, as it is a baseline programme for unskilled practitioners, with no prior accredited training.

Table 5.1 represents the Unit Standards included in the Early Inspiration Training Programme.

The Unit Standards being assessed include the following:

Table 5.1 Early Inspiration Training Programme Unit Standards

244258	Demonstrate Basic understanding of child development	5 credits
244262	Interact with babies, toddlers and young children	5 credits
114998	Demonstrate understanding of selected texts in English	6 credits
114993	Write texts on relevant topics in English	4 credits
114999	Speak and respond in everyday situations in English	6 credits
119358	Encourage community awareness and participation	12 credits
TOTAL CREDITS: 38		

According to the credit value of the programme, approximately 380 hours of work should be spent on this programme by practitioners. Contact time, preparation for modules, completing activities and assessments are all included in the 380 hours. The 380 notional hours are spread over the eight-month training programme. It is important for practitioners to be allowed an opportunity to implement what has been learnt in the classroom, and to translate this into their early childhood centres. Because of this, the training programme incorporates Outcomes-Based Education principles. Outcomes-Based Education is a model of education, which encourages participation in the learning process; it encourages students to take part, challenge views, question, and become actively involved in the learning environment. Some of these principles include:

- Learners have a clear focus on the learning outcomes;
- High expectations are placed on learners and educators;
- There are greater opportunities for learner success, as activities are practical and learner-based.

In order to allow for learners to gain a deep understanding and implementation of what has been learned, the training programme is mapped out over eight months. This ensures that practitioners are given time to implement what has been learned, and to develop a concrete understanding of the text, as well as the confidence to create the necessary opportunities for children to learn, instead of being bombarded with text, and not being allowed the time to implement this without any true understanding.

The support of the mentor allows learners to ask questions, raise concerns and work through challenges. It is important that the mentor be able to communicate in the practitioner's mother tongue.

The benefits of the Early Inspiration Training Programme, being on NQF Level 02, allow for a greater target audience to be reached. The requirements for candidates to take part in the training programme include being able to communicate in English, and to demonstrate a basic understanding of children's development, while understanding community dynamics and transformative development.

The NQF Level 02 training programme provides candidates with a deep understanding of early childhood development – specifically focusing on creating a stimulating environment and enhancing young children's cognitive development. The Early Inspiration Training Programme is also a platform for learners to develop further skills by continuing on to higher NQF levels, and eventually going on to reach tertiary level, should they so wish.

Although the primary aim of the Early Inspiration Training Programme would be to enhance the potential for young children, the most operative method in assessing the effectiveness and the impact of the Early Inspiration Training Programme would be to assess the impact that the training has had on the practitioners themselves. This could be assessed by means of the comprehensive portfolio of evidence, as well as tracking practitioners' progress by means of four on-site observations throughout the eight-month programme.

Time is spent assessing individual children, according to age-appropriate assessment criteria set out by Early Inspiration. Learners are assessed, according to the same set of structures – before and after the eight-month intervention training programme. This assesses the effectiveness of the practitioners' teaching ability, as a result of the training programme.

The Early Inspiration Training Programme is broken down into a number of interactions throughout the eight-month programme. These interactions include: training, observations, mentorship and assessment.

It is imperative to note the relationships between the understanding and psychology of education and the implementation of the Early Inspiration Training Programme. One of the key components and the cornerstone of initiating the Early Inspiration Training Programme is to provide uneducated practitioners with an understanding of their role in terms of children's development and potential and the importance that stimulation has on development. The

elements discussed in Chapter 1 and 2 were key indicators when developing the Early Inspiration Training Programme, and elements of early mathematics, literacy and life-skills were integrated throughout the training programme, ensuring that practitioners were able to implement these key cornerstones and ensure holistic development of children.

Initial training (months 1 and 2) places a large focus on understanding children, their development, expectations of children in different stages, ways in which to approach children, the understanding of including a holistic approach of early mathematics, literacy and life-skills into the classroom, through implementing the South African CAPS system in Grade R classes. With an understanding of early mathematics, literacy and life-skills, classroom values, teaching approaches, skills and knowledge are manipulated and moulded to provide practitioners with their own philosophy of teaching. The understanding of these early learning mechanisms, including early mathematics, literacy and life-skills, included throughout the Early Inspiration Training Programme represent a holistic, integrated approach to teaching and learning, fundamental to providing the practitioners with a deep understanding of childhood development and education as well as how to implement this in the classroom and community.

Table 5.2 Overview of the Early Inspiration Training Programme

Module Name	Dates	Duration
Understanding how children learn (brain development) 5 aspects of development Characteristics and activities: 0-5 years	Month 1 : Week 1	1 day on-site initial observation 3 consecutive days training
	Month 1: Week 3	1 day mentorship
Interacting with children in a meaningful way	Month 2: Week 1	1 day training
	Month 2: Week 3	1 day mentorship
Assessing children's abilities	Month 3: Week 1	1 day on-site observation and mentorship 1 day training
	Month 3: Week 3	1 day mentorship
Administration in Early Childhood Centres	Month 4	1 day of training
Creativity with teaching apparatus	Month 5	1 day training
	Month 6	1 day on-site observation
Practitioner, parent and the communities role in development	Month 7	1 day training
Re-cap	Month 8	1 day on-site observation 1 day training

5.5 HYPOTHESES

The primary aim of this study was:

- To assess the effectiveness of the Early Inspiration Training Programme in early childhood centres in underprivileged sectors of South Africa.
- To test the validity and effectiveness of sending practitioners on the eight-month training and mentorship programme.
- To assess the growth and development in young children's development over the eight-month period, in order to examine the effects of the stimulation concepts in young children;
- To indicate how such concepts could be provided for in the early childhood centre.

Hypothesis 1: Intervention

The null hypothesis (H_0) and the alternative hypothesis (H_1) for significance of intervention, comparing Control and Experimental groups:

H_{1,0}: There is no significant difference between the overall total development of the subjects in the control and experimental groups.

H_{1,1}: There is a significant difference between the overall total development of the subjects in the control and experimental groups.

Hypothesis 2: Physical-Motor Development

The null hypothesis (H_0) and the alternative hypothesis (H_1) for the significance of the implementation of Physical-Motor Development concepts, comparing control and experimental groups:

H₂: There is no significant difference between the Physical-Motor Development of the subjects in the control and experimental groups.

H_{2,1}: There is a significant difference between the Physical-Motor Development of the subjects in the control and the experimental groups.

Hypothesis 3: Socio-Emotional Development

The null hypothesis (H_0) and alternative hypothesis (H_1) for the significance of the implementation of Socio-Emotional Development concepts, comparing control and experimental groups:

H_{3,0}: There is no significant difference between the Social-Emotional Development of the subjects in the control and in the experimental groups.

H_{3,1}: There is a significant difference between the Social-Emotional Development of the subjects in the control and experimental groups.

Hypothesis 4: Language and Speech Development

The null hypothesis (H_0) and alternative hypothesis (H_1) for the significance of the implementation of Language and Speech Development concepts, comparing control and experimental groups:

H_{4,0}: There is no significant difference between the Language and Speech Development of the subjects in the control and experimental groups.

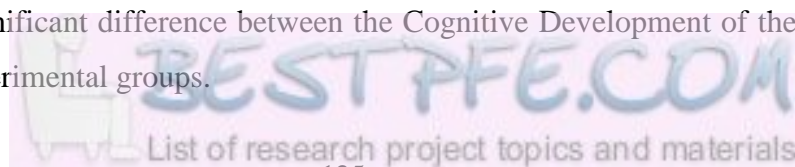
H_{4,1}: There is a significant difference between the Language and Speech Development of the subjects in the control and experimental groups.

Hypothesis 5: Cognitive Development

The null hypothesis (H_0) and alternative hypothesis (H_1) for the significance of the implementation of Cognitive Development concepts, comparing control and experimental groups:

H_{5,0}: There is no significant difference between the Cognitive Development of the subjects in the control and experimental groups.

H_{5,1}: There is a significant difference between the Cognitive Development of the subjects in the control and experimental groups.



Hypothesis 6: Visual Perceptual Skills

The null hypothesis (H_0) and alternative hypothesis (H_1) for significance of implementation of Visual Perceptual Skills concepts, comparing control and experimental groups:

H_{6.0}: There is no significant difference between the Visual Perceptual Skills of the subjects in the control and experimental groups.

H_{6.1}: There is a significant difference between the Visual Perceptual Skills of the subjects in the control and experimental groups.

A hypothesis that states the programme that has been developed, according to the work of Dewey and the constructivist theory, is one which would provide positive results, and would prove to have had a large impact on the cognitive development of young children, and to have assisted in their stimulation over the eight-month Early Inspiration Training Programme.

Dewey's work is well recognized worldwide; and it is the cornerstone of the intervention programme used in this study.

5.6 CONCLUSION

This chapter has dealt with the theory behind the development of the research tool – by referring to various previous models, theories, methods and concepts of early childhood development. The finished research tool – in the form of an eight-month Training Programme for unskilled practitioners working in early childhood centres in South Africa – has been fully discussed.

CHAPTER 6

METHODOLOGY AND RESEARCH DESIGN

6.1 INTRODUCTION

The purpose of this study was to develop and field-test an instrument, which supports practitioners working in early childhood development's personal and professional competences. The instrument, which is an eight-month practitioner-training programme, devotes attention to building pedagogical thinking skills, empowering practitioners to manage managerial processes, while instilling knowledge, skills, practice, values and attitudes. The effectiveness of this practitioner-training programme is assessed through the developmental growth observed in children taught by these practitioners. This chapter describes the methods that were used to implement this practitioner-training programme, in order to ensure effectiveness and growth in children's' development, as well as including methods for exploring the validity and reliability of the study.

The literature was reviewed to establish the existing curricular approaches used in early childhood education, the importance of early intervention, the situation in the South African context, as well as the effective implementation of adult learning programmes. Furthermore, the ethical issues to be considered, in order to conduct the research in a sound and professional capacity are stipulated.

From the review, it is clear that young children's cognitive development is permanently enhanced by means of stimulation, which in turn impacts on the development of a nation in a large way (Choudhary, 2012: p62). The three major aspects of cognitive development include: mathematics, literacy, and life skills, which are all equally important, and need to be enhanced simultaneously and by means of integration (De Witt, 2009; Eliason, 2008; Gordon & Brown., 2008; Seefeldt *et al.*, 1998; Sternberg, 2008).

As explained in Chapter 4, the child's school and home environment, family situation, health, nutrition, and community involvement have proven to be of great importance, and have a huge influence in the child's development (Eliason, 2008; Gordon & Brown; Hendrick & Weissman; Meier *et al.*, 2007; De Witt, 2009; Zepeda, 2012: p1).

This section encompasses a complete description of the research design of the methods and the procedures employed in this study, the aim of which was to note the effects that quality practitioner training can have on the young child, and the programmes used for intervention. Selective methods for the participants, measures to ensure trustworthiness, ethical issues, data collection and analysis, and the limitations of the study are issues that are included in this chapter.

6.2 THE RESEARCH PROBLEM

Various programmes and activities need to be logically planned, in order to aid cognitive development and enhance children's learning abilities. These need to be implemented through adequate practitioners' training programmes. Thus, the research question for this study can be formulated as follows:

- *What are the effects of the Early Inspiration Training Programme on the young children of South Africa?*

The principal aim of this study was to gain a comprehensive understanding of the effectiveness of the Early Inspiration Training Programme on the children whose practitioners undergo intervention, showing the importance of stimulation in the early childhood years, and the envisaged long-term effects of this stimulation. This has been done by means of a literature study, as well as an empirical investigation.

Once an understanding of the effectiveness of the Early Inspiration Training Programme had been developed, further secondary questions arose, such as:

- *What is the child's ability to learn and develop critical concepts, general knowledge, critical thinking and problem-solving skills?*
- *How can the various cognitive concepts be provided for in the early childhood programme, preventing early drop-out rates and the repetition of grades?*
- *What can practitioners and parents do to enhance their children's development?*

An understanding of the stimulation and development of cognitive abilities in the young child, through the Early Inspiration Training Programme would provide practitioners with an understanding of the different developmental levels and methods of learning, as well as the

ability of the young child to learn and develop abstract ideas and knowledge. It could further add to the body of knowledge with regard to what should be done by practitioners and parents, in order to enhance the young child's development.

6.3 THE AIM OF THE RESEARCH

This study was aimed at providing scientific knowledge of the impact of the Early Inspiration Training Programme in early childhood settings in South Africa.

The primary aim of this empirical study was:

- To assess the effectiveness of the Early Inspiration Training Programme in early childhood centres in underprivileged sectors of South Africa;
- To test the validity of the Early Inspiration Training Programme;
- To assess the growth and progress in young children's development over the eight-month period, in order to examine the effects of the stimulation concepts in young children;
- To indicate how such concepts can be provided for in the early childhood centre; and
- To establish the reliability of the application of the programme in South African early childhood teaching and learning.

McMillan *et al.* (2006: p22) define the research design as a comprehensive plan for creating empirical evidence, which would be used to answer the research questions, aims and objectives. For the purpose of this research, this study used a quantitative, experimental research design.

6.3.1 The nature of quantitative research

As explained in Chapter 1, a quantitative research method was used. The quantitative approach is value-free and focuses on variables, while measuring objective facts rather than looking into social and cultural contexts. According to McMillan *et al.* (2006: p23), quantitative fields of study '*adopt a positivist philosophy that emphasizes objectivity and the quantification of phenomena*'.

Objectivity is maximized as a result of the data being in the form of numbers, statistics, structure and control, and the information is then transferred into a computer-readable format (Neuman, 2006: p41). Once the data had been collected, the analysis of the data commenced.

This stage typically involves manipulating the data or numbers by using computer software to create charts, tables, graphs and statistics (Neuman, 2006: p14).

Once the researcher has all the information graphically represented, an interpretation of the data is necessary. By looking at the analyzed data – and with background knowledge on the research topic – the original research question can be answered, and insight can thereby be arrived at (Neuman, 2006: p14). This graphical representation will be evident in Chapter 8.

In an experimental research design, the researcher has, in some manner, control over some subjects, and is able to manipulate their experiences (McMillan *et al.*, 2006: p23). The researcher is then able to investigate cause-and-effect relationships, by making comparisons between the control and experimental groups through statistical analysis (McMillan *et al.*, 2006: p24).

6.4 THE RESEARCH DESIGN

‘The quality of action research depends on the reflexive sensitivity of the researchers, whose data collection, analysis and interpretations will all be mediated by their sense of self and identity’ (Somekh, 2006: p14). The study was conducted by means of a true experimental design, whereby the subjects were measured before and after the treatment. This is the only design that can effectively determine the cause-and-effect procedure, as it involves a control group and an experimental group (McMillan *et al.*, 2006: p24).

6.4.1 The research method

This research method involved the data collection, the sampling method, the researcher as the instrument, ethical issues, and a suitable method, which ensured trustworthiness and data analysis.

The research design that was implemented was a quantitative method for capturing and analysing the data. Quantitative research is based on logical positivism, where one single reality is measured (Neuman, 2006: p13). The previous data were thoroughly researched, and the literature was consulted, so that the procedures to be implemented would follow a step-by-step plan.

The quantitative approach also created a means to establish a relationship between the measured variables, and thus explain the cause of this change (McMillan *et al.*, 2006: p24).

All subjects that participated in this research were assigned to either the control group (independent variable) or to the experimental group (dependent variable) by probability sampling, based on randomisation (Neuman, 2006: p251). All subjects in the population (isiXhosa Grade R classes) had the same probability of being selected, and children in each class were then included in the study, based on whether their practitioner was placed in the Experimental or Control group. Pre-tests and post-tests were done with both the control and experimental groups, and thorough intervention and stimulation took place with the experimental group.

A questionnaire was used to provide valuable subject history and parental objectives. The questionnaires ensured anonymity, and are economical (McMillan *et al.*, 2006: p194).

Correlational research determines and analyses the relationships between variables (McMillan *et al.*, 2006: p25). Using this method, certain predictions may be made on the basis of these relationships. It is however important to note that this design did not necessarily determine cause and effect. This study intends to determine the relationship and effects that practitioners attending the Early Inspiration Training Programme have on ensuring that effective teaching and learning take place.

6.4.2 The data collection

The data-collection period consisted of a pre-testing of the children's ability level (Pre-Test and Post-Test Assessment Form (Physical-Motor, Social-Emotional, Language and Speech, Cognitive Development and Visual Perceptual Skills: Appendix F), as well as all practitioners undergoing a knowledge pre-test (Appendix E), which took place prior to the commencement of the practitioner-intervention programme. Thereafter, practitioners in the experimental group underwent the Early Inspiration Training Programme (8 months), and a final post-assessment (Appendix F), which included all the participants, the children, and the practitioners.

An advantage of the Pre- and Post-Test assessment form administered on the children was that all assessors were trained in early childhood development and working with children between the ages of 4 and 6 years. The assessors were trained on how to administer the test effectively, the assessment range (a scale of 0 to 5) as well as expectations of children in relation to the assessment tool. Another advantage is that the assessment tool is a holistic assessment which focuses on South African children between the ages of four and a half and six years old. It was fundamental that the assessment was administered in isiXhosa as the

children were isiXhosa speaking. The assessment tool was therefore translated into isiXhosa for the assessment process. All assessors' home language was isiXhosa so they were comfortable communicating with the children. The 10 assessors that implemented the pre-testing were the same as those that implemented post-testing.

One of the disadvantages of the assessment was that, due to the number of participants in the study, the assessment was not implemented in a one-on-one format, but was implemented in groups where one assessor would administer the test to a group of between two to three participants at a time. This was the case for pre-testing and post-testing of the children.

The assessment tool was developed according to guidelines provided of expectations of children in various stages, according to the various domains of development, dealing specifically with the elements of early numeracy, literacy and life-skills as discussed in Chapter 2. The tool covers key elements including the following as imperative components of the assessment:

Physical-Motor Development

- Gross-motor (skipping, balancing, jumping, throwing, catching, somersault)
- Fine-motor (pencil grip, threading)

Social-Emotional Development

- Drawing with an understanding of body concept
- Confidence
- Identifying and understanding emotions
- Problem Solving Strategies
- Understanding own ability level
- Moral understanding
- Peer and adult interaction

Language Development

- Understanding and being able to answer questions about the child's family, address, self, being able to maintain a conversation
- Pronunciation
- Interpretation of instructions
- Naming of body parts in isolation
- Memory and Critical thinking activities
- Identification of like and unlike words
- Ability to listen to and interpret a story, recite numbers, colours and words in sequence

Cognitive Development

- Counting (one-to-one correspondence)
- Understanding number value
- Ordering and sequencing
- Number, shape, pattern and colour identification

Visual Perceptual Skills

- Visual Discrimination
- Visual Seriation
- Visual Closure
- Visual Foreground and Background
- Copying

The assessment tool seems fair and provides a realistic understanding of children's ability level. Although domains of development were isolated in order to structure the assessment,

the tool was developed with a holistic approach which identifies and reflects the child in totality.

The questionnaires which were administered to the practitioners enabled the researcher to gain background information from each practitioner, as well as to provide a large amount of information in a short period of time (Koshy, 2005: p87).

6.4.3 The sampling methods

Literature was reviewed to identify the importance of early childhood intervention, as well as to gain an understanding of the major theoretical advances in the history of education, specifically in the South African context. The cognitive aspect of development and growth in young children was the focal point of this study, emphasising the importance of early intervention and the impact that practitioners can have with key knowledge, understanding and skills, as well as how this can be imparted to the children in their care.

A population refers to '*a group of elements or cases, whether individuals, objects, or events, that conform to specific criteria, and to which we intend to generalise the results of the research*' (McMillan *et al.*, 2006: p119).

In many cases, the population is so large and unreachable that it cannot be used in its entirety, due to the inability of the researcher to control the group. In the case of this research, a useful division of the population was used. The research population of this study may be defined as: selected unskilled practitioners working in underprivileged South African early childhood centres. These practitioners teach children between the age of five and six and a half years old, Grade R. This is the final year of intervention before children enter formal schooling in Grade 1. A group of the population from which the data have been collected is called a sample group (McMillan *et al.*, 2006: p119).

For the purpose of this study, the participants (children between the ages of five and six and a half years) were classified, according to class. The practitioners were selected by means of systematic random sampling, where each individual had an equal chance of being selected (Neuman, 2006: p230). Neuman (2006: p227) explains random sampling as being one that truly represents the population, and allows for the researcher to statistically compute and analyse the relationship between the sample and the population.

Systematic random sampling takes place when the researcher calculates the sampling interval. The interval then becomes the quasi-random selection method.

The sampling interval suggests how to select the elements from a sampling frame, starting from a randomly selected element. The sampling frame needed to be arranged randomly for systematic random sampling to take place effectively (McMillan *et al.*, 2006: p121; Neuman, 2006: p230).

The systematic random sampling method was relevant and appropriate for this study, as it had a specific task to accomplish. The population was not arranged, according to any systematic pattern; the list was arranged randomly, which ensures that there were no possible weaknesses in the selection of participants (McMillan *et al.*, 2006: p121).

The study explored the effects of practitioners undergoing the Early Inspiration Training Programme, and assessed the effectiveness of this programme, based on Grade R children's growth and development in the respective practitioner's care.

The practitioners included in this study had to be unqualified, and working in an isiXhosa school in the Port Elizabeth region, teaching Grade R. The children involved in this study were in these Grade R classes; and they ranged in age from five to six and a half years old. Initially, 800 children were selected to take part in the study, but due to measures beyond the control of the researcher, only 648 children took part in both pre- and post-testing. A number of the children left the early childhood centre where initial testing was being implemented; some children changed classes, while others were absent on assessment days.

6.4.4 Gender distribution of subjects

Male and female subjects were used in this study. All subjects were chosen by means of systematic random sampling, where gender played no role in determining the selection of the subjects. Table 6.1 indicates that a total of 361 females (56%) and 287 males (44%) took part in this study.

Table 6.1 Distribution of male and female subjects

Female	361	56%
Male	287	44%
Total	648	100%

6.4.5 Subjects' home language distribution

The children selected to take part in this study were all isiXhosa home-language speaking children. A limiting factor was that early childhood centres included in the study needed to be isiXhosa-speaking underprivileged schools. All of the subjects were assessed in isiXhosa, in order to ensure a fair assessment.

6.4.6 Control and experimental groups

A total of 648 subjects took part in the study; both males and females were included. The participants were classified by means of classification, according to class. The practitioners were selected by means of systematic random sampling into two main categories:

- The control group (277 participants)
- The experimental Group (371 participants)

The control group underwent the pre-test and the post-test procedures. The subjects continued with their daily programme at their current early childhood centre; and the practitioners received no supportive training from Early Inspiration whatsoever. The experimental group underwent the pre-test. The practitioners would then take part in an eight-month intervention programme, focusing on effective practitioner-training strategies, management and the initiating of a deep understanding of early childhood development. After the eight-month intervention programme, the participants underwent the post-test.

Figure 6.1 is a representation of the 648 subjects, consisting of 277 subjects (43%) in the control group and 371 subjects (57%) in the experimental group.

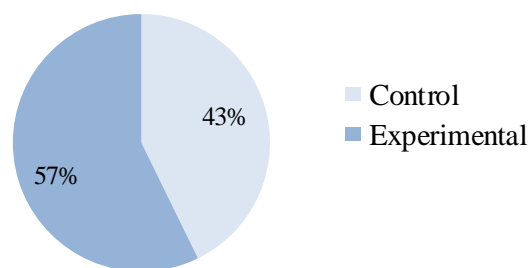


Figure 6.1 Representation of subjects in the control and experimental groups

6.4.7 Ethical measures

According to Koshy (2005: p83), it is imperative to carry out ethical guidelines during research projects. Dingwall (Ed. Love, 2012, p4) states that gaining ethical approval is a mandatory process, which needs to take place prior to any data-collection process.

All information gathered was coded, in order to ensure the anonymity of the subjects involved in the study. According to Neuman (2006: p139), anonymity ensures that the participants remain nameless, and that their identity is thus protected from being disclosed. All information gathered would remain confidential – with the identity of the subjects only being known to the researcher.

All the subjects were required to sign an informed consent form (Informed Parental Consent for Child to Participate in the Study: Appendix D), agreeing to participate in the study (Neuman, 2006: p135). The ethical requirements were fulfilled for the purpose of this study.

6.4.8 Informed consent

Attaining informed consent implies that the researcher ensures that the participants would be treated with anonymity and confidentiality at all times. The intended use of all information gained and acquired during the investigation, the various actions and events to be followed during the execution of the investigation, any possible advantages, disadvantages, or dangers to which participants may be exposed, would all be disclosed to the participants prior to the investigation (McMillan *et al.*, 2006: p334).

Further, it is emphasized that precise and absolute information is to be provided to all subjects, so that they may be fully aware of the steps of completion in the investigation, and that they would, therefore, be able to make an informed and critical decision regarding their participation in the study (Mouton, 2001: p244; Neuman, 2006: p135). All participants were briefed and had a clear understanding of the study prior to the commencement thereof.

Written informed consent was obtained from the practitioners involved in the study; the participant's parents (children under the age of 18) and the principals of the early childhood centres (Appendix A) – after they had received a letter explaining the intentions and programme for the research project (Appendix A: Letter to Principals; Appendix B: Letter of Acceptance by Principal; Appendix C: Letter to Department of Education). No participant was allowed to participate in the study without having completed and returned a consent form, which had been signed by a parent or guardian.

All names were removed to protect the participants' identities, and from the schools where this research was implemented. The informed consent form for all the participants, practitioners, parents and principals ensures the anonymity of the children in the classrooms, using pseudonyms to classify the participating schools, practitioners and children throughout the study, and in all succeeding periodicals and presentations thereof.

6.4.9 Confidentiality and privacy

According to the Oxford Dictionary (Ed. Branford: p602), privacy refers to '*freedom from disturbance or public attention*'. In the case of research this would refer to anything that is normally not intended for others to observe or analyze (McMillan *et al.*, 2006: p334). Confidentiality is a prolongation and extension of privacy. Privacy refers to a contract between people that limits others from accessing private information (McMillan *et al.*, 2006: p335).

Consequently, the names of the participants who were involved during the intervention programme were not given in the study. That is, the researcher has kept all the details of early childhood participants confidential.

6.4.10 Participants in the study

For the purpose of this study, all the participants were selected by means of systematic random sampling, where each individual has an equal chance of being selected (Neuman, 2006: p230). The participants in this study were 800 subjects selected from 30 Grade R classes; and these will be assigned to either the experimental or the control groups *via* random selection. The 30 early childhood centres and the respective practitioners were selected by random sampling. The children in the practitioners' classes formed part of the control or the experimental group, respectively. Only 648 participants were involved in both the pre-testing and the post-testing.

The participants were classified, by means of systematic random sampling, into two main categories. The total number of participants involved in both the pre-testing and the post-testing included:

- Control Group (277 children)
- Experimental Group (371 children)

6.4.11 Processing the data

When analysing data, it is imperative that the data should be organised in a clear and concise manner. According to McMillan *et al.* (2006: p417), quantitative data are summarised using simple descriptive statistics, such as the mean, frequencies, the mode, the range and graphs.

6.4.12 Procedure of the research project

In the initial phase of this research study, before direct interaction with children, the researcher contacted the early childhood centre's principals and practitioners – and consulted with them on their approaches to teaching, their motivation to make a difference, and their current teaching beliefs and practices. Various aspects of the practice were discussed with the principals, including the Early Inspiration Training Programme, class schedules, classroom arrangements, resources and materials used in the classroom, and the curriculum currently being implemented.

This was done, in order to gain a perspective on the children's abilities, as well as a guideline for the input that both the experimental and the control groups would receive during the class teaching.

The researcher provided insight into the Early Inspiration Training Programme; she also provided information to the practitioners and the principal on the modules and procedures of this research project; and these were explained in detail. The expectations of the early childhood centre were discussed, as well as the practitioners' expectations of the research, the project and the intervention programme.

The data were collected by means of pre-testing and post-testing. All 648 children involved were assessed in their mother-tongue by trained assessors. This pre-testing was performed under the same conditions for all the participants. The pre-tests and post-tests were implemented in a group format. The duration of the pre-test was roughly 50 minutes. The practitioners involved underwent a knowledge pre-test, as well as an interview. During the duration of the Early Inspiration Training Programme, the experimental group of practitioners were expected to complete a Portfolio of Evidence. The practitioners in the control group and the experimental group did the knowledge test prior to, and after the intervention.

The experimental group then underwent the eight-month Early Inspiration Training Programme.

Questionnaire forms were completed by all the practitioners (McMillan *et al.*, 2006: p194; Neuman, 2006: p292).

The post-test (T2) was completed by both the experimental and the control groups after the eight-month intervention process. The questionnaires and knowledge test sent out to all the practitioners (Appendix D) would provide an indication of the practitioners' understanding on early intervention – as well as the importance thereof.

6.4.13 Validity and reliability

The results of the subjective and objective evaluations on the 648 subjects were assessed and observed. Although these scores may appear to be similar, each child's level of development was different and specific for each individual. The manner of learning and attaining knowledge is different from child to child. Reliability and validity are essential in scientific research, as they '*help to ensure that our measures are objective*' (Pellegrini *et al.*, 2004: p140).

6.4.13.1 Validity

Instrument validity refers to the consistency of measurements and to the results on different occasions (McMillan *et al.*, 2006: p130). Validity usually refers to the reliability and truthfulness of the measurements (Pellegrini *et al.*, 2004: p140). The pre-tests and the post-tests are the same; so no deviation took place in the instrument used to assess the learners. The assessors tested all the subjects in a similar manner, in their mother tongue, and in groups of four children to one assessor. This was intended to ensure a fair standard of assessment. The two aspects focused on consisted of content validity and face validity.

Face validity ensures that the concepts tested all follow a developmental pattern and structure – for example, if a child cannot count from 1-5, s/he would therefore not be able to count by one-to-one correspondence 6-10 objects.

Content validity ensures that after a thorough investigation of the literature on the cognitive concepts, including the sub-sections on physical-motor, language and speech, socio-emotional, play and cognitive, that all the relevant aspects of the sub-sections were taken into

account in the study. Tests devised and programmes implemented for the intervention were all based on the theory discussed in the conceptual framework.

i.) Internal validity

Internal validity is the degree to which conclusions and assumptions on the cause-and-effect relationships arising from an experiment are accurate and correct. There are many types of threats, which could affect the internal validity of a research design (McMillan *et al.*, 2006: p134, 260). According to Polgar and Thomas (http://www.qmu.ac.uk/psych/RTrek/study_notes/web/sn3.htm, 18/03/09), 'Internal validity concerns the soundness of an investigation'.

Possible threats, which may affect the internal validity of this trial, include the following:

- History

The history refers to various possible incidents that could occur outside or inside the context of the study. These incidents are out of the researcher's control; but they could influence the results of the study (McMillan *et al.*, 2006: p136, p261).

There is a possibility that incidents outside the researcher's control might occur. The effectiveness of the intervention programme relies heavily on the children's school attendance. Children in the experimental group that are not at school on a regular basis may tend to have less effective results than those who are at school more consistently. Other external factors, which could have an impact on the children's development, or the lack thereof, would include: nutrition, family input, sleep patterns, abuse and neglect, health, and – of course, love.

According to Tebes (Ed. Jason & Glenwick, 2012, p23), it is important that researchers be sensitive to multiple cultural contexts. These would include: *gender, race, ethnicity, age, sexual orientation, religion, disability status, or any number of individual contexts signifying human diversity.*

- Instrumentation

Instrumentation refers to a visible change in the results. This is because of changes in the instrument itself, or changes in the person who is implementing the research (Neuman, 2006: p262; McMillan *et al.*, 2006: p262).

The instrument used for the pre-tests and the post-tests remained the same. The same scoring sheet was used for all the children, and the person implementing the research also remained unchanged throughout the research process; so no deviation took place.

- Subject attrition

There is frequently a difference in the number of subjects present for the pre-test, compared with those in the post-test (McMillan *et al.*, 2006: p138). Only subjects present for both the pre-test and the post-test were submitted and analysed. As a result, the research study began with 800 participants; but only 648 were included in the study.

- Maturation

Maturation refers to changes in the individual subject that take place between the pre-test and the post-test. Children are constantly changing and growing. From one month to the next, they also become more mature. Factors, such as the time of day, the weather, the child's health, and even their moods would all affect their results in the tests (McMillan *et al.*, 2006: p138-139, 261; Neuman, 2006: p261). The children used in this study were living in poverty-stricken areas; and as a result, many external factors could play a role in impacting pre- and post-test scores. These would include, but would not necessarily be limited to: nutrition, health, prior intervention, family input, sleep patterns, abuse and neglect, parental input, in addition to the resources available.

Maturation refers to changes in the individual subjects between their pre-test and their post-test scores. Because all children are constantly changing and growing, the fact that children develop would be a common occurrence in all the children, and one which cannot be prevented. Every precaution was taken to ensure that factors, such as the time of day, the weather, and the child's health would be considered when implementing the research.

6.4.13.2 External validity

- Population external validity

Population external validity is the extent to which the results can be generalised to all other people: not only to people with similar characteristics. The results of a study should only be generalised when the population has similar characteristics to those of the subject group. These characteristics would include features, such as age, race, sex, ability, and socio-

economic classification (McMillan *et al.*, 2006: p141; <http://www.gifted.uconn.edu/siegle/research/Samples/externalvalidity.html>, 10/11/09).

All the children – in both the experimental and the control groups – were between the ages of five and six-and-a-half years old. They attend one of 30 early-childhood centres in Port Elizabeth; they all come from a similar socio-economic sector; and they all speak the same mother-tongue, isiXhosa.

The racial breakdown of the practitioners includes all 30 practitioners being black females. The participants in this study were boys and girls, between the ages of five and six-and-a-half years old. All 648 subjects were isiXhosa speaking, and live in poverty-stricken environments in Port Elizabeth, South Africa.

6.4.13.3 Reliability

Reliability refers to the consistency of the uniformity in an experiment. It suggests that the same thing can be reproduced by different researchers under similar conditions, and they would all reach the same results (McMillan *et al.*, 2006: p130, p188 & p198; <http://www.socialresearchmethods.net/kb/reliable.php>, 3/11/09).

In order to determine whether the tests would be reliable, the tests were implemented by the same assessors, over a period of 6 weeks. The tests were administered in the children's mother tongue, isiXhosa, using the same instruments and resources for all the children.

6.4.14 The questionnaire

According to McMillan *et al.* (2006: p194), a questionnaire is the most widely used method to obtain information. The questionnaire was developed, according to a step-by-step plan in McMillan *et al.* (2006: p194), whereby the following steps need to be followed:

- Establish justification
- Define the objectives
- Write the items
- Review the items
- Construct the general format of the questionnaire
- Conduct a pilot test

- Revise the questionnaire and responses

Insight into the steps of an understanding of children's development, various strategies which are able to enhance development and concept understanding, as well as understanding each individual's development are all vitally important. The purpose of the questionnaire was to gain an understanding of the importance practitioners place on early intervention, as well as their understanding of the basic concepts.

A questionnaire (Early Inspiration Training Programme Questionnaire/ Knowledge Test: Appendix E) was distributed to each practitioner that had returned a consent form, and had agreed to the terms of the study (Appendix D). Each subject was given clear instructions on completing the questionnaire; and these were done under test conditions, where the participants were not able to use any alternate sources, but used only their own pre-existing knowledge.

The questionnaire provided insight into the practitioner's idea of early childhood development, as well as their basic understanding of simple concepts. During the Early Inspiration Training Programme, insight was provided to gain a greater sense of understanding on children's development, the necessary stages of development, the amount of importance placed on cognitive development, the activities that they would use to aid and enhance cognitive development, and factors that play a role in this development.

6.5 THE DATA ANALYSIS

Once the pre-tests and post-tests had been implemented, and the data had been collected, these data needed to be formatted in a way that is meaningful – prior to drawing conclusions and implementing the appropriate action (Koshy, 2005: p109). According to McMillan *et al.* (2006: p417), '*quantitative data are summarized using simple descriptive statistics (such as frequencies, the mean, the mode, the range and graphs)*'. The aim of the data analysis was for the researcher to determine whether it would provide the needed information, in order to achieve the goals and aims of the study (Koshy, 2005: p109).

A number of hypotheses were postulated. These will be dealt with in detail in Chapter 7 and Chapter 8.

The purpose of this study was to develop and field-test an instrument, which supports practitioners working in early childhood development's personal and professional competences. The instrument, which is a practitioner-training programme, devotes attention to building pedagogical thinking skills, empowering practitioners to manage managerial processes, while instilling knowledge, skills, practice, values and attitudes.

The following tests were employed to test the hypotheses:

1. Single variable statistics (mean, standard deviation and coefficients of variance), frequency histograms and one independent variable regression were used to give greater insight into the pre-test and post-intervention scores. The reliability of the scores for the pre-tests and the post-tests was determined by the item-analysis-factor analysis, and the calculation of Cronbach's Coefficient of alpha (McMillan *et al.*, 2006: p54, p185-186).
2. T-tests were implemented, in order to determine the level of significance in the control and experimental groups, as well as to compare the two groups' mean scores ($p \geq 0.001$ at the 0.1% level of significance).
3. The level of significance of the study was determined by the p-level or level of probability (McMillan *et al.*, 2006: p292). A critical value at the five-percent level of confidence ($p \geq .05$) was required for significance.
4. Analysis of co-variance, using the statistical software package program used by BMDP2007, in addition to the analysis of co-variance, where the treatment was the grouping variant; and the pre-test was the co-variant used to test the level of improvement in the scores, as a result of the intervention programme (McMillan *et al.*, 2006: p165).
5. The item-analysis-factor analysis and the calculation of Cronbach's coefficient of alpha were used to test the reliability of the pre-test and post-intervention test scores (McMillan *et al.*, 2006: p185-186).

6.6 THE LIMITATIONS OF THE STUDY

The study was limited to the selected children aged between five and six-and-a-half years from 30 selected early childhood centres in the underprivileged socio-economic status group of Port Elizabeth. Other centres and age-groups were not explored.

6.7 CONCLUSIONS

To test the effectiveness of the Early Inspiration Training Programme, not only did the practitioners undergo direct intervention, but the assessment was conducted on 648 children between the ages of five and six-and-a-half years old, in Grade R. A test was conducted on a Group of 648 children and 30 practitioners. The practitioners in the experimental group took part in an eight-month intervention programme, during which time the primary concepts on children's development were taught to them, according to the children's levels of understanding. After the eight-month study, the same tests were carried out on all the original 648 subjects.

The effects of the children, whose practitioners were in the experimental group (underwent Early Inspiration Training Programme Training), or those in the control group (no training) were assessed. The effectiveness of the intervention programme was also tested; and the results of success or failure were noted.

In this chapter, an overview has been given on the research methodology used for this study. In the following chapter, a more in-depth description will be given of the plan for analysing the collected data, as well as the research results obtained from the analysis.

CHAPTER 7

DATA ANALYSIS AND FINDINGS

7.1 INTRODUCTION

This chapter presents the results of a study conducted, in order to gain a comprehensive understanding of the effectiveness of practitioners' training in underprivileged early childhood settings in the South African context. This was done by means of a literature study, as well as an empirical investigation.

The secondary aims of this study were to:

- Assess the validity of the Early Inspiration Training Programme impacting on the child's development in totality;
- Establish the reliability of the application of the programme of cognitive development.

7.2 HYPOTHESES

The primary aim of this study was:

- To assess the effectiveness of the Early Inspiration Training Programme in early childhood centres in underprivileged sectors of South Africa.
- To test the validity and effectiveness of sending practitioners on the eight-month training and mentorship programme.
- To assess the growth and development in young children's development over the eight-month period, in order to examine the effects of the stimulation concepts in young children;
- To indicate how such concepts can be provided for in the early childhood centre.

Hypothesis 1: Intervention

The null hypothesis (H_0) and alternative hypothesis (H_1) for the significance of intervention, comparing the Control and Experimental groups:

H_{1.0}: There is no significant difference between the overall total development of the subjects in the control and experimental groups.

H_{1.1}: There is a significant difference between the overall total development of the subjects in the control and experimental groups.

Hypothesis 2: Physical-Motor Development

The null hypothesis (H_0) and the alternative hypothesis (H_1) for the significance of Physical-Motor Development concepts, comparing control and experimental groups:

H_{2.0}: There is no significant difference between the Physical-Motor Development of the subjects in the control and experimental groups.

H_{2.1}: There is a significant difference between the Physical-Motor Development of the subjects in the control and the experimental groups.

Hypothesis 3: Social-Emotional Development

The null hypothesis (H_0) and alternative hypothesis (H_1) for the significance of Social-Emotional Development concepts, comparing control and experimental groups:

H_{3.0}: There is no significant difference between the Social-Emotional Development of the subjects in the control and experimental groups.

H_{3.1}: There is a significant difference between the Social-Emotional Development of the subjects in the control and experimental groups.

Hypothesis 4: Language and Speech Development

The null hypothesis (H_0) and alternative hypothesis (H_1) for the significance of Language and Speech-Development concepts, comparing control and experimental groups:

H_{4.0}: There is no significant difference between the Language and Speech Development of the subjects in the control and experimental groups.

H_{4.1}: There is a significant difference between the Language and Speech Development of the subjects in the control and experimental groups.

Hypothesis 5: Cognitive Development

The null hypothesis (H_0) and alternative hypothesis (H_1) for the significance of Cognitive Development concepts, comparing control and experimental groups:

H_{5.0}: There is no significant difference between the Cognitive Development of the subjects in the control and experimental groups.

H_{5.1}: There is a significant difference between the Cognitive Development of the subjects in the control and experimental groups.

Hypothesis 6: Visual Perceptual Skills

The null hypothesis (H_0) and alternative hypothesis (H_1) for the significance of Visual Perceptual Skills concepts, comparing control and experimental groups:

H_{6.0}: There is no significant difference between the Visual Perceptual Skills of the subjects in the control and experimental groups.

H_{6.1}: There is a significant difference between the Visual Perceptual Skills of the subjects in the control and experimental groups.

7.3 ANALYSIS OF THE DATA

The following analysis of the data was employed:

1. Single variable descriptive statistics (mean, standard deviation and frequency distributions) give insight into the pre- and post-intervention scores.
2. The reliability of the scores for the pre-test and post-test procedures was determined by item analysis comprising the calculation of Cronbach's coefficient alpha (McMillan *et al.*, 2006: p54, p185-186).

3. T-tests were carried out, in order to determine the level of statistical significance of the differences between the control and experimental groups, as well as to compare the two groups' mean scores.
4. The level of statistical significance of the study was determined by the p-level or level of probability (McMillan *et al.*, 2006: p292). A critical value at the five-percent level of significance ($p \leq .05$) was required for statistical significance.
5. The practical significance was assessed, and a conclusion was determined 'by an effect size statistic', which then indicates whether the research would be practically important and would contain useful information, which could impact on current policy or ways of life.
(<http://www.utexas.edu/academic/ctl/assessment/iar/glossary.php#p,09/09/13>). If the results show statistical significance, then practical significance is achieved, according to Cohen's D, where statistical tests related to the mean value fall above the interpretation levels.
6. The level of improvement in the scores, as a result of the intervention programme was tested by conducting Analysis of Covariance, using the statistical software package program Statistica – with treatment of the grouping variant and the pre-test score, as well as the covariant (McMillan *et al.*, 2006: p165).

When significance is mentioned, it implies that the result is both statistically significant ($p < .05$) and practically significant (Cohen's $d > 0.20$ or Cramér's V is greater than the critical value for the relevant degrees of freedom).

7.4 RELIABILITY OF THE SCORES DERIVED FROM THE INSTRUMENT

Reliability refers to the consistency in the uniformity of an experiment. It suggests that the same thing could be reproduced by different researchers under similar conditions, and they would obtain the same results (McMillan *et al.*, 2006: p130, 188, 198). If the instrument does not show much error, then it is reliable. If the instrument has a considerable amount of error, it is seen as being unreliable.

The instrument used in the pre- and the post-test to assess the subjects' areas of development focused on five primary aspects; Physical Motor Development, Social-Emotional

Development, Language and Speech Development, Cognitive Development and Visual Perceptual Skills, all of which consisted of sub-sections. The internal reliability and the consistency of the scores derived from this instrument were tested, using Cronbach's alpha coefficient. The threshold value for Cronbach's alpha is generally regarded as the minimum value indicating adequate internal consistency (reliability) is 0.70.

(<http://vault.hanover.edu/~altermattw/methods/R/reliability/reliability-2.html>, 10/9/13). This means that all the scores in a study should be more than 0.70.

In this study, only the pre-test Visual-Perception with a score of 0.69 was marginally below the threshold. The rest of the pre-test scores showed predominantly high levels of reliability, with scores ranging between 0.75 and 0.87, while the post-test scores ranged between 0.87 and 0.92, all of which were above the threshold. These results can be regarded as adequate proof of the reliability of the scores derived from the instrument in this study. It is however, clear that the results in the post-test show better consistency than the results in the pre-test. This could be as a result of the children being more familiar with the assessor, as well as the exposure to the programme and to effective stimulation.

Figure 7.1 is a graphical representation of the alpha scores used to test the reliability of scores derived from the instrument for each aspect of development, namely: Physical-Motor, Social-Emotional, Language, Cognitive, Visual Perceptual and Total Child Development in the pre-test and post-test procedures.

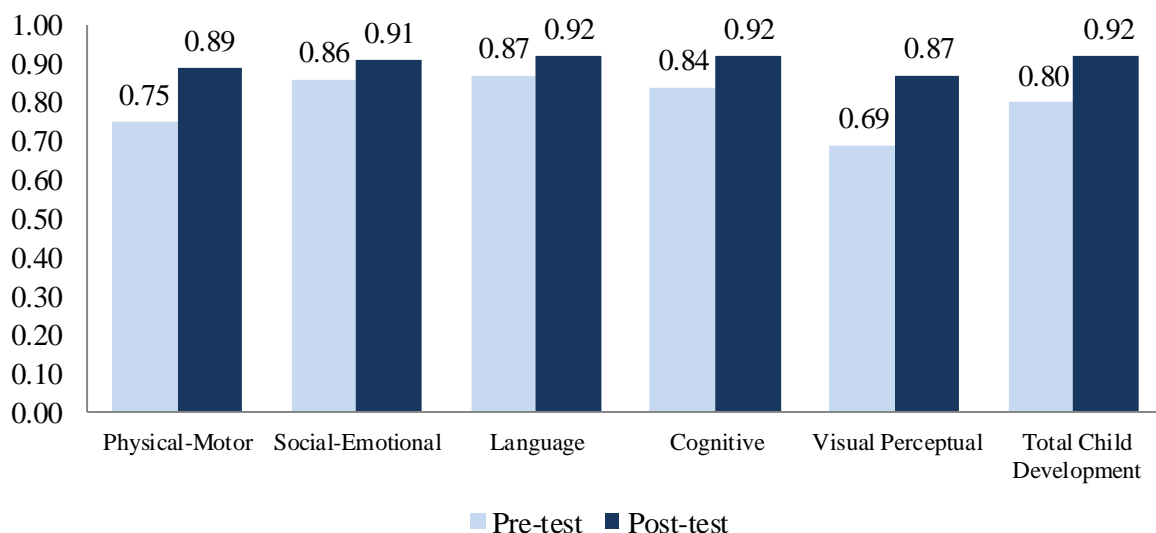


Figure 7.1 Cronbach's alpha values for the scores of the instrument used, representing internal reliability

The minimum score obtained in the pre-test was 0.69 (Visual Perception), and the maximum score was 0.86 (Social-Emotional Development). The minimum score obtained in the post-test was 0.87 (Visual Perception) and the maximum score was 0.92 (Language and Cognitive Development). The results in the post-test were more consistent.

7.5 FREQUENCY DISTRIBUTIONS FOR PRE-TEST AND POST-TEST SCORES

A frequency distribution represents the number of scores in each of the several ranges of values (<http://davidmlane.com/hyperstat/A26308.html>, 22/10/09). Frequency distributions were calculated on all the results from pre-tests and post-tests performed on all 648 subjects. The frequency distribution of the scores for the control group and the experimental groups during the pre-test and post-test scores are represented in this section.

The subjects were scored in percentages, based on their work in each element assessed. The following formula was used to convert subjects' responses $x_1, x_2 \dots x_k$ to the k items on a five-point Likert scale with 1 = Poor to 5 = Excellent to an average percentage score:

$$Score = 25 \left[\left(\frac{\sum_1^k x_i}{k} \right) - 1 \right]$$

The categories for the score percentages are as follows:

- [0 to 20)** Starting at 0 until (but not including) 20 – Poor
- [20 to 40)** From (and including) 20 until (but not including) 40 – Below average
- [40 to 60]** From (and including) 40 until (and including) 60 – Average
- (60 to 80]** From (but not including) 60, until (and including) 80 – Above average
- (80 to 100]** From (but not including) 80, until and including) 100 – Excellent

Subjects were assessed in each of the five domains of development, namely: Physical-Motor Development, Social-Emotional Development, Language and Speech Development, Cognitive Development and Visual Perception. The frequency distribution in each of the domains is presented and discussed – for both the control and the experimental groups for the pre-test and the post-test.

7.5.1 PHYSICAL-MOTOR DEVELOPMENT

A Chi² Test of Independence and Cramér's V statistic were implemented, in order to assess whether the distribution of scores obtained in each domain showed any significant difference in the pre-test between the Control and the Experimental Groups.

7.5.1.1 Pre-Test Scores in Experimental and Control Groups for Physical-Motor Development

The frequency distributions of the Experimental and Control groups are depicted in Table 7.1 with the difference between the groups found to be significant [Chi²(d.f. = 4, n = 648) = 19.65; p = .001; V = 0.17 Small].

Table 7.1 Frequency Distribution of Pre-test scores for Physical-Motor Development

Physical-Motor Development Pre-Test Scores						
	Experimental Group		Control Group		Total	
[0 to 20)	6	2%	6	2%	12	2%
[20 to 40)	57	15%	80	29%	137	21%
[40 to 60]	209	56%	139	50%	348	54%
(60 to 80]	93	25%	50	18%	143	22%
(80 to 100]	6	2%	2	1%	8	1%
Total	371	100%	277	100%	648	100%

The range [40 to 60] was the most frequent range overall in the Experimental group (56%), as well as the Control group (50%). As many as 27% of the total scores in the experimental group were 60% or above, while only 19% of the control group scored above 60% for Physical-Motor Development. A total of 79% of the control group scores were between 20% and 60%, while 71% of the experimental group's scores fell in this same bracket for Physical-Motor Development.

Figure 7.2 represents the total frequency distribution (%) of scores for the Experimental group and the Control group in the pre-test for Physical-Motor Development. It is clear that

the scores in the Control group and the Experimental group have a similar distribution in ranges, with 73% of the Experimental group scores falling in the [0 to 60] range and 81% of the Control group scores in the same range. Only 27% of the total scores for the Experimental group were in the (60 to 100] range, and 19% in the Control group.

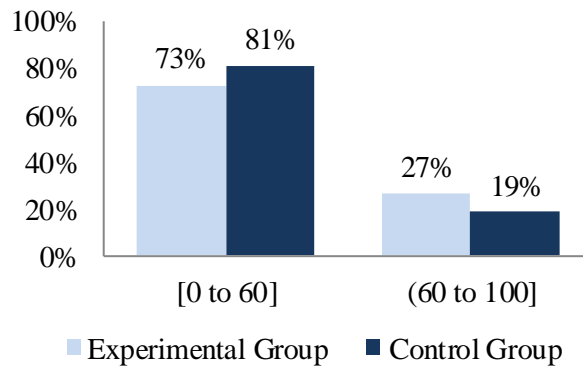


Figure 7.2 Total frequency distribution for Physical-Motor Development in Experimental and Control groups during the pre-test

7.5.1.2 Post-Test Scores in Experimental and Control Groups for Physical-Motor Development

The frequency distributions of the Experimental and Control groups are depicted in Table 7.2, with the difference between the groups found to be significant [$\chi^2(d.f. = 4, n = 648) = 186.08; p < .0005; V = 0.54$ Large].

Table 7.2 Frequency Distribution of Post-test scores for Physical-Motor Development

Physical-Motor Development Post-Test Scores						
	Experimental Group		Control Group		Total	
[0 to 20)	0	0%	5	2%	5	1%
[20 to 40)	2	1%	56	20%	58	9%
[40 to 60]	54	15%	90	32%	144	22%
(60 to 80]	158	43%	114	41%	272	42%
(80 to 100]	157	42%	12	4%	169	26%
Total	371	100%	277	100%	648	100%

The range [60 to 80] was the most frequent range overall in the Experimental group (43%), as well as the Control group (41%). As many as 85% of the total scores in the Experimental group were 61% or above, while only 45% of the Control group scored in the same bracket for Physical-Motor Development. Only 16% of the Experimental group scored between 0 and 60%, while 54% of the control group scored in the [0 to 60] range.

Figure 7.3 represents the total frequency distribution (%) of scores for the Experimental group and the Control group in the post-test for Physical-Motor Development. It is clear that the Control group scores were distributed through all the ranges evenly (54% in the [0 to 60] range and 45% in the (60 to 100] range). The Experimental group, however, reflects a great improvement, with 16% of the scores falling in the [0 to 60] category and 85% in the [60 to 100] range.

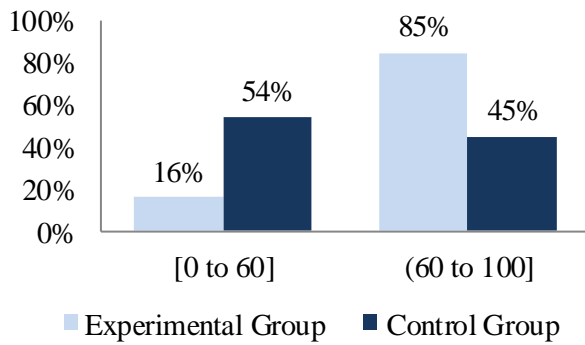


Figure 7.3 Total frequency distribution in Control group during the post-test

7.5.1.3 Difference between pre- and post-test scores for Physical-Motor Development

The frequencies of the difference between the pre-test and post-test scores of the Control and the Experimental groups were determined and are represented in Table 7.3.

A Chi² Test of Independence was implemented and used to assess the difference in scores obtained in the pre-test and the post-test in the Control and the Experimental Groups, [Chi² (df = 4, n = 648) = 84.89; p < .0005; V = 0.36 Medium]. The difference in scores was calculated by subtracting the results of the pre-test from those of the post-test.

Subjects were scored in percentage, based on their work in each element assessed. The range categories are presented as follows:

- [-100 to 0)** Starting at -100 until (but not including) 0
- [0 to 10)** From (and including) 0 until (but not including) 10
- [10 to 20]** From (and including) 10 until (and including) 20
- (20 to 40]** From (and not including) 20, until (and including) 40
- (40 to 100]** From (and not including) 40, until and including) 100

Table 7.3 Frequency distribution Post-test minus Pre-test differences for Physical Development

Frequency Distribution Difference: Physical Development						
	Experimental Group		Control Group		Total	
[-100 to 0)	30	8%	87	31%	117	18%
[0 to 10)	47	13%	57	21%	104	16%
[10 to 20]	88	24%	55	20%	143	22%
(20 to 40]	147	40%	64	23%	211	33%
(40 to 100]	59	16%	14	5%	73	11%
Total	371	100%	277	100%	648	100%

The frequency distribution of the differences between the pre-test and post-test scores of the Experimental Group and the Control Group were determined; and they are represented in Table 7.3. The difference in scores was calculated by subtracting the results of the pre-test scores from those of the post-test. These differences were found to be significant [χ^2 (df = 4, n = 648) = 84.89; $p < .0005$; $V = 0.36$ Medium].

The greatest difference in the frequency distribution was by 40% in the (20 to 40) range in the Experimental Group. The difference in frequency distribution was 31% in the range (-100 to 0) in the Control Group. A 45% difference in the frequency distribution was evident in the [-100 to 20] range in the Experimental group; while a 72% difference in frequency distribution was evident in the same range in the Control group. There was a 56% difference in frequency distribution in the [20 to 100] range for the Experimental group; and only 28% in the Control group.

Figure 7.4 represents the total frequency distribution (%) of scores for the Experimental group and the Control group in the post-test for Physical-Motor Development.

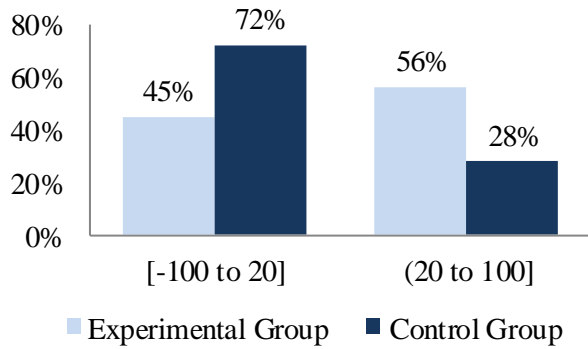


Figure 7.4 Total frequency distribution (%) of scores for the Experimental group and the Control group in the post-test

7.5.2 SOCIAL-EMOTIONAL DEVELOPMENT

A Chi² Test of Independence and Cramér's V statistic were implemented, in order to assess whether the distribution of scores obtained in each domain showed any significant difference in the pre-test between the Control and the Experimental Groups.

7.5.2.1 Pre-Test Scores in Experimental and Control Groups for Social-Emotional Development

The frequency distributions of the Experimental and Control groups are depicted in Table 7.4, with the difference between the groups found to be significant (Chi² [d.f. = 4, n = 648] = 103.00; $p < .0005$; $V = 0.40$ Medium).

Table 7.4 Frequency Distribution of Pre-test scores for Social-Emotional Development

Social-Emotional Development Pre-Test Scores						
	Experimental Group		Control Group		Total	
[0 to 20)	27	7%	58	21%	85	13%
[20 to 40)	103	28%	145	52%	248	38%
[40 to 60]	167	45%	65	23%	232	36%
(60 to 80]	68	18%	9	4%	77	12%
(80 to 100]	6	2%	0	0%	6	1%
Total	371	100%	277	100%	648	100%

The range [40 to 60] was the most frequent range overall in the Experimental group (45%); and the [20 to 40] was the most frequent range in the Control Group (52%). Only 20% of the total scores in the Experimental group were 61% or above; while only 3% of the control group scored above 61% for Social-Emotional Development. A total of 80% of the Experimental Group scores were between 0% and 60%; while 96% of the Control group's scores fell in this same bracket for Social-Emotional Development in the pre-test.

Figure 7.5 represents the total frequency distribution (%) of scores for the Experimental group and the Control group in the pre-test for Social-Emotional Development. It is clear that the scores in the Control group and the Experimental group have a similar distribution in ranges, with 80% of the Experimental group scores falling in the [0 to 60] range and 96% of the Control group scores falling in the same range. As few as 27% of the total scores for the Experimental group were in the [60 to 100] range, and 4% in the Control group.

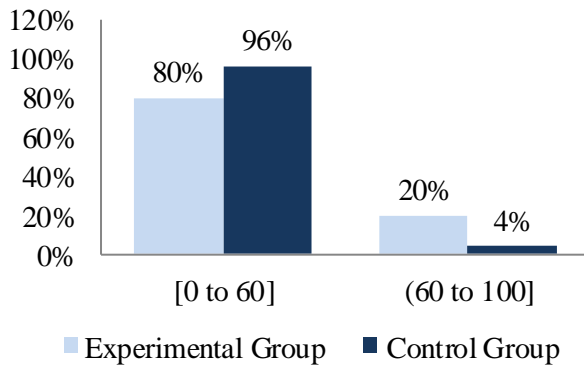


Figure 7.5 Total frequency distribution for Social-Emotional Development in experimental and control groups during the pre-test

7.5.2.2. Post-Test Scores in Experimental and Control Groups for Social-Emotional Development

The frequency distributions of the Experimental and Control groups are depicted in Table 7.5, with the difference between the groups found to be significant [χ^2 (d.f. = 4, n = 648) = 195.47; $p < .0005$; $V = 0.55$ Large].

Table 7.5 Frequency Distribution of Post-test scores for Social-Emotional Development

Social-Emotional Development Post-Test Scores						
	Experimental Group		Control Group		Total	
[0 to 20)	1	0%	10	4%	11	2%
[20 to 40)	15	4%	96	35%	111	17%
[40 to 60]	73	20%	96	35%	169	26%
(60 to 80]	138	37%	60	22%	198	31%
(80 to 100]	144	39%	15	4%	159	25%
Total	371	100%	277	100%	648	100%

The range [80 to 100] was the most frequent range overall in the Experimental group (39%), and the ranges [20 to 40] and [40 to 60] each had a frequency of 35% in the Control group. A total of 76% of the scores in the Experimental group were 61% or above; while only 26% of the Control group scored in the same bracket for Social-Emotional Development. Only 24% of the Experimental group scored between 0 and 60%; while 74% of the control group scored in the [0 to 60] range.

Figure 7.6 represents the total frequency distribution (%) of scores for the Experimental group and the Control group in the post-test for Social-Emotional Development. It is clear that the Control group scores were distributed with 74% of the scores being in the [0 to 60] range, and 27% of the scores in the [60 to 100] range. The Experimental group, however, reflects great improvement – with 24% of the scores falling in the [0 to 60] category, and 76% being in the [60 to 100] range.

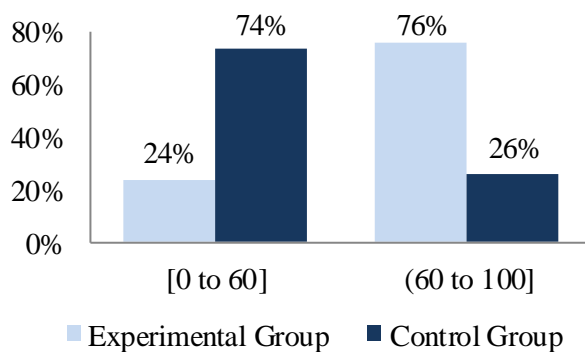


Figure 7.6 Total frequency distribution in control group during the post-test

7.5.2.3 Difference between pre- and post-test scores for Social-Emotional Development

The frequencies of the difference between the pre-test and post-test scores of the Control and Experimental groups were determined, and are represented in Table 5.6.

A Chi² Test of Independence was implemented and used to assess the difference in scores obtained in the pre-test and the post-test in the Control and the Experimental Groups, [Chi² (df = 4, n = 648) = 47.40; p < 0.0005; V = 0.27 Small]. The difference in scores was calculated by subtracting the results of the pre-test from those of the post test.

The subjects were scored in percentages, based on their work in each element assessed. The range categories are presented as follows:

- [-100 to 0)** Starting at -100 until (but not including) 0
- [0 to 10)** From (and including) 0 until (but not including) 10
- [10 to 20]** From (and including) 10 until (and including) 20
- (20 to 40]** From (and not including) 20, until (and including) 40
- (40 to 100]** From (and not including) 40, until and including) 100

Table 7.6 Frequency distribution Post-test minus Pre-test differences for Social-Emotional Development

Frequency Distribution Difference: Social-Emotional Development						
	Experimental Group		Control Group		Total	
[-100 to 0)	18	5%	56	20%	74	11%
[0 to 10)	49	13%	45	17%	94	15%
[10 to 20]	90	24%	69	25%	159	25%
(20 to 40]	128	35%	73	26%	201	31%
(40 to 100]	86	23%	34	12%	120	19%
Total	371	100%	277	100%	648	100%

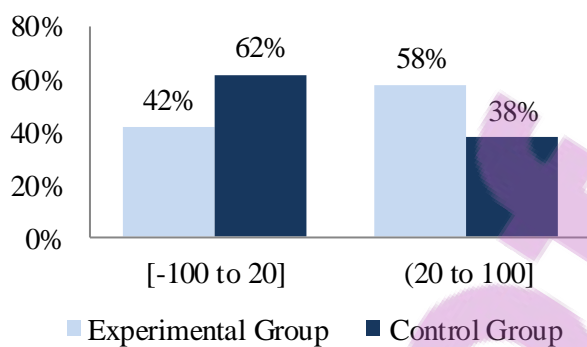
The frequency distribution of the differences between the pre-test and post-test scores of the Experimental Group and the Control Group were determined; and they are presented in Table 5.9. The difference in scores was calculated by subtracting the results of the pre-test scores from those of the post-test. These differences were found to be significant [χ^2 (d.f. = 4, n = 648) = 47.40; $p < .0005$; $V = 0.27$ Small].

The greatest difference in the frequency distribution was by 35% in the (20 to 40) range in the Experimental Group. The greatest difference in frequency distribution was 26% in the

range (20 to 40) in the Control Group. A 42% difference in the frequency distribution was evident in the [-100 to 20] range in the Experimental group; while there was a 62% difference in frequency distribution in the same range in the Control group. A 58% difference in frequency distribution was evident in the [20 to 100] range for the Experimental group, but only 38% in the Control group.

Figure 7.7 represents the total frequency distribution (%) of scores for the Experimental group and the Control group in the post-test for Social-Emotional Development.

Figure 7.7 Total frequency distribution (%) of scores for the Experimental group and the Control group in the post-test



7.5.3 LANGUAGE AND SPEECH DEVELOPMENT

A Chi² Test of Independence and Cramér's V statistic were implemented to assess whether the distribution of scores obtained in each domain showed significant difference in the pre-test between the Control and the Experimental Groups.

7.5.3.1 Pre-Test Scores in Experimental and Control Groups for Language and Speech Development

The frequency distributions of the Experimental and Control groups are depicted in Table 7.7, with the difference between the groups found to be significant [Chi² (df = 4, n = 648) = 44.15; p < 0.0005; V = 0.26 Small].

Table 7.7 Frequency Distribution of Pre-test scores for Language and Speech Development

Language and Speech Development Pre-Test Scores						
	Experimental Group		Control Group		Total	
[0 to 20)	8	2%	20	7%	28	4%
[20 to 40)	123	33%	138	50%	261	40%
[40 to 60]	148	40%	68	25%	216	33%
(60 to 80]	85	23%	37	13%	122	19%
(80 to 100]	7	2%	14	5%	21	3%
Total	371	100%	277	100%	648	100%

The range [40 to 60] was the most frequent range overall in the Experimental group (40%) and the range [20 to 40] was the most frequent range in the Control group (50%). A mere 25% of the total scores in the Experimental group were 61% or above; while only 18% of the Control group scored above 61% for Language and Speech Development. As many as 82% of the Control group scores were between 0% and 60%; while 75% of the Experimental group's scores fell in this same bracket for Language and Speech Development.

Figure 7.8 represents the total frequency distribution (%) of scores for the Experimental group and the Control group in the pre-test for Language and Speech Development. It is clear that the scores in the Control group and the Experimental group have a similar distribution in ranges, with 75% of the Experimental group scores falling in the [0 to 60] range and 82% of the Control group scores falling in the same range. Only 25% of the total scores for the Experimental group were in the [60 to 100] range and 18% in the Control group.

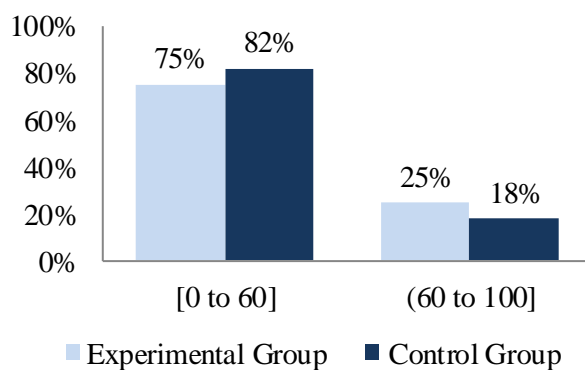


Figure 7.8 Total frequency distribution for Language and Speech Development in Experimental and Control groups during the pre-test

7.5.1.2 Post-Test Scores in Experimental and Control Groups for Language and Speech Development

The frequency distributions of the Experimental and Control groups are depicted in Table 7.8, with the difference between the groups found to be significant [χ^2 ($df = 4$, $n = 648$) = 262.04; $p < 0.0005$; $V = 0.64$ Large].

Table 7.8 Frequency Distribution of Post-test scores for Language and Speech Development

Language and Speech Development Post-Test Scores						
	Experimental Group		Control Group		Total	
[0 to 20)	1	0%	7	3%	8	1%
[20 to 40)	8	2%	129	47%	137	21%
[40 to 60]	45	13%	65	23%	110	17%
(60 to 80]	178	48%	59	21%	237	37%
(80 to 100]	139	37%	17	6%	156	24%
Total	371	100%	277	100%	648	100%

The range [60 to 80] was the most frequent range overall in the Experimental group (48%) and the range [20 to 40] was the most frequent range in the Control group (47%). A total of 85% of all the scores in the Experimental group were 61% or above; while only 27% of the Control group scored in the same bracket for Language and Speech Development. A mere 15% of the Experimental group scored between 0 and 60%; while 73% of the Control group scored in the [0 to 60] range.

Figure 7.9 represents the total frequency distribution (%) of scores for the Experimental group and the Control group in the post-test for Speech and Language Development. It is clear that the Control group scores were primarily in the [0 to 60] range, with 73% frequency and 27% frequency in the [60 to 100] range. The Experimental group, however, reflects a great improvement, with 15% of the scores falling in the [0 to 60] category, and 85% in the [60 to 100] range.

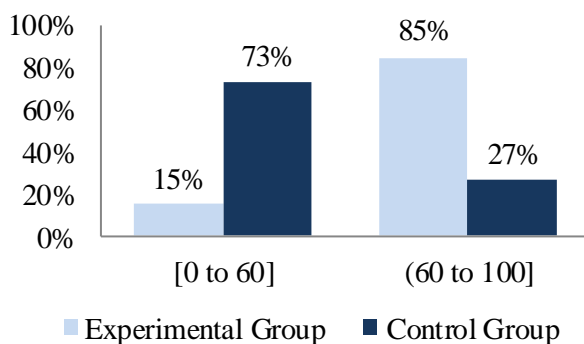


Figure 7.9 Total frequency distribution in control group during the post-test

7.5.1.3 Difference between pre- and post-test scores for Language and Speech Development

The frequencies of the difference between the pre-test and post-test scores of the control and experimental groups were determined and are presented in Table 7.9.

A Chi² Test of Independence was implemented, and used to assess the difference in scores obtained in the pre-test and the post-test in the Control and the Experimental Groups, [Chi² (df = 4, n = 648) = 84.89; p < 0.0005; V = 0.36 Medium]. The difference in scores was calculated by subtracting the results of the pre-test from those of the post-test.

The Subjects were scored in percentages, based on their work in each element assessed. The range categories are presented as follows:

- [-100 to 0)** Starting at -100 until (but not including) 0
- [0 to 10)** From (and including) 0 until (but not including) 10
- [10 to 20]** From (and including) 10 until (and including) 20
- (20 to 40]** From (and not including) 20, until (and including) 40
- (40 to 100]** From (and not including) 40, until and including) 100

Table 7.9 Frequency distribution Post-test minus Pre-test differences for Language and Speech Development

Frequency Distribution Difference: Language and Speech Development						
	Experimental Group		Control Group		Total	
[-100 to 0)	20	5%	103	37%	123	19%
[0 to 10)	40	11%	53	19%	93	14%
[10 to 20]	82	22%	59	21%	141	22%
(20 to 40]	152	41%	52	19%	204	31%
(40 to 100]	77	21%	10	4%	87	13%
Total	371	100%	277	100%	648	100%

The frequency distribution of the differences between the pre-test and post-test scores of the Experimental Group and the Control Group were determined and are presented in Table 7.9. The difference in scores was calculated by subtracting the results of the pre-test scores from those of the post-test. These differences were found to be significant [χ^2 (d.f. = 4, n = 648) = 151.75; $p < .0005$; $V = 0.48$ Medium].

The greatest difference in the frequency distribution was by 41% in the [20 to 40] range in the Experimental Group. The difference in frequency distribution was 37% in the range [-100

to 0] in the Control Group. There was a 38% difference in frequency distribution in the [-100 to 20] range in the Experimental group; while there was a 77% difference in frequency distribution in the same range in the Control group. As much as a 62% difference in frequency distribution was evident in the [20 to 100] range for the Experimental group, but only 23% in the Control group.

Figure 7.10 represents the total frequency distribution (%) of scores for the Experimental group and the Control group in the post-test for Language and Speech Development.

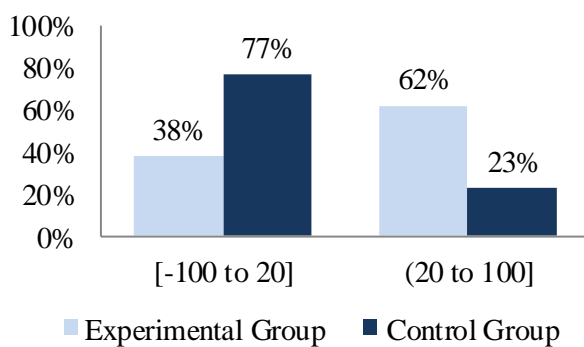


Figure 7.10 Total frequency distribution (%) of scores for the Experimental group and the Control group in the post-test

7.5.4 COGNITIVE DEVELOPMENT

A Chi² Test of Independence and Cramér’s V statistic were implemented to assess whether the distribution of scores obtained in each domain showed any significant difference in the pre-test between the Control and the Experimental Groups.

7.5.4.1 Pre-Test Scores in Experimental and Control Groups for Cognitive Development

The frequency distributions of the Experimental and Control groups are depicted in Table 7.10, with the difference between the groups found to be significant [Chi² (df = 4, n = 648) = 34.97; p < .0005; V = 0.23 Small].

Table 7.10 Frequency Distribution of Pre-test scores for Cognitive Development

Cognitive Development Pre-Test Scores						
	Experimental Group		Control Group		Total	
[0 to 20)	73	20%	41	15%	114	18%
[20 to 40)	128	35%	148	53%	276	43%
[40 to 60]	98	26%	69	25%	167	26%
(60 to 80]	64	17%	19	7%	83	13%
(80 to 100]	8	2%	0	0%	8	1%
Total	371	100%	277	100%	648	100%

The range [20 to 40] was the most frequent range overall in the Experimental group (33%), as well as the Control group (53%). Only 19% of the total scores in the Experimental group were 61%, or above; while only 7% of the Control group scored above 61% for Cognitive Development. As many as 93% of the Control group's scores were between 0% and 60%;, while 81% of the experimental group's scores fell in this same bracket for Cognitive Development.

Figure 7.11 represents the total frequency distribution (%) of scores for the Experimental group and the Control group in the pre-test for Cognitive Development. It is clear that the scores in the Control group and in the Experimental group have a similar distribution in ranges, with 81% of the Experimental group scores falling in the [0 to 60] range and 93% of the Control group scores falling in the same range. Only 19% of the total scores for the Experimental group were in the [60 to 100] range; and 7% were in the Control group.

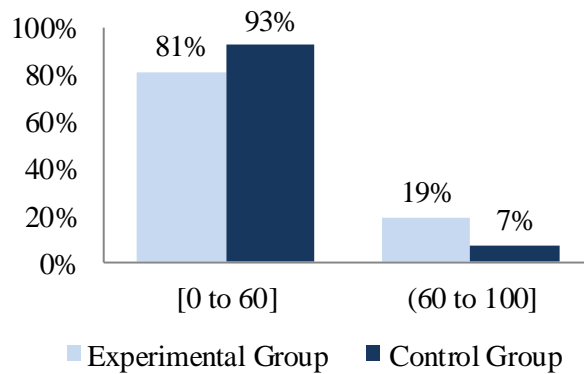


Figure 7.11 Total frequency distribution in control group during the pre-test

7.5.4.2 Post-Test Scores in Experimental and Control Groups for Cognitive Development

The frequency distributions of the Experimental and Control groups are depicted in Table 7.11, with the difference between the groups found to be significant [χ^2 (df = 4, n = 648) = 244.65; $p < .0005$; $V = 0.61$ Large].

Table 7.11 The Frequency Distribution of Post-test scores for Cognitive Development

Cognitive Development Post-Test Scores						
	Experimental Group		Control Group		Total	
[0 to 20)	11	3%	19	7%	30	5%
[20 to 40)	28	8%	154	56%	182	28%
[40 to 60]	60	16%	57	21%	117	18%
(60 to 80]	141	38%	36	13%	177	27%
(80 to 100]	131	35%	11	3%	142	22%
Total	371	100%	277	100%	648	100%

The range [60 to 80] was the most frequent range overall in the Experimental group (38%); while the range [20 to 40] was the most frequent range in the Control group (56%). A high of

73% of the total scores in the Experimental group were 61% or above; while only 16% of the Control group scored in the same bracket for Cognitive Development. A mere 27% of the Experimental group scored between 0 and 60%; while 84% of the control group scored in the [0 to 60] range.

Figure 7.12 represents the total frequency distribution (%) of scores for the Experimental group and the Control group in the post-test for Cognitive Development. It is clear that the Control group's scores were distributed throughout all the ranges (84% in the [0 to 60] range and 45% in the [60 to 100] range, with a greater frequency in the [0 to 60] range). The Experimental group, however, reflects a great improvement with 27% of the scores in the [0 to 60] category and 75% in the [60 to 100] range.

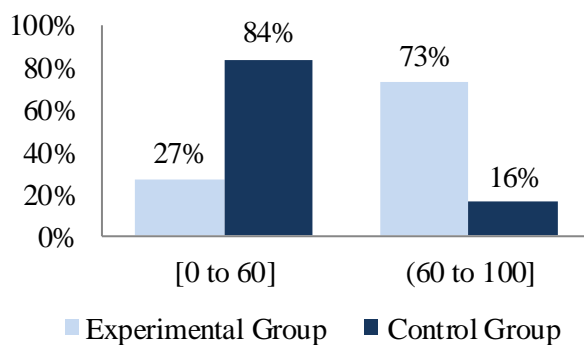


Figure 7.12 Total frequency distribution in control group during the post-test

7.5.4.3 Difference between pre- and post-test scores for Cognitive Development

The frequencies of the difference between the pre-test and post-test scores of the control and experimental groups were determined, and are presented in Table 7.12.

A Chi² Test of Independence was implemented; and this was used to assess the difference in scores obtained in the pre-test and the post-test in the Control and the Experimental Groups, [Chi² (df = 4, n = 648) = 84.89; p < .0005; V = 0.36 Medium]. The difference in scores was calculated by subtracting the results of the pre-test from those of the post-test.

The subjects were scored in percentages, based on their work in each element assessed. The range of categories is presented as follows:

- [-100 to 0)** Starting at -100 until (but not including) 0
- [0 to 10)** From (and including) 0 until (but not including) 10
- [10 to 20]** From (and including) 10 until (and including) 20
- (20 to 40]** From (and not including) 20, until (and including) 40
- (40 to 100]** From (and not including) 40, until and including) 100

Table 7.12 Frequency distribution Post-test minus Pre-test differences for Cognitive Development

Frequency Distribution Difference: Cognitive Development						
	Experimental Group		Control Group		Total	
[-100 to 0)	19	5%	110	40%	129	20%
[0 to 10)	44	12%	55	20%	99	15%
[10 to 20]	53	14%	40	14%	93	14%
(20 to 40]	147	40%	58	21%	205	32%
(40 to 100]	108	29%	14	5%	122	19%
Total	371	100%	277	100%	648	100%

The frequency distribution of the differences between the pre-test and post-test scores of the Experimental Group and the Control Group were determined; and they are presented in Table 7.12. The difference in scores was calculated by subtracting the results of the pre-test scores from those of the post-test. These differences were found to be significant [Chi^2 ($df = 4$, $n = 648$) = 168.20; $p < 0.0005$; $V = 0.51$ Large].

The greatest difference in the frequency distribution was by 40% in the (20 to 40) range in the Experimental Group. The difference in frequency distribution was 40% in the range [-100 to 0] in the Control Group. The 31% difference in frequency distribution was evident in the [-100 to 20] range in the Experimental group, while a 74% difference in frequency distribution

was evident in the same range in the Control group. And a 69% difference in frequency distribution was evident in the [20 to 100] range for the Experimental group; and only 26% in the Control group.

Figure 7.13 presents the total frequency distribution (%) of scores for the Experimental group and the Control group in the post-test for Cognitive Development.

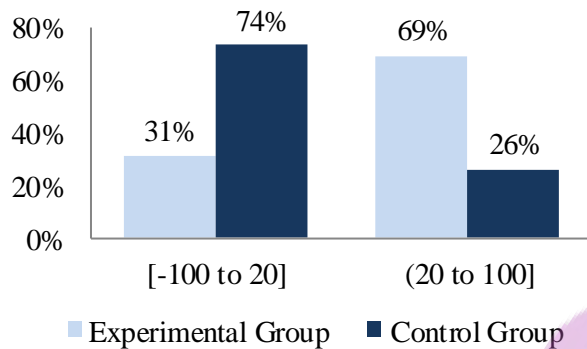


Figure 7.13 Total frequency distribution (%) of scores for the Experimental group and the Control group in the post-test

7.5.5 VISUAL PERCEPTUAL SKILLS

A Chi² Test of Independence and Cramér's V statistic were implemented to assess whether the distribution of scores obtained in each domain showed any significant difference in the pre-test between the Control and the Experimental Groups.

7.5.5.1 Pre-Test Scores in Experimental and Control Groups for Visual Perceptual Skills

The frequency distributions of the Experimental and Control groups are depicted in Table 7.13, with the difference between the groups found to be significant [Chi² (df = 4, n = 648) = 48.26; p < 0.0005; V = 0.27 Small].

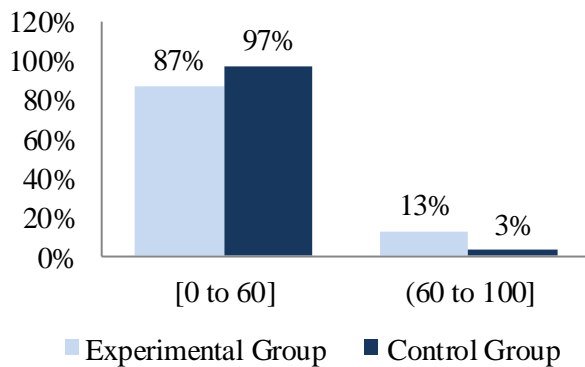
Table 7.13 Frequency Distribution of Pre-test scores for Visual Perceptual Development

Visual Perceptual Skills Pre-Test Scores						
	Experimental Group		Control Group		Total	
[0 to 20]	98	26%	51	18%	149	23%
[20 to 40)	119	32%	157	57%	276	43%
[40 to 60]	107	29%	61	22%	168	26%
[60 to 80]	41	11%	8	3%	49	8%
[80 to 100]	6	2%	0	0%	6	1%
Total	371	100%	277	100%	648	100%

The range [20 to 40] was the most frequent range overall in the Experimental group (32%), as well as the Control group (57%). Only 13% of the total scores in the Experimental group were 61% or above; while only 3% of the Control group scored above 61% for Visual Perceptual Skills. A total of 97% of the Control group's scores were between 0% and 60%; while 87% of the Experimental group's scores fell in this same bracket for Visual Perceptual Skills.

Figure 7.14 represents the total frequency distribution (%) of scores for the Experimental group and the Control group in the pre-test for Visual Perceptual Skills. It is clear that the scores in the Control group and the Experimental group have a similar distribution in range, with 87% of the Experimental group scores falling in the [0 to 60] range and 97% of the Control group scores falling in the same range. Only 13% of the total scores for the Experimental group were in the [60 to 100] range and 3% were in the Control group.

Figure 7.14 Total frequency distribution for Visual Perceptual Skills in experimental and control groups during the pre-test



7.5.5.2 Post-Test Scores in Experimental and Control Groups for Visual Perceptual Skills

The frequency distributions of the Experimental and Control groups are depicted in Table 7.14, with the difference between the groups found to be significant [χ^2 (df = 4, n = 648) = 275.48; $p < 0.0005$; $V = 0.65$ Large].

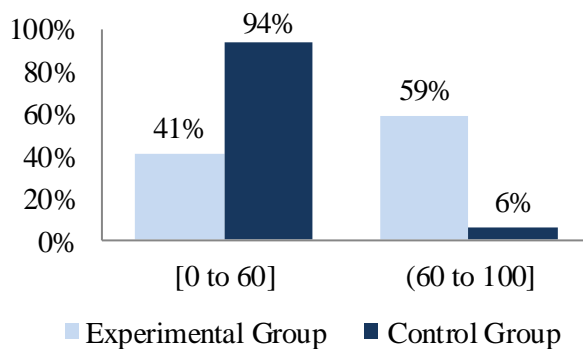
Table 7.14 Frequency Distribution of Post-test scores for Visual Perceptual Development

Visual Perceptual Skills Post-Test Scores						
	Experimental Group		Control Group		Total	
[0 to 20)	9	2%	55	20%	64	10%
[20 to 40)	39	11%	148	53%	187	29%
[40 to 60]	105	28%	56	21%	161	25%
(60 to 80]	132	36%	17	6%	149	23%
(80 to 100]	86	23%	1	0%	87	13%
Total	371	100%	277	100%	648	100%

The range (60 to 80] was the most frequent range overall in the Experimental group (36%) and the range [20 to 40] was the most frequent range in the Control group (53%). As many as 59% of the total scores in the Experimental group were 61% or above; while only 6% of the Control group scored in the same bracket for Visual Perceptual Skills. Only 41% of the Experimental group scored between 0 and 60%; while 94% of the Control group scored in the [0 to 60] range.

Figure 7.15 represents the total frequency distribution (%) of scores for the Experimental group and the Control group in the post-test for Visual Perceptual Skills. It is clear that the Experimental group scores were predominantly reflected in the [0 to 60] range, with 94% being the frequency in this range. The Experimental group, however, reflects great improvement, with 41% of the scores in the [0 to 60] category and 59% in the (60 to 100] range.

Figure 7.15 Total frequency distribution in control group during the post-test



7.5.5.3 Difference between Pre-Test and Post-Test Scores in Experimental and Control Groups for Visual Perceptual Skills

The frequencies of the difference between the pre-test and post-test scores of the control and experimental groups were determined and are presented in Table 7.15.

A Chi² Test of Independence was implemented and used to assess the difference in scores obtained in the pre-test and the post-test in the Control and the Experimental Groups, [Chi² (df = 4, n = 648) = 84.89; p < 0.0005; V = 0.36 Medium]. The difference in scores was calculated by subtracting the results of the pre-test from those of the post test.

The subjects were scored in percentages, based on their work in each element assessed. The range categories are presented as follows:

- [-100 to 0)** Starting at -100 until (but not including) 0
- [0 to 10)** From (and including) 0 until (but not including) 10
- [10 to 20]** From (and including) 10 until (and including) 20
- (20 to 40]** From (and not including) 20, until (and including) 40
- (40 to 100]** From (and not including) 40, until and including) 100

Table 7.15 Frequency distribution of Post-test minus Pre-test differences for Visual Perceptual Development

Frequency Distribution Difference: Visual Perceptual Skills						
	Experimental Group		Control Group		Total	
[-100 to 0)	32	9%	130	47%	162	25%
[0 to 10)	56	15%	57	21%	113	17%
[10 to 20]	55	15%	30	11%	85	13%
(20 to 40]	104	28%	46	17%	150	23%
(40 to 100]	124	33%	14	4%	138	21%
Total	371	100%	277	100%	648	100%

The frequency distribution of the differences between the pre-test and post-test scores of the Experimental Group and the Control Group were determined, and are presented in Table 7.15. The difference in scores was calculated by subtracting the results of the pre-test scores from those of the post-test. These differences were found to be significant [χ^2 (df = 4, n = 648) = 166.62; $p < 0.0005$; $V = 0.51$ Large].

The greatest difference in the frequency distribution was by 33% in the (40 to 100) range in the Experimental Group. The difference in frequency distribution was 47% in the range [-100

to 0] in the Control Group. A 39% difference in the frequency distribution was evident in the [-100 to 20] range in the Experimental group; while a 79% difference in frequency distribution was evident in the same range in the Control group. A 61% difference in frequency distribution was evident in the (20 to 100) range for the Experimental group, but only 21% in the Control group.

Figure 7.16 represents the total frequency distribution (%) of scores for the Experimental group and the Control group in the post-test for Visual Perceptual Skills.

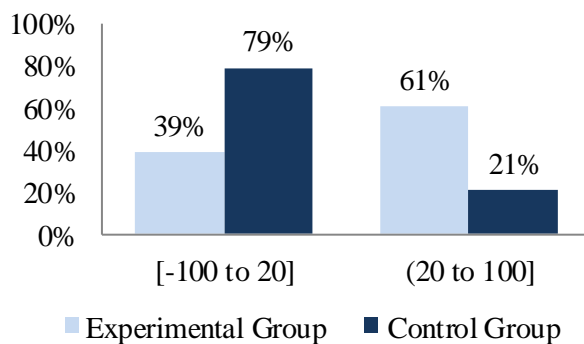


Figure 7.16 Total frequency distribution (%) of scores for the Experimental group and the Control group in the post-test

7.5.6 TOTAL CHILD DEVELOPMENT

A Chi² Test of Independence and Cramér's V statistic were implemented, to assess whether the distribution of scores obtained in each domain showed any significant difference in the pre-test between the Control and the Experimental Groups.

7.5.6.1 Pre-Test Scores in Experimental and Control Groups for Total Child Development

The frequency distributions of the Experimental and Control groups are depicted in Table 7.16, with the difference between the groups found to be significant [Chi² (d.f. = 4, n = 648) = 46.35; p < 0.0005; V = 0.27 Small]*.

Table 7.16 Frequency Distribution of Pre-test scores for Total Child Development

Total Child Development Pre-Test Scores						
	Experimental Group		Control Group		Total	
[0 to 20]	9	4%	13	5%	27	4%
[20 to 40)	133	36%	166	60%	299	46%
[40 to 60]	180	49%	92	33%	272	42%
[60 to 80]	42	10%	6	2%	48	7%
[80 to 100]	2	1%	0	0%	2	0%
Total	371	100%	277	100%	648	100%

* 1 added to all observed frequencies to comply with Cochran's rules

The range [40 to 60] was the most frequent range overall in the Experimental group (49%); and the [20 to 40] range was most common in the Control group (60%). A mere 11% of the total scores in the Experimental group were 61% or above; while only 2% of the Control group scored above 61% for Total Child Development. A grand total of 98% of the Control group scores were between 0% and 60%; while 89% of the experimental group's scores fell in this same bracket for Total Child Development.

Figure 7.17 presents the total frequency distribution (%) of scores for the Experimental group and the Control group in the pre-test for Total Child Development. It is clear that scores in the Control group and the Experimental group have a similar distribution in ranges with 89% of the Experimental group scores falling in the [0 to 60] range and 98% of the Control group scores falling in the same range. Only 11% of the total scores for the Experimental group were in the [60 to 100] range and 2% in the Control group.

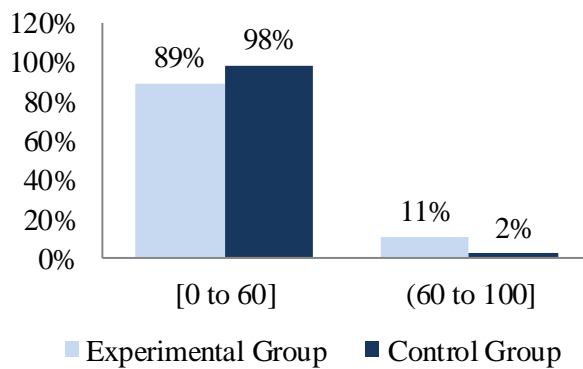


Figure 7.17 The Total frequency distribution for Total Child Development in the Experimental and Control groups during the pre-test

7.5.6.2 Post-Test Scores in Experimental and Control Groups for Total Child Development

The frequency distributions of the Experimental and Control groups are depicted in Table 7.17 with the difference between the groups found to be significant [χ^2 (df = 4, n = 648) = 287.88; $p < 0.0005$; $V = 0.67$ Large].

Table 7.17 Frequency Distribution of Post-test scores for Total Child Development

Total Child Development Skills Post-Test Scores						
	Experimental Group		Control Group		Total	
[0 to 20]	0	0%	3	1%	3	0%
[20 to 40)	12	3%	130	47%	142	22%
[40 to 60]	68	18%	98	35%	166	26%
[60 to 80]	172	46%	44	16%	216	33%
[80 to 100]	119	33%	2	1%	121	19%
Total	371	100%	277	100%	648	100%

The range (60 to 80) was the most frequent range overall in the Experimental group (46%) and the range [20 to 40] was the most frequent range in the Control group (47%). As many as 79% of the total scores in the Experimental group were 61% or above; while only 17% of the Control group scored in the same bracket for Total Child Development. Only 21% of the Control group scored in the same bracket for Total Child Development. Only 21% of the Experimental group scored between 0 and 60%; while 83% of the control group scored in the [0 to 60] range.

Figure 7.18 represents the total frequency distribution (%) of scores for the Experimental group and the Control group in the post-test for Total Child Development. It is clear that the Control group scores were distributed with a greater reflection in the [0 to 60] range with 83% and 17% in the (60 to 100) range. The Experimental group reflects a great improvement, with 21% of the scores in the [0 to 60] category and 79% in the [60 to 100] range.

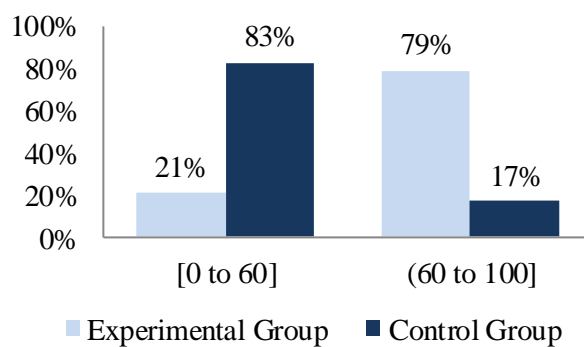


Figure 7.18 Total frequency distribution in control group during the post-test

7.5.6.3 Difference between Pre-Test and Post-Test Scores in Experimental and Control Groups for Total Child Development

The frequencies of the difference between the pre-test and post-test scores of the control and experimental groups were determined, and are presented in Table 7.18.

A Chi² Test of Independence was implemented and used to assess the difference in scores obtained in the pre-test and the post-test in the Control and the Experimental Groups, [Chi² (df = 4, n = 648) = 84.89; p < 0.0005; V = 0.36 Medium]. The difference in scores was calculated by subtracting the results of the pre-test from those of the post-test.

The subjects were scored in percentage, based on their work in each element assessed. The range categories are presented as follows:

- [-100 to 0)** Starting at -100 until (but not including) 0
- [0 to 10)** From (and including) 0 until (but not including) 10
- [10 to 20]** From (and including) 10 until (and including) 20
- (20 to 40]** From (and not including) 20, until (and including) 40
- (40 to 100]** From (and not including) 40, until and including) 100

Table 7.18 Frequency distribution Post-test minus Pre-test differences for Total Child Development

Frequency Distribution Difference: Total Child Development						
	Experimental Group		Control Group		Total	
[-100 to 0)	8	2%	72	26%	80	12%
[0 to 10)	33	9%	98	35%	131	20%
[10 to 20]	83	22%	56	20%	139	21%
(20 to 40]	167	45%	49	18%	216	33%
(40 to 100]	80	22%	2	1%	82	13%
Total	371	100%	277	100%	648	100%

The frequency distribution of the differences between the pre-test and post-test scores of the Experimental Group and the Control Group were determined and are presented in Table 7.18. The difference in scores was calculated by subtracting the results of the pre-test scores from those of the post-test. These differences were found to be significant [χ^2 (df = 4, n = 648) = 218.31; $p < 0.0005$; $V = 0.58$ Large].

The greatest difference in the frequency distribution was by 45% in the (20 to 40) range in the Experimental Group. The difference in frequency distribution was 35% in the range [0 to

10] range in the Control Group. Only a 33% difference in frequency distribution was evident in the [-100 to 20] range in the Experimental group; while there was a 81% difference in frequency distribution in the same range in the Control group. A 67% difference in frequency distribution was evident in the [20 to 100] range for the Experimental group, but only 19% in the Control group.

Figure 7.19 presents the total frequency distribution (%) of scores for the Experimental group and the Control group in the post-test for Total Child Development.

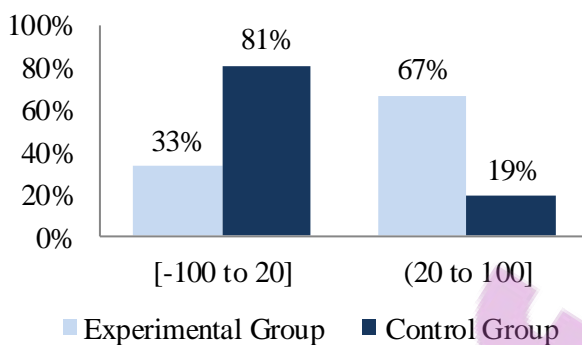


Figure 7.19 Total frequency distribution (%) of scores for the Experimental group and the Control group in the post-test

7.6 DESCRIPTIVE AND INFERENCEAL STATISTICS BASED ON MEAN SCORES

Single variable statistics, including the mean scores and the standard deviations, are presented in Table 7.19. These statistics could be used to provide greater insight into the pre-test and post-test intervention scores of the control and experimental groups, as well as a comparison of the difference in results between the pre-test and the post-test mean scores in the control and experimental groups.

According to <http://sociology.about.com/od/Statistics/a/Descriptive-inferential-statistics.htm> (9/9/13), '*inferential statistics is concerned with making predictions or inferences about a population from observations and analyses of a sample*'. This means that the researcher

should be able to make generalized deductions based on intervention with a sample in the same representative group.

The mean score, according to McMillan *et al.* (2006: p158), is the arithmetic average of a set of scores in a specific category. Every score is used to determine the mean score, by adding the scores, then dividing the total by the number of scores.

T-tests for independent groups were conducted to determine the level of statistical significance of the difference between the control and experimental group mean scores. In order to test the significance of the study, the t-test statistic, as well as the corresponding degrees-of-freedom needed to be presented, in order to determine the significance level of the results. The degrees of freedom as a statistical concept is calculated by adding the sample size of the control group to that of the experimental group, and then subtracting 2 from the total. In this case the degrees of freedom (*df*) is 646.

Cohen's *d* statistic is defined as a scale, which represents the standardised difference between two means. In the case of this study, the two means compared are the difference in the control group and that of the experimental group (<http://power.education.uconn.edu/glossary.htm>, 30/11/09; <http://www.sportsci.org/resource/stats/effectmag.html>, 30/11/09).

Table 7.19 A description of Cohen's correlations
(<http://www.sportsci.org/resource/stats/effectmag.html>, 30/11/09)

Correlation Coefficient	Descriptor
0.0 - 0.20	Not significant
0.20 – 0.50	Small difference
0.50 – 0.80	Medium difference
0.80 - infinity	Large difference

In order to determine an unbiased comparison between pre- and post-test scores in the Experimental and Control groups, an analysis of covariance was conducted, using the statistical software package programme Statistica. The treatment was the grouping variant and the pre-test was the covariant, with the null-hypothesis assumption that the two groups

(control and experimental) have equal post-test scores with parallel slopes of improvement. These results are presented in Table 7.20.

Table 7.20 reflects a number of descriptive statistics – including the mean score, the standard deviation, the post-test minus the pre-test difference, the t-test score, the degrees of freedom, the p-value and Cohen’s d statistics. These will be discussed systematically.

Table 7.20 Comparison of control group and experimental groups’ pre-test and post-test mean and difference scores

t-Test Comparison between Control (n = 277) and Experimental (n = 371) Groups								
PRE-TEST								
Variable	Group	Mean	Std. Dev.	Difference Exp. Con.	t	d.f	p	d
Physical-Motor Development	Experimental	52.47	13.92	5.45	4.72	646	<.0005	0.38
	Control	47.02	15.31					
Social-Emotional Development	Experimental	45.31	17.60	13.99	10.89	646	<.0005	0.87
	Control	31.32	14.04					
Language and Speech Development	Experimental	47.97	16.13	6.10	4.47	646	<.0005	0.36
	Control	41.88	18.44					
Cognitive Development	Experimental	38.89	20.73	3.84	2.56	646	.011	0.20
	Control	35.04	16.09					
Visual Perceptual Skills	Experimental	34.98	20.89	4.34	2.95	646	.033	0.23
	Control	30.64	14.75					
Total	Experimental	43.93	13.95	6.75	6.73	646	<.0005	0.53
	Control	37.18	10.60					
POST-TEST								
Variable	Experimental / Control	Mean	Standard Deviation	Difference	t	df	p	d
Physical-	Experimental	76.39	13.81	21.53	16.69	646	<.0005	1.32

Motor Development	Control	54.86	19.04					Large
Social-Emotional Development	Experimental	72.33	16.64	24.69	17.45	646	<.0005	1.39
	Control	47.64	19.27					Large
Language and Speech Development	Experimental	74.13	13.80	27.51	21.28	646	<.0005	1.69
	Control	46.62	19.12					Large
Cognitive Development	Experimental	69.13	20.35	28.56	18.50	646	<.0005	1.47
	Control	40.57	18.16					Large
Visual Perceptual Skills	Experimental	63.94	20.43	32.29	21.55	646	<.0005	1.71
	Control	31.65	16.54					Large
Total	Experimental	71.18	13.92	26.92	24.13	646	<.0005	1.92
	Control	44.27	14.21					Large
POST-TEST MINUS PRE-TEST DIFFERENCE								
Variable	Experimental / Control	Mean	Standard Deviation	Difference	t	d.f	p	d
Physical-Motor Development	Experimental	23.91	18.02	16.08	10.47	646	<.0005	0.83
	Control	7.83	20.98					Large
Social-Emotional Development	Experimental	27.02	19.13	10.70	6.64	646	<.0005	0.53
	Control	16.33	21.73					Medium
Language and Speech Development	Experimental	26.16	17.39	21.42	14.60	646	<.0005	1.16
	Control	4.74	19.83					Large
Cognitive Development	Experimental	30.24	21.40	24.71	14.82	646	<.0005	1.18
	Control	5.53	20.45					Large
Visual Perceptual Skills	Experimental	28.95	24.89	27.95	15.08	646	<.0005	1.20
	Control	1.01	21.05					Large
Total	Experimental	27.26	15.40	20.17	17.20	646	<.0005	1.37
	Control	7.09	13.87					Large

Table 7.20 shows that in the Control group the total mean score during the post-test (44.27) was more than that of the pre-test (37.18). The difference in total means was 7.09. In the Experimental group, the total mean score during the post-test (71.18) was more than that of the pre-test (43.93). The difference in total means was 27.26. According to Cohen's D, there was a small significance between the Control and the Experimental group's pre-test scores, excluding the two elements, which show a medium and a large difference in pre-test scores. It is, therefore, important to determine the results by determining an Analysis of covariance.

Figure 7.20 reflects the difference in mean scores between the pre- and the post-test in the Experimental and the Control groups. It is clear that the Experimental group's mean score was substantially higher than that of the Control group.

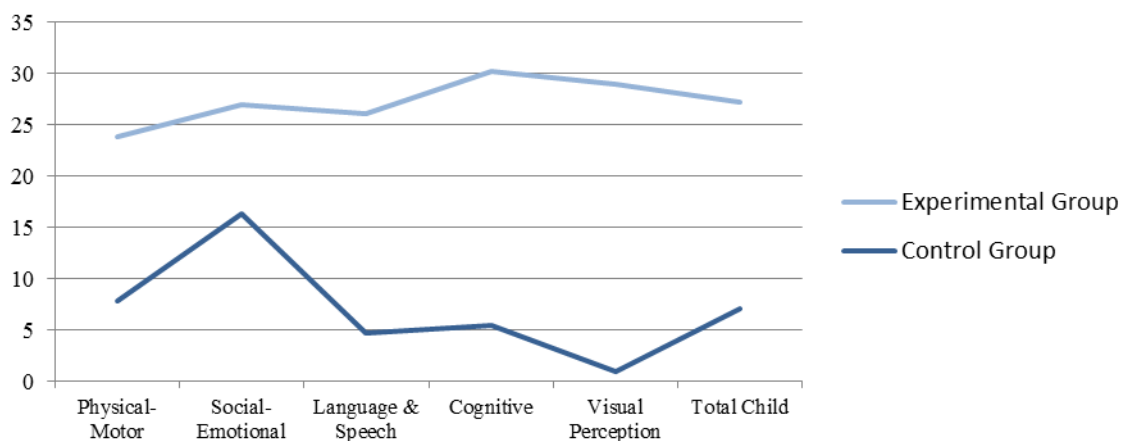


Figure 7.20 Difference in mean scores between the pre- and the post-test

Based on Table 7.20, it is clear that the difference between the pre- and post- test scores in the Experimental group was significantly larger than that of the Control group. As presented in Table 7.20, according to Cohen's d, it is evident that in four of the five domains of development, namely Physical-Motor, Language and Speech, Cognitive and Visual Perceptual Skills, they reflect a large difference in scores between pre-test and post-test. Social-Emotional Development reflects a medium difference in scores, according to Cohen's D. Possible explanations of this will be discussed in Chapter 8. The post-tests show a large difference between the Control group and the Experimental groups' scores, which provides clear evidence of the effect of the intervention programme.

7.6.1 Difference between Experimental Group and Control Group Mean Scores

In Table 7.20, t-statistic scores are presented, focusing on Physical-Motor Development (10.47), Social-Emotional Development (6.64), Language and Speech (14.60), Cognitive Development (14.82) and Visual Perceptual Skills (15.08), as well as the mean scores for each aspect thereof.

As a result, from the scores in Table 7.20 it is clear that the null hypotheses, $H_{0,1} - H_{0,6}$, can be rejected at the Alpha = 0.05 level; and that the hypotheses, $H_{1,1} - H_{1,6}$, can be accepted. This means that there are significant differences in all the observations.

7.6.2 Cohen's d statistic

Table 7.20 comprises a presentation of the means, and the description of the difference between the two means. The Cohen's d score presented in Table 7.20 shows a total score of Total Child Development (Physical-Motor, Social-Emotional, Language & Speech, Cognitive and Visual Perceptual Skills) equals 1.37. This score depicts a large practical significance, as presented in Table 7.20, resulting in the comparison between the control and the experimental group's overall score to be significantly large.

7.6.3 Analysis of covariance

From the results reported earlier, it is clear that the level of improvement in the scores of the experimental group was large; while the control group's level of improvement was minimal. Small and Medium differences in scores were reflected in the pre-test; while large differences were reflected in all domains for the post-test between the Control and the Experimental groups. The Experimental group scores were significantly better than the Control group scores; this shows signs of significance, according to Cohen's d; and this can be described as a large differences between group scores, with the exception of one element, where there was a medium difference between scores.

Because there was an initial difference in scores between the Control Group and the Experimental group, this is not conclusive proof that there is a significant difference overall. As a result, an analysis of covariance was conducted.

Table 7.21 reflects proof that the intervention programme did in fact have the desired effect, even though the two groups did not start off equal with all the treatment effects (ExpCon) p-values being highly significant (< 0.0005).

Table 7.21 Analysis of covariance results for each domain of development

		Sum of Squares	Degrees of Freedom	Mean Sum of Errors	F	p
Physical-Motor Development Post-Test	Intercept	146293.8	1	146293.8	579.70	<.0005
	Pre-Score	7818.6	1	7818.6	30.98	<.0005
	ExpCon	62706.2	1	62706.2	248.48	<.0005
	Error	162772.1	645	252.4		
Social-Emotional Development Post-Test	Intercept	221884.8	1	221884.8	762.76	<.0005
	Pre-Score	17341.5	1	17341.5	59.61	<.0005
	ExpCon	54705.2	1	54705.2	188.06	<.0005
	Error	187627.6	645	290.9		
Language & Speech Development Post-Test	Intercept	156741.7	1	156741.7	696.51	<.0005
	Pre-Score	26140.2	1	26140.2	116.16	<.0005
	ExpCon	98102.2	1	98102.2	435.94	<.0005
	Error	145149.7	645	225.0		
Cognitive Development Post-Test	Intercept	209395.6	1	209395.6	658.43	<.0005
	Pre-Score	39034.1	1	39034.1	122.74	<.0005
	ExpCon	114249.2	1	114249.2	359.25	<.0005
	Error	205124.9	645	318.0		
Visual-Perceptual Development Post-Test	Intercept	253549.1	1	253549.1	747.82	<.0005
	Pre-Score	11253.1	1	11253.1	33.19	<.0005
	ExpCon	153397.5	1	153397.5	452.43	<.0005
	Error	218687.0	645	339.0		
Total Child Development Post-Test	Intercept	91660.0	1	91660.02	547.46	<.0005
	Pre-Score	19435.3	1	19435.30	116.08	<.0005
	ExpCon	85261.5	1	85261.50	509.24	<.0005
	Error	107991.1	645	167.43		

All the results expressed in Table 7.21 were highly significant; and this implies that for each domain, there is a significant base score (because intercept $p < 0.05$); the post-test scores are related to the pre-test scores (because pre-score $p < 0.05$); and there is a significant treatment effect (because ExpCon $p < 0.05$). There is a significant difference between the Control and the Experimental group at the post-test level, where all the domains are significant.

Table 7.22 displays the unbiased comparison reflecting the performance of the Control group and the Experimental group at the post-test level. This reflects that, once adjustments had been made to account for the differences between the Experimental and Control Groups' pre-scores), all Cohen's d scores for the difference between the Experimental and Control groups' mean scores for the various developmental domains were greater than the 0.8 threshold value – indicating thereby a large difference. It may thus be concluded that the mean post-test scores of the Experimental group were significantly greater than those of the Control group for all domains; and the aggregate construct with the between-group differences being all in the large category.

Table 7.22 Least-squares adjusted mean scores for the Experimental (n = 371) and Control (n =277) groups and related statistics

	Group	Mean	Std. Dev.	Difference	- 95%CI	+95%CI	Cohen's d
Physical-Motor Development Post-Test	Exp	75.83	16.00	20.23	74.20	77.46	1.26
	Con	55.60	16.04		53.71	57.50	
Social-Emotional Development Post-Test	Exp	70.42	17.71	20.21	68.61	72.22	1.13
	Con	50.21	17.93		48.09	52.33	
Language & Speech Development Post-Test	Exp	73.16	15.10	25.25	71.62	74.70	1.67
	Con	47.91	15.13		46.12	49.70	
Cognitive Development Post-Test	Exp	68.45	17.87	26.98	66.63	70.28	1.51
	Con	41.48	17.89		39.37	43.59	
Visual Perceptual Skills Post-Test	Exp	63.52	18.47	31.31	61.64	65.40	1.69
	Con	32.21	18.48		30.03	34.39	
Total Child Development Post-Test	Exp	69.93	13.13	23.99	68.59	71.27	1.82
	Con	45.95	13.20		44.39	47.50	

Figure 7.21 reflects a linear profile of the mean scores of the Control Group and the Experimental group.

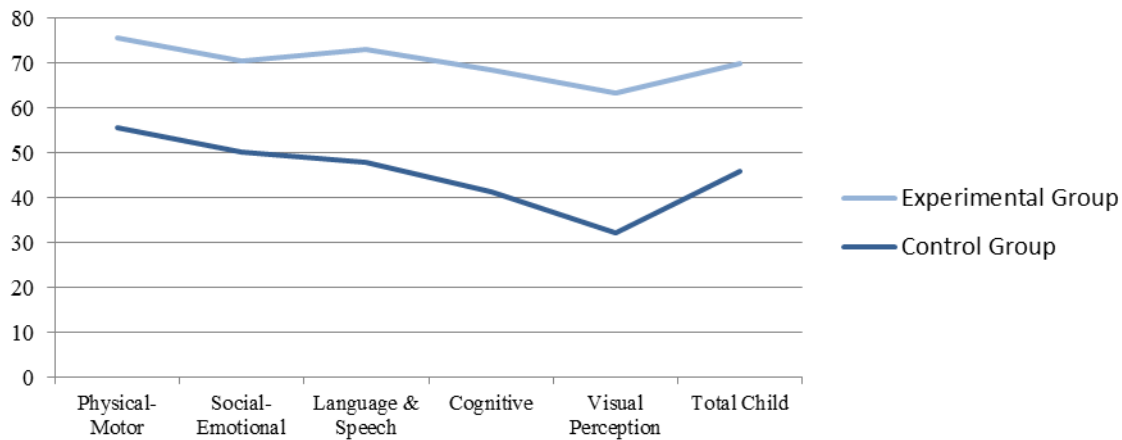


Figure 7.21 Adjusted difference in mean scores between the pre-test and the post-test

7.7 PRACTITIONER GROWTH

A number of findings were noted when analyzing the practitioner’s Portfolios of Evidence, the pre-and post-Knowledge Tests and through the reflection tool where practitioners were able to give feedback and their response to the intervention.

7.7.1 Portfolio of Evidence

Of the practitioners that underwent the 8-month Early Inspiration Training Programme, 100% competence was obtained. The practitioners were assessed against the 6 Unit Standards included in the Early Inspiration Training Programme, and in each case, practitioners reflected competence against a number of summative and formative, integrated and aligned assessments.

Portfolios of Evidence reflected a range of assessments based on the content taught. Activities were assessed by means of formative and summative activities which were practical and ensured that the teachers used the knowledge that they gain and involvement this in the classrooms, so as to ensure that the children benefit. A range of knowledge and skills were assessed in an integrated manner throughout the portfolio’s which ensured that the

teachers critically analyze their own teaching strategies, reflect on lessons taught and improve on their own intervention. This ties in with knowledge test questioning where practitioners discuss their approach to teaching and learning, their view of whose responsibility teaching children is (parent, teacher or both) and their view of themselves and the difference that they are making to their communities.

Through constant reflection, assessments, discussions, mentorship, support, and seeing growth in children, practitioners were able to reflect knowledge gained in their post-tests as well as in the Portfolios of Evidence where practitioners reflected knowledge gained.

Mentorship was a key component of the Early Inspiration Training Programme, and great support was received through the on-going contact with Early Inspiration staff in the teachers' mother tongue. This mentorship provided practitioners with a sense of belonging, it gave them extra knowledge and support in their classrooms, they ways that they implement the knowledge that was learned in the classroom, assessments and interactions with children, setting up the practitioners' classrooms, planning strategies and a deep knowledge understanding of key concepts discussed, including Numeracy, Literacy and Life-Skills.

7.7.2 Knowledge Test

Practitioners in both the control and the experimental groups engaged in a knowledge test which was used to gage initial knowledge in the field of early childhood development. This knowledge test reflected the practical implementation of teaching and learning with young children.

A vast increase in average score of the practitioners in the experimental group was evident, where the average score of practitioners from control group between pre- and post-assessment did not reflect improvement. The three open-ended questions posed in the knowledge test, focusing on the educator's theories and approach to teaching, reflected more insight and a deeper understanding of the child in post-assessment, as opposed to pre-assessment. Below is a response from one of the practitioners from the Experimental Group to the following question:

Pre Knowledge Test

Q. Explain what you enjoy most about working with young children.

A. 'A child is very funny and one comes to love them. I enjoy building puzzles or blocks with them and making castles with cards or some of the blocks, that's how we bond and learn as well. Whatever the teacher says or teach them goes. It doesn't matter what the parents say'.

Post Knowledge Test

Q. Explain what you enjoy most about working with young children.

A. 'Young children are the ideal people to work with as their brains are busy developing, they love learning through playing games and are so eager to ask questions and grow their knowledge. The excitement in children brings me so much joy. I love my job'.

7.7.3 On-Site Visits and Video's

Four on-site visits took place throughout the 8-month Early Inspiration Training Programme intervention. During this on-site visit the practitioners were expected to present and teach a typical lesson to the children in the class. This needed to include the teaching of a concept according to a theme, including a creative activity, movement or music. The lessons were assessed in the Portfolios of Evidence according to a rubric which included the following key elements:

- Practitioner
 - Approach
 - Professionalism
 - Organization
 - Classroom ethos
 - Use of language
 - Discipline in the class
- Intervention with children
 - Open-ended Questioning
 - Content of the lesson
 - Planning of the lesson
 - Structure to the lesson
 - Array of activities implemented
 - Subject matter knowledge
 - Integration within the lesson
- Children's response to the lesson
 - Maintained interest in the lesson

- Child involvement
- Child interest represented
- Children's understanding and learned knowledge

These lessons were recorded and the teachers were provided an opportunity to watch their recorded video's. This provided deep insight into their own understanding of their teaching philosophy and the broader idea of their intervention. Through allowing the practitioners to watch themselves teach lessons they were able to identify strengths and weaknesses and adjust their teaching strategies to be most beneficial to the children. Post-on-site visits were also recorded and these showed a reflection of great growth and development in terms of the practitioners' confidence, understanding of expectations and structure within classrooms. The practitioners' video's represented growth in terms of intervention focusing on key elements in the teaching and learning environment.

7.7.4 Practitioner feedback

Practitioners that underwent the 8-month Early Inspiration Training Programme provided feedback post intervention to share their experience of the training as well as the impact that it may or may not have made on their philosophy of teaching and interacting with young children. The responses from the practitioners were overwhelming and included some of the following:

- *The training has made me more confident when I am in front of my learners. I now know that I am teaching them the right things.*
- *The way the facilitator trained us made up pass on the knowledge to other people because the information was so good. We were also motivated to help our children. It was excellent.*
- *The course boosted my self-esteem!*
- *The course has been very fruitful, informative and very inspirational. It has opened my eyes and my knowledge.*
- *The course contains new, good, useful information and the activities were meaningful as well. It has helped me a lot. Thank you Early Inspiration.*
- *I learnt a lot about children; I learnt how to teach them, how to involve parents and how to interact with them.*

The Early Inspiration Training Programme has proven to be beneficial to the practitioners in the Experimental Group through providing thorough knowledge, skills, values and a sense of confidence as well as equipping practitioners with their own personal philosophy to teaching and understanding the effects that their intervention has in the long-run and the impact that they can make on children, families and communities.

7.8 SUMMARY

The aim of data analysis is for the researcher to determine whether the data provide the needed information, in order to achieve the goals and aims of the study (Koshy, 2005: p109). Single variable descriptive statistics (mean, standard deviation and frequency distributions) give insight into the pre-test and post-intervention scores. To assess the internal consistency and the reliability of the scores for the pre-test and post-tests, alpha coefficients for each were computed.

The internal consistency of the scores derived from the instrument was evaluated via Cronbach's alpha, using both the control and experimental group's pre-test and post-test scores. It is evident that the treatment had the required effect – with large differences discovered between the Experimental Group and the Control Group's post-scores.

Concluding remarks, together with some recommendations, will be discussed in Chapter 8.

CHAPTER 8

CONCLUSIONS AND RECOMMENDATIONS

8.1 INTRODUCTION

Children begin the process of learning from a very young age; and they move from one stage of cognitive development to the next, while they are constantly being stimulated by their environment and the happenings therein (Chapter 2.11: p18). *'Education is the most powerful weapon which you can use to change the world'* (Nelson Mandela, http://www.allgreatquotes.com/graduation_quotes.shtml, 02/09/13). Learning is an ongoing lesson in life, one with which we need to be equipping young children.

This study's aim was to provide scientific knowledge, and to gain a comprehensive understanding of the impact of the Early Inspiration Training Programme in early childhood settings in South Africa. The results of this study, in conjunction with others cited in previous chapters, suggest that the influence that quality cognitive intervention has on the development of young children is extensive.

In the literature study, as an integral part of the research and discussed in Chapters 2, 3 and 4, it was evident that ensuring scientific, credible, accurate research is imperative. According to Bryman (p1), *'Triangulation refers to the use of more than one approach to the investigation of a research question, in order to enhance confidence in the ensuing finding'*. For the purposes of this study, triangulation, a multi-method of research, ensuring the validity of research, was also enhanced by using multiple assessors in the field to gather and interpret the data (Investigator triangulation). A number of interpretations were used to analyse and make sense of the gathered data (Theoretical triangulation).

This ensured the significance of the study, as well as ensuring that scientific research was conducted with the utmost caution (Denzin [1970] in Bryman; p2).

The study set out to develop and assess the impact of an effective teacher-training programme, ensuring the advancement and improving of children's development in the early years. Through observing a number of early childhood centres in the underprivileged sector in the South African context, many day-care centres, crèche's, play schools, baby homes, Grade R schools and safe havens have been developed with the sole purpose of 'entertaining' or 'babysitting'

children; but because of a lack of teacher-education and skills training, a serious lack of an educational understanding of children's development and growth persists.

Gordon & Brown. (2008: p315) explain that untrained practitioners and parents are often unable to effectively stimulate children; and therefore, this inability impacts on development. In the South African context, it seems that many parents, care-givers and practitioners are unaware of the developmental levels and steps in the development of children; and thus, they are ill-equipped and unable to effectively stimulate and enhance their children's development.

The practitioners dealing directly with children have an incredibly important role in providing opportunities for children to learn and gain understanding of concepts.

The primary aim of this study was:

- To assess the effectiveness of the Early Inspiration Training Programme in early childhood centres in underprivileged sectors of South Africa.
- To test the validity and effectiveness of sending practitioners on the eight-month training and mentorship programme.
- To assess the growth and development in young children's development over the eight-month period, in order to examine the effects of the stimulation concepts in young children;
- To indicate how such concepts can be provided for in the early childhood centre.

Hypothesis 1: Intervention

The null hypothesis (H_0) and the alternative hypothesis (H_1) for the significance of intervention, comparing Control and Experimental groups:

H_{1,0}: There is no significant difference between the overall total development of the subjects in the control and experimental groups.

H_{1,1}: There is a significant difference between the overall total development of the subjects in the control and experimental groups.

The null hypothesis is rejected at the 0.1% level of significance. Therefore, there is a significant difference between the Total Child Development of the subjects in the control and in the experimental groups.

Hypothesis 2: Physical-Motor Development

The null hypothesis (H_0) and the alternative hypothesis (H_1) for the significance of the implementation of Physical-Motor Development concepts, comparing control and experimental groups:

H_{2.0}: There is no significant difference between the Physical-Motor Development of the subjects in the control and experimental groups.

H_{2.1}: There is a significant difference between the Physical-Motor Development of the subjects in the control and the experimental groups.

The null hypothesis is rejected at the 0.1% level of significance. Therefore, there is a significant difference between the Physical-Motor Development of the subjects in the control and experimental groups.

Hypothesis 3: Social-Emotional Development

The null hypothesis (H_0) and the alternative hypothesis (H_1) for the significance of the implementation of Social-Emotional Development concepts, comparing control and experimental groups:

H_{3.0}: There is no significant difference between the Social-Emotional Development of the subjects in the control and experimental groups.

H_{3.1}: There is a significant difference between the Social-Emotional Development of the subjects in the control and experimental groups.

The null hypothesis is rejected at the 0.1% level of significance. Therefore, there is a significant difference between the Social-Emotional Development of the subjects in the control and experimental groups.

Hypothesis 4: Language and Speech Development

The null hypothesis (H_0) and the alternative hypothesis (H_1) for the significance of the implementation of Language and Speech-Development concepts, comparing control and experimental groups:

H_{4.0}: There is no significant difference between the Language and Speech Development of the subjects in the control and experimental groups.

H_{4.1}: There is a significant difference between the Language and Speech Development of the subjects in the control and experimental groups.

The null hypothesis is rejected at the 0.1% level of significance. Therefore, there is a significant difference between the Language and Speech Development of the subjects in the control and experimental groups.

Hypothesis 5: Cognitive Development

The null hypothesis (H_0) and the alternative hypothesis (H_1) for the significance of the implementation of Cognitive-Development concepts, comparing control and experimental groups:

H_{5.0}: There is no significant difference between the Cognitive Development of the subjects in the control and experimental groups.

H_{5.1}: There is a significant difference between the Cognitive Development of the subjects in the control and experimental groups.

The null hypothesis is rejected at the 0.1% level of significance. Therefore, there is a significant difference between the Cognitive Development of the subjects in the control and experimental groups.

Hypothesis 6: Visual Perceptual Skills

The null hypothesis (H_0) and the alternative hypothesis (H_1) for the significance of the implementation of Visual Perceptual Skills concepts, comparing control and experimental groups:

$H_{6.0}$: There is no significant difference between the Visual Perceptual Skills of the subjects in the control and experimental groups.

$H_{6.1}$: There is a significant difference between the Visual Perceptual Skills of the subjects in the control and experimental groups.

The null hypothesis is rejected at the 0.1% level of significance. Therefore, there is a significant difference between the Visual Perceptual Development of the subjects in the control and experimental groups.

All null hypotheses were rejected at the 0.1% level of significance, meaning that there is a significant difference between all the elements of total child development in the control group and the experimental groups. This displays the effectiveness of the Early Inspiration Training Programme in early childhood centres in underprivileged sectors of South Africa, by comparison of the control-group scores with those of the experimental-group scores. The importance and effectiveness of sending practitioners on the eight-month training and mentorship programme is clear.

The level of growth in young children's development over the eight-month period was assessed, in order to examine the effects of the stimulation of concepts in young children. The development displayed in children whose teachers received additional skills and knowledge through the Early Inspiration Training Programme was substantially greater than that in the children whose teachers had not received any additional training and support.

The knowledge gained through attendance of the Early Inspiration Training Programme clearly provided teachers with a deep understanding of early childhood development and growth; but it also provided practitioners with practical tools to use in their early childhood centre. Many early childhood centres in the underprivileged schools in South Africa have few resources, no electricity, and no running water. Although practitioners may lack resources and infrastructure,

with the knowledge of early childhood development, a passion for children, together with a sense of empowerment and responsibility, practitioners can provide the concepts dealt with in Chapters 2 and 3 in their early childhood centre, ensuring that children grow and develop to their maximum potential.

Chapter 8 deals with an overview of the investigation, the findings and recommendations on the effects of the Early Inspiration Training Programme in early childhood centres in South Africa.

8.2 SUMMARY OF THE RESULTS

An eight-month intervention programme was developed, in order to examine the effects that effective practitioner training can have on children in underprivileged settings. Elements of development were dealt with in totality, including Physical-Motor Development, Social-Emotional Development, Language and Speech Development, Cognitive Development and Visual and Perceptual Skills. When teaching in the classroom situation, according to literature referenced in Chapter 4, and according to the South African Department of Basic Education, the focal areas of integrating the above domains of development are taught through Numeracy, Literacy and Life-Skills. The research provided confirmation on the effectiveness of the Early Inspiration Training Programme, reflecting the importance of stimulation in the early childhood years and the envisaged long-term effects of this stimulation. It was clear that the educators, primary care-givers, teachers and parents that were included in this study, become more aware of the importance of early childhood care and the long-term effects and their implications, thereby developing an understanding of the key concepts dealt with.

From the findings discussed in Chapter 7, it has become clear that the effects of early intervention and stimulation of developmental concepts, through the Early Inspiration Training Programme, are significantly beneficial to the young child. The results provide encouraging evidence on the viability of the Early Inspiration Training Programme and the growth in children's development – through practitioners receiving effective training and a deep understanding of Early Childhood Development.

From Table 5.22 (p175) it becomes clear that those subjects whose practitioners had received the Early Inspiration Training Programme (experimental group) consistently outperformed those whose practitioners had not received any additional training (the control group).

The results described indicate that:

- Practitioners benefitted personally from the intervention, their confidence and motivation was heightened and they seemed more driven and determined as they now had an understanding of their role.
- Children are in fact able to learn and develop numeracy and mathematical concepts, literacy and language development, general knowledge, and life skills development, preventing repetition of grades and school drop-out. This is only evident should children receive adequate and effective early intervention.
- Cognitive concepts can in fact be provided for in underprivileged early childhood settings should the children be exposed to developmentally appropriate interventions which will, in turn, prevent early drop-out rates and repetition of grades.
- Effective interventions implemented by teachers and parents can contribute towards enhancing children's mathematical, language, life skills and general knowledge ability. An understanding of the stimulation and development of cognitive abilities in the young child provides an understanding of the different developmental levels and methods of learning, as well as the ability of the young child to learn and develop abstract ideas and knowledge. It further adds to the body of knowledge with regard to what should be done by teachers and parents, in order to enhance the young child's development.

8.2.1 Reliability of instruments

Another aim of this investigation was to evaluate the methods of implementation, which assist the development of the cognitive concepts. The eight-month Early Inspiration Training Programme that was designed for this study proved to be reliable and effective. In Table 5.01 (p143), the reliability statistics for the pre-test and post-test scores are recorded. The results of subjects in the respective groups displayed scores which were consistent with one another. The increase of results in the experimental group in the course of the post-test was to be found in each domain, while the results of the control group remained similar, or worse, than those of the pre-test.

As a result of the significant difference in results of the experimental group's pre-test and post-test scores (Table 5.25: p180), it may be deduced that not only does intervention have a great effect on total child development, but that the method of implementation designed for the purposes of this study was effective in implementing an effective teacher-training programme, where learned concepts are implemented in the classroom, thereby ensuring the development and enhancement of cognitive concepts.

8.2.2 Effects of early cognitive intervention

Brody (Ed. Kyllonen, Roberts & Stankov, 2008: p71) justifies the teaching and learning process by stressing the importance of the development of intelligence: '*What is learned (self-evidently) depends on what is taught. Individuals with the same intelligence may acquire different levels of expertise and knowledge if they are taught in different ways*'.

In Table 5.25 (p180), it is clear that there was a significant difference between the scores of the Control group and the Experimental group's individual categories of Physical-Motor Development, Social-Emotional Development, Language and Speech Development, Cognitive Development and Visual Perceptual Skills.

T-tests for the independent groups were conducted, in order to determine the level of statistical significance of the difference between the control and experimental group's mean score. These t-statistics are represented in Table 5.22 (p175), where a total t-statistic of 17.20 with 646 *df*, is significant at $p \leq 0.001$ (0.1% level).

This suggests that the study is highly significant, and that the results would be evident in 99.9% of the cases. The null hypothesis is rejected at the 0.1% level of significance. Therefore, there is a significant difference between the Total Child Development of the subjects in the control and experimental groups.

In Table 5.25 (p180), it is clear that there is, in fact, a significant difference between the mean scores on Physical-Motor Development, Social-Emotional Development, Language and Speech Development, Cognitive Development and Visual Perceptual Skills, when comparing the control group with the experimental group. The practitioners of the experimental group took part in the eight-month intervention programme, which they then implemented in their

classrooms; and as a result, their total mean scores in the post-test were significantly higher than those of the control group.

Figure 5.3 (p146) represents the differences in the mean scores between the control group and the experimental group. Each concept of Physical-Motor Development was compared, and a significant increase in the mean scores in each concept was clearly evident.

Figure 5.8 (p154) represents the differences in mean scores between the control group and the experimental group. Each concept of Social-Emotional Development, together with a significant increase in the mean scores of each concept, was clearly evident.

Figure 5.10 (p158) represents the differences in the mean scores between the control group and the experimental Group. Each concept of Language and Speech Development, as well as a significant increase in the mean scores for each concept, was clearly evident.

Figure 5.13 (p163) represents the differences in the mean scores between the control group and the experimental Group. Each concept of Cognitive Development, together with a significant increase in the mean scores in each concept, was clearly evident.

Figure 5.16 (p168) represents the differences in the mean scores between the control group and the experimental Group. Each concept of Visual Perceptual Development, together with a significant increase in the mean scores in each concept, was clearly evident.

Figure 5.19 (p173) represents the differences in the mean scores between those of the control group and the experimental Group. Each concept of Total Child Development, and a significant increase in mean scores in each concept, was clearly evident.

Cohen's d statistic represented a similar result, where the comparison between the results of the two groups is infinite. Table 5.22 (p175) shows that the difference in results is extremely large, again stressing the positive effects of the Early Inspiration Training Programme. It is clear that the effects of the Early Inspiration Training Programme teaching strategies on early intervention and cognitive stimulation have positive effects on the development of young children.

It is clear from the results of this study that there is a great need for practitioner-training programmes implemented in the same manner as the Early Inspiration Training Programme, as they have clear positive results, not only on the practitioners, but on the children's development also.

8.3 CONCLUSIONS

In 99.9% of the cases of practitioners attending the Early Inspiration Training Programme, effective stimulation and development became evident in young children, representing positive results (Table 5.24: p179). This is an outstanding result, encouraging the development of intervention programmes for all domains of developmental concepts – from an early age, through effective practitioner-training programmes. Effective early intervention would enable young children to gain an understanding of the cognitive concepts from an early age. This could possibly prevent future barriers to learning resulting in a smaller number of children in schools struggling with the foundational concepts.

It is clear that there is a great demand in South Africa for effective skills-training programmes which focus on training practitioners working with children in the early years placing special focus the basic domains of development as well as providing them with a deep, yet practical, understanding of children's development, expectations that can be placed on children at different levels, and activities which can be implemented within the various age groups.

It may be assumed that with a decrease in the number of learners struggling with foundational concepts, the need for specialists, such as Occupational Therapists and Remedial Therapists should become substantially less; and more children from the underprivileged areas would be able to remain in the school system, thus reducing the number of children continuing the cycle of poverty, as represented in Chapter 4 (Figure 4.2).

Parents, teachers, social workers, therapists, extended family and siblings all play a vital role in the upbringing of children in today's society. These stakeholders all form part of an important hierarchy; and children's emotional, social, physical and intellectual advances will always need to be attended to (Chapter 4).

Based on the interpretations provided by the practitioners that received intervention on the 8-month Early Inspiration Training Programme, there is great benefit in being involved in a programme of this sort which includes elements of intervention, training, support, school visits, mentorship and assessment which carries weight and is accredited. Based on the feedback provided by practitioners, the intervention was meaningful and supported the practitioners not only in their knowledge, skill, ability to plan and implement lessons, but also in the practitioner's confidence and self-esteem.

8.4 RECOMMENDATIONS

8.4.1 Intervention programme

Effective practitioner-training programmes should be readily available to early childhood educators. Ideally, a programme like the Early Inspiration Training Programme, should be implemented, which would provide practitioners with a deep understanding of young children's development in totality, relating to the different stages of child growth.

A step-by-step understanding could be implemented, which focuses on the various developmental levels (Chapter 2), an understanding of how children's brains grow, and develop, enabling children to learn (Chapter 2), as well as the various aspects of children's development, according to the new South African CAPS curriculum, namely mathematics, literacy and life skills (Chapter 3), with their various sub-sections.

This Early Inspiration Training Programme, as well as an indication of the ways whereby concept development could be provided for in the classroom, should be explained to practitioners working in Early Childhood Centres. It is clear that the concepts discussed in Chapter 3 need to be provided for in Early Childhood Centres, as concept development has clearly proved to be crucial in the intervention programmes, as has been adequately demonstrated in this study.

Training Programmes endorsed by the Department of Education need to be aligned with CAPS training, and to provide a detailed understanding of early childhood development, ensuring that practitioners have the knowledge, skills, attitude and values needed to be an effective practitioner. From the reporting in the practitioners Portfolios of Evidence and in discussions

with the practitioners, the challenges that the practitioners face daily include, but are not limited to the following:

- Lack of parental involvement
- Lack of resources
- Poor management and administration of centres
- Early Childhood Centres are viewed as ‘babysitting services’ rather than education services
- Lack of knowledge on effective intervention in the early years
- Children with special needs are not accommodated
- Overcrowded classrooms
- Poor financial management (unable to pay staff, compromising the quality of teaching and learning)

As a result, training programmes need to include elements in their training, which would support practitioners with the management of an ECD Centre; by planning programmes, assessing children, having attendance registers, ensuring parent-teacher contact, good nutrition programmes, and a safe, loving environment, in order for children to grow and develop.

Based on the feedback provided by practitioners, the support and continuous contact that practitioners receive adds value to the knowledge component as practical, supportive intervention is provided. The mentorship component maintains the contact between practitioner and training organization, ensuring accountability and responsibility. Through this constant contact, the practitioners reap the benefits when identifying progress in children. This provides the practitioners with confidence and reassurance that the extra effort and hard work is part of a ‘bigger picture’ and is contributing considerably to the future of these young children.

Another recommendation would be for the government to secure funding for organizations, which offer *quality* teacher-training programmes, so as to support the Department of Education in the training and equipping of practitioners.

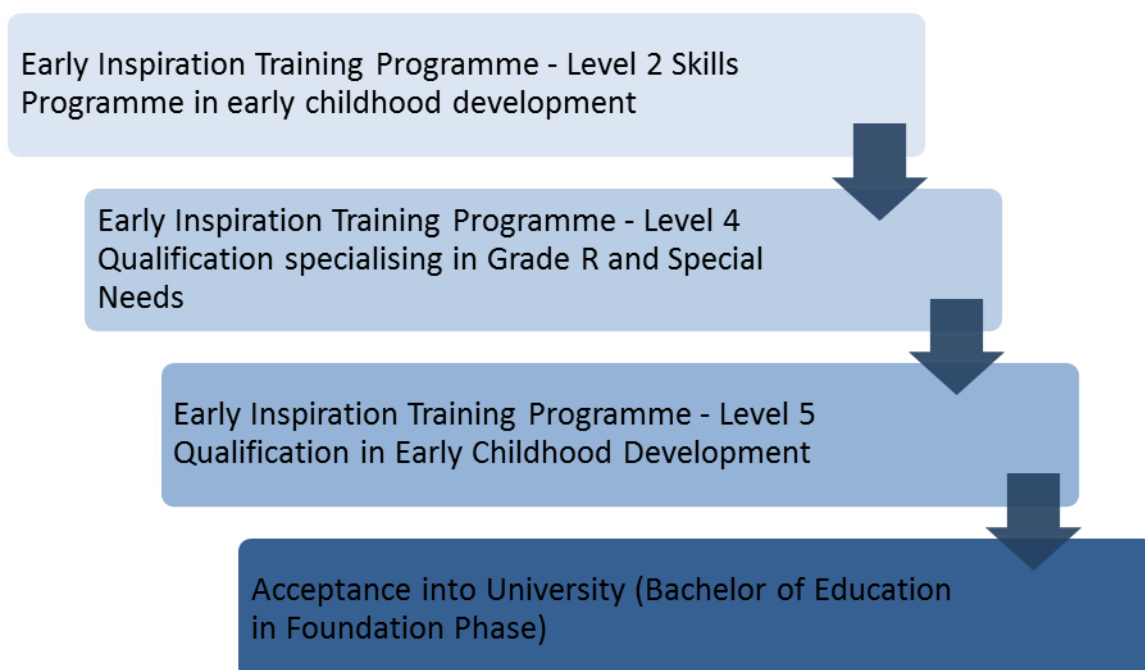
A long-term vision for South Africa – in terms of early childhood development – should be to make available an effective growth chart of development for practitioners. This ensures that

practitioners are life-long learners, continually growing and developing and ensuring maximum impact in their classrooms. A continuous process of teacher-training would ensure accountability; practitioners need to be producing children that are school-ready and achieving good results.

The long-term vision for Early Inspiration would be to provide a model of continuous development and growth, thereby enabling teachers to get to a high level of education and personal development. All practitioners trained at Early Inspiration need to begin on a Level 2 training programme (this is the training programme used for the purposes of this study). Once practitioners have received competence on Level 2, they should then proceed to a Level 4 qualification. Once the Level 4 Qualification has been achieved, practitioners would do a Level 5 Qualification in early childhood development. Once this has been achieved, they would be able to apply for acceptance at a local University to complete a Bachelor of Education (Foundation Phase) degree.

This vision is aligned not only to the provision of quality, trained teachers for the children of this generation, but also to empower and uplift the working class. The better trained a practitioner is, the higher the monthly remuneration would be. By providing high levels of skills training, we are educating and empowering the children – as well as the working-class generations. Figure 8.1 is a representation of the vision for Early Inspiration and the growth chart of development.

Figure 8.1 Early Inspiration Growth Chart of Development (for practitioners)



Another long-term recommendation could be to design a longitudinal study, to see whether these children retain the benefits of the intervention. This would be a longer study; and it could be influenced by a number of external factors, such as: the quality of future teachers, family environment, health, nutrition, abuse, neglect, educational influences, classroom situation, school situation, and suchlike.

8.5 RECOMMENDATIONS FOR FURTHER STUDIES

Kay (2005), Tolbert and Theobald (2006, in De Witt, 2008: p1), state that in order for there to be a sustainable, long-term beneficial outcome in children's development, intervention is imperative, including programmes that enhance child development from the early stages, as well as ensuring that intervention and stimulation are maintained for as long as possible, since children are constantly developing and maturing.

This study has attempted to demonstrate the immediate outcome of total child development and growth as well, as providing an understanding of the various concepts as practitioners are implementing effective teaching strategies through being trained in the Early Inspiration Training Programme. There is a clear comparison between those subjects, who underwent the intervention programme, and those that did not. Results were clear after the intervention process that positive development had taken place in the experimental group.

Early intervention enables young children to gain an understanding of the cognitive concepts from an early age. We may safely assume that the immediate effects of intervention and concept development form the foundations for future learning.

The field of early childhood intervention strategies provides a great opportunity for further investigation. Although studies have shown that there is a great need for early intervention, a strategic plan and design for early childhood stimulation would be of great benefit for Early Childhood Development Centres, as was referred to in Chapter 2.

Like the NCS (Chapter 2 and 3), which suggests guidelines and standards for formal teaching strategies, so an intervention strategy and plan should be implemented in Early Childhood Centres across South Africa. The development and implementation of this programme would be of great benefit to education in South Africa.

8.6 LIMITATIONS OF THE STUDY

The study was limited to children aged between five and six-and-a-half years old, and how they are taught in isiXhosa and live in underprivileged areas. Although the study presented rich quantitative data, and the participants were numerous, a generalization of the findings to other contexts should not be made. Nonetheless, this investigative study presents an important perspective on the development of cognitive concepts in early childhood. A limitation of this study could be the fact that the training was only implemented over an eight-month period.

A spin-off from the vision of the Early Inspiration Growth chart of Development, training and support should be available to teachers for a longer period of time, thereby ensuring long-term accountability and support.

8.7 CLOSING REMARKS

The early years of a child's life are years of rapid development and change (Chapter 2). Each child is born with infinite potential and possibilities; and as individuals of the human race, it is our duty to help these children grow and flourish, since by so doing, we stoke the power within that truly makes us powerful. In order for children to flourish, the development and enhancing of their maximum capabilities and potentials, as well as making the most of their period of existence are of the utmost importance (<http://jmm.aaa.net.au/articles/4564.htm>, 1/11/09).

Nelson Mandela, in his Inaugural Speech in 1994, uttered the following proclamation (Marianne Williamson, <http://jmm.aaa.net.au/articles/4564.htm>, 1/11/09):

"Our deepest fear is not that we are inadequate. Our deepest fear is that we are powerful beyond measure. It is our light, not our darkness, that most frightens us. We ask ourselves, who am I to be brilliant, gorgeous, talented, and fabulous? Actually, who are you not to be? You are a child of God. Your playing small doesn't serve the world. There's nothing enlightened about shrinking so that other people won't feel insecure around you. We are all meant to shine, as children do. We are born to make manifest the glory of God that is within us. It's not just in some of us; it's in everyone. And as we let our own light shine, we

unconsciously give other people permission to do the same. As we are liberated from our own fears, our presence automatically liberates others."

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APPENDIX A
LETTER TO PRINCIPAL

Contact Details

Lauren Stretch
p h . 0 8 4 5 5 4 9 6 8 8
f a x . 0 8 6 6 6 8 7 0 0 9
lauren@earlyinspiration.co.za
www.earlyinspiration.co.za



10 February 2013

Dear Principal

As per our telephonic conversation this morning, please find information regarding Pre-Grade R and Grade R assessments. We would request your assistance in assessing approximately 1000 children, 500 of which will be in a control group and 500 of which will be in an experimental group.

The control group will be assessed in February and then re-assessed again in September, against the same tool. Children will be selected to take part in either the control or the experimental groups. This selection will be done through random selection.

All children need to be assessed in their mother tongue. This means that we will need translators to administer the assessment tests, I will merely oversee that all is running smoothly. Each child receives a little work book with assessment rubrics which they work according to.

Informed consent forms will please need to be completed by all parents of the children prior to any assessments take place.

Should you have any staff members which you feel would benefit from additional training, please let me know and I will send you the Early Inspiration Training Programme application form.

Thank you and look forward to hearing from you very soon.

Regards,
Lauren Stretch

'Education is the most powerful weapon which you can use to change the world' - Nelson Mandela

BESTPFE.COM
List of research project topics and materials

APPENDIX B
LETTER OF ACCEPTANCE BY PRINCIPAL

(Please insert School Stamp)

This letter serves to confirm that _____
(School Name) is willing to participate in the research study done by Lauren Stretch on behalf of Department of Education at UNISA.

I understand that the school will participate in either the control or the experimental group and the selection hereof takes place by random sampling. I understand that no harm will be done to any of the children in this school through this research project.

Date: _____

Place: _____

Principal: _____

Signed: _____

APPENDIX C
LETTER TO DEPARTMENT OF EDUCATION

Contact Details

L a u r e n S t r e t c h
p h . 0 8 4 5 5 4 9 6 8 8
f a x . 0 8 6 6 6 8 7 0 0 9
lauren@earlyinspiration.co.za
www.earlyinspiration.co.za



10 February 2013

Dear Annelise Baines

RE: Department of Education, Grade R, Port Elizabeth

I am Lauren Stretch, a PhD Student at UNISA focusing on the effectiveness of practitioner training and whether the training of teachers is having a direct impact on the development of children. Please will you read the following information on the study which I would like to implement in Grade R classes in the Port Elizabeth region.

If you have any further questions after reading the information provided please do not hesitate to contact me.

Purpose of the study:

1. To develop and evaluate the effectiveness of the Early Inspiration Training Programme, to enhance the ability of young children in order to provide a better understanding of the development and abilities of these learners, as well as providing insight into the benefits of and the rate of individual development of the young learner,
2. To assess the validity of the Early Inspiration Training Programme, and

To establish the reliability of the application of such a programme focusing on equipping, empowering and educating unskilled practitioners dealing with young children.

Procedure

I will research this topic adequately; I will then visit 30 Early Childhood schools and centres in the underprivileged sector of Port Elizabeth and implement assessments on approximately 1000 children. Through random selection 23 teachers will be selected to attend an 8 month training programme where

teachers will be taught effective teaching strategies. Once the 8 month programme has been completed, all 1000 children will be re-assessed

I will also send questionnaires out to teachers and gain insight on their views of development pre- and post-intervention.

All parents of children to be included in the study will need to provide consent for their children and children will also need to agree to be a part of the study.

1. After the study, parents will be provided with results of your child's pre- and post-testing
2. After the study, parents will be provided with recommendations based on your child's scores on ways in which you as a parent can support the child's development
3. After the study, parents are also invited to attend a 'parent-building' workshop where we will provide parents with practical ways in which to support childrens' development

Voluntary Participation

Teachers and Children do not have to agree to participate in this study. Even after consent and assent has been given, participants may still discontinue his/her participation at any time and no explanation will be required.

Risks and Discomforts

Involvement in this study will not in any way have negative implications on children/teachers development. Under no circumstances will children be placed in a difficult situation implicating himself/herself. All children in a class are exposed to the same test at the same time and no prejudice will avail.

A problem that may be encountered could be that some of the interviewed parents and teachers may answer questions according to what they feel should be done and not necessarily what they do to encourage effective stimulation. Children that are constantly absent from school may not receive the same level of stimulation which could in turn affect their results.

Benefits

Children and teachers which participate are likely to help me determine the benefit of practitioner-training so as to improve the quality of education in underprivileged settings. Possible benefits of this research will be to gain a better understanding of the potential effects of effective teacher training

and how this can impact on many children's' lives. Another benefit for children would be for parents to have a clear assessment of your child's abilities and be able to highlight any potential developmental barriers.

Confidentiality

The identity of all participants will not be revealed in any discussion in my results. All assessors will be asked to keep findings of children confidential and to not discuss anything relating to your child, or any other participants, with other people who do not form part of the study. The importance of group confidentiality will be explained to the assessors and participants. Participants will be asked to sign a confidentiality agreement.

Sharing of Research Findings

The findings of this study will be reported on in the form of a dissertation. After the study, the completed dissertation will be available to the public to read, however no real names or other identifying particulars of the participants will be provided.

Informed assent

If parents give consent for their children to participate, I will additionally need the agreement of each child by means of verbal agreement. He/she will thus be given the opportunity to either give or refuse his/her informed assent as well – this will be done verbally as Grade R children are unable to read and complete written forms. Care will be taken to assure that your child understands all parts of the study before his assent is asked for.

It is advised that, should teachers and children agree to their participation, they take part in Pre- and Post-testing, the decision to participate or refuse with regard to any part of this research, remains his/her and your choice.

We request your endorsement and support of the above mentioned research project.

Thank you and look forward to hearing from you very soon.

Regards,
Lauren Stretch

'Education is the most powerful weapon which you can use to change the world' - Nelson Mandela

APPENDIX D

INFORMED PARENTAL CONSENT FOR CHILD TO PARTICIPATE IN THE STUDY.

Informed Consent Form for _____ (name of child).

This informed consent form is for parents of Grade R girls and boys who are being invited to participate in the research study titled 'Assessing the effectiveness of practitioner training in underprivileged early childhood settings.'

Name of Investigator: Lauren Stretch

Name of University: University of South Africa (UNISA)

You will be given a copy of the full Informed Consent Form after all signatures have been given.

PART I: INFORMATION SHEET

Introduction

I am Lauren Stretch, a PhD Student at UNISA focusing on the effectiveness of practitioner training and whether the training of teachers is having a direct impact on the development of children. Once you have read more about the study, and if you agree to let your child participate, I will ask your child for his/her agreement as well. Both of you have to agree independently before I can include your child in the study.

If you have any further questions after reading the information provided in this consent form, you can ask them of me.

Purpose of the study:

3. To develop and evaluate the effectiveness of the Early Inspiration Training Programme, to enhance the ability of young children in order to provide a better understanding of the development and abilities of these learners, as well as providing insight into the benefits of and the rate of individual development of the young learner,
4. To assess the validity of the Early Inspiration Training Programme, and

To establish the reliability of the application of such a programme focusing on equipping, empowering and educating unskilled practitioners dealing with young children.

Procedure

I will research this topic adequately; I will then visit 30 Early Childhood schools and centres in the underprivileged sector of Port Elizabeth and implement assessments on approximately 1000 children. Through random selection 23 teachers will be selected to attend an 8 month training programme where teachers will be taught effective teaching strategies. Once the 8 month programme has been completed, all 1000 children will be re-assessed

APPENDIX E

EARLY INSPIRATION TRAINING PROGRAMME QUESTIONNAIRE

SECTION 1: Multiple Choice

1. **How old is an INFANT?**
 - A: 1 year to 2 years
 - B: Birth to 7 months
 - C: 3 years to 8 years
 - D: 13 years to 21 years

2. **Physical-motor development includes:**
 - A: Listening to stories
 - B: Running, hopping, jumping
 - C: Being kind and caring
 - D: Bring brave

3. **How old is a TODDLER?**
 - A: 1 year to 2 years
 - B: Birth to 7 months
 - C: 3 years to 8 years
 - D: 13 years to 21 years

4. **Primary colours include:**
 - A: Yellow, Red, Green
 - B: Red, Yellow, Blue
 - C: Orange, Green, Red
 - D: White and Black

5. **How old is a TEENAGER?**
 - A: 1 year to 2 years
 - B: Birth to 7 months
 - C: 3 years to 8 years
 - D: 13 years to 21 years

6. **When working with young children, it is important to teach using all the senses. The senses include:**
 - A: Sight, Hearing, Touch, Taste
 - B: Sight, Hearing, Touch, Smell
 - C: Sight Hearing Touch, Smell and Laughing
 - D: Sight, Hearing, Touch, Taste, and Smell

7. **Emotional-social development DOES NOT include:**
 - A: Playing with friends
 - B: Running, hopping, jumping
 - C: Being kind and caring
 - D: Bring brave

8. **Fine-motor development includes:**
 - A: Being able to communicate
 - B: Drawing pictures and playing with small objects
 - C: Being able to shout very loud
 - D: When a child does not cry

APPENDIX F

PRE-TEST AND POST-TEST ASSESSMENT FORM

Early Inspiration
ASSESSMENT
BOOKLET

[GRADE R: 5 – 6 years old]

Name of child: _____

Age: _____ Centre: _____

Birthdate: _____

PRE TEST DATE: _____ [colour ink]

POST TEST DATE: _____ [colour ink]

APPENDIX G
PHYSICAL-MOTOR DEVELOPMENT SCORING SCALE

GROSS-MOTOR DEVELOPMENT

1. Stand on one leg for 10 seconds

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

2. Stand on one leg for 10 seconds with eyes closed

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

3. Skip 3 metres

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

4. Walk along a beam for 3 metres

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

5. Jump over lines 80cm apart

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

6. Throw a ball through the hoop

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

APPENDIX H
SOCIAL-EMOTIONAL DEVELOPMENT SCORING SCALE

1. Draw a person (no help from teacher)

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

2. Confidence

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

3. Identify emotions with ease (ES Card 1)

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

4. Understand emotions with ease (ES Card 2)

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

5. Problem Solving (ES Card 3)

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

6. Understanding Myself (ES Card 4)

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

APPENDIX I

LANGUAGE AND SPEECH DEVELOPMENT SCORING SCALE

1. Answer the question: What is your name?

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

2. Answer the question: How old are you?

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

3. Answer the question: Where do you live?

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

4. Ability to hold a conversation

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

5. Pronunciation of words

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

6. Listens and follows through with instructions (L Card 1)

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

APPENDIX J
COGNITIVE DEVELOPMENT SCORING SCALE

1. Counting objects (Count 12 counters)

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

2. Counting pictures (C Card 1)

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

3. Estimation (C Card 2)

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

4. Ordering (C Card 3)

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

5. Complete face picture (C Card 4)

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

6. Number Recognition (C Card 5)

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

APPENDIX K
VISUAL PERCEPTUAL SKILLS SCORING SCALE

1. Which one doesn't fit in? (V Card 1)

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

2. Matching the identical card (V Card 2)

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

3. Direction (V Card 3)

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

4. Visual Closure (V Card 4)

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

5. Visual Foreground/Background (V Card 5)

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

6. Copying (V Card 6)

- 1= Cannot complete the task at all; poor performance
- 2= Below average performance
- 3= Average performance and completion of task. Fair
- 4= Above average performance and completion of task. Good
- 5= Can complete the task with ease. Excellent

APPENDIX L
LANGUAGE QUALITY ASSURANCE CERTIFICATE



Language Quality Assurance Practitioners

Mrs KA Goldstone

Dr PJS Goldstone

**14 Erasmus Drive
Summerstrand
Port Elizabeth
6001
South Africa**

Tel/ Fax: +27 41 583 2882

Cell: +27 73 006 6559

Email: kate@pemail.co.za

pat@pemail.co.za

12 October 2013

TO WHOM IT MAY CONCERN

We hereby certify that we have language-edited the thesis of Lauren Kathryn Stretch entitled: ASSESSING THE EFFECTIVENESS OF PRACTITIONER TRAINING IN UNDERPRIVILEGED EARLY CHILDHOOD SETTINGS.

We are satisfied that, provided the changes we have made are effected to the text, the language is of an acceptable standard, and is fit for publication.

Kate Goldstone

BA (Rhodes)

SATI No: 1000168

UPE Language Practitioner (1975-2004)

NMMU Language Practitioner (2005)

Dr Patrick Goldstone

BSc (Stell.)

DEd (UPE)

Language Quality Assurance – Certification Statement

APPENDIX M
RESEARCH ETHICS CLEARANCE CERTIFICATE



Research Ethics Clearance Certificate

This is to certify that the application for ethical clearance submitted by

L Stretch [43903266]

for a D Ed study entitled

**Assessing the effectiveness of practitioner training in
underprivileged early childhood settings**

has met the ethical requirements as specified by the University of South Africa
College of Education Research Ethics Committee. This certificate is valid for two
years from the date of issue.

A handwritten signature in black ink, appearing to read 'CS le Roux'.

Prof CS le Roux
CEDU REC (Chairperson)
lrouxcs@unisa.ac.za

10 May 2013

Reference number: 2013 MAY/43903266/CSLR