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Personalized Learning in Home Education:

An Examination of Parent Perceptions and Use of Multiple Intelligences and Learning Styles in Lower Elementary Learners in Nairobi, Kenya

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Submitted in partial fulfilment of the requirements for the Degree of Master of Science in Education Management at Strathmore University

School of Humanities and Social Sciences

Strathmore University

Nairobi, Kenya

June, 2019

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Janice Muthoki Kaunda Sitati

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11th June 2019

APPROVAL

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ABSTRACT

This study explored personalized learning in home education. It examined parent perceptions of their learner's needs and interests through the combined use of two complementary educational approaches, the theory of Multiple Intelligences and the theory of Learning Styles. It further examined if and how these two approaches were used to personalize learning for lower elementary learners within the context of home education. The theoretical framework proposed the combined use of both approaches to achieve effective personalized learning in this context. This mixed methods study was done in Nairobi with a sample drawn from home educated learners between the ages of 6 and 10 years and their parent educators. The data was collected using open ended parent educator questionnaires and learner interviews as well as closed ended multiple intelligences checklists and learning styles inventories. The data was analyzed using thematic analysis due to the exploratory nature of the study. It was found that parent educators were knowingly or intuitively aware of their learners' multiple intelligences and learning styles, and this awareness in many cases translated to effective personalized learning. Outcomes of effective personalized learning were enhanced personalized home learning characterized by increased learner engagement, motivation, comfort, increased understanding and enjoyment in learning. A derived conceptual framework was suggested which confirmed and built on the theoretical framework. As the study was limited to home education of lower elementary learners in Nairobi, future studies were recommended to test the resulting conceptual framework quantitatively within Kenya and further studies on the same can be done in other countries where home education is practiced.

***Key Words**: Multiple Intelligences; Learning Styles; Personalized Learning; Home Education; Lower Elementary Learners; Parent Educators*

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

MI	– Multiple Intelligences
LS	– Learning Styles
NACOSTI	– National Commission for Science, Technology and Innovation
APBET	– Alternative Provision of Basic Education and Training
HSLDA	– Home-school Legal Defence Association
IQ	– Intelligence Quotient
ACE	– Accelerated Christian Education
USA	– United States of America
UK	– United Kingdom
ICT	– Information and Communications Technology
KICD	– Kenya Institute of Curriculum Development

DEFINITION OF TERMS

Home Education: Home education is when parents take the opportunity of full responsibility for their children's education without sending them to school (Mountey, 2009). Instead, the parents take up the role of educator and, either on their own or with assistance from tutors for certain aspects of learning, educate the child in all areas – academic and otherwise. Also referred to as Home Learning, Home-school or Homeschooling in this report.

Learning Styles: This term is used interchangeably with the term Learning Style Preferences in this report, and refers to Learning Styles put forward by Dunn and Dunn (Dunn, Dunn, & Price, 1978). Learning style has been defined as educational conditions or strategies that a student prefers to use when learning and under which the learning best takes place. It relates to the environmental conditions under which learners prefer to learn and be assessed on that learning as well as their preferences for activity level, type of information and information processing strategies (Roberts, 2017).

Multiple Intelligences: These are eight modes of intelligence identified by Gardner (Gardner, 1983) who argued against the notion of a single intelligence that can be measured by IQ. He suggests that instead human beings have several intellectual capacities and that we all have a unique blend of them (Multiple Intelligence Profiles) which need to be provided for in education (Robinson & Aronica, 2015).

Personalized Learning: Adapting educational instruction to each individual learner so that it varies according to the learner's needs. This individualization of learning includes the use of multiple instructional modes to scaffold each learner's learning, enhancing the student's motivation, and may affect pace, time and/or place of learning (Jeynes, 2016). Sometimes referred to as Enhanced Learning in this report.

ACKNOWLEDGMENTS

I would like to express my heartfelt gratitude to my Heavenly Father and to the wonderful people who were instrumental to the success of this research work. I would not have accomplished this without the love, help and support of my amazing husband, Moses Sitati, and my lovely children who inspired me and cheered me on every step of the way. To my family and friends who encouraged and prayed for me and watched over my children, and carried me through the tough seasons, I say thank you. I am especially grateful to Alice Muema who went over and above the call of duty and friendship.

Special mention goes to Dr. Alfred Kitawi, for believing in me and guiding my research and requiring excellence at each point of the study - thank you, for the meticulous reading of my numerous drafts in record time and the constructive feedback given. Many thanks to the whole team at the Strathmore School of Humanities and Social Studies, especially Brian Njeru and Dr. Magdalene Dimba who constantly answered questions and were always available to help.

I am very grateful to the home educating community in Nairobi and specifically, all the home educator parents who gave of their time and insights to provide a glimpse into the fascinating world of home education. I am humbled by the sacrifice of these parents and honoured that I had the chance to interact with them and learn from them. Special thanks to the amazing home educated children who were more than willing to answer my questions and illuminate my study and my life with their infectious zeal for life and learning. May you go on to accomplish great things!

I would also like to acknowledge the talented researchers who took the time to share their wisdom and guidance. Special thanks to the classmates who encouraged me to keep going and to accomplish what we set out to do.

CHAPTER ONE: INTRODUCTION

1.1. Introduction

Educational reform in Kenya has focused on schools, teachers, curriculum, leadership and similar facets of schooling. This study focused on the lower elementary home educated learner; to explore whether educational reform could begin in the home, through personalized learning using the Multiple Intelligence (MI) theory, and its closely related counterpart, Learning Styles (LS) theory. This chapter introduced the background of the problem, the statement of the problem, the research questions, the scope and significance as well as the limitations of the study.

1.2. Background to the problem

Personalized learning relies heavily on the educator-learner relationship, and is recognized as a tool to address the differences in learners and promote better learning outcomes by meeting the individual needs and interests of learners (Murphy, 2016). It is seen as an alternative to the "one-size-fits-all" instruction often seen in schools (Bray & McClaskey, 2013). Home education, the context for this study, uniquely offers the potential to provide personalized learning experiences to learners with a variety of learning preferences and interests.

A historical look at the aims and goals of educational initiatives in Kenya illustrates that much effort has gone into improving the quality of education in Kenya, with an emphasis on the economic and development goals of the country (Abagi & Odipo, 1997). More recently, there has been a wave of educational innovation in Kenya focusing on both public and private schools and the use of ICT to personalize learning (Patillo, 2018). This, coupled with a move by the government to introduce a competency-based curriculum to improve learning, has seen Kenya rise to the top of the World Economic Forum Africa ranking for Quality of Education Systems in Africa (Samans & Zahidi, 2017). Even with all this effort, the individual learning outcomes for learners across Kenya have shown no significant improvement in literacy and numeracy during the period from 2009 to 2015 (Uwezo, 2016).

In Kenya, and indeed much of the world, schools throughout history have been uniform schools: students are taught the same things, in the same way, and are assessed in equally similar manner. This approach is seen as fair, since everyone is being treated equal. However, this approach is fundamentally unfair (Gardner, 2006a). It gives academic advantage to those who have strong linguistic and logical-mathematical intelligences, and makes school challenging for the many learners who exhibit somewhat different intellectual profiles (Gardner, 2006a). "Most people think that there is but a single intelligence; MI theory holds that we each have eight or more intelligences, and we can use them to carry out all kinds of tasks" (Gardner, 2006a, p. 26); (Robinson & Aronica, 2015). However, when one or two intelligences are used in schools for instruction and testing, it puts those who excel in other intelligences at a clear disadvantage even though they are undoubtedly gifted in other areas of intelligence such as the arts, sports, or in mechanical and other psychomotor domains.

By holding onto a traditional notion of intelligence, schools identify certain skills as basic or essential, and demean others by labelling them as frills or merely extracurricular activities. A narrow definition of intelligent behaviour causes learners who don't excel in linguistic or logical disciplines to believe their abilities to be of little use (Campbell & Campbell, 1999).

Kenya has had few notable initiatives in encouraging the development of alternative education management models which would lead to the development of multiple intelligences in its learners. This is due to the fact that the traditional management models which exist emphasize on teaching academic content at the expense of what is referred to as non-formal and informal dimensions of learning (Naissuma, Kindiki, & Chumba, 2017). In addition, the curriculum used for many years did not provide flexible education pathways for identifying and nurturing the talents and interests of learners early enough to prepare them for the world of work, career progression and sustainable development (Kenya Institute of Curriculum Development [KICD], 2017).

Another problem in Kenya is the fact that teachers may not have understood the diversity of their learners in a typical classroom. Teachers keep on embracing the same traditional teaching styles in every context leading to disengagement by students in the

learning process and low academic achievement (Nzesei, 2015). In contrast, evidence suggests that matching students' learning style preferences with educational interventions compatible with those preferences is beneficial to their learning (Denig, 2004). Unfortunately, not all teachers are aware of the importance of varying teaching techniques to accommodate learning styles (Healy, 2004). They also are not able to correctly identify the learning styles of all the learners in their charge (Dunn, 1990), nor can many schools afford the investment it would require. The Kenyan Competency-Based Curriculum aims to prepare teachers to engage with learner diversity, and impart knowledge about alternative learning styles and instructional strategies that are inclusive of all learners (KICD, 2017), indicating that the government too recognizes the need to personalize learning for students.

Parents are in a better position to recognize each individual child's needs and interests, having observed them from birth (Mountey, 2009). A learner's home life represents a powerful learning experience. This impact on learning ability is mainly due to the emotional bond between parent and child formed from the earliest moments of life (Armstrong, 1998). According to educational psychologist Jane Healy (2004), intellectual and emotional development are inseparable. Children need their parents' love and attention far more than anything else. Healy (2004) further stated "Each child weaves his own intellectual tapestry, the quality of which depends on active interest and involvement in a wide variety of stimuli. The home environment provides the raw material for this masterpiece" (p.20).

Understanding multiple intelligences and learning styles can make a big difference in how parents engage with their children individually and help to develop their intelligences. This is particularly relevant at the lower elementary level, between the ages of 6 and 10 years, as this is the age at which the child becomes especially concerned with the acquisition of objective skills, knowledge, and competences (Gardner, 1983). This is also the age at which most children begin formal learning and is the interest age for this study.

Home education has the potential to provide personalized learning experiences to learners with a variety of intelligence profiles and learning styles. In home education,

parents take full responsibility for their child's education without sending them to a formal school, while using resources like museums, libraries, sports centres, and nature sanctuaries in the community to enhance learning. It also includes interacting with tutors and other families for field trips and collaborative learning experiences (Mountey, 2009).

Having been practiced in the United States of America and other parts of the world for over 60 years (Moore & Moore, 1994), home education was introduced in Kenya by foreign missionaries based here in the 1990s. A few Kenyan families who then learned about home education began home educating their children, some of whom have since graduated into University and various careers. Since then, the number of home educating families has grown both in Kenya and in other parts of the world, including the USA, UK and South Africa. While there is no express legal provision for home education in Kenya, the Constitution of Kenya places responsibility to ensure children receive basic education upon the parents. Those home educating their children do so under the exemption in section 30(4) of the Basic Education Act, and the Alternative Provision of Basic Education and Training [APBET] guidelines. The guidelines provide for informal education providers that do not fall under the Basic Education Act, and mentions home-schools which fall under this category of informal schools.

One reason for the increasing popularity of home education, even in Kenya, is that it is perceived as the ultimate personalized educational environment, that is, an environment where instruction is adapted to each individual learner so that it varies according to the learner's needs (Jeynes, 2016), and is shaped by the learning preferences and interests of the learner (Taylor & Gebre, 2016). "Many home-educating parents implicitly recognize that schools are often unwilling or unable to serve children with unique learning styles or scholarly needs" (Galen, 1989, p. 57). Some home educators have been able to successfully structure their children's learning according to the learner's unique needs and interests rather than conforming to a pre-packaged curriculum (Galen, 1989). It is unclear whether this is the case in Kenya, as little research exists on home education.

Gardner (1995) uses the term "individually configured" education to refer to education that takes individual differences seriously and, insofar as possible, crafts practices that

serve different kinds of minds equally well. The opportunities for this kind of flexible education for families who decide to home educate their children are significant. However, as Galen (1989) notes, a large number of parents new to home-schooling use textbooks and workbooks similar to what is used in schools and retain the formal structure of schools. Knowledge is commodified at home as it is in school and the children are expected to be passive and uncritical consumers of information and skills. The pace at which they move through the curriculum may be individualized but superficially so (Galen, 1989), as they do not take into consideration the child's intelligence profile or unique learning style. This superficial individualization of curricula may also apply to the local home education context, since many Kenyan home educators use "boxed curricula" (Gitonga & Waswa, 2018).

In a recent interview on a national broadcasting station in Kenya (Gitonga & Waswa, 2018), two home educating parents discussed the need to identify their children's abilities and giftings and channel those giftings and strengths to a life course in line with their abilities and interests, while building on their weaknesses. This can be achieved by aligning a learner's multiple intelligences and learning styles to their needs and interests for personalized education. However, there is little to indicate whether Kenyan home educators have been successful in identifying their learners' abilities and learning preferences and personalize learning to meet those needs.

Little is known of the content and process of learning in the context of home education in Nairobi as research on home education in Kenya is scant at best, despite its rapid growth. This study investigated parent educator awareness of their learners' needs and interests by assessing whether they were able to accurately perceive their lower elementary learner's learning styles and multiple intelligences. The study also explored whether MI and LS approaches were used, either knowingly or intuitively, to personalize learning of home educated learners in Nairobi and if so, what effect their use had on learning.

Most of the research into the use of multiple intelligences and learning styles has focused on the use of either MI or LS within schools at the elementary, secondary and tertiary level and very little within the context of home education. There is limited

research which combines the two concepts (Cervera, 2015), and even less which applies either of them in the home education context. Further, there is very limited research in this area in Kenya and the little that is there focuses on the use of either MI or LS among secondary school learners.

1.3. Statement of the problem

Home education is growing in Kenya, and it is significant to establish how and if learning is effectively taking place by examining the content and process of learning in this context. The issue of multiple intelligence and learning styles is critical to a learner's success (Denig, 2004); (Dunn, Denig, & Lovelace, 2001); (Silver, Strong, & Perini, 2000). Given the unique potential of home education to offer personalized learning experiences for a variety of learners (Jeynes, 2016), this study sought to explore how MI and LS, which deal with the content and process of learning respectively, can be aligned to different learner's abilities and learning needs in this context to enhance personalized learning.

Little research exists in Kenya (Nzesei, 2015); (Naissuma, Kindiki, & Chumba, 2017) which examines the use of multiple intelligence and learning styles, especially in the context of home education. Therefore, this study investigated parent educator perceptions of the multiple intelligences and learning styles of their children, and how parent educators engaged in home education in Nairobi make use of these two approaches, knowingly or intuitively, to personalize learning.

1.4. Research Questions

This study sought to explore if and how multiple intelligences and learning style theories are being applied in home education contexts with learners in the lower elementary age group in order to identify any gaps which may exist in personalized education of the whole child using these two approaches. To this end, the research explored the following questions:

i. What are parent educator perceptions of the multiple intelligence profiles of lower elementary learners in home education contexts?

ii. What are parent educator perceptions of the learning style preferences of lower elementary learners within home education contexts?

iii. What is the extent to which home educators in Kenya are aware of and use multiple intelligences approach and/or their child's learning style preferences in their home education contexts to personalize learning?

1.5. Scope of the Study

The study was carried out in Nairobi, Kenya among the population of families within the community of home educators with children in the lower elementary years of learning, specifically, children aged 6 years to 10 years. This is because this is the age at which most children begin formal learning and therefore become especially concerned with the acquisition of objective skills, knowledge, and competences (Gardner, 1983). This would allow parent educators working closely with their children the opportunity to notice the emergence of their multiple intelligences and learning styles.

A sample of these families was accessed through networks consisting of co-ops (groups of like-minded home educators who meet regularly for collaborative learning experiences) with children in the required age bracket. Seven of these networks were accessed each of which had varying numbers of members, ranging from a group of five families to a group of almost thirty families, which meet once a week or every two weeks.

1.6. Significance of the Study

This study was intended to explore the perceptions of parent educators of their learner's needs and interests through the lens of MI and LS, and to identify any gaps that may exist in home educator instructional considerations which may impact the personalized learning of the child. It also suggests a way forward that makes greater use of the MI profiles and LS preferences to enhance the personalized learning experience of learners in home educational contexts. This will benefit both the learner and the instructing educators by illustrating the value of combining both MI and LS approaches to personalize learning within home education. It also draws lessons from parent educators who are highly effective at personalizing learning, for emulation by the greater home

educating community, as well as those in similar contexts or those engaged in parent-led educational interventions.

Understanding a learner's multiple intelligence allows educators to nurture individual strengths and strengthen weaknesses to meet the learner's personal academic needs (Richards, 2016). Identifying and teaching to a child's learning styles will allow for learners to learn in a way that complements their unique preferences which will lead to better learning achievement and improved attitude towards learning (Medlin, 2010). This combined effect will be of benefit to the learners as they develop with a deeper understanding of their learning needs and preferences leading to a more self-motivated learner for life-long learning.

1.7. Delimitations and limitations of the study

This study was limited to the realm of home education in Nairobi, Kenya as the sample drawn from this area, being an urban area, was believed to have access to information about personalization of learning due to access to information and a robust home education community in Nairobi. The results may not be generalised to other educational contexts due to the uniquely flexible learning environment of home education which may not be easily replicated in other contexts. The study is not intended to guide educational contexts outside of home education.

The study is delimited to the ages of lower elementary school learners, that is, 6 to 10 years of age since this is the age at which most learners begin formal learning, while also requiring more hands-on instruction. Their parent educators would therefore be able to perceive their natural learning styles and multiple intelligence. In addition, the exploratory nature of the study means that the study may not be generalised to the greater population.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

This chapter covered a review of literature by various researchers and educators on personalized learning, and introduced and explained the theory of multiple intelligences and learning styles. It also looked at the intersection of the two theories and how they can be used to personalize learning. A theoretical framework based on the literature was suggested towards the end of the chapter.

2.2. Theoretical review

Personalized learning can be defined as instruction that is differentiated and paced to the needs of the learner and shaped by the learning preferences and interests of the learner (Taylor & Gebre, 2016). This definition can be effectively looked at in two broad theories of education. The theory of Multiple Intelligences which looks at the *interests* of the learner and Learning Style theory which focuses on the *learning preferences* of the learner and how to meet these needs of the learner. MI theory deals with the *content* and disciplines of learning whereas learning style models focus on the individualized *process* of learning. It has been suggested that MI theory and learning style models need each other for personalized learning (Silver, Strong, & Perini, 2000).

Multiple intelligence theory and Learning style theory work hand in hand to provide different aspects of personalized learning. Personalized learning is premised on the need to understand the learner – his or her personal interests, preferences and ambitions – and to use that knowledge to enhance understanding and increase learning motivation (Redding, 2016). Home education allows the leveraging of the natural parent-child relationship which is a critical factor in the personalization of learning (Murphy, 2016). Understanding the learner then for the parent educator is intuitive since they know the child from birth, and so are more likely to have a thorough knowledge of their learners as individuals (Jeynes, 2016). The use of MI theory and LS model allows the parent to make use of that intuitive knowledge of the learner to know how to engage the learner in identifying what is to be learned (the content) and in the design of how it should be learned (process). The use of these two educational approaches also allows the parent

educator to vary the pace of learning as well as the mode, time and venue of instruction for each learner (Redding, 2016).

The theory of MI should therefore not be separated from the theory of LS, but instead they should be viewed as two sides of the same coin, both serving to equip the educator to be more effective at promoting learning and motivation in the learner. The effectiveness of the two approaches is due to the fact that their combined use maximizes their benefits and minimizes the liabilities of multiple intelligences and learning styles (Silver, Strong, & Perini, 2000). This was relevant to this study since parent educators can apply the MI and LS approaches to enhance their education efforts. Each of these theories is discussed in this section.

2.2.1 The Theory of Multiple Intelligences (MI Theory)

The theory of multiple intelligences (MI theory) was first introduced by Howard Gardner, a cognitive psychologist from Harvard University, in his book *Frames of Mind: The Theory of Multiple Intelligences* (1983). Developed primarily as a contribution to mainstream psychology, the theory elicited far more interest and enthusiasm from educators (Gardner, 1995). The theory provides a useful framework for understanding different abilities in each child, their strengths and value and how to nurture these abilities in each child. Parents and educators can use this framework to help children become intrinsically motivated to learn and develop their potential and character in order to be of service to self and others (Armstrong, 1998).

Howard Gardner challenged the view that intelligence was what had been for years measured using standardized I.Q. tests developed initially by Alfred Binet as a measure of an individual's abilities and potential (Hoerr, 2000). Gardner instead argued that there are many different types of intelligences that cannot be measured by paper and pen intelligence tests. In addition, he argues that we are all so different largely because we all have different combinations of intelligences (Robinson & Aronica, 2015) and these are what make each child unique and necessitates a more personalized approach to education (Gardner, 2006b).

Gardner (1999) conceptualizes the theory of multiple intelligences as *a biopsychological potential to process information that can be activated in a cultural setting to solve problems or create products that are of value in a culture.* They are potentials – presumably, neural ones – that will or will not be activated, depending upon the values of a particular culture, the opportunities available in that culture, and the personal decisions made by individuals and/or their families, schoolteachers, and others.

Gardner identifies eight main intelligences: *Linguistic Intelligence* involves sensitivity to spoken and written language, the ability to learn languages, and the competence to use language to accomplish goals (Gardner, 1983); *Logical-Mathematical Intelligence* involves the capacity to analyse problems logically, the ability to handle chains of reasoning and to recognize patterns and order (Hoerr, 2000); *Musical Intelligence* entails skill in the performance, composition, and appreciation of musical patterns (Gardner, 1999); *Bodily-Kinesthetic Intelligence* entails the ability to control one's bodily motions and to handle objects skilfully (Armstrong, 2009); *Spatial Intelligence* features the potential to recognize and manipulate the patterns of wide space, for instance in navigation, as well as the patterns of more confined areas such as art, design or even surgery (Gardner, 1999); *Naturalist Intelligence* demonstrates proficiency in the recognition and classification of numerous species of flora and fauna, and is comfortable in the world of organisms usually having the gift of caring for, taming, or interacting subtly with diverse living creatures (Gardner, 1999); *Interpersonal Intelligence* denotes a person's capacity to recognize the intentions, motivations, and desires of other people and, thus, to work effectively with others (Gardner, 1999); and *Intrapersonal Intelligence* involves the capacity to understand oneself, the ability to discriminate among one's emotions, and knowledge of one's own strengths and weaknesses (Armstrong, 2009).

These multiple intelligences seldom work independently. Several intelligences tend to operate concurrently and complement each other as individuals develop skills or solve problems (Gardner, 1983). It is therefore critical that education equips and develops children in different areas of intelligence and pays special attention to the areas of considerable strength in any one or combination of intelligences. In this way, the child will grow up to be able to aid in the development of the society and will themselves be

able to achieve competence in whatever career or field they choose to go into. To develop only one or two areas of intelligence cripples the child and robs him of numerous opportunities.

A key concept that Armstrong (2009) brings out in relation to the application of MI theory is the concept of crystallizing experiences and paralyzing experiences which are two key processes in the development of intelligences. *Crystallizing experiences* are the sparks that light an intelligence and start its development toward maturity. Conversely, *paralyzing experiences* refer to experiences that "shut down" intelligences. Often these events occur in early childhood, although they can occur anytime during the life span (Armstrong, 2009). Parents are uniquely placed to recognize and provide crystalizing experiences or mitigate against paralyzing experiences (Koch, 2016).

It is of note, however, that Gardner's multiple intelligences have the potential to be used for good or for evil and therefore it is necessary to form as a foundation for the development of all these intelligences the moral and ethical basis for action. Gardner stresses that no intelligence is in itself moral or immoral. Intelligences are strictly amoral, and any intelligence can be put to a constructive or a destructive use (Gardner, 1999).

The theory of multiple intelligences has been criticised on the grounds that because it has not been scientifically proven, there is little substance to the theory. On the contrary, the evidence is in the numerous cultures and accomplishments which exemplify human life – through the sciences and the arts, religion and philosophy, engineering, architecture and technology, sports and athletics and all the myriad ways that these activities enrich the human existence in different cultures and communities (Robinson & Aronica, 2015).

Howard Gardner is however, not the only theorist to challenge the idea of a single intelligence measured by I.Q. Robert Sternberg developed the Triarchic Theory of Intelligence which consists of three main intelligences (Sternberg, 1985) (Healy, 2004). These are the *Componential Intelligence* – which refers to analytical ability or the ability to think abstractly and process information effectively; *Experiential Intelligence* – this is essentially the creative ability to formulate new ideas and to combine seemingly

unrelated facts into information; and the *Contextual Intelligence* – which refers to the practical ability of an individual or what we commonly refer to as "street smarts", the ability to adapt to changing environmental conditions and to shape the environment so as to maximize one's strengths and compensate for one's weaknesses. Sternberg (1985) defined intelligence as mental activity central to one's life in real-world environments; individuals "succeed" in life when they use mental skills to adapt to, select, and shape external environments.

Another theory related to intelligence is that put forward by Daniel Goleman in his book titled *Emotional Intelligence: Why it can matter more than I.Q.* (Goleman, 1995). He perceives emotional intelligence as being able to rein in emotional impulse; to read another person's innermost feelings; and to handle relationships smoothly. In essence Goleman (1995) identifies abilities such as self-control, persistence, zeal, and the ability to motivate oneself as being hallmarks of emotional intelligence. Healy, (2004) suggests that no matter what a child's IQ is, they need interpersonal skills as well as personal skills and that parents should train their children in how to interpret the social and personal demands of a situation.

Robert Coles developed yet another intelligence outside the realm of intelligences as traditionally understood. He coined the term *Moral Intelligence* and defined it as a child's growing capacity to understand others with fairness, honesty, concern and generosity (Coles, 1997). This capacity develops primarily as children observe the adults around them – parents, teachers – and how they navigate moral situations in life and emulate these moral examples, for better or for worse.

What these theories have in common is the belief that intelligence is a multifaceted, complex capacity. However, Gardner's theory of multiple intelligences is distinguished from the other theories by its breadth, it's scientific basis, and its implications for use within educational contexts (Hoerr, 2000). Several authors have expounded on the educational applications of MI theory to aid in curriculum design and implementation by educators (Armstrong, 2009; Campbell & Campbell, 1999; Lazear, 1991; Hoerr, 2000; Koch, 2016). In so doing they have developed the MI theory significantly and made it more accessible to numerous educators and parents.

Swanson (2016) and Moore (1981) believe that parents are best placed to develop their children's abilities because warmth, responsiveness and consistency are very important to a child's learning. "Parents are true experts on a child's multiple intelligences. They've had the opportunity to see the child learn and grow under a broad spectrum of circumstances encompassing all eight intelligences" (Armstrong, 2009). Holt, (1982) noted "If we look at children only to see whether they are doing what we want or don't want them to do, we are likely to miss all the things about them that are the most interesting and important. People teaching their children at home consistently do a good job because they have the time, and the desire, to know their children, their interests, the signs by which they show and express their feelings." These signs are integral to the development of a child's multiple intelligences and learning styles.

Gathercole, (2007) observed that "Indeed the family is responsible for a child's social, behavioural, spiritual, and even academic upbringing, and many studies have shown that parents and home life are by far the strongest influencing factors in all these areas." The home education environment provides a personalized approach to instruction that makes it possible to develop a curriculum which takes into account the unique gifts, talents and skills of each learner (Jeynes, 2016).

2.2.1.1 Development of Multiple Intelligence in Learning

As mentioned prior, MI theory has numerous educational implications, which fact has fuelled its popularity worldwide (Chen, Moran, & Gardner, 2009). Gardner's theory resonates very strongly for many educators because it offers a framework for acting on what they believe – all children have strengths (Hoerr, 2000). MI theory is a student-centred model which does not have a "right" way to implement it (Mettetal, Jordan, & Harper, 1997). This adaptability makes it ideal for schools and even home education as it allows the educator or parent to use their judgement on how best to meet their learner's needs.

For learners to be able to use the full spectrum of their intellectual capabilities, it is necessary for them to be explicitly taught the skills of each intelligence in the same way they are taught literacy, numeracy, vocabulary, etc. For instance, to develop a learner's

spatial intelligence requires learning skills such as image manipulation, active imagination, mapping and graphic representation (Diezmann & Watters, 2000).

The development of the multiple intelligences is not the same as developing what we refer to as talent. All people, children and adults, possess all eight intelligences or "ways of knowing", which we use to understand our world, problem solve, acquire knowledge, create artistic products, and generally meet life's daily challenges (Lazear, 1992). The noteworthy individuals who stand out as being talented are those who have developed these ways of knowing to a high degree – such as a renowned artist like Vincent Van Gogh, who honed his spatial intelligence, or a musician of repute such as Mozart, who had a highly developed musical intelligence.

Lazear (1992) sets out four levels of learning which educators and parents can use to help learners become more aware of their intelligences and learn how to use them to greater effect. The first level is the *Tacit Level* where a parent or educator helps learners become aware of the eight multiple intelligences and how much they are used in daily life. Next is the *Aware Level* which helps learners to strengthen their intelligences through practice. After this is the *Strategic Level* which involves the conscious decision to use the eight intelligences regularly to expand creativity, improve learning, and enhance problem solving capacity. Finally, the *Reflective Level* involves integrating the use of the multiple intelligences in normal daily life in order to function at higher levels of creativity and innovation.

Learning at each level is possible from the earliest stages of education. At home, awakening intelligences early is advantageous because they are more likely to become strengths (Koch, 2016). For instance, early dance or music lessons can result in considerable talent later in life. Learning with more than one intelligence helps learners understand what they are learning better. They tend to remember what they learn longer, apply their learning more accurately, and grow in optimism for the future (Koch, 2016).

At pre-school and kindergarten, MI can be incorporated into their learning by having different intelligence activity centres in their learning space or around the house to allow children to gain experiences that engage their various intelligences and allow the parent or educator to observe and assess their strengths, interests and proclivities (Gardner &

Hatch, 1989). At the elementary level, MI has been applied through the use of heterogeneously grouped self-contained classes, flow time, activity rooms, choice centres and enrichment clusters (Mettetal, Jordan, & Harper, 1997) to allow the children the opportunity to discover their strong areas and develop their full range of intelligences (Gardner & Hatch, 1989). In addition, teachers can teach to multiple intelligences in their lessons or allow students to demonstrate their knowledge of a unit using their preferred intelligence.

Home education too allows for a variety of options for using and developing MI, from enrichment classes, co-op meetings for collaborative learning, field trips, creative design, nature studies, all of which can be incorporated into daily lessons. When parents exhibit healthy and positive attitudes and provide a variety of interesting experiences for their children, this provides the nurture needed to develop the intelligences the child is born with (Koch, 2016). MI is also a powerful pedagogical organizer that can help parents structure learning according to the needs of students (Johnson, 2007).

Armstrong (2009) highlights certain environmental influences which have the potential to promote or suppress the development of intelligences: *Access to resources or mentors* – family income will influence what resources and opportunities are available for children (such as a musically gifted child whose parents cannot afford to pay for music lessons or attendance at a school which doesn't offer opportunities to develop the eight intelligences); *Historical-cultural factors* – which prevail at the time one is growing; (e.g. growing during war or unrest in a country such as happens in many parts of Africa); *Geographic factors* – relating to where the child grows up; (a child growing up on a farm has greater potential for developing a naturalist intelligence than one growing in an urban area or a "concrete jungle"); *Familial factors* – the influence exerted in many cases by parents towards the career choices their children make or the activities they will be involved in; (a love of reading in one or both parents often develops linguistic intelligence in children (Koch, 2016); *Situational factors* – for instance if a child has to help take care of a large family while they were growing up they may have little time to develop in areas of promise.

A parent's awareness of these environmental influences may instruct the choices made with regard to where to live and what to invest family resources in in order to crystalize rather than paralyze their children's intelligences. Kathy Koch (2016) highlights the key role parents play in the development of their children's intelligences, their self-concept and learning potential, and advises parents to expose their young children to a variety of activities and to take note of their children's interests so that their unique passions can be awakened (Koch, 2016). This is especially true for parents who home educate as the activities their children are exposed to lie solely within their control.

2.2.2. Learning Styles Theory

The theory of Multiple Intelligences, perhaps by virtue of its wide acceptance by the educational community, has come to be most strongly associated with the concept of Learning Styles (Roberts, 2017). Gardner has refuted this claim (Gardner, 2013) arguing that the two concepts should not be collapsed into one but should be understood as two distinct concepts. This position has been supported by (Dunn, Denig, & Lovelace, 2001) and (Silver, Strong, & Perini, 2000) who articulated that MI theory deals with the content and disciplines of learning whereas learning style models focus on the individualized process of learning. They further suggest that MI theory and learning style models need each other and cannot be separated from each other for personalized learning.

Learning style has been defined as educational conditions or strategies that a student prefers to use when learning and under which the learning best takes place (Roberts, 2017). It relates to the environmental conditions under which learners prefer to learn and be assessed on that learning as well as their preferences for activity level, type of information and information processing strategies (Roberts, 2017). Another definition of learning style is the way in which each individual begins to concentrate on, process, internalize, and remember novel and challenging academic content (Denig, 2004).

However, it is of note that researchers have been unable to identify a comprehensive and functional definition of learning styles nor to agree on a single construct for the notion of learning styles and measurement instruments for the same (Roberts, 2017). There are, therefore, a substantial number of learning style theories put forward by different

researchers such as Dunn & Dunn, Honey & Mumford, Kolb, Myers-Briggs, Jung, Sternberg, Curry, Gregorc among others. A review of these learning styles can be found in (Roberts, 2017; Claxton & Murrell, 1987; Sims, Sims, & Ed., 1995; Schmeck, 1988; Tobias, 1994).

Of the numerous learning style models that have been developed, the Dunn & Dunn model (1978) has been developed for use with children in the elementary level (Medlin, 2010) as well as other ages, and for this reason was used in this research. Dunn, Dunn & Price (1978); (Dunn & Honigsfeld, 2013) suggest that learning style is based on an individual's response to five dimensions of elements: *environmental dimension* – dealing with the elements of sound (do learners prefer quiet or noise when learning), light (preference for bright light or dimmer lighting), temperature (do learners need warmth or cooler conditions) and seating (formal or more relaxed); *emotional dimension* – whether or not learners need a lot of motivation, can persist in a task, can assume responsibility for their learning, or if they need lots of structure; *sociological dimension* – learner preferences for working alone, in pairs, in groups or whether they need adult supervision or varied combinations; *physiological dimension* – perceptual element (whether the learner is auditory, visual, kinesthetic, or tactile learner), intake (does the learner need snacks as they learn), time (optimal time for learning), mobility (does the learner need freedom to move around a lot); and the *psychological dimension* – does the learner attack problems globally or analytically, or are they impulsive or reflective before they begin a task.

This model by the Dunns maintains that a child's performance is likely to be influenced by 6 to 14 of the 21 elements identified in their model in a wide variety of combinations, since all children are different (Dunn, et al., 2010). Further, if children are taught in a way which complements their unique identified learning styles preferences, their attitude towards learning and understanding are likely to improve (Medlin, 2010). Flexibility by educators in presenting material can help most learners understand concepts and remember more easily. This capitalizes on the learner's natural style while boosting weak areas with extra assistance (Healy, 2004).

Critics of the Dunn and Dunn learning style model have questioned the existence of the learning style construct and have argued that there is a lack of strong scientific evidence to support the assertion that matching instruction to a learner's preferred style improves learning (Dunn & Honigsfeld, 2013). In spite of this criticism, practitioners and researchers have continued to use and research on learning styles and there is significant data to suggest that it is a viable and useful construct for use to improve learning (Lovelace, 2005).

Learning style relates to the way an individual learner begins to concentrate, process, and retain new and challenging information (Dunn & Honigsfeld, 2013). For instance, a learner who is analytic learns better when content is presented in a step-by-step manner building up to the main concept, whereas, a global learner needs to see the big picture before focusing on the details (Dunn, 1990). Learning styles are also not static, they change or develop over time. Most elementary learners are global and then some become analytic as they grow older.

Further, some trends have been observed concerning analytic and global learners. It is common to find that analytics prefer learning alone, in a quiet, bright, formal setting with few distractions. Conversely, many global learners appear to prefer distraction in the form of working with others, sound (music or background talking), informal seating, take breaks often and like to eat or drink something as they work (Dunn, 1990). Educators need to know how to teach both analytically and globally and to allow the environmental conditions which will afford each learner success.

Similarly, educators need to present new information to learners using their preferred perceptual style in order to maximise on understanding and retention, as well as increase motivation for learning (Dunn, et al., 2010).Young children and struggling learners are almost always tactile/kinesthetic learners, and so introducing new content to them auditorily is likely to lead to confusion in many cases (though there are always exceptions to this) (Dunn, 1990). Educators of young learners need to be aware of this and use auditory or visual teaching styles mostly to reinforce lessons already learned using tactile or kinesthetic strategies. As they grow older, many leaners develop auditory/visual perceptual styles, although a portion remain tactile/kinesthetic and are

often labelled "underachievers" or "learning-disabled" (Dunn, 1990). Delivery of content in ways that match these styles leads to much better understanding and retention.

The use of learning styles in learning requires that the educator, whether parent or otherwise, learns something about his or her learner in order to meet the learner's particular learning styles. It is imperative that the educator spend time studying the learner in order to understand how best to educate (Swanson, 2016). In this regard, the parent educator has a distinct advantage over the schoolteacher because he or she has spent time studying the child from birth. In addition, in some (but not all) cases, children's learning styles or patterns are similar to those of either the mother or the father. Because of this, the parents often have strategies they have adapted to help their children understand and enjoy learning (Healy, 2004). For learners in school contexts, their parents may need to help the school understand their child's individual needs and suggest new ways of studying at home.

It has been suggested that the methods by which a person who is strong in a multiple intelligence learns best is indicative of the learning style preferences of that individual (Denig, 2004). This was one reason that a synthesis of the two theories would be seen to be useful in personalizing learning for each child.

2.2.3. Combining Multiple Intelligences and Learning Styles

Personalized learning has been defined as "instruction that is differentiated and paced to the needs of the learner and shaped by the learning preferences and interests of the learner" (Taylor & Gebre, 2016). This definition, when inverted, points to the use of learning preferences (or Learning Style preferences) and interests of the learner, which in many cases is indicative of the learner's MI profile, both of which when used to differentiate instruction, result in personalized learning.

Educational activities focused on the whole child requires providing the learner with alternative pathways to learning success which are adapted to meet the learner's individual learning needs and interests (Scherer, 2009). These activities should present concepts differently, engage students differently in learning and provide learners with successful learning experiences; all of which can be achieved with the use of multiple intelligence and learning styles approaches (Scherer, 2009). MI-based instruction is a

holistic and inclusive instructional model that helps educators create cross-curricular links and integrate different learning styles and abilities (Johnson, 2007).

It has been suggested that both multiple intelligences and learning style theories have certain strengths and weaknesses when applied to education that correspond to the strengths and weaknesses of the other (Silver, Strong, & Perini, 2000); and "while distinct, they are not competing concepts, and they work together to contribute to learning" (Dunn, Denig, & Lovelace, 2001). Therefore, to provide a holistic education which engages the full range of human diversity in each learner requires the blending together of these two models (Silver, Strong, & Perini, 2000).

Gardner's (1993) MI is an especially powerful model in helping educators create authentic learning experiences for students as well as increase student achievement, participation, and nurture various learning styles (Johnson, 2007). This potential of multiple intelligences to nurture learning styles is an area of interest in this study. Individual traits among learners suggest that educators need to assess the learning style preferences of each learner and devise interventions that are compatible with those preferences (Griggs & Dunn, 1984).

In order to put this combined personalization model using MI and LS into practice, parent educators should be guided by four basic principles. First, it would build comfort into learning in order to enable learners to respond positively to their education since learner comfort is related to learning styles and intelligences. Secondly, in order to ensure that comfort does not result in mental laziness, it must be balanced with challenge. Learners would be willing to be challenged to use styles and intelligences which need to be developed, when they know their dominant styles and intelligences are respected and can be used to develop their weaker areas. Third, combining use of MI and LS allows the learner to understand content in greater depth. Lastly, the combined approach to personalization prevents boredom caused by constant repetition, thereby resulting in a more motivated learner. By using LS and MI, learners can be engaged, participate actively, are more self-confident and self-motivated towards life-long learning (Silver, Strong, & Perini, 2000).

This study sought to investigate if and how multiple intelligences and learning styles were used in the context of home education and what the perceptions of the parent educators were concerning their children's multiple intelligence profiles and learning style preferences. The aim was to suggest the blending together of these two models to enhance home learning and possibly guide home educators in the design of personalized educational interventions for each child.

2.3. Empirical Review

2.3.1. Multiple Intelligences

There have been a number of research studies conducted on the theory of multiple intelligences by Gardner such as in regard to self- assessment and parent perceptions of the intelligences (Furnham, 2000). There are also studies on the application of multiple intelligences in the educational context such as a qualitative study of the attitudes towards a multiple intelligences curriculum in Farthington elementary school (Mettetal, Jordan, & Harper, 1997) which involved observation of students and a parent survey as well as interviews with students, parents, teachers and administrators. This study highlighted the importance of MI in changing teacher and student attitudes and illustrated that learning about MI theory changed the thinking of the educators and learners even before there was a significant curriculum change (Mettetal, Jordan, & Harper, 1997). This potential for altering parent and learner attitudes in home learning contexts was of interest for this study.

Delia Richards (Richards, 2016) conducted a cross-sectional, exploratory study to explore the perceptions of teachers, administrators and parents on integrating the multiple intelligences by Howard Gardner into the curriculum of pre-kindergarten to grade three in a public elementary school in Atlanta, Georgia. Data was collected using questionnaires and focus group interviews, as well as the researchers attending teachers' meetings. Findings from administrators, teachers, and parents revealed satisfaction with the integration of MI into the curriculum, and how the differentiation lessons use different learning styles. The study by Richards (2016) provided part of the framework for this study as it is an exploratory study into use of MI and learning styles, although the latter was not explicit.

Another study conducted by Sherelle Hessell (Hessell, 2005) was a comparative study of teacher and parent perceptions of first grade children's multiple intelligences as well as the influence of ethnic origin and gender on these perceptions. The sample was taken from three classrooms from different public charter schools in Tallahassee, Florida. Three teachers and 40 parents completed the Multiple Intelligences Development Assessment Scale (MIDAS)-KIDS, "My Young Child" (MYC) to assess their children's multiple intelligences based on the MI theory by Gardner (1983). Parents perceptions of some intelligences was significantly higher than teacher perceptions, due to the fact that they had more varied experiences with their children in different environments. In addition, it was found that stereotyping on the basis of gender and ethnic origin plays a role in how parents and teachers socialize children which impacts the development of some intelligences over others. This study also informed the framework for the current research and was useful in the design of data collection instruments.

2.3.2. Learning Styles

Since the inception of the Learning Style theory (Dunn, Dunn, & Price, 1978), more than 860 studies have been carried out by researchers on the learning styles of various groups and ages (Dunn & Honigsfeld, 2013). Research on leaning styles explains why children in the same family perform differently academically, as well as the differences and similarities between boys and girls, different age groups and children with different reading abilities (Dunn, 1990).

A meta-analysis of research based on the Dunn & Dunn LS model conducted between 1980 and 2000 (Lovelace, 2005) was conducted to understand the overall effectiveness of the LS model with regard to improving learning for all learners in all contexts of the world. The meta-analysis found that the data strongly suggested that use of learning styles in instruction would increase the learning and the attitude towards learning of all learners of all ages.

A study on the learning style preferences, based on Dunn & Dunn model, of German adolescents was conducted to see whether the differences could be grouped by age, gender, and academic achievement (Hlawaty, 2008). This study found that the German

adolescents sampled revealed significantly different learning style characteristics. This indicated that all learners learn differently, and this needed to be considered in the home education context as well.

Several studies cited by Dunn (1990) revealed that when learners were introduced to new educational material through their preferred perceptual learning style (auditory, kinesthetic, visual, tactile), they remembered significantly more than when they were introduced to this information through their least preferred perceptual learning style. This was very relevant for the current study as the need to personalize learning rested heavily on instruction that is differentiated and shaped by the learning preferences of the learner.

2.3.3. Personalized Learning

Personalized learning requires adapting instruction to meet the learner's individual needs and interests (Scherer, 2009). This requires varying instruction according to these needs and ensuring that content is engaging and motivating for the learner. Previous studies have illustrated that learners are better equipped to understand educational content when they learn in a manner that complements their unique learning styles. Further, studies have shown that matching learning style preferences with education interventions that are compatible increase academic achievement (Denig, 2004). Research also shows that understanding learners' multiple intelligences positively impacts education programs or instructional routines for learners in different educational contexts (Hoerr, 2000). This study posited that a synthesis of MI theory and LS model would lead to effective personalized learning.

2.3.4. Multiple Intelligences and Learning Styles

A paper by Denig (2004) compared the theories of multiple intelligences by Gardner (1983) and learning styles by Dunn et al. (1978) to suggest ways that educators using a combination of both theories may be able to improve student learning over the range of intelligences. The author made a distinction between the two and stressed that multiple intelligences addresses what is taught (the product or content); learning styles addresses how it is taught (the process). Denig (2004) suggested that methods by which people

who were strong in a multiple intelligence learn best were suggestive of the various learning styles by which learners process new and difficult information, and proposed a research format which synthesized the two approaches for the benefit of future research to see which learning style elements correlate with each intelligence. This research borrowed from this proposal to develop the framework for the current study.

Another study on Dunn and Dunn learning styles and Gardner's multiple intelligences of EFL college students in Kuwait (Alrabah, Wu, & Alotaibi, 2018) used convenience sampling to collect data from 250 students on their MI and LS via Google Forms surveys filled online and analysed using Excel spreadsheets. Results indicated that while the participants' dominant learning styles were global, extroverted, hands-on, and visual, their dominant multiple intelligences were interpersonal, visual, and kinesthetic. This had implications for pedagogy used to teach the students to incorporate their MI and LS into lessons. This study provided insights for the current research when designing data collection and analysis tools.

Research conducted on the correlation of multiple intelligences by Gardner and learning styles as variables in the teaching-learning process of Spanish as a foreign language (Cervera, 2015), used a different learning style model from the one used in this study (Honey and Alonso's model), but was a useful reference during the research design. Another study (Tirri & Nokelainen, 2011) sought to operationalize Howard Gardner's MI theory into a self-evaluation tool to be used by learners to measure learner's own perceptions and beliefs about themselves and their intelligence profile. This study provided useful insights during the design of research and data collection tools.

2.3.5. Multiple Intelligence and Learning Styles in Home Education

A study on learning styles of home-schooled children was conducted to investigate if home-schooled children whose parents more accurately perceived their learning style preferences had higher academic achievement scores (Medlin, 2010). The study, based on the Dunn and Dunn model, found that parents accurately perceived most of their children's learning style preferences, and for some preferences, parental accuracy was related to children's achievement. This was useful in informing the framework for the current study.

A qualitative study conducted across the United States of America to investigate the motivations behind instructional decisions within homeschools (Thomas, 2016) found that instructional motivations reported by home educating families included a child's unique learning style, a child's interests, special goals, and special needs. This study was instructive in guiding the methodology of the current study. Another study on parental perceptions of homeschooling in Kenya (Nthuku, 2016) also found that a key reason for parents to home educate was that it provided enough time for the child to develop their passions, interests and talents. These two studies pointed to the use of LS in home education and by extension, MI with regard to the interests of the child.

MI theory has been applied in numerous educational contexts. In *Multiple Intelligences and Student Achievement: Success Stories from Six Schools* (Campbell & Campbell, 1999) the authors examined six schools ranging from elementary to middle-level to high schools and they discovered that MI theory is flexible enough to be applied to any educational context because it is a construct about human intelligence. They identified some fundamental principles of successful MI programs which would be applicable in any educational context: Belief that learners are intellectually competent in multifaceted ways; promotion of intellectual diversity; educators as astute observers of learners and adjustment of instruction accordingly; learning is active, hands-on and multimodal; learner strengths are used to improve academic weaknesses; personalized educational experiences; autonomous learning skills developed; mentoring; interdisciplinary study in multi-age groupings; application of learning in real world contexts; and varied assessments (Campbell & Campbell, 1999). These fundamental MI programs principles are easily mirrored in many home education contexts around the world as evidenced by the Worldwide Guide to Homeschooling (Ray, 2002). Because MI identifies what to look for, parents can become better observers of their students and, as a result, would be able to diversify and personalize learning for each child.

A study on home-schooling (Green, 2005) noted that a major reason many parents home educate was due to their beliefs that their child has unique academic, behavioural, emotional and physical needs which necessitated a more personalized approach to learning. Jeynes confirmed this when he identified as a key beneficial aspect of home

education the provision of an environment in which learners received more personalized instruction from their educators (Jeynes, 2016).

2.3.6. Multiple Intelligences and Learning Styles in Kenya

There were few studies on multiple intelligences in Kenya and on learning styles as well. None had sought to combine the two approaches to learning. One study on multiple intelligences in Kenya focused on secondary school learners (Ouma, 2014) but combined the use of IQ tests and multiple intelligence and seemed to use the two interchangeably. The conclusions of that study were therefore not helpful in this study.

A second study (Naissuma, Kindiki, & Chumba, 2017) sought to examine alternative instruction management models that enhanced MI among secondary students in Kenya. This study found an over-emphasis on the linguistic and logical-mathematical intelligences at the expense of the other intelligences. Data was collected using questionnaires, document analysis, focus group discussion and interviews and was analysed using qualitative thematic approach, descriptive and inferential statistics and presented in tables and graphs. The findings indicated that school management was managing traditional instruction management models of enhancing abilities thus majority of the students' multiple intelligences were not developed.

(Nzesei, 2015) undertook a correlation study of learning styles and learner achievement in secondary schools in Kenya and sought to investigate the learning style preferences for the students. The current study was focused on children in the lower elementary level of education in the context of home education in Kenya. It sought to identify the learning styles and multiple intelligences of learners in this age group and the perceptions of their educators concerning the learners' abilities with an aim to enhance home learning. Home educators in Kenya, much like their counterparts in other countries are desirous of developing the whole child (Nthuku, 2016), (Gitonga & Waswa, 2018) and a synthesis of MI and LS would greatly enhance efficacy in the pursuit of home education.

2.4. Theoretical Framework

In qualitative research, the theoretical or conceptual framework provides the theoretical lens or perspective to guide the researcher on the crucial issues for examination (Creswell, 2009). This study proposed exploring the blending of MI theory and LS theory as a tool to impact children's personalized learning in the context of home education.

Personalized learning which is focused on the whole child requires adapting instruction to meet the learner's individual learning needs and interests (Scherer, 2009). It also requires varying instruction in order to engage students differently in learning and provide learners with successful learning experiences; all of which can be achieved with the use of multiple intelligence and learning styles approaches (Scherer, 2009). MI-based instruction is a *holistic* and inclusive instructional model that can help parent educators integrate different learning styles and abilities (Johnson, 2007).

The theory of multiple intelligences by Gardner (1993) advocates that intelligence should not be reduced to a single overarching construct and suggests instead there are at least eight intelligences that educators need to consider in the holistic development of the learner; these are the linguistic, logical-mathematical, spatial, bodily-kinesthetic, musical, naturalistic, interpersonal and intrapersonal intelligences. These intelligences represent the content of learning, and the strengths of MI theory in relation to the learning process are that: it provides impetus for educational reform in various contexts (Armstrong, 2009); it is child-centred and develops children's innate potential (Denig, 2004); and it challenges educators to find ways that work for each individual learner (Gardner, 1999). In an educational environment, MI encourages instructors to create multi-facetted curriculum and engaging learning experiences (Johnson, 2007).

On the other hand, the learning style preferences theory developed by Dunn et al.(1978), argues that individuals demonstrate intelligence through the manner in which they perceive, comprehend, adapt to new situations, learn from experience, seize the critical factors of a complex issue, solve problems, critically analyse, and make productive decisions (Denig, 2004). The theory identified 21 elements grouped into environmental; emotional; sociological; physiological; and psychological variables which they call

learning styles to refer to the ways in which each individual pays attention to, processes, internalizes and remembers novel and challenging academic content. The 21 elements are: sound, light, temperature, design, motivation, persistence, responsibility, structure, self, pair, peers, team, adult, varied, perceptual, intake, time, mobility, and global-analytic processors, hemisphericity, impulse-reflective.

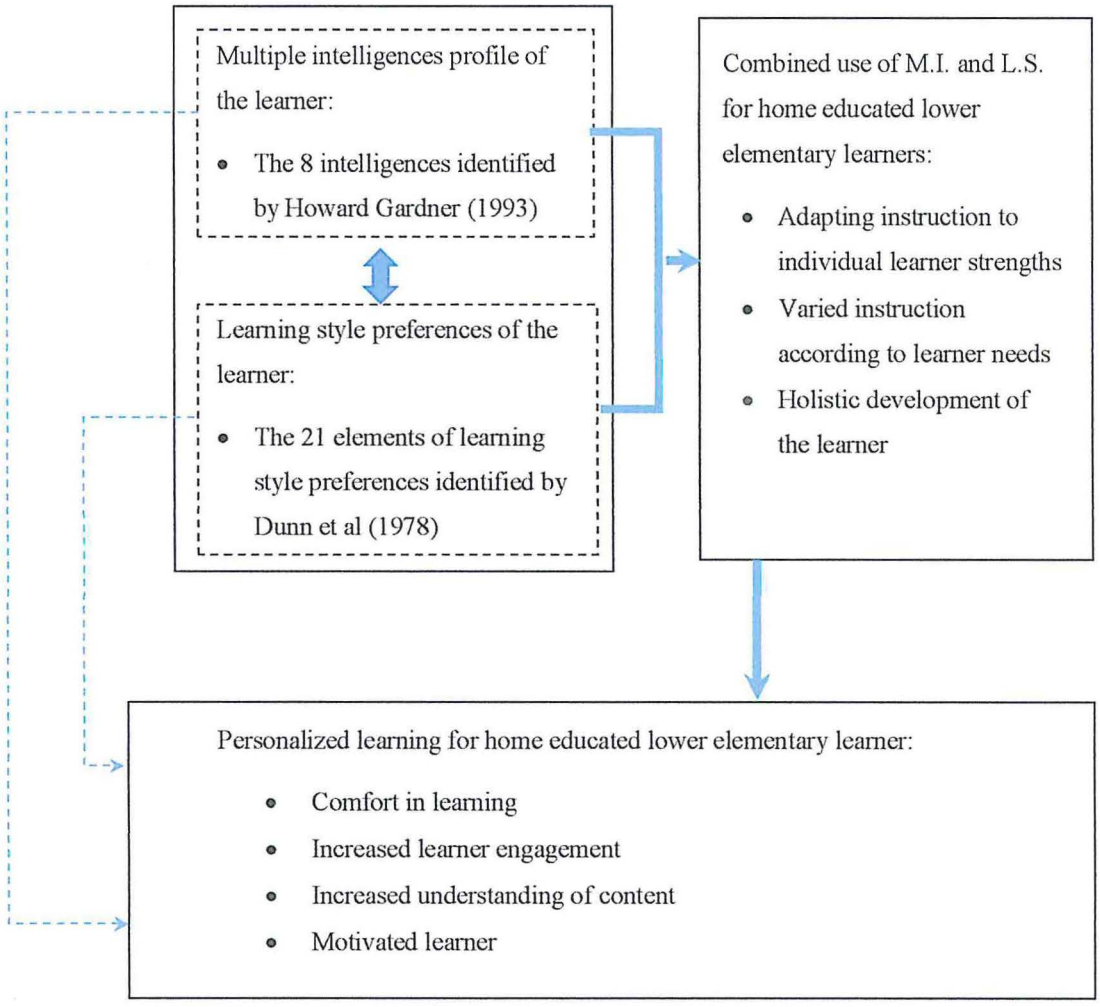
Research shows that students learn more effectively when educators teach in a manner that is consistent with each learner's dominant learning styles, and that matching learning style preferences with compatible educational interventions is beneficial to learner academic achievement (Denig, 2004). Multiple intelligence approach also makes a positive difference in educational programs, and it improves the lives of children (Campbell & Campbell, 1999); (Hoerr, 2000). This study proposed that a synthesis of the two educational theories, MI theory and LS preferences, would result in even greater learning effectiveness by enhancing the provision of personalized learning to each individual learner.

The assumption was that the enhanced learning of the home educated learner, as a result of personalized learning using MI and LS of the learner, would result in more comfort in learning enabling learners to respond positively to their education. It was also expected that learners would respond positively to learning challenges using different learning modalities and that the learner would be able to understand content in greater depth. In addition, it was expected that those learners for whom this personalization was effective would be actively engaged in learning, thereby resulting in a more motivated learner who enjoys learning (Silver, Strong, & Perini, 2000).

Home education has been referred to as the "ultimate personalized educational environment" which for purposes of this research was defined as adapting instruction to each individual learner so that it varies according to the learner's needs, and interests (Jeynes, 2016). This study explored how home education, as the ultimate personalized educational environment, lends itself to the kind of personalized learning facilitated by the use of Gardner's MI approach (Gardner, 1983) and the consideration of the child's learning style preferences (Dunn, Dunn, & Price, 1978).

The study's theory proposition was that the consideration of MI theory and LS preferences were applied intuitively or deliberately within the context of home education, and could more easily be synthesized within that context due to the personalized learning opportunity that home education provides. This study therefore explored the integration of the MI theory and LS preferences into the lower elementary learning activities of children in home education contexts, and the resulting learning outcome of personalized learning. These theories were selected due to their applicability to the home education context. This was the operating theoretical framework, derived from theory, rather than a conceptual framework because the theories of MI and LS were guiding the study, and the concepts would be clarified in the course of the study (Imenda, 2014). Figure 2.1 below illustrates this theoretical framework.

Figure 2.1. Theoretical model



The areas of interest in this exploration as informed by (Richards, 2016) were first, to identify the perceptions of home educators of the lower elementary learner's multiple intelligences as they related to the teaching and learning experiences within home-schools. Secondly, to identify the perceptions of home educators of the learning style preferences of the lower elementary learners as they related to the teaching and learning experiences in the home education context. Third, to analyse how effective home educators were at being able to understand and apply, either knowingly or intuitively, the MI and LS approaches within the teaching and learning framework of lower elementary learners in Nairobi to personalize learning for each child for enhanced learning.

2.5. Gaps in research

Most of the research in Kenya and internationally in the areas of both multiple intelligences and learning styles focused on the application of MI theory and learning style theories in educational contexts within the school setting. There was not much research on the application of MI theory or LS model in the context of home education, and in Nairobi this had not really been studied. This study sought to fill this gap.

Another gap was the fact that most international research on MI and LS focused on the ages of upper elementary, through secondary school to tertiary level. In Kenya, most of the studies in this area have been focused on secondary education and this study focused on children in the age group of lower elementary, ages 6-10, in an attempt to fill this gap. Another aspect not presented in previous studies was the definition of personalized home learning and its attributes as a consequence of use of both MI and LS and this study aimed to fill this gap.

2.6. Contribution of this study

This study sought to shed some light on the MI profiles and the LS preferences of children in lower elementary home education contexts in order to address possible weaknesses in home education arising from a failure to understand their learners' needs and interests. The study also investigated if and how MI and LS theories were applied in home education in order to see if there was an educational gap or whether lessons could be drawn from the personalization of learning for those using the two approaches for

enhanced home learning. This would be useful in understanding the opportunities inherent in a synthesis of the two concepts with the aim of improving personalized learning experiences for those engaged in home education and allowing them to use the full scope of their learners' abilities and strengths while developing their weaker areas for the development of the whole child.

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

3.1. Introduction

This chapter focused on the plan, structure and strategy that was used to obtain answers to the research questions and to extract themes and subthemes from the data. It presented the procedure and the methods that were employed in carrying out the research.

3.2. Research design

Research design sets forth how the researcher will fulfil the research purpose and answer the research questions identified (Patton, 2015). The research design for this study was a mixed methods design which used a concurrent triangulation strategy to collect and analyse the data (Creswell, 2009). This approach was hinged on a pragmatic philosophy which combined the two research methods to help illuminate the research problem.

Mixed methods research is used when there is need for more insight to be gained from the combined use of both qualitative and quantitative methods as their combined use provides an expanded understanding of the research area (Creswell, 2009).The use of both qualitative and quantitative data collection tools, as well as the concurrent collection of data, gave opportunity to compare the data during analysis. The priority was however given to the qualitative aspects of the data due to the exploratory nature of the study and to allow for themes and subthemes to be identified from the data.

Qualitative research is exploratory and is useful when the researcher does not know the important concepts to examine, either because the topic is novel or has never been addressed with a certain group of people (Creswell, 2009). This study looked at personalized learning using multiple intelligences and learning style theories which is an emerging concept and has not been the subject of much research in Kenya. In addition, there was limited research on learning approaches used in home education in Nairobi, Kenya. The research also presented an understanding of personalized learning in home education contexts and its attributes, which has not been done in previous research work.

Qualitative approaches are used to inductively and holistically understand human experience in context-specific settings (Patton, 2015). This study was therefore conducted using a mixed methods approach with priority given to the qualitative data while using the quantitative data to investigate parent understanding of their learners' interests and needs within the context of home education. It was primarily an exploratory study to understand parent perceptions of the multiple intelligences and learning styles of elementary aged children engaged in home education and to investigate whether or not their parent educators consciously or unconsciously made use of MI and LS approaches to personalize learning. As priority was given to the qualitative methods over the quantitative ones, the essence of the research remained qualitative and descriptive.

3.2.1. Research Questions and approach

In this study the MI checklists and the LS inventories were used to triangulate and crystallize the qualitative data collected via questionnaires and interviews and vice versa. For each research question the outcomes were measured using several tools as illustrated in Table 3.1 below.

Table 3.1. Research Questions and Approach

Research Question	**Data Collection and Measurement**
i) What are parent educator perceptions of the multiple intelligence profiles of lower elementary learners in home education contexts?	Awareness of parents of the concept of MI in the parent questionnaire. The perceptions parents have of each of their children as recorded in the MI checklist. Do the results indicated on the checklist match up with the learner's account of their learning process? Are the results of the MI checklist and learner interview supported by the parent responses to the questionnaire? Do the parent responses clear any mismatch detected? Do the results of the MI checklist match up with the results obtained from the LS inventory or are there inconsistencies?
ii) What are parent educator perceptions of the learning style preferences of lower elementary learners within home education contexts?	Awareness of parents of the concept of LS in the parent questionnaire. The perceptions parents have of each of their children as recorded in the LS inventory. Do the results indicated on the LS inventory match up with the learner's account of their learning process? Are the results of the LS inventory and learner interview supported by the parent responses to the questionnaire? Do the parent responses clear any mismatch detected? Do the results of the LS inventory match up with the results obtained from the MI checklist or are there inconsistencies?
iii) What is the extent to which home educators in Kenya are aware of and use multiple intelligences approach and/or their child's learning style preferences in their home education contexts to personalize learning?	Based on the results from the parent responses and the learner responses as well as the MI checklist and LS inventories are parents personalizing learning for their home educated children? How is the learning being personalized? Use of MI in learning. Conscious or unconscious. Use of LS in learning. Conscious or unconscious. Use of both MI and LS in learning. Conscious or unconscious. Gaps in personalized learning. Lessons from those personalizing learning.

The use of the MI checklists and LS inventories, which were more quantitative in nature, together with the qualitative questionnaires and interviews gave rise to a mixed methods study. A mixed methods study is defined as one which combines both qualitative and quantitative research methods to broaden understanding (Creswell, 2009). A qualitative thematic analysis of the data was carried out in order to determine the aspects of the study set out in the table above.

3.3. Population and sampling

The idea behind sampling in qualitative research is to purposively select participants or sites that will best help the researcher understand the problem and the research question (Creswell, 2009). Purposeful sampling is defined as the process of strategically selecting information-rich cases to study which by their nature and substance will illuminate the inquiry question being investigated (Patton, 2015).

For purposes of this study, participants were sampled from the population of families of home educators of children within the ages of 6 and 10 years, who made up learners in the lower elementary level of education. This study was limited to the number of home educating families the researcher could gain access to as the home educating community in Nairobi was not large. It was estimated that the number was over 300 families (Home School Legal Defence Association [HSLDA], 2016). The target population of those families with children in this age bracket was smaller still – estimated to have been about 70 to 100 families in Nairobi. The sample was therefore a homogenous sample of families with home educated learners in the target age, purposively selected using snowball sampling to provide access to the participants.

This access was gained through home educator networks, known simply as co-ops, where home educators met to carry out various group learning activities. Through snowball sampling, one key participant known to the researcher in each network provided an entry point into the group and recruited more participants within the group (Barbour, 2014). The home educator networks sampled from met periodically (weekly, every two weeks, or monthly) in various parts of Nairobi to engage in learning activities like swimming, nature study, field trips, scouting, science experiments, physical education classes, art classes, etc. Three interviews were conducted in homes where the participants were unable to attend the co-op meeting but had expressed willingness to participate. In all cases, duly signed consent forms were administered, and a copy retained by the researcher and participant.

In purposeful sampling, due to the small sample size, the sampling is terminated when no new information is forthcoming from new respondents; the point of saturation

(Patton, 2015). The current research was therefore considered to have reached the point of saturation when no new information was forthcoming from new participants. It had been anticipated that this point of saturation may be between 15-20 participants. The target sample for this study was therefore between 25-30 participants to ensure that data collected exceeded this saturation point.

The participants sampled were 26 families consisting of 26 parent-educators and 34 learners in total. Some of the parents sampled had more than one child in the target age group and this resulted in more learners than parent educators; six of the sampled parents had two children in the target age group and one parent had three children in the target age group. The point of saturation was reached at the point where no new information was being given by the participants. This was estimated to have occurred after about 18 participants and their learners had been interviewed. The additional participants helped to bolster the already shared views.

3.4. Data collection methods

This study employed a mixed methods approach by using both qualitative and quantitative data collection methods to provide parallel insights, by using complementary methods to illuminate the different aspects of the experience of the same group of people (Barbour, 2014). In this case, the study used the different data sets from the two open-ended qualitative tools and the two closed-ended quantitative tools to look at the same phenomenon through a different lens, a process known as triangulation or crystallization (Barbour, 2014). Whereas triangulation emphasizes corroboration, crystallization acknowledges that there can be contradictions in the data sets and uses these disagreements to elucidate and build explanations.

The data collection tools were piloted on a small group of about three participants in Nairobi. Based on their feedback the structure of the questionnaires was changed to allow for different aspects of the data to be collected. The pilot also allowed the timing of how long it would take to conduct the interviews and complete the checklist and inventory. This proved quite useful in recruiting of participants as it helped to give a

definitive timeline for the collection of data as well as plan around the activities of the co-op meetings where the data was collected.

3.4.1. Open-ended questionnaires and interviews

Qualitative studies make use of open-ended questions, which are descriptive questions (Patton, 2015). Open-ended questions are not followed by any kind of specified choice, and the respondent's answers are recorded in their entirety (Nachmias & Nachmias, 1996). The research used open-ended questionnaires and interviews to collect data from the educators and learners about the use of MI and LS in the home-schools. The questionnaires and the interviews were administered by the researcher as this was an exploratory study which required opportunities for the researcher to ascertain a lack of information on the part of the respondent (Nachmias & Nachmias, 1996). This was useful in determining awareness of MI and LS theories by home educators.

Appendix C of this report contains the questions that were included in the questionnaire, which was administered to the parent educators and the responses collected by the researcher. The original intent was to record the interviews using an audio recorder. However, I encountered resistance to being recorded by the parent participants as they were uncomfortable and was in some cases asked not to record. For this reason, I stopped recording the sessions using an audio recorder and instead opted to write down the responses verbatim, capturing as much emotion and inflection as I could into the transcription of the data. Some of the parents were also hesitant to allow me to audio record their children and for that reason I only recorded a few of the responses. However, I made every effort to capture the sentiments of the learners in their responses.

In the case of four parent questionnaires, the parent participants were requested to write down their responses to the questionnaire as the time for the co-op meeting was short and I needed to interview their children as well. I however, ensured that the data was as rich as the questionnaires I personally administered by giving guidelines and instructions before and during the time they completed the questionnaire. Afterwards, the questionnaires were reviewed, and any gaps were filled either on the spot or through follow-up phone calls to the participants.

Appendix D contains the questions that guided the interviews of the home educated lower elementary learners. The interviews were conducted by me as the researcher except for one case where because of time I requested a friend of mine who had already been interviewed and who had prior experience conducting interviews to conduct one interview for me. The results collected in this case were consistent with the rest of the data set. The interviews were conducted wherever the children felt most comfortable, on the side of swimming pools, on the grass, on a park bench, etc. Most of the children were very excited about being interviewed.

3.4.2. Closed-ended MI checklist and LS inventory

The study also used a simplified multiple intelligences checklist, included in Appendix E to collect data on the multiple intelligence profiles of the learners. This was developed using an MI checklist provided by Armstrong (2009) for use by teachers to assess the MI profiles of the learners in their classes. I modified it so that it would be more relevant for use by parents, being guided by Koch (2016) on the aspects of MI that would be easily recognized by parents. The study also used a simplified learning styles inventory contained in Appendix F to collect data on the learning style preferences of the learners in the various home-schools. This LS inventory was adapted from the Parent Questionnaire used by Medlin (2010) in her study and modified it to be relevant to parents using (Dunn, 1990). The MI checklist and the LS inventory were completed by the parent educators for each individual learner; where a parent had two or more children, two or more checklists and inventories were completed. The checklist and inventory were only given to the parent participant after the parent educator questionnaire had been administered. This allowed the research to check the knowledge of the parent educators of the concepts of MI and LS before they had the opportunity to learn what the concepts were from the quantitative data collection tools.

The MI checklist and LS inventory were comprised of closed-ended questions which were intended to strengthen the study by triangulation with the questionnaires and the interviews. This triangulation enabled the study to check the consistency of the data collected (Patton, 2015). Some of the participants did not complete the checklist or inventories correctly and they had left some sections unanswered or unchecked. In these

instances, I followed up with them on phone and asked them for the responses to the unchecked sections and completed the checklists in a different colour pen. This was to help determine which responses required follow up calls for clarity.

3.5. Data analysis procedures

Data analysis in qualitative studies is an ongoing process. Researchers formulate hypotheses and note important themes throughout the course of the study. As the study progresses some of the hypotheses are abandoned while others are refined and new ones are formulated (Nachmias & Nachmias, 1996). The analysis of data used thematic analysis with regard to certain regularities, patterns or themes which emerged from the data concerning parent perceptions of the learning styles and multiple intelligences of the learners and their use within home education contexts.

Thematic analysis is a flexible qualitative method for identifying, organizing, describing, and reporting themes found within a data set (Braun & Clarke, 2006). This analysis was useful for examining the perceptions of the various participants, highlighting similarities and differences in their responses and generating unexpected insights (Nowell, Norris, White, & Moules, 2017).

The main phases in the thematic research included: becoming familiar with the data; generating initial codes; searching for themes; reviewing themes; defining and naming themes; interpretation and producing the report. This was an iterative and reflective process which developed over time and which constantly moved back and forth between phases during the research (Nowell, Norris, White, & Moules, 2017).

The data sets were transcribed which allowed for familiarization with the data and forming of initial themes. The data was then manually coded into the most basic elements of the raw data which could then be assessed for meaning (Braun & Clarke, 2006). The codes were developed mainly from the responses given by parent educators to the questionnaire as well as the learner responses to the interview as these were the main qualitative data sources. The codes were then examined to identify interesting aspects that formed the basis of repeated patterns which were then grouped into initial themes on the basis of the main research questions.

The codes developed from the responses to the learner interviews were also compared against the parent educator responses to the MI checklist and the LS inventory to assess whether the findings for each learner were consistent across the data sets or whether they were inconsistent. The parent educator questionnaire responses were also examined to identify the possible reason for any inconsistencies and to confirm the consistencies. This process of crystallizing the data (Barbour, 2014) enabled the thematic analysis to be strengthened by looking at the linkages between the data sets, to assess parent educator perceptions of their children's MI and LS as well as the conscious or unconscious use of the two approaches by home educators to personalize learning for their children.

The themes identified were then refined using visualization mind-maps to help illustrate more clearly the linkages between the codes and to sort the main themes and the sub-themes within them (Braun & Clarke, 2006). Those themes which were not strong enough were absorbed into larger themes and those which did not address the research questions were discarded. I then read through the data sets once more to ascertain whether the themes identified actually fit the data and to code any data that may have been missed in the initial coding process. The refining of the themes and rereading the data sets provided a basis for the research report and helped link the analysed themes back to the original data.

3.6. Research quality

This relates to the validity, reliability and objectivity of the research to be carried out, although these terms carry different connotations in qualitative research from that of quantitative research. Validity is necessary to demonstrate the accuracy of findings and convince readers of this accuracy, while reliability relates to examining consistency of responses (Creswell, 2009). In qualitative studies, validity and reliability are conceptualized as trustworthiness: credibility, transferability, dependability, and confirmability (Nowell, Norris, White, & Moules, 2017). This was ensured by the use of both qualitative and quantitative instruments to enable triangulation of data sources and methods.

Content validity and specifically face validity is concerned with the extent to which the researcher believes the measuring instrument is appropriate to measure what is intended (Nachmias & Nachmias, 1996), and to determine whether the research findings are accurate from the standpoint of the researcher, the participants, or the readers of an account (Creswell, 2009). Reliability in qualitative research is used to check for consistent patterns of theme development. This was ensured by testing the data collection instruments with a small group of participants to see whether the questions asked would measure what was intended.

This study used triangulation and crystallization to search for points of convergence or divergence among the different sources of information and used it to build a coherent justification for themes identified in the study. The researcher also used peer debriefing to call upon two colleagues who were not involved in the research project to aid in probing the thinking around all or parts of the research process, to enhance the accuracy of the account (Creswell, 2009) (Barbour, 2014). The learning style inventory based on Dunn & Dunn learning style model had good validity and reliability (Roberts, 2017) as did the multiple intelligences test (Alrabah, Wu, & Alotaibi, 2018). These were used together with questionnaires and interviews to enhance validity and reliability of the study.

3.7. Research ethics

This study entailed working closely with families and ethical considerations were taken into account. One of the primary considerations was not to put participants at physical. psychological, social, economic, or legal risk during the conduct of data collection and analysis. Another consideration was to respect vulnerable populations such as minors and expectant mothers (Creswell, 2009).

The main risk facing most home educators was the lack of explicit legal provisions supporting home education in Kenya (Gathure, 2015). This placed at legal risk any participants who would prefer not to be identified as home educators. The study therefore took measures to ensure that the home educators sampled would not be identifiable through the data collected. An additional risk was the fact that home

education is a relatively new concept in Kenya which posed the social risk of a lack of understanding of home education and thus a negative view of the practice. One eventual benefit of this study was to shed light on the practice of home education to foster greater understanding among educators and policy makers in Kenya.

The researcher at all times strictly adhered to the principles of confidentiality and informed consent and ensured that any children involved in the study were always accompanied by an adult for the duration for the interview and that the parent procured consent from the child before the interview was conducted and signed the informed consent form on behalf of the parent and the learner.

The identities of all the participants were protected and participants were only identified through a randomized code number assigned to each participant. The instruments used a randomized participant code to identify the parent participants and the learner participants to ensure confidentiality, anonymity and non-traceability of participants during collection, analysis and dissemination of the data. Further, the research report further changed the codes that would prevent even the participants from being able to identify themselves since they each remained with a copy of the signed informed consent form.

Any information collected was for research purposes only and has not and will not be shared with a third party except as contained in this report. To this end, an informed consent form was developed for participants to sign before they participated in the research and it acknowledged that participant's rights would be protected during the data collection (Creswell, 2009). The informed consent form ensured that the data collected was not under duress of any kind and laid out the right of the participants to not answer any question. A draft of this informed consent form is located in Appendix B.

Each parent participant signed this consent form in duplicate before either the parent or learner interview was conducted. A copy of the signed consent form remained with each parent participant and the researcher retained the other copy. In addition, the parent was present during the interview of the learners although in one case the child seemed

hesitant to give candid responses in the hearing of the parent and so, at the request of the parent, we moved out of earshot in this case but within sight of the parent.

The informed consent form and all the data collection instruments as well as the proposal for this study were reviewed by the RHInnO Ethics Review Board and authorization duly obtained before carrying out this research in Nairobi. In addition, NACOSTI approval to conduct research within Nairobi County was sought and a research permit duly granted.

CHAPTER FOUR: PRESENTATION OF RESEARCH FINDINGS

4.1. Introduction

The current study looked at the conduct of personalized learning within the context of home education with regard to whether or not parent educators used MI and LS either deliberately or otherwise and what their perceptions were of their children's MI and LS. This chapter began by presenting the findings relating to the participants engaged in home education in Nairobi. The following sections went on to explain the findings relating to the research questions set out in Chapter One of this study.

4.2 General findings relating to home education in Nairobi

The general findings relating to the participants engaged in home education in Nairobi was presented based on the sample of 26 families; who does it, why they do it, where they do it, how they do it, when they do it. These findings shed light on the practice and context of home education in Nairobi to better understand the findings relating to the various research questions.

4.2.1. Description of Participants

The sampled home educators were comprised of 26 families who live in various parts of Nairobi County. The 26 participant families were represented by 26 parent educators and 34 learners. One of the sampled parent educators was a father, and 2 participants were a mother and father responding to the questions together. The other 23 parent educator participants were all mothers. In all cases sampled, the mothers were the primary home educators. This accounted for the majority of the participants being female as the data was collected during co-op meetings which learners attend mostly with their mothers.

Table 4.1 below provides summary profiles of the participants in this study.

Table 4.1. Summary profiles of participants

Parent Code	Parent Gender	No. of Children	Parent Years Home Ed	Learner Code	Learner Gender	Learner Age	Years in School	Learner Years in Home Ed.
A	Male	2	5	A1	Male	8	0	5
				A2	Female	6	0	3
B	Female	2	2	B1	Female	6	0	2
C	Female	2	3	C2	Male	6	0	3
D	Female	3	3	D1	Male	8	0	3
				D2	Female	6	0	2
E	Female	2	0.25	E1	Male	7	6	0.25
F	Female	3	0.25	F1	Male	8	5	0.25
G	Female	3	3	G1	Female	8	0	3
				G2	Male	6	0	3
H	Female	2	5	H1	Male	9	1	5
I	Male & Female	3	3.5	I1	Male	6	0	3.5
J	Female	3	4	J1	Female	10	3	4
				J2	Female	7	1	4
K	Female	3	4	K1	Male	10	3	4
				K2	Male	8	1	4
L	Female	2	4	L1	Female	10	1	4
M	Female	4	4	M1	Female	8	1	4
N	Female	3	2.5	N1	Female	7	0	2.5
O	Female	3	7	O1	Female	9	0	4
P	Female	3	1	P1	Female	9	5	1
Q	Female	3	7	Q1	Female	8	0	2
R	Female	4	3	R1	Male	10	0	10
S	Female	2	0.75	S1	Female	10	5	0.75
T	Female	4	2	T1	Female	10	4	2
U	Female	4	10	U1	Female	9	0	9
V	Female	1	0.25	V1	Female	7	5	0.25
W	Female	3	3	W1	Female	9	3	3
X	Male & Female	11	24	X1	Male	10	0	3
				X2	Male	8	0	3
				X3	Male	7	0	2
Y	Female	2	4	Y1	Female	9	3	4
Z	Female	3	4	Z1	Female	10	3	4
				Z2	Female	9	2	4

The 26 participant families were made up of diverse numbers of children ranging from a family with one child to a family with eleven children (aged between 5 years and 27 years). The mean, mode and median number of children per family was 3 children per family. Most of the families were home educating all their children except for one

family which had the two younger children in school and the older child (age 8years) was the one being home educated. Two of the participants had children who were much older and had gone through the school system but had decided to home educate the younger ones.

Description of home educator participants

Under this section, it was important to determine the experience and training of the home educators. The number of years of experience home educating for the parent educators ranged from as little as three months to as many as 24 years. Most of them had however been home educating for less than 5 years. With regard to educational training of the parent educators, 34.62% had a background in education ranging from a few months of training in education at a local university to one with a bachelor's and master's degree in education from a foreign university. Some of them also had experience teaching in schools, with one having 20 years of experience teaching in a private international school in another African country.

The remaining 65.38% had no formal educational background or training. However, most of those without formal university training had attended informal training for home educators administered by various home education support organizations, either internationally or locally. These trainings helped the parents with choice of curriculum, and how to use that curriculum. In addition, most instructional material designed for use in home education come with an instructor's guide to assist parents to use the material to good effect.

Description of learner participants

The ages, gender and number of years home educating vis a vis schooling was noted. The learners were 34 children in total. Their ages ranged from 6 years to 10 years with the mean, mode and median age being 8 years. There were 14 male and 20 female learner participants in the sample. 17 of the 34 participants had never been to school, meaning they had been home educated all their lives. This represented 50% of the learners sampled. The remaining 50% had been in school for as little as 1 year and as long as 6 years. The number of years the learners had been home educated ranged from as little as three months to as many as 5 years of home education for the learners.

4.2.2. Findings on home education program

This section set out the findings regarding how home education is done in Nairobi, that is, location of home education, the primary educator, the type of instructional materials and the choice of education program.

Context of education program

Most of the sampled learners learnded primarily within the home but went out for co-op meetings and outdoor learning activities like sports, dance, field trips, and nature study. Most of the learners were taught by their mothers with some help from the fathers or older siblings. A few of them had tutors who visited the home regularly to help teach some of the traditional academic subjects and left the rest of the lessons to the mother, and one of the sampled learners had teachers who taught all the subjects while the mother played a supervisory role.

In all the sampled families, the parent educator determined the educational program for the child, and in some cases, there was evidence of consultation between both parents. Both parents were in agreement on the decision to home educate in all the sampled cases. In all cases sampled, this was done after consideration and consultation with home educator support organizations and other more experienced home educators, as well as after conducting considerable research from educational literature and internet resources.

Instructional materials

Of the sampled participants, 61.54% of them used boxed curricula, which is essentially a structured curriculum that comes pre-packaged with all the required subjects for the various grade levels. Of these, 38.46% of total participants used the Accelerated Christian Education (A.C.E.), curriculum almost exclusively. This curriculum is described as a Bible-based, Christian K–12 curriculum, consisting of reading programs, core curriculum, required electives, and additional instruction programs. It is a structured American program and uses "paces" which allow the child to self-instruct for the most part and the parent is involved in helping the learner understand the material and checking the learner's work. Parent educators sampled who used the A.C.E curriculum supplemented with Kenyan History, Geography and Kiswahili. 19.23% of

participants families used the Kenyan 8-4-4 or the competency-based curriculum but most of these said they supplemented the instructional material with other learning material aligned to the children's interests. 1 of the sampled participants used the Cambridge curriculum from an online provider and had tutors who instructed the learner.

The rest of the home educators (38.46%) were *eclectic* in their educational approach, in that they chose instructional materials for each of the subject areas they felt were most aligned with the child's interests and what they felt the child needed to know. Most of them used foreign instructional materials from the USA and the UK and supplemented it with Kenyan materials for local content like Swahili and Kenyan History and Geography. The eclectic approach was seen as the more flexible approach as it allowed the parent educator to select instructional materials which were in line with the learner's needs and interests.

Factors guiding choice of education program

The deciding factor for most of the parent educators with regard to their choice of educational program was found to be a desire to educate their children using a Biblical Worldview or Christian approach. In addition, the desire to meet the individual learning needs or preferences of the learners as well as cater to their interests and innate abilities and talents was a major guideline for most parent educators when selecting instructional materials and educational routines. Some of the parents indicated that a desire to provide a personalized, holistic education for their child determined the choice of education program; in order to ensure development of the whole child – physically, emotionally, spiritually, and intellectually. A few parents indicated using mostly locally available materials, with cost and accessibility being relevant.

The source of information for most parent educators on which instructional materials and educational routines to use was found to come largely from other home educators, homeschooling conferences, research from books or the internet as well as home-school resource centres. A few parents even visited schools and consulted with teachers in order to help them in designing their home education program.

Table 4.2. below provides a summary of the learning activities which comprised home education programs that the sampled participants in Nairobi engaged in.

Table 4. 2. Learning activities that make up home education programs

Most Common Activities	**Elective activities (less common)**	**The Arts / Creativity**	**Sports**	**Responsibility**
- Math - English (reading, writing, grammar, word-building) - Science - Social Studies - Swahili - Bible/ Devotions - Music/ Piano - Co-op Meetings	- Art/ Drawing - Handicrafts - Field trips - Nature study - Read aloud - Geography - History - Literature - Board game - Puzzles - Lego/ blocks - French	- Creative Writing - Ballet/ dance - Piano - Guitar - Tin whistle - Violin - Chess - Engineering - Robotics - Poetry - Drama - Computer	- Swimming (most common) - Soccer - Skating - PE - Horse riding - Tennis - Cycling - Tennis - Hiking - Camping - Basketball - Gymnastics - Taekwondo	- Chores - Cooking - Baking

4.2.3 Findings on motivation for home education

The findings regarding the various motivations parent educators had for deciding to home educate were varied. They were themed as desire for an alternative learning solution, desire to have more learner engagement, desire to personalize learning, and desire to increase parental involvement and control in learning.

Alternative learning solution

The most common reason given for parents opting for home education was a dissatisfaction with the formal school system and a desire for an alternative. About half of all participants sampled fell into this category. They narrated various negative experiences they had had when they put their children into formal schools. A few parents said that their children were so tired after school that they did not have time to pursue other interests they had like violin or even cooking. Other parents cited a rocky transition from one school system (e.g. Waldorf or IGCSE) to another system as the reason they decided to try home education. Others said they relocated and were not happy with the schools in the area where they lived and did not wish for their child to have to commute for long in order to get to school.

A few parents said that they were *"traumatized by their own or their children's experiences in school"* and wanted something different for their children – for them to enjoy learning.

Increased learner engagement

It was found that some of the parents did not feel that the school was able to meet the learning needs of their child. One parent's response captured this sentiment quite well. She had this to say *"It started as a general frustration with the school system. I was not happy with who my child was becoming - once confident was now withdrawn and not enthusiastic about life at such an early age (age 4). The school environment was not conducive. The school could not accommodate him as he was - his spirit was breaking and by the time he was going to Grade 2 his spirit was hardening to cope. He did not care anymore. I tried to tell the school, but they could not change for him - they did not get it. They had their own ends which were different from mine and my sons. I felt homework was not necessary at age 5 or 6. We had different philosophies. I decided since they were not willing to change, I moved him out"*. This parent response illustrates the challenge parents face to have their learner's need met in formal school and the resulting decision to home educate so as to ensure learner engagement in learning.

Personalized learning

Other common themes relating to the motivations behind the decision to home educate also included a desire to provide their children with a *"personalized"*, *"customized"* or *"individualized"* education. Another was a desire to provide them with a *"wholesome"* or *"holistic"* education which would *"maximise their human potential"* spiritually, emotionally, physically as well as intellectually or academically. Some of the parents said they wanted their children to *"develop a love for learning"* or to *"enjoy learning"*. This pointed to a desire to have engaged or motivated learners. This confirmed the position by Galen (1989) and Jeynes (2016) that home education is growing in popularity as it is perceived as the ultimate personalized learning environment.

Increased parental involvement: Some of the parent educators also expressed a desire to spend more time with their children as a motivation for home educating and *"to do life together"* or *"learn from life"*. A few parents indicated a desire to be more in control of

what their children were learning, with some saying they wanted the chance to impart Godly values to their children. These parent educators were motivated by a desire to be more involved in their learner's education and to foster values and learner motivation and character development. A small number of parents said they were advised to try home education by friends who had done it and they found it worked well for their children.

The motivations for home education, while varied, all had a similar theme; the desire to provide a better education for their learners. Having discussed the findings with regard to the context for this study, the next sections examined the findings with regard to the research questions set out in Chapter One of this study.

4.3. Parent educator perceptions of their learners' Multiple Intelligences

The assessment of parent educator perceptions of their learner's Multiple Intelligence profiles was reliant on several data sets. The Multiple Intelligences Checklist provided the findings of what parents perceived their learners' intelligence profile to be.

The Learner's Interview responses were compared against the Multiple Intelligences Checklist and the Parent Educator Questionnaire responses in order to evaluate the consistency of the parent educator perceptions of their children and the findings set out below.

Table 4.3. below provided a summary count of the collective count of the intelligences for all the learners as perceived by the parents. The scores for each child's intelligence were given out of 10 and the scores were ranked as weak, moderate, and strong. For all the intelligences, anything below 5 was ranked as weak. A score of 5 or 6 indicated a moderate score in that area, and a score of 7 and above was ranked as strong.

Table 4.3. Score for Multiple Intelligences

	Weak	Moderate	Strong
Musical	8	7	19
Spatial	6	10	18
Logical-Mathematical	12	12	10
Linguistic	10	10	14
Bodily-Kinesthetic	3	10	21
Interpersonal	4	9	21
Naturalist	10	8	16
Intrapersonal	6	15	13

It was found that the non-traditional intelligences – those not typically used in classroom settings for academic learning – had the highest number of strong scores for the sampled group, with bodily-kinesthetic intelligences and interpersonal intelligence ranking the highest among the group of 34 learners, each at 61.76%. The two intelligences also recorded the lowest number of weak scores with just 8.82% being weak in bodily-kinesthetic intelligence and 11.76% being weak in interpersonal intelligence. Musical intelligence and Spatial intelligence were also ranked quite high with 55.88% and 52.94% of learners scoring as strong respectively. These non-traditional intelligences are usually in the realm of extra-curricular activities and are often overlooked yet they form a strong basis for varying instruction using these strengths to personalize learning for those who are strong on this area.

Conversely, logical-mathematical was found to be the weakest intelligence among the learners with only 29.41% of learners being strong in this intelligence and 35.29% of learners being ranked as weak in this intelligence by their parent educators. Similarly, linguistic intelligence had 41.18% of learners scoring in the strong area and 29.41% being ranked as weak in linguistic intelligence. These two intelligences are the ones traditionally used for learning in most educational contexts. One reason for this low score for the "traditional intelligences" among home educated learners could have been that parents who home educated did so because they felt their learners, who were not strong in these two areas, were not having their learning needs met by the formal schooling system which primarily uses these intelligences. This finding also illustrated

the contention by Gardner (2006) that the traditional school system which uses primarily these two intelligences is unfair for a large proportion of learners who are not naturally gifted in this area.

Another reason for the weakness in these intelligences may have been due to a lack of understanding of content in this realm or the learning styles of the learners were not compatible with the way these intelligences were being taught. This pointed to the need for parents to vary instruction of the lessons which focus on the logical-mathematical and linguistic intelligences using the learner strengths and learning styles to improve these weaker areas.

The naturalist intelligence was ranked in the moderate range with 47.06% of learners ranking as strong in this intelligence and 29.41% being ranked as weak in this intelligence. The naturalist intelligence holds potential for use to engage the learner interest as many learners seemed to have an interest in this area. Intrapersonal intelligence was found to have 38.24% of learners ranked as being strong in this area and 17.65% being ranked as weak. These findings indicated that most learners were within the moderate range in this intelligence which could be developed and used to personalize learning. It might also indicate that the majority of learners may not have been very strong in self-learning assignments and needed more educator involvement in their learning.

4.3.1. Personalized learning using MI

These findings pointed to whether or not parent educators were already using their perceived learners' strengths to personalize learning for them and increase understanding of content. It was found that most of the parent educators seemed to have a good grasp of their learner's Multiple Intelligences based on their response to the MI checklist as compared against the Learner Interview responses and the Parent Educator responses as well. Most parents were aware of the need to consider their learner's interests, abilities and giftings in the design and delivery of the learner's educational program. This would indicate motivated learners as their learning is tied to their interests and abilities.

Based on the themes which emerged from the Parent Educator questionnaire responses, at least 50% of parent educators mentioned multiple intelligences as a tool for personalizing learning and of these, most parents had a good idea of MI theory as an educational tool and some were intuitive. One such parent said that MI theory,

> *"was a major incentive for homeschooling because school only emphasizes on one or two intelligences".*

This illustrated a parent who understood the MI theory and its use in education. 42% of parents had some idea of the need to employ MI theory in learning but based more on intuition rather than theory knowledge. One such parent referred to *"giftedness of children... like my eldest is very musical without being taught"*, which showed the parent recognized her learner's inherent intelligence strengths without knowing about the theory of MI. The use of MI theory would enhance this parent educator's use of these inherent abilities to personalize learning in areas of weaker ability. Finally, 8% of the parents made no mention of using the learner's interests, abilities or giftings to guide learning. This would have an effect on personalization of learning.

From these findings it was concluded that most of the parent educators were either knowingly or intuitively aware of the need to use their learners' multiple intelligences to personalize learning and use their strengths to build on their weaker areas, while following their interests in selecting instructional materials and activities. A few of the parent educators did not seem as aware of the need to use a learner's MI in learning and would likely therefore have had low level of personalization of learning for their learners.

4.3.2. Assessment of parent perceptions of Multiple Intelligences

Findings regarding the parent educator perceptions of their learner's Multiple Intelligence profiles were compared against the other data sets to check for consistency. Similarity was ascertained by analysing the data set and cross-checking the responses given by the parent in the MI checklist against the responses the learners gave in their interviews. Similarity of data was themed based on corroboration between what the parent perceived to be the learners score for a given intelligence and the Learner interview responses and Parent educator responses. This was because the MI Checklist

was comprised of statements which could be confirmed or disputed by the learner responses. Any inconsistencies between learning activities which a learner said they enjoyed or did not enjoy in learning and the score given by the parent for the intelligence corresponding with the activity in question were flagged. These findings of consistency and inconsistency were themed as strong similarity, moderate similarity and low similarity between parent and learner responses.

Strong similarity between parent and learner responses

The aspects of enhanced learning seen here were personalized learning, motivated learning and engaged learning as a result of stronger similarity between parent and learner responses. This strong similarity was taken to be as a result of better understanding of the learner interests and abilities by the parent educator. It was found that 55.88% of parent educators had strong similarity with regard to their perceptions of their child's MI and the learner responses. For example, one parent educator scored the learner 8 out of 10 in spatial intelligence and the learner said his favourite subject was:

> *"Drawing and art. I like colouring and I like to see my artwork pinned up."*

The learner's love of art is in line with many of the items on the checklist for spatial intelligence and therefore the parent educator perception of the learner's intelligence was consistent with the learner responses. Another learner with a score of 9 in logical mathematical intelligence confirmed this score by saying his favourite subject was,

> *"science. I like learning about the world and the things people make and doing science experiments".*

These responses indicated motivated learners who enjoyed both the content and the process of learning.

With regard to whether they went outdoors to learn, one learner responded,

> *"Yes, we go on treasure hunt for animals, we find bugs that are interesting, we go for field trips hiking and running ahead. I like it a lot. I love field trips we see waterfalls and caves and the caves have bats which I love.".*

The parent in this case had scored the learner's naturalist intelligence 9 out of 10. This indicates that the parent educator had clearly perceived the learner's love of nature and outdoors and made an effort to include nature study in the education program. The

findings also point to a learner who is engaged in learning because it caters to his particular intelligence strengths and one who is motivated to learn. The learner enjoys learning in the outdoors because it meets his/her learning needs and interests. This indicates a parent educator who has used the MI aspect of personalized learning to good effect.

Moderate similarity between parent and learner responses

Findings indicated that 35.29% of parent educators had moderately strong similarity between their perceptions of their children's MI profiles and learner responses. This means that the learner's responses confirmed the score they gave for some intelligences, but for others, their learner's response was not in line with the score given for the particular intelligence.

An illustration of this was provided by a parent who scored their learner 10 out of 10 in logical-mathematical intelligence. The learner, said his least favourite subject was, *"Math – it's a lot of work and it's hard to do."* This learner response was inconsistent with a number of items on the MI checklist concerning the logical-mathematical intelligence, e.g. that the learner must enjoy working with numbers and enjoy math class. The same parent scored the same learner highly for naturalist and spatial intelligences and the learner confirmed this by saying he likes home education because he goes on field trips and finds art fun at his co-op. This illustrates that the parent educator in this case likely understood some but not all the interests and abilities of the learner. This may have some negative implications for personalization of learning.

A similar illustration was provided by a learner who was scored 1out of 10 in logical-mathematical intelligence but his response to the question on his favourite subject was,

> *"English and Math! Math is addition, subtraction, multiplication and division. I like it!"*

The same learner was however scored 6 out of 10 for his linguistic intelligence. This indicates the parent may be accurate for some intelligences but on the logical-mathematical intelligence, the very low score was inconsistent with the learner's expressed liking of math.

Weak similarity between parent and learner responses

Findings indicated that 8.82% of parent educators had low similarity between their perceptions of their learner's MI profiles and learner responses. This was indicated by inconsistency between the learner's responses and the MI scores indicated by the parent in more than one case and where the scores given were extremely low. An illustration of this was provided by a parent educator who had scored the child's spatial intelligence at 2 out of 10, and logical mathematical a score of 1 out of 10. However, the learner said that the thing he likes most about being home educated is *"Math! I get to do art a lot."* The learner's response may indicate that the parent educator was not very accurate in the scores given to the learner for the two intelligences since some of the checklist responses would have been higher given the fact that the learner seemed to enjoy math and art which are closely related to the intelligences with the lowest scores.. This possible misunderstanding of the learner's MI would likely hinder efforts at personalization and lead to ineffective personalized learning.

4.4. Parent educator perceptions of their learners' Learning Styles

These findings pointed to whether or not parent educators were aware of and were using their perceived learners' preferred learning styles to personalize learning for them to increase learner comfort and understanding of content. As mentioned in Chapter Two, only 6 to 14 of the 21 learning styles identified in the Dunn & Dunn model would affect a child's learning. For purposes of this analysis, the findings discussed were those which focused primarily on the perceptual learning styles since they were the most commonly referred to learning styles by the parent educators and learner interview responses.

The perceptual learning styles make up one of the 21 learning styles identified by Dunn & Dunn model and is the most widely known learning style based on findings of this study. This learning style relates to the sensory modality through which a learner receives complex content most effectively. Some learn best by hearing (auditory), by seeing or reading (visual), others need to move around while concentrating (kinesthetic), and others learn best when able to manipulate items with their hands (tactile).

Table 4.4 below sets out a summary count of the perceptual learning styles as indicated by the parent educators for each of their learners.

Table 4.4. Count of Perceptual Learning Styles

Perceptual LS	Count of Perceptual
Auditory	10
Kinesthetic	7
Tactile	4
Visual	13
Grand Total	**34**

As shown in the summary table of perceptual learning styles, most of the parents perceived their learner's primary learning style to be either auditory or visual – the two most commonly used for traditional teaching. 38.24% of learners were perceived to be visual learners while 29.41% were perceived to be auditory. 20.59% of learners were perceived to be kinesthetic learners while only 11.76% were perceived to be tactile learners. These parent perceptions were curious since most young learners tend to be tactile/kinesthetic according to Dunn (1990), and their auditory/visual perceptual styles develop as they grow older. In addition, triangulation with the learner interview responses did not support some of the parent perceptions of their learner's perceptual learning styles. Perhaps some parents perceived this because the most commonly used instructional style was using auditory or visual styles and the parent educator chose the one the learner responded to the best.

In addition to the perceptual learning styles, findings relating to the learning styles which most closely corresponded to the perceptual learning styles, or the multiple intelligences, or which had been discussed or raised by the learner or their parent in their interview and questionnaire responses, were also presented and discussed below. Not all the LS inventory results were presented, only those which were discussed in other data sets and could therefore be triangulated. The learning styles which were presented in this study alongside the perceptual LS were: sound (whether the learner prefers quiet or noise when learning), seating (formal or informal), whether the learner prefers working alone or with others, whether the learner prefers working with parent or with peers, mobility (can sit still for long or need to move often), needs breaks or can focus on a task, whether they prefer structure or like to do things their own way, and optimal time

for learning (morning or afternoon/evening). Table 4.5 below sets out a summary count of these 8 additional learning styles discussed in these findings.

Table 4.5. Count of Commonly Mentioned Learning Styles

Learning Style	Count of LS	Count of LS	Count of no preference
Sound	Noise - 9	Quiet - 15	No preference - 10
Seating	Informal - 21	Formal - 11	No preference - 2
Working - others/ alone	Others - 19	Alone - 6	No preference - 9
Working – peers/ parent	Peers - 9	Parent - 19	No preference - 6
Mobility	Move often - 22	Sit still - 11	No preference - 1
Breaks/ focus	Breaks - 20	Focused - 9	No preference - 5
Structure/ own way	Own way - 17	Structure - 9	No preference - 8
Time for learning	Morning - 22	Afternoon - 4	No preference - 8

The findings showed that the less traditional learning style counts were higher than the more traditional ones used in learning. For instance, 64.7% of learners preferred to move often whereas most educators would prefer a learner sit still for the duration of learning. The findings relating to seating were also less conventional with 61.76% of learners preferring informal seating to formal. 20 learners (58.82%) preferred taking breaks in between learning. These learning styles, while challenging to accommodate in a traditional classroom setting, can easily be accommodated in home education and lend themselves well to personalization of learning within this context.

It was found that 55.88% of learners preferred working with others over working alone, but a similar 55.88% of learners also preferred working with parents over working with their peers. This finding indicated a need for parents to ensure their learners have sufficient opportunities for their learner's to be engaged in group learning activities and ensure the parent educator is present to guide the learner during more individual learning.

4.4.1. Personalized learning using LS

Learning styles like preference for informal seating, need to move often, and need to take frequent breaks in learning would be difficult to accommodate in a traditional classroom. However, the home education environment would be able to accommodate

these less conventional learning styles through personalization of learning with these learning styles in mind. Personalization in response to these perceived learning styles would increase learner comfort. For instance, leaners could have more breaks during learning, use more movement in learning and be allowed to sit outside, on the couch, on the floor, or to even learn in bed.

It was found that more parents had prior knowledge about the Learning Style theory than the MI theory, with 73% of parent educators being able to name some of the learning styles. This indicated knowledge of the LS theory and its application in personalized learning. The remaining 27% of parent educators had intuitive knowledge of LS. One parent's response to the question regarding knowledge of learning style theory was illustrative of this intuitive knowledge of LS:

> *"If you've ever had more than two learners in a class you will notice that children learn differently!"*

This finding showed that even where parent educators are not trained formally in education, by virtue of working closely with the learners, differences in how children learn is evident.

It was found that most parent educators had a good grasp of the need to consider their children's learning needs in design of educational routines and choice of instructional materials. This finding was based on parent responses to the question regarding their familiarity with the concept of unique Learning Styles in children.

More specifically, 65.4% of parent educators were very aware of the need to use their child's learning styles in the design of educational program, while 30.8% of parent educators had some idea of the value of LS theory for personalizing learning. Only 3.8% of the parent educators gave no indication of awareness of the LS theory as useful in learning.

However, even though LS theory knowledge was higher than that of the MI theory, the similarity between the parent perceptions of their learners' LS and the learner responses was weaker than that of their child's MI. This could be attributed to the fact that many parent educators had not heard of the tactile perceptual learning style – only auditory, visual and kinesthetic. As a result, they may have had already pre-conceived learning

styles assigned to their learners based on the three categories or perhaps based on the teaching style they had adopted. This inconsistency could have a negative impact on the understanding of content by learners whose parent educator perception of their learning style was different from their actual learning style.

4.4.2. Assessment of parent perceptions of learning styles

Findings relating to the similarity between the parent perceptions of their learner's Learning Styles and the learner responses were ascertained by cross-checking the responses given by the parent in the LS inventory against the responses the learners gave in their interviews. Any inconsistencies between learning preferences or needs which a learner made reference to, and the learning style identified by the parent were flagged as an indication of possible mismatch of the parent perception of their child's LS, especially the perceptual learning style. These were themed as strong similarity, moderate similarity and weak similarity between parent and learner responses.

Further, it has been suggested that the methods by which a person who is strong in a multiple intelligence learns best is indicative of the learning style preferences of that individual (Denig, 2004). For this reason, the perceptions parents had of their child's LS was triangulated against the learner's MI profile to further ascertain consistency or lack thereof.

Strong similarity between parent and learner responses

Based on the triangulation between the data sets, it was found that (47.06%) of parent educators had a strong similarity between their perceptions of their child's Learning Styles and learner responses and was corroborated by the learner's MI profile. An example of this was a parent educator who perceived the learner was a tactile learner, and the learner said his favourite subject was, *"Creativity – because I get to draw and paint and trace."* This indicated a more motivated learner because he enjoyed what he was doing, and he was given the space to do it. The same learner also indicated liking the use of manipulatives for learning math and science. The responses by the learner were in line with the parent perception that the learner was a tactile learner. In this case the findings showed good personalization of learning using the perceptual learning style resulting in more engaged learning, and increased understanding of content.

One learner who was also perceived as being tactile confirmed this by saying that the thing she loved most about home education was *"games and experiments"*. The same learner also enjoyed science because of experiments, enjoyed dissecting living things to see how they work inside, and liked to use blocks or sticks to count. The learner response illustrated personalization of learning in consideration of the perceived learning style.

Moderate similarity between parent and learner responses

Findings indicated that 26.47% of parent educators had moderate similarity between perceptions of their children's LS preferences and learner responses or MI profiles. This means that they were likely right about the learning styles they picked for their child in some instances but in others there were inconsistencies between the parent perceptions and learner responses. For instance, one parent accurately perceived one learner's learning style to be sit still, because the learner preferred to sit and not move around. However, it would appear the parent educator thought that meant the learner was visual when she was most likely tactile because the learner said of the use of manipulatives:

> *"Like for my math when it is hard for me, I use blocks for addition and subtraction. I like it – it makes it easier."*

This indicated that the child needed tactile materials to help her understand and so she was likely a tactile learner. The parent in this case had however made provision for the learner to use manipulatives and had a high level of personalization which employed a variety of instructional materials.

Weak similarity between parent and learner responses

Findings indicated that 26.47% of parent educators had weak similarity between their perceptions of their learner's learning styles and their learner's responses. This was indicated by a clear mismatch between the learner's responses, the learning styles indicated by the parent and the MI scores indicated by the parent. An illustration of this was provided by a learner whose LS was perceived as being a visual learner and the parent educator believed that the learner preferred to sit still and work alone. However, the interview responses indicated that her least favourite subject was:

> *"Math - some of the questions are too hard or I don't understand them. I have to keep trying to meet goals and I keep falling behind. Sometimes we*

go out and do activities like constructing something with 8 blocks and explain what I did - I enjoy that."

This response pointed towards a tactile learner rather than a visual one as she struggled with written instructions and preferred to learn using her hands. A further response by the learner on the use of manipulatives supported the finding of a tactile learner: *"Yes I like it a lot because it is much easier to understand and get the answer."* The same learner also said she enjoys going outdoors and moving around when learning, which would negate the assessment as preferring to sit still. The parent perceived MI score for bodily-kinesthetic was also high at 7 out of 10, which further pointed to a learner who prefers to move around when learning. This gave rise to a finding of weak similarity between parent perception of learning styles and learner responses, which would most likely result in poor personalization of learning.

Perceptual Learning Styles:

With specific regard to the perceptual learning styles, the initial analysis yielded findings which were different from the expected norm as more learners were perceived to be auditory/visual. The expected result would have been that more parents perceived their lower elementary learners to be tactile/kinesthetic based on Dunn (1990). In addition, triangulation with the MI checklist and the learner responses revealed some inconsistencies in the data.

For this reason, I took the analysis a step further and conducted another count of the perceptual learning styles of the learners in cases where the learner gave an indication of their preferred learning style in their interview response and where this was corroborated by the MI checklist. I then undertook a comparison count of the initial parent perception of perceptual learning styles as against the new "adjusted" perceptual learning styles.

Table 4.6 below gives a summary of the comparison of the two sets of data.

Table 4.6. Comparison of initial Learning Styles vs Adjusted Learning Styles

Learner LS	Count of Perceptual (initial)
Auditory	10
Kinesthetic	7
Tactile	4
Visual	13
Grand Total	**34**

Learner LS	Count of Perceptual (adjusted)
Auditory	6
Kinesthetic	10
Tactile	13
Visual	5
Grand Total	**34**

The comparison tables above show that the count of the non-traditional learning styles, kinesthetic and tactile - increased, while those of the more traditional learning styles - auditory and visual - decreased. Tactile was the highest with at 38.23% of learners showing signs of being tactile learners and 29.41% of learners assessed as kinesthetic learners. Conversely, the count of auditory learners went down to 17.64% while only 14.7% of the learners were deemed to be visual learners. Table 4.7. below illustrates the adjusted values.

Table 4.7. Change in Values after Adjustment

Perceptual	Perceptual (adjusted)	Count of Perceptual
Auditory	Auditory	6
Auditory	Kinesthetic	1
Auditory	Tactile	3
Kinesthetic	Kinesthetic	7
Tactile	Tactile	4
Visual	Kinesthetic	2
Visual	Tactile	6
Visual	Visual	5

The different colours show the categories of learning styles and the number which changed. The initial findings were that auditory learners were 10. However, this number went down to 6 auditory learners because 1 learner was assessed to be kinesthetic rather than auditory, and 3 learners were assessed to be tactile rather than auditory. The initial parent perceptions indicated that 13 of the learners were visual. However, after the data was analysed, 2 of those assessed as visual were believed to instead be kinesthetic and 5 were assessed as being tactile rather than visual.

It must however be noted that this assessment was rather subjective, and it would require a much more thorough analysis of additional data to make this definitive. However, based on the data at hand, it would appear that more of the learners may have been tactile and kinesthetic learners than were auditory and visual. This would be consistent with findings of research cited by Dunn (1990) which stated that young children and underachievers were almost exclusively tactile/kinesthetic learners, and their auditory and visual learning styles develop as they grow older. The new count was also more consistent with the results from the MI checklists.

4.5. Use of MI and LS by parent educators to personalize learning

This study sought to find out whether parent educators of home educated lower elementary learners were aware of and used, either intuitively or consciously, the multiple intelligences and/or learning styles of their lower elementary learners to personalize learning for them. The findings were ascertained based on the parent educator responses to the questions regarding whether they customised their home education program, and varied instruction to accommodate their learner needs and interests. These responses were triangulated by manually cross-checking each parent educator response with the corresponding learner MI checklist, the LS inventory and the learner interview responses, to develop a comprehensive understanding of how MI and LS were used to personalize learning for each learner.

It was found that of the participants sampled, parent educators of 29.41% of the learners were very good at using MI and LS to personalize learning. An illustration of this was provided by a parent who had strong similarity between her perceptions of her learner's MI and LS and the learner's responses. She said of efforts to vary instruction:

> *"Yes, I vary instruction. My son needs to read, for example math problems he needs to read. My daughter prefers to do, to build, to count, to cut angles. So, the same lesson is done differently. Grammar – for my son he listens and understands, the girl needs to see pictures and do things."*

The parent educator in this case illustrated understanding of her learners' needs and interests and tried to ensure learning was personalized for each learner. The learner

response confirmed this by indicating that they often used music or songs in learning, went outdoors for lessons, moved around during learning and used manipulatives to help her understand. The learner response conveyed enjoyment and comfort in learning as well as understanding of content and engaged learning as a result of the personalization using MI and LS.

Of the parent educators who were personalizing learning well, most (26.47%) were highly effective at it based on the response from the learners to interview questions. This effectiveness resulted in enhanced learning for their learners. For purposes of analysis, effectiveness was demonstrated by learner interview responses which indicated significant enjoyment, comfort, understanding and engagement in learning, as a result of efforts their parent educators were making at personalizing learning using MI and LS.

It was found that 50% of the parent educators were fairly good at using MI and LS to personalize learning for their children. This means that they were able to personalize learning for their learners to some degree but they faced some challenges, such as one parent who said she tries to vary instruction but was not always able to because the curriculum they used had course requirements which had to be met. Findings revealed that for 52.94% of the learners, the personalization was moderately effective based on learner responses. Moderate effectiveness was demonstrated by learner enjoyment or engagement in some areas, but learner frustration in other areas. For instance, where a learner's learning style was mismatched or an MI strength like musical or naturalist was not used in learning, this resulted in reduced understanding of content.

Finally, findings indicated that 20.59% of parent educators were making little effort to personalize learning for their children. This was indicated by their response to whether they customised their learner's education program to their MI or LS. They indicated either that they did not or, that they hadn't yet started but intended to as they were new to home education. This finding was consistent with Galen (1989) who found that new home educators tended to bring school home focusing mostly on textbooks and workbooks. This resulted in personalization themed as low effectiveness, as learning was taking place, just not in a manner that was customized to the learner's needs and interests.

It was interesting to note that for two of the learners whose parents said they were not *yet* customizing their education program, triangulation with the learner responses and the MI and LS inventories indicated that personalization was happening to some degree intuitively. For two other learners, parent educator attempts at personalization had low effectiveness as indicated by learner responses of low learner engagement and motivation. This may have been as a result of using means of personalization which were not very compatible with the learner's MI and LS, for instance, using reading workbooks for a tactile learner without the use of manipulatives.

It was found that overall, most of the parents seemed to have a good understanding of their children's Multiple Intelligences and Learning Styles based on their response to the MI checklist and LS inventory as compared against the Learner Interview responses and the Parent Educator responses. This, however, did not always translate to highly effective personalization of learning.

The findings discussed in this section were illustrated in Table 4.8 below. The table shows the similarity between the parent perceptions of their learners' MI and LS and the learner responses. The most consistent results were given a rank score of 3, those which had a few inconsistencies were ranked 2 and those which had the most inconsistencies were ranked 1. The higher the ranking, the better the awareness and understanding of the learner's MI and LS a parent was deemed to be. The personalization of learning using both MI and LS were ranked 3 for those who personalized very well, a ranking of 2 was given to those who personalized moderately well and a rank score of 1 was for those who said they did not personalize learning. The final column indicates the findings relating to the effectiveness which as discussed, was based on learner responses indicating comfort, understanding, engagement and motivation. Highly effective parent educators were ranked a score of 3, moderately effective were ranked as 2 and low effectiveness was indicated using a score of 1.

Table 4.8. Scores of Perceptions, Personalized Learning and Effectiveness

Participant	MI Similarity with Learner Response	LS Similarity with Learner Response	Personalization Use (MI/LS)	Effective for Learner
1.	2	3	3	3
2.	2	2	1	1
3.	2	1	1	1
4.	2	1	1	1
5.	3	3	3	3
6.	3	3	2	2
7.	3	3	2	2
8.	3	2	1	1
9.	3	3	1	1
10.	3	3	2	2
11.	3	3	3	3
12.	2	2	3	3
13.	2	3	2	2
14.	2	1	3	3
15.	3	3	3	3
16.	3	3	2	2
17.	3	1	2	1
18.	3	3	2	2
19.	3	3	3	3
20.	3	2	2	2
21.	3	3	3	3
22.	3	3	2	2
23.	2	2	2	2
24.	1	1	2	2
25.	3	2	3	3
26.	1	1	2	1
27.	3	3	2	2
28.	2	1	2	2
29.	2	2	2	2
30.	3	3	3	2
31.	2	2	2	2
32.	1	1	2	2
33.	2	2	2	2
34.	3	1	2	1
Total	**84**	**75**	**73**	**69**

As illustrated, high effectiveness was achieved by parent educators who applied both MI and LS for their learners in their personalization. Most parent educators were assessed as highly or moderately effective while a few were low in effectiveness. This shows that for the sampled home educating families, personalization of learning was mostly happening with varying degrees of success. Therefore, findings support the notion that home education is the ultimate personalized learning environment because, even for

parents who were acting purely on intuition, they managed to successfully personalize learning for their learners.

This section presents the themes emerging from the data sets regarding this personalization, its effectiveness and the contributing factors that emerged as themes. These were categorized as highly effective, moderately effective and low effectiveness.

4.5.1. Highly Effective Personalization of Learning

As earlier mentioned, high effectiveness was demonstrated by learner interview responses which indicated significant enjoyment, comfort, understanding and engagement in learning. For the (26.47%) highly effective parent educators, the following themes emerged as contributing to that success.

Learner responses

Personalized learning experiences

Findings from the learner responses that where personalization was highly effective the learners were constantly exposed to various kinds of personalized learning experiences. The main themes were interactive learning, active learning, and use of engaging instructional materials.

Interactive learning

Manipulatives: One tactile learner indicated: concerning the use of manipulatives in learning,

> *"Yes, we use them in learning, and I like it. It doesn't feel like learning when I'm using them. It's fun to play with them."*

This indicated an engaged motivated learner who enjoyed learning. Another similarly tactile learner said,

> *"Like for my math, when it's hard for me, I use blocks for addition and subtraction. I like it. It makes it easier."*

These indicated that the learner needed manipulatives to help in understanding of content pointing to this being a tactile learner. This learner also enjoyed learning using manipulatives which allowed more interactive learning.

Movement when learning: A learner said movement,

> *"helps me to understand different lessons like when we are learning about different measurements we stand up and move around so I can understand. Also, when learning spelling rules, we get to march around and use all parts of our bodies to help us understand and remember. I love it!"*

This was coded as the learner needs movement to understand content which indicated that this may have been a kinesthetic learner.

Active learning

Outdoor learning: A learner who scored very highly as having a naturalist intelligence expressed a love for the outdoors thus:

> *"We go on treasure hunts for animals, we find bugs that are interesting, we go on field trips, hiking and running ahead, I like it a lot. I love field trips; we see waterfalls and caves, and the caves have bats which I love."*

This was indicative of an engaged learner who enjoyed what he was learning because it met his interests in nature and the outdoors. It also confirmed his high score as a naturalist.

Active participation in learning: One learner who scored very highly under naturalist intelligence and who was also a kinesthetic learner said that her favourite subject was:

> *"Science – because I can do experiments and I like it. I read science books, investigations, I also learn about living things and plants. I have also picked and dissected and see how things work inside."*

This indicated that the use of science experiments was helping the learner be more participatory and engaged in learning and it helped with the need to move, being a kinesthetic learner. The content of the lessons also appealed to her naturalist intelligence. The parent educator in this case also identified the learner's intelligence as naturalist and learning style as kinesthetic. This enhanced home learning due to personalization using MI and LS.

Engaging materials

Highly effective parent educators made an effort to make the learning process enjoyable for their learners and made use of instructional materials which engaged the learner in different ways.

Use of engaging instructional materials: One learner said the thing she likes most about home education was:

> *"Math! It's fun, fun, stuff! All the math is like a fun, fun, game. I love science – learning about plants and colouring!"*

This was coded as use of engaging instructional materials since the learner indicated that the fun activities were incorporated into the instructional content of the books selected.

Use of games in learning: A kinesthetic learner said her favourite subject was:

> *"Reading. I like to read bigger books. I write words on the whiteboard. I like to write on the whiteboard. We play games like tic-tac-toe and guess which word mum has written."*

The use of games like tic-tac-toe in her reading program was used to increase enjoyment as well as movement which motivated the learner. The use of the whiteboard by the learner is also indicative of freedom of movement by the learner which she enjoys, being kinesthetic.

Parent responses:

Learner-centered learning

Many of the highly effective parents felt that the learner's interests and abilities should be a guiding factor in determining a child's educational program. They also made efforts to customize learning according to the learner's needs and capabilities in various ways.

Customization of learning: One highly effective parent educator said that one of the strengths of home education was,

> *"being able to know your child's needs and learning styles in a personal way because of time spent. I can see which areas need to build on or be relaxed on based on his development, for example writing – I have to slow that down."*

This response showed a parent educator who understood their learner's needs as a result of a close parent-child bond, and responded to that child's need, and customized instruction according to the pace and needs of the learner.

Another parent indicated the methods used to customize learning:

> *"Using manipulatives; repetition; changing instructional material to one that will result in greater understanding; selecting material with varied instructional suggestions such as drawing, colouring, songs."*

Here, the choice of instructional material was based on how varied the content was for the leaner such as material which allowed the child to colour, draw, sing, move around as part of the learning. This kind of instructional material was a useful tool for personalizing learning as it already took into account different MI and LS and made provision for them in the way content was presented.

Teaching for Understanding: Parent educators who were highly effective made a conscious effort to see where their learners had gaps or where they didn't understand something and worked to ensure the child had finally understood the concept. One parent said home education,

> *"allows for highly individualized instruction. Being able to do one-on-one which allows identifying gaps or lack of understanding. Flexibility to try different methods to deliver content."*

Another parent said,

> *"I learn to recognize the child's struggles and be creative in delivery or stop and wait."*

This response illustrated conscious personalization of learning to ensure increased understanding of content. It also illustrated the parent's willingness to vary instruction and responsiveness to the learner's needs.

Parent Educator Support

Leveraging support Networks: Parent educators who were highly effective at personalizing learning for their learners made a deliberate effort to find and join co-ops which met their children's learning needs and interests. For instance, one parent who is a member of a co-op which used a classical memory approach said:

"He has a very good memory so classical is a good fit for him."

Co-ops also provided opportunity for learners to interact with other learners and learn with them which many had indicated as a learning style preference. One parent said,

"Some (learning experiences) were imposed by the fact that the children needed to hang out with other children like classical and co-op."

This response indicated a parent educator who was responsive to the learners' need to be with other children for part of their learning and effort was made to find a co-op that was a good fit for the learner and met learner needs. The co-op in this case was part of the personalizing of learning to increase learner comfort and engagement.

Another parent educator joined a co-op which was specifically geared towards nature study to meet the needs of her learner who has a high naturalist intelligence, again, indicating a high level of personalization in the choice of group learning activities.

Research on home education: Most of the parents who were highly effective at personalizing learning had done a lot of research about education and how best to teach their children in order to understand and meet their learner's needs. When asked about their main source of information to design their home education program, one parent said:

"The home-school conference. Resource Centre. Own research with spouse from books and online to find out what is being done in other countries/ locally. Visiting schools. International home-school conferences online. Co-op member recommendations."

This parent illustrated that personalization doesn't just happen. Parents had to be deliberate about it, and the more research one did, the more equipped the parent educator was to personalize learning, and the more effective that personalization was likely to be. Other more experienced home educators were a great resource in helping parents know how to vary instruction for their learners.

It was noted that of the parent educators who were rated as highly effective, 42.85% had a background in education and the other 57.15% had no formal educational training. It was evident from the untrained parent educators that a background in education is not necessary to be effective at personalizing learning.

Holistic approach to education

Many of the parent educators who were quite effective at personalizing learning for their children had adopted a whole child approach to education – focusing on their physical, spiritual, intellectual and emotional well-being and development. This had several benefits for their learners.

Knowing the child well: Highly effective parents were deliberate about nurturing every aspect of their child, which resulted in intimate knowledge of the child which helped in personalization. One parent summed this up quite well:

"You have time to observe, time to indulge in different things that you might not be able to do elsewhere. I get to see what my children enjoy doing, for example my son loves to cook - I did not know that because he was too busy with schoolwork to pursue his interests. Enough contact with children to know when they are being tardy and when they are tired. To discuss faith and values. We can build a relationship with them and answer questions. You're present to guide children more closely than if they were anywhere else. Their personalities develop better because of constant positive input. You can monitor what they eat - what they used to eat on Wednesday used to mess them up in school and give them the runs for half a week - now we don't have that problem."

This response illustrated some benefits of home education for personalizing learning, such as, spending time with children, understanding learners needs, freedom for the child to explore interests, control by parent over what the learner is exposed to, character development, values.

Recognizing Learning Needs: The focus on developing the whole child helped parent educators to be more aware of their children's learning needs as they observe them and work to build their emotional, physical, mental and even spiritual capabilities. One parent said,

> *"I realised my daughter is a kinesthetic learner which explains why she used to be thrown out of class all the time. She has a scientific mind. She can't move on without understanding. She needs to do."*

She went on to say that she discovered this,

"out of desperation - I learnt what they (learning styles) are and used different ways to discover our children's learning styles."

This parent response illustrated that effective parent educators don't start out that way. It takes effort to personalize learning. The parent response showed that a parent can intuitively see the learner's needs, then take measures as a parent to equip themselves on how to respond to those needs. Deliberate effort is needed.

The approach to education: Some of the whole child home education approaches adopted by effective parents tended to inadvertently use MI and LS in the approaches they encouraged without actually referring to them as such. For instance, a parent who used one such approach said their choice of educational program was guided by,

"Philosophy - maximise human potential, physical, spiritual. (The philosophy/approach) sees children as individuals full of potential then demonstrates (to parents) how to train potential."

Another highly effective parent who also used a whole child approach said:

"I researched a lot and I liked the philosophies behind the two approaches we use. I want learning to have a Christian approach. I like the relationship to the developmental milestones and understanding of how a child develops. I liked their view on what learning is. The choice of reading material they offer - good literature."

The philosophy of learning guided the approach to education. This parent illustrated the importance of learning different philosophies and approaches to learning in order to find one that works for a particular learner. The use of MI and LS to personalize learning is compatible with a whole child approach to education.

4.5.2. Moderately Effective Personalization of Learning

Many parents made an effort to personalize their learner's education. For 52.94%, findings were that their efforts at customizing learning and varying instruction according to their learner's needs bore some fruit, but they also faced some challenges, resulting in moderately effective personalization of learning. The discussion on the highly effective personalization of learning highlighted the successful efforts expressed by the moderately effective parents to personalize learning. This section focused on the themes

of the challenges faced by parent educators and learners which resulted in moderately, rather than highly, effective personalization of learning.

Learner responses:

Parent perception of the learner's MI or LS

Flawed perception of LS or MI: In cases where there was low or moderate similarity between the parent perception of their learner's MI and/or LS and the learner's responses, there was evidence of reduced effectiveness of personalization. This was based on learner responses as well as parent educator responses on the challenges faced in personalizing using MI and LS. An example of this was a parent educator who perceived the learner's perceptual LS to be visual. The learner's interview responses to what they enjoyed were: *"Science - because of the many experiments."* The learner's response to the question on the use of manipulatives was, *"I use shapes, Legos and pictures (as manipulatives) - I like it."*. This would indicate that the learner may have been tactile because of expressed enjoyment using hands in learning. However, when the same learner was asked what they did not enjoy the response was:

> *"A lot of homework for math - writing the date and hard questions. Colouring the maps there are only two colours in the maps. Reading because there are so many hard words." "Piano - I don't like piano because it takes too long and reading music."*

The learner response was coded as a learner who was likely not a visual learner as evidenced by the dislike of largely visual activities. This would indicate that the learner may not have been visual, even though the parent's perception was that the learner was visual. However, the personalization activities being given were more suited to a visual learner. This had led to moderately effective personalization and moderate engagement of the learner, because of the possible flawed perception of the learner's learning style as visual rather than tactile.

Mismatch of personalization and learner needs: In some cases, parent educators were aware of and even perceived their learner's MI and LS consistently with learner responses. However, when it came to personalization, they chose personalization

approaches which did not match with the child's LS or MI. For instance, one learner whose parent educator scored him a 10 for naturalist intelligence said:

> *"My mom likes us to do class outside when it's in the morning even when it's cold. I don't like it when it's cold."*

This learner's response indicated a discomfort in learning outside when it was cold, even though as a learner with a strong naturalist intelligence, the outdoors was likely a place they enjoyed learning. In addition, the parent educator accurately perceived this learner's LS to be a preference for warmer rather cooler environment in the LS inventory. Therefore, the parent asking the children to learn outside was helpful for the MI strength of the learner, but it ignored the environmental LS preference of warmth, leading to discomfort and lowering the effectiveness of the personalization of learning.

Reduced learner engagement

Use of less engaging instructional materials: Some learners expressed frustration with the instructional materials they were using which they found boring. When asked the least favourite subject, and what they didn't like about it, one learner responded:

> *"Science. I underline answers and I don't like it. I do a check-up and self-test."*

This learner did not seem to enjoy the structure of the content in the instructional materials and found it boring. Another learner shared the same sentiment about the least favourite lesson:

> *"Literature – It's annoying cause I have to read a book that I don't always like, and why can't they use science stories or social studies?"*

This learner was frustrated by the lack of engaging content. The parent educator correctly perceived that this learner had a high naturalist intelligence and therefore the literature lessons could have been personalized by giving more nature related literature to read. However, because the curriculum had required reading, the learner was not engaged by the reading material resulting in reduced personalization.

Inadequate varying instruction: Many of the learners who had moderate or low personalization of learning expressed low variation of instruction for their least favourite lessons. For instance, one learner said of the least favourite subject,

"I read a book and write answers to questions. I don't learn it in different ways."

This expressed lack of varied instruction had led this learner to be less engaged in the learning of that particular subject. This sentiment about low variety of instruction was repeated by quite a number of learners (26.47%), which resulted in a finding of moderate or low effectiveness of personalization of learning.

Parent educator responses:

Parent educators elucidated some of the challenges which they faced in personalization of learning. These were themed under resource constraints.

Resource constraints

Financial and Time constraints: It was found that a number of parents who were moderately effective at personalizing learning were making a good effort but felt limited by the time and financial commitment required. One parent said this about the challenges faced in personalizing learning:

"Resources - for example one loves music, it's hard to get a good tutor and it's expensive, football club is expensive. It's hard to be able to do all they like to do. I hope I can identify all their needs, but it might not be possible. It makes sense to try to get them to do the same things for example swimming or football whether we like it or not. Time and resources."

This response demonstrated the challenges faced by parent educators who wanted to meet all their learner's interests and needs but due to financial or time constraints found it difficult. In addition, the parent educator was afraid of not being able to correctly perceive each learner's interests and needs.

Pre-packaged (boxed) curricula: Some parents indicated a frustration with their chosen curriculum when it came to customizing learning according to learner needs. Since it was a pre-packaged curriculum, which had a set structure of delivery and content, the room for personalization was reduced. When one parent educator was asked whether they customized learning to the learner's natural interests and abilities the response was:

"No, because the course has requirements which must be met." This finding was echoed by another parent whose response to the same question was:

> *"No. Absolutely it would make a difference - because by following a formal structure we're losing out on the benefits of following the child's interests, I just haven't had the opportunity - it would be great."*

In these examples, the parent educators had incorporated co-op activities and sports and music activities in an attempt to meet their learner's interests. However, they were not able to vary instruction and customize the learning for their learner's due to the strict requirements of the curricula they were using. This indicated moderately effective personalization since the learning of more academic content was not personalized to the learning needs or interests of the learners.

Different learners and ages: Some parents indicated that because of the different ages and needs of their various children it was challenging to personalize learning for each of them. One parent put it this way:

> *"Sometimes it's easy to read one's strength into another. It can get busy so to identify becomes hard. It is hard work to separate each child to study and learn them and teach them in that way. To constantly and faithfully very the instruction is hard though varying makes learning fun and interesting for the child. It's very easy to find it easier to teach the child who learns like you so it's easier to teach the one who's like me than not like me."*

This parent elucidated the fact that personalization could be challenging even where the learners were few as is the case in most home education contexts. MI and LS provide strategies for personalization of learning which could make it easier for an educator to personalize learning for more than one child. Another parent said:

> *"As a mother of small children for example a 2-year-old, I need time to meet their needs. You lack the ability to concentrate on one thing because many things demand my attention."*

This parent response indicated the challenge of personalizing learning for more than one learner, especially when they were different ages and had very young siblings who demanded a lot of attention.

4.5.3. Low Effectiveness in Personalization of Learning

While all the sampled parents expressed a desire to personalize learning for their children, some either said they were not yet customizing learning to learner needs and interests or were not very effective at using their learner's MI or LS to vary instruction. 20.59% of parent educators fell into this category. The finding on some of the reasons for this are discussed below. The learner responses were themed as low awareness of learner needs, and the parent educator responses were themed as parent educator limitations.

Learner responses

Low awareness of learner needs

Non-traditional learning style: It was found that some of the learners who had non-traditional learning styles like tactile/kinesthetic or very strong MI in non-traditional areas like music, felt frustrated by their parent educator's using the more traditional LS and MI. One example was provided by a learner whose parent educator had scored the learner's MI very highly on musical, interpersonal, linguistic and naturalist intelligences. The parent educator had however perceived the learner's learning styles as preferring formal seating, to sit still, learn in quiet and a visual leaner. The learner's responses to certain questions yielded the following responses:

> *"It's (home education) not fun. I don't get to go outside and play around. My gadgets are taken away from me." "Yes. I sing a lot, very very much, when I'm doing my paces. I hum, most of the time. I try not to but can't help it." "When my parents are there I don't sing or move around I am silent! (*Laughs cheekily*)"*

This learner's response illustrated that she preferred the outdoors, likely needed frequent breaks, was highly musical and perhaps could have done with sound in the background as she learned. This was an example of a learner who had low learner motivation because her learning style needs were not being met by the one environment where they could have been allowed to thrive. The LS she was assigned were almost completely incompatible with her MI strengths and the fact that she could not sing, hum, move around or take breaks reduced her comfort and enjoyment in learning.

Low customization: Some parent educators knew the theory of MI and LS quite well. However, there were a number of parents who seemed unaware of the need to personalize learning for each of their learners and who had simply brought school home in the form of boxed curricula (Galen, 1989). This finding was supported by the fact that the learners for whom effectiveness was low used pre-packaged curricula and their responses as well as those of their parent educators indicated that little effort had been made to customize learning or vary instruction for the learners.

Parent responses:

Parent educator limitations

Limited focus: Some parents acknowledged they needed to personalize learning but had chosen to focus on a certain aspect of learning while their children were young. The idea was to later personalize as their children's interests developed. One such parent educator said in response to the question about whether they customized learning:

> *"No. We are only now starting to see what his abilities and interests are, so we see that interest and we are trying to do more. Our son is more hands-on so more science experiments. After literacy we will be able to focus on this. The children's learning abilities are different and I'm old school, so I realise with him if I don't change it he won't get it. I can't go the traditional way."*

This parent clearly understood the need to personalize but had decided to focus on literacy first. This response illustrated high awareness but somewhat limited understanding of how MI and LS should be applied. The focus on literacy first failed to consider that even the teaching of literacy needs to be personalized to the learner's needs and interests. A better understanding of MI and LS theory and application would likely result in more effective personalization (Denig, 2004).

Overwhelming to personalize: Some parents found the prospect of varying instruction for each learner overwhelming because of the time required to do so. One parent had this to say:

> *"It's overwhelming at times because of trying to teach so many and giving each attention. Time to attend to each of them."*

This educator response was coded as limitations of parent educator due to time and resource constraints. This led to feelings of being overwhelmed by the idea of personalizing learning for each learner. MI and LS theory application would be adaptable in such contexts as they have been applied in many different learning environments (Campbell & Campbell, 1999); (Dunn, 1990).

Feelings of inadequacy: Some parents felt inadequate to the task of trying to personalize learning because they lacked educational training. Instead, they opted to simply use pre-packaged curriculum in the recommended format. One parent educator commented with regard to challenges faced when trying to personalize:

> *"You can miss it sometimes because you may not be sufficiently equipped to identify it."*

Another parent expressed similar sentiments when she said:

> *"My son is physical, and I need to be able to keep up with him. He wants to do riding to do football and then learn. I feel insufficient"*

This response illustrated limitations of educator confidence or physical ability to meet their learner's needs. MI and LS would be helpful in this regard to help educators realize that there was always something that could be done to personalize learning for all learners, regardless of resource constraints, or limitations of the educator.

It was interesting to note that of the 5 parent educators found to have been rated as low in effective personalization, 2 had formal training in education. This finding illustrated that a background in education was not an advantage to personalization of learning, and therefore was not necessary for effective personalization of learning. Understanding of learner needs and interests and knowing how to respond to them was the key to effective personalization of education (Murphy, 2016).

4.6. Summary of research findings

This chapter presented the findings of the research with respect to the research questions. It was found, with regard to parent perceptions of their learner's MI, that most parents were able to perceive their learner's multiple intelligence profile even though many of them had no prior knowledge of the MI theory. This confirmed the position put forward by Mountey (2009) that parents are in a better position to recognize

learner needs and interests as they have observed them from birth. It also illustrates the strength of home education for offering personalized learning as the use of MI theory is easily accommodated in this context. A few parent perceptions however, were inconsistent with data from other data sets, which pointed to the need for parents to be trained to better understand the theory and how it relates to learner needs and interests, so as to improve personalization of learning in home education.

With regard to parent perceptions of their learner's learning styles, it was found that most parents were able to perceive their learner's learning style preferences. This showed the usability of LS theory in the home education context because it is based on the knowledge the educator has of the learner. Parents ideally know their children better than anyone else and therefore recognizing and accommodating their learning styles is well-suited to the home education context. It was however noted that there were some inconsistencies between the parent perception of learner LS in some cases and the other data sets. This was despite the fact that more parent educators had prior knowledge of the theory of LS than those who knew the MI theory. This illustrated the importance of understanding the LS theory and its implications to enhance personalized learning for children in home education.

The final question inquired into the awareness and use of MI and LS approaches by parent educators of lower elementary learners to personalize their learning. The findings revealed that a good number of parent educators were aware of and were using both MI and LS to personalize learning for their learners, to extremely good effect. It would appear from findings that the combined use of MI and LS approaches to personalize learning had a better effect than using one or the other. The use of one without the other often resulted in reduced effectiveness of personalization. This implies that it is crucial for parent educators to be trained in both MI and LS theories and how to apply the two approaches simultaneously to customize learning for each child. This would result in better understanding of content, as well as learner engagement, motivation, comfort and enjoyment as a result of enhanced personalization of learning. It would also ensure that both the content and process of learning were adequately considered in the personalization of learning thereby strengthening home education as the ultimate personalized educational environment.

4.6.1. Thematic relationships for personalized learning in home education

The different thematic relationships elucidated in the findings of this study were illustrated in the map at the end of this section (Figure 4.1.). It sheds light on the different paths taken by the participants with regard to the use of MI and LS to personalize learning. The combined use of MI and LS, that is, high awareness and accuracy of parent perceptions of learner MI and LS, were illustrated by the bold arrows leading to highly effective personalization of learning. (The word accuracy was used in the map to describe the strength of the similarity between parent perceptions of their learners MI and LS and the learner and educator responses in other data sets.)

Themes which contributed to effective personalization were instructive to improve the practice of home education in Nairobi. The themes were interactive learning, active learning, use of engaging materials, learner-centred learning, strong parent educator support and a focus on whole child learning. These led to the ideal outcomes of enhanced home learning described by learners which were, increased learner comfort in learning, increased understanding of content by learners, high learner enjoyment and engagement in learning, and increased motivation of learners.

Quite a number of parent educators, while they made a good effort to personalize learning for their children, were only moderately effective at personalizing learning because they used either LS on its own or MI on its own to lower effect than the group who combined both approaches. This was illustrated in the map using a normal unbroken arrow. In addition, it was found that the use of pre-packaged curricula and/or resource constraints also contributed to reduce the effectiveness of the personalization of learning. This had the outcome of sub-optimal home learning, which led to reduced learner enjoyment, comfort, motivation, and difficulty understanding content.

Finally, the findings revealed that while they felt there was merit to personalization of learning for leaners, a few parents had made little attempt to personalize learning for their children. In the map, this is illustrated using a dotted arrow. This was due to feelings of being overwhelmed by the time requirement to do so or inadequacy to effectively personalize learning. The outcome of this was low or sub-optimal personalized home learning.

From these findings it can be surmised that for the most effective personalization of learning, both the MI theory approach and the LS theory approach should be combined to instruct parents on how to effectively personalize learning. These thematic relationships of findings were summarized in figure 4.1 below.

Figure 4.1. Map of thematic relationships of personalized learning in home education

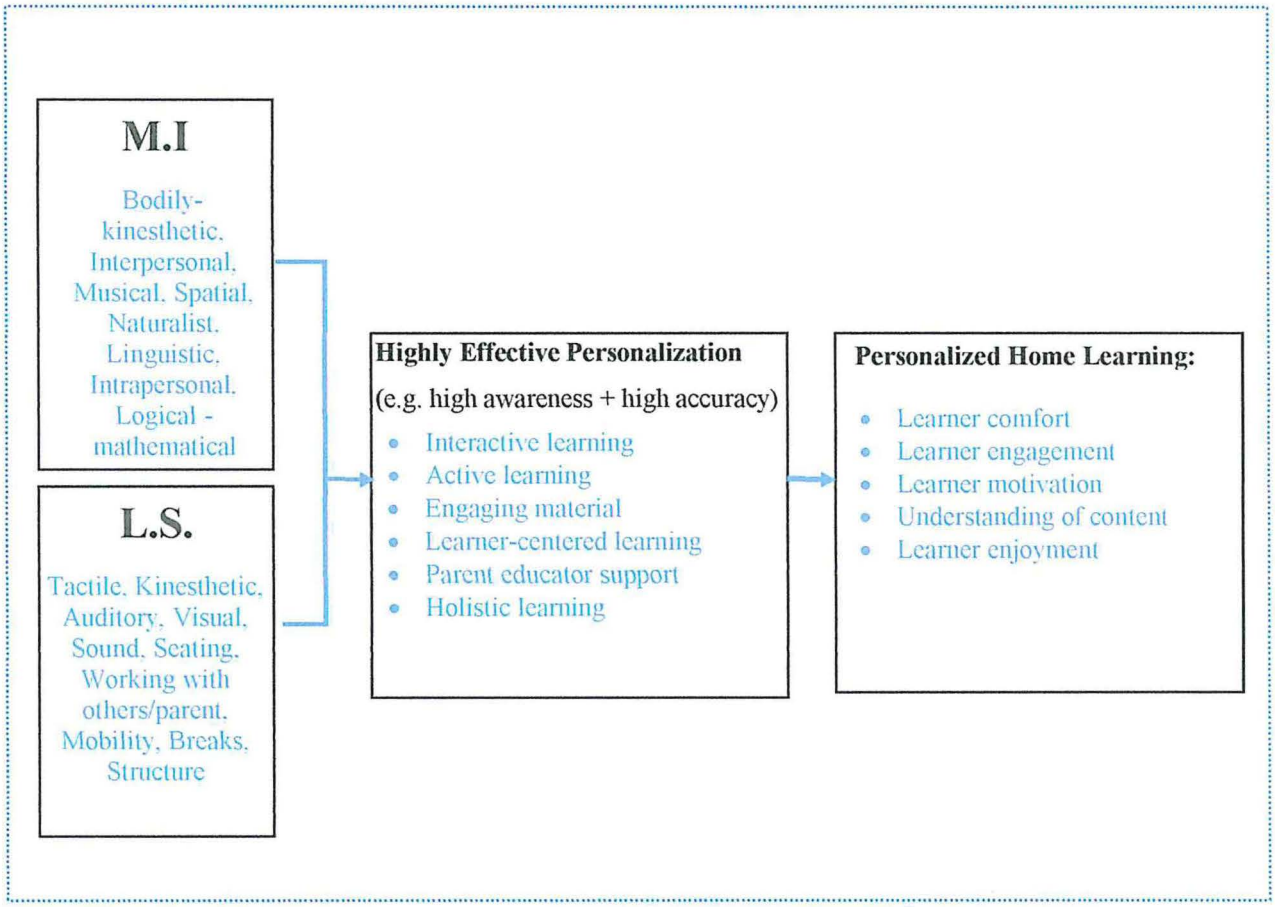
4.6.2. Derived conceptual framework

Figure 4.1 above was simplified into merged themes which represent the ideal scenario for delivery of personalized learning in home education based on the findings of this study. The merged themes represented a derived conceptual framework developed from the findings of this study, and reflecting the proposed theoretical framework detailed in Figure 2.1. of this report. The derived conceptual framework built on the theoretical framework and was expanded to include factors which contributed to highly effective personalization. The outcomes of personalized home learning proposed in the theoretical framework were confirmed by the findings of this study, with the inclusion of learner enjoyment as an outcome. Figure 4.2 below illustrates the merged themes from Figure 4.1. and sets out the ideal position, which is the combined use of MI and LS for effective personalization resulting in the outcomes which characterize personalized home learning.

The conceptual framework derived from the study posits that the combined use of MI theory by Gardner (1983) and LS model by Dunn & Dunn (1978) to customize and vary instruction for home educated lower elementary learners results in highly effective personalization. This highly effective personalization is characterized by high awareness as well as high accuracy (as used in figure 4.1.) by parent educators in their perceptions of a learner's MI profile and LS preferences. Effective personalization is also dependent on educators using this knowledge to customize educational programs and vary instruction to meet their learners' needs and interests. This could be through the use of interactive learning, active learning, use of engaging instructional materials, learner-centred learning, holistic learning and strong parent educator support.

The outcome of this highly effective learning was found to be enhanced understanding of instructional content by the learner as well as increased learner comfort, engagement, motivation and learner enjoyment in the content and process of learning. Those engaged in home education could apply this framework in order to enhance learning and specifically, personalized learning for those in lower elementary stage of learning. The conceptual framework postulates that personalization of learning using MI and LS would lead to improved educational outcomes for the learner.

Figure 4.2 Derived conceptual framework from merged themes



CHAPTER FIVE: DISCUSSION OF RESEARCH FINDINGS

5.1. Introduction

This study set out to investigate parent educator perceptions of their learners' multiple intelligences and their learning styles and the extent to which they used their understanding of their learners' needs and interests to personalize learning for their lower elementary learners. This chapter discussed the findings relating to the emerged themes and sub-themes in relation to the research questions.

5.2. Perceptions of Multiple Intelligences

The findings relating to the parent educator perceptions regarding their learner's intelligences were instructive in several ways. First, the fact that most of the learners were perceived as having non-traditional bodily-kinesthetic and interpersonal intelligences as their strongest intelligences, as well as musical and spatial intelligences, suggested that the need for personalization of learning was apparent. One of the strengths of the MI theory for enhancement of learning is the fact that the stronger intelligences can be used to bolster the weaker intelligences. This is due to the fact that learning with multiple intelligences helps learners understand and apply content better (Koch, 2016). Learning with MI would require educators to devote time and energy to understand MI theory, then use that knowledge and what they have learned about their learners' MI strengths to modify the curriculum in use to fit the learners, both in instruction and assessment (Hoerr, 2000).

From the findings it was imperative that more parent educators learned how to personalize learning using the bodily-kinesthetic, interpersonal, spatial and musical intelligences in order to increase learner motivation and attitude towards learning in the areas of logical-mathematical and linguistic intelligences. This could be through simple changes in the home-school, such as those employed by different parent educators and enjoyed by learners, as collated from the learner interview responses. Some examples were: using songs, humming, instruments and rhythms in teaching new concepts for the musically inclined learner; using movement, dance, drama, games, manipulatives for the bodily-kinesthetic learner; using videos, pictures, art activities, Lego sets, and pictures for the spatial learner; and making an effort to have co-operative learning experiences through co-ops, fun gatherings, board games and

other interactions for the interpersonal learner (Armstrong, 2009). There is no one right way to implement MI, each home educator could use MI in a way that reflects their unique home context and culture (Hoerr, 2000).

The findings also pointed to the need for parent educators to take more time and be more deliberate about nurturing and developing their learner's logical-mathematical and linguistic intelligences, as these still play a crucial role in life and in many careers today. The low scores for these two intelligences were corroborated by 61.76% of learners who named Math and English as their least favourite subject. The learners' reasons were that lessons took too long, were hard, and lack of variety in the way the lessons were learned. However, those who had high scores in these intelligences intimated they enjoyed lessons because they used engaging instructional materials, and used musical, bodily-kinesthetic and spatial activities like games, manipulatives and songs in the learning of these subjects. These examples of applied use of MI illustrate the impact that the use of MI in learning has on raising learner interest and strengthening intelligences.

Regarding the individual perceptions of the learner's MI profile by the parent educators, the findings indicated some parents gave very high scores for their children in all the intelligences which may have been a rather unbalanced perception of their child's strengths without seeing any of his/her weaknesses. Conversely, some parents gave rather low scores for their children's MI profiles on the checklist which may indicate that they had not spent much time observing their children, or that the curriculum used had an unbalanced focus on self-work. This skewed perception of learner abilities on either weaknesses or strengths robbed the parent of the opportunity to see the learner's individuality and therefore the learner's unique intelligence profile. This resulted in less effective personalization of learning for the learner in these cases. From the thematic analysis, recognition of both strengths and weaknesses of their learners was crucial to the provision of a more balanced view of the child's learning potential. MI effectiveness was realized through this understanding of strengths and weaknesses (Chen, Moran, & Gardner, 2009).

Another consideration under MI theory use for personalizing learning was to ensure that the parent educator was aware of the perceptual and other learning styles of their learners to ensure that they do not hinder learning by using a learning style that is not compatible with a learner to teach content. As illustrated by the findings, the

combined use of MI and LS was more effective for personalization of learning than using one or the other. This meant that for a child with a high spatial or bodily-kinesthetic intelligence, which pointed to a tactile/kinesthetic learner, parent educators should resist the use of primarily auditory or visual means of delivering learning content. Instead the use of tactile/kinesthetic instructional materials and activities would be encouraged since they use the bodily-kinesthetic and spatial strengths of the learner. It has been proposed that people who were smart in an intelligence learned best through methods associated with that intelligence (Denig, 2004).

In addition, findings related to the learners who received less effective personalized learning indicated they were less engaged and motivated to learn some subjects. This was likely evidence of the impact of crystallizing experiences and paralyzing experiences on the development of learner's intelligences (Armstrong, 2009). Parent educators needed to make every effort to encourage and facilitate their learner's development of all the intelligences early in life so as to afford their learner's the best opportunity to reach their full potential (Koch, 2016).

From the findings, it was clear that no two learners had exactly the same intelligence profiles. This held true even for siblings. This therefore called for parent educators to embrace the use of MI theory to personalize the learning of their children in order to give them every advantage that the approach offers to improve learning and understanding. Parent educator acceptance of MI theory use in learning would impact parent attitudes about home education even before they made any concrete changes to their instruction (Mettetal, Jordan, & Harper, 1997), and this would be an important step for learning personalization.

Efforts should therefore be made by the home educating community in Nairobi towards greater understanding of MI theory and its application in understanding the different intelligence profiles of learners, so as to customize instruction and enhance personalized learning for them. Policy regarding training of parent educators on the use of MI in education should also be pursued to ensure better personalization and learning outcomes for home educated learners.

5.3. Perceptions of Learning Styles

With regard to perception of parent educators of their learner's learning style, the findings showed that most parents were able to perceive their learner's learning style. This finding was consistent with the findings of the research by Medlin (2010), who found that parent educators were able to accurately perceive their learner's preferred learning style. However, parent perceptions of their learner's learning styles had more inconsistencies when triangulated with other data sets than the multiple intelligences. This was an interesting finding considering more of the parent educators were familiar with the LS theory and significantly fewer had heard of the MI theory. This illustrated the strength of combining both the LS and the MI to enhance home learning as weaknesses in one can be countered by strengths in the other (Silver, Strong, & Perini, 2000).

The initial count of the perceptual learning styles, i.e. how children prefer to receive new information, had more children being perceived to be visual and auditory learners – the two most commonly used learning styles in traditional learning. However, after triangulation with other data sets, this count was provisionally adjusted based on the learner responses and the MI checklist results. The new count indicated a greater number of learners may actually have been tactile or kinesthetic learners. This finding was consistent with studies of the learning styles of younger learners (Dunn, 1990).

Perceptual learning style is significant once more for parent educators to note as teaching young learners new and difficult information via auditory methods or visual means at the first instant almost always guarantees poor comprehension (Dunn, 1990). It would instead be better to introduce such information using the learners preferred perceptual learning style then reinforce it auditorily or visually or using another learning style. This also illustrated how important it was for parent educators to understand the LS theory and how to modify instruction to accommodate each learner's perceptual learning style as well as other learning styles.

From the number of inaccurate perceptions of learning styles, it would appear that learning styles were more complex than perhaps many understood. It is therefore far more important for a parent educator to learn something about his/her learner, in order to meet that child's learning aptitude. (Swanson, 2016). Much of teaching

works in the intangible realm because it is based on what an educator has learned about the learner. While it is sometimes helpful to recognize a particular learning style, more emphasis should be placed on studying the learner to understand learning needs (Swanson, 2016). This held true for many of the parent educators who had little or no in-depth knowledge about learning styles or multiple intelligences, but they were able to intuitively tap into their children's learning needs and meet them without realizing they were applying a complex educational theory. However, knowing what to look for was helpful, therefore, some understanding of the theory would be useful.

While this study focused on the perceptual learning styles, the other learning styles were also instructive of the kind of learning activities that a parent educator should have their learners engage in. They also corresponded closely with multiple intelligences and were complementary in many cases. This was illustrated by learners who were perceived as having a strong bodily-kinesthetic intelligence preferring to move often and need frequent breaks in learning. Such learning styles needed to be considered by parent educators to ensure they did not negate personalization efforts. For instance, a learner who prefers warmth should not be required to learn outdoors in the cold as this is likely to hinder learning to some degree. A learner who needs to move around should not be required to sit still until they finish their work but should be given the opportunity to take frequent breaks so they can concentrate better on task. This personalization was particularly well suited to home education where the learning styles relating to environment could easily be accommodated, like informal seating, low light, constant breaks, etc. Parent educators should be careful not to bring school home in the process of home education.

The other learning styles put forward by Dunn & Dunn (1978), while they were not discussed in the findings of this study, would also be relevant for different learners in different contexts. For instance, the tendency towards global or analytical understanding of content would be important for understanding whether learners needed to learn content starting with the details then building up to the big picture, or whether they needed to see the big picture first then have a concept broken down to its component parts. It would therefore be helpful for parent educators to familiarize

themselves with all the learning styles so that they can determine those which are relevant for their individual learners and how to accommodate them in learning.

Home educator community trainings in Nairobi should therefore encourage greater understanding of LS model and the instructional considerations which each learning style occasions. The home educating community would benefit from better understanding of their learners' LS preferences and how they can be accommodated within the home context, to enhance personalized learning for them. It would also be instructive for policy makers to provide support for parents on how to incorporate the use of LS in learning to ensure better personalization and outcomes for lower elementary home educated learners.

5.4. Personalizing Learning using Multiple Intelligences and Learning Styles

Parent educator perceptions of their learner's preferred learning style, and multiple intelligences, where consistent with learner responses and used to vary instruction resulted in more effective personalization than use of one and incorrect use of the other. This was one reason for the argument for combining of the two approaches in order to better personalize learning for each learner (Silver, Strong, & Perini, 2000). The combined effect of the two increased incidences of understanding of content, enjoyment and comfort in learning as well as engaged and motivated learners, as illustrated by the findings of this study (Johnson, 2007).

The findings of this study showed that while formal or intuitive understanding of the MI and LS theories was high, the application of the theories to better personalize learning was somewhat less successful than anticipated. Knowledge of learner needs and interests did not always translate to application of that knowledge to customize educational programs. In many instances, learners reported fewer personalized learning experiences than was possible in even the most basic home-school context. While this was some cases blamed on resource constraints, evidence from the highly effective personalization efforts illustrated that it was possible to personalize learning using easily and locally available materials and resources.

It was evident from the parent educator and learner responses that the use of manipulatives, outdoor learning, music and movement was possible in even the most basic home education contexts. Manipulatives were in some cases made using

common household items like beans, balls, rocks, sticks, cut-outs, etc. Some parents made up words to a common tune or nursery rhyme to help a learner remember information in musical form. Movement didn't require any materials, just some creativity and the outdoors and the willingness by educators to relinquish the need to have learners sit still as they learn. Some learners expressed relief at being able to stand up and walk around while learning. Another shared their love for marching around the room while learning spelling rules, as the activity helped with memory. Parents who allowed these activities rarely understood it but admitted to seeing that it worked for their more kinesthetic learners. These were some of the most basic forms of personalization evidenced in the study. There were many more, as varied as there were learners, learning styles and multiple intelligences. Personalization was therefore not beyond the reach of any home educator, and it had a positive impact on the content and process of learning.

Lessons were learned from the highly effective parent educators in this study. Personalization of learning for them was simply making learning fun for the learner, using engaging materials, games and active participation in learning. Again, these were not necessarily resource intensive, but they did require commitment and some creativity and a great deal of sacrifice on the part of the parent educator. However, the rewards were worthwhile as it resulted in more engaged learners.

Joining co-ops which catered to the needs of learners was also quite important for personalization as they helped meet some of the learning style preferences of children to learn and interact with their peers. The choice of co-op joined was not random in many cases but was based on the parent's knowledge of the learner interests and the "fit" for the learner. This was crucial to ensure that the choice of co-op strengthened rather than negated the personalization efforts. Various lessons which could be learned from other more experienced parent educators was relevant as knowledge of MI and LS within the home educating community could help in the effort to personalize learning for all learners.

Another aspect drawn from the study findings was that parents should look out for areas of difficulty in learning. If a learner is struggling with a certain content or subject, the parent educator should evaluate the teaching method being employed in order to see if the process of delivery, rather than the content is the challenge. A change to the delivery method using either the MI or LS strengths of the learner,

thereby providing the learner with alternative pathways to learning success (Scherer, 2009) could be the key to unlocking the learner's understanding.

The use of boxed curricula was one of the challenges faced by parent educators in their efforts to personalize. However, all curriculum can be customized and adapted to meet the needs and interests of the learner. Varying instruction however, required a more hands-on approach from the parent educator in order to create authentic learning experiences for the learner and make up for the weaknesses in instructional material (Johnson, 2007). The foundations laid by educators in varying instruction according to learner MI and LS would equip the learner to recognize how they learn best and train them in strategies which make use of their learning styles and multiple intelligences to build on their weaker areas and eventually become a better, more independent learner. Personalization would also be useful in designing different assessment methods which would potentially provide numerous pathways for the learner to express understanding of content.

Ultimately, personalized learning is meant to meet learner needs, being shaped by learning preferences and interests of the learner (Taylor & Gebre, 2016). The combined use of Multiple Intelligences and Learning Styles gives parent educators tools that they can use to do just that and ultimately lead to a more self-motivated and engaged learner.

5.4. Enhanced personalized home learning

Personalized learning should be effective in order to ensure the learner has every opportunity for success. From the findings of the study it was found that the outcomes of effective personalization were characterized by certain indicators of enhanced personalized home learning.

Effective personalization was characterised by learner engagement in what they were learning. It was found that learners who actively participated in learning and were interested in the content were engaged learners consistent with the position put forward by (Silver, Strong, & Perini, 2000). Another indicator of effective personalization that was evident from the findings was increased understanding of content. It was found that learners who used, for instance, manipulatives or movement in learning were better able to comprehend the information than when it was presented in a visual or auditory manner. Parent educators who encountered

difficulty in understanding in their learners were encouraged to vary instruction in order to find a means of instruction which suited the learner's needs. In cases where the learner expressed difficulty understanding, the mode of instruction was through linguistic or visual means. Using a different perceptual learning style or the learner's stronger MI could improve understanding.

Change of pace, another aspect of personalization would also be useful where understanding was a challenge. It was found that where learners experienced struggles not related to MI or LS, the developmental readiness of the learner had to be considered, especially for lower elementary learners who developed at different paces. Setting aside the challenging material and revisiting it a few weeks or months later was found to resolve the understanding challenges. This is easily accommodated in a home education setting which is personalized for the needs of every learner.

Enjoyment of learning due to engaging instructional materials was another outcome observed of effective personalization leading to enhanced home learning. Learners who characterized this were very enthusiastic and considered learning fun. Effective personalization of learning also resulted in highly motivated learners who were well on the way to being self-directed learners because they actively participated in learning (Silver, Strong, & Perini, 2000). These learners were confident and looked forward to their lessons. Enhanced home learning was also illustrated by learner comfort due to learner preferences and needs being taken into consideration (Scherer, 2009).

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1. Introduction

This chapter set out the conclusion of the study in light of the findings discussed, as well as the recommendations made to enhance personalization in home education in Nairobi and specifically for lower elementary learners. Limitations of the study were also set out.

6.2. Conclusion

The current study sheds light on the practice of home education in Kenya, how it is conducted and by whom. It validates the assertions by (Jeynes, 2016) that homeschooling offers the ideal personalized learning environment. It also illustrates that combined use of MI and LS leads to enhanced personalized learning for learners as posited by (Denig, 2004). In order to improve personalization of learning for home educated lower elementary learners parent educators should be trained on MI theory and LS theory and how they can be applied to the home education context in Nairobi.

Parent awareness of their learner's MI profile was instructive when designing home education routines and selecting instructional materials. Teaching using a learner's intelligence strengths can help improve understanding in areas of weakness. The study revealed that the bodily-kinesthetic, musical, spatial and interpersonal intelligences had the greatest number of strong scores. Teaching using these strengths would therefore involve incorporating movement, visual representations, music and group or parent-led learning. Further, parent educators should make effort to develop their learners in the logical-mathematical and linguistic intelligences as these had the lowest number of strong scores despite its central role in life.

In addition, the use of learning styles in delivery of content would be helpful to ensure it is received by the learner and increases the understanding of the learner. This is especially true of the perceptual learning styles, which are tactile, kinesthetic, auditory and visual. The other learning styles which were of focus in this study were sound, mobility, seating, working with others or alone, working with parent or peers, needing to take breaks or focus, and optimal time for learning. These contributed to learner comfort and were easily accommodated in personalization of learning within

the context of home education. Knowledge of the other learning styles not discussed in the findings of this study would also be important for parent educators for effective personalization as every learner is different and has different learner needs.

Finally, the use of both Multiple Intelligences and Learning Style to personalize learning was more effective than using either one or the other as they lend support to each other and result in a more engaged learner which ideally leads to better learning outcomes. This was due to the fact that MI deals with the content of learning and LS deals with the process of learning. Their combined use results in better tools for varying instruction and customizing learning to each learner's needs and interests. Parent educators should therefore be encouraged to learn their learner's individual MI profiles and LS preferences and use this to design personalized educational programs for their learners. This would leverage similarities between the learners in any one family while ensuring that their different learning needs and abilities are met.

Personalized learning begins and ends with the individual learner. It begins with understanding the learner needs and abilities and ends with a learner who is empowered and equipped with the ability to be a lifelong learner. The combined use of Multiple Intelligences and Learning Styles is a powerful tool that can be applied from the beginning of that process and well into adulthood and is therefore an effective personalization strategy. Personalized learning using MI and LS is also particularly well suited to the home education context due to the close relationship between the parent and learner and the flexibility of the home environment to accommodate learning needs.

Effective personalization is evident in learner motivation, learner engagement, learner comfort in the learning process, greater understanding of content and enjoyment in the content and process of learning. Such a lower elementary learner is well on the way towards lifelong learning. Personalized learning in home education is therefore an attainable goal for all learners and should be encouraged among the home educating community in Nairobi. The combined use of MI and LS is an effective personalization tool to address the differences in learners and enhance learning outcomes by meeting the unique needs and interests of learners.

6.3. Implications of the Study

This study has implications for the whole community of home educators as it suggests strategies they can employ for learners of all ages to personalize learning for greater understanding. This includes better structured or revised approaches to identification of learner needs, interests, and strengths which can be applied to improve learning outcomes. It could also give home educators confidence in their capacity to home educate and equip them to be more effective at personalizing learning through increased self-awareness.

This study also has implications for those in the educational community who are interested in providing personalized learning experiences for their learners. These could be parents with learners in the formal schooling system who would like to be more involved in their children's learning.

6.4. Recommendations

This study recommends exploring a change in education policy towards increased personalization of learning for lower elementary learners, as the benefits for engagement and motivation of learners as well as increased understanding of content are evident. It also recommends empowering parents to know their learners well and training them on MI and LS theory and how they can be used to enhance personalized learning for learners in various contexts.

Parent educators should be encouraged to understand their learner's MI profiles and use areas of strength to develop areas of weakness. Home educators should also make efforts to develop the logical-mathematical and linguistic intelligences for those learners who are weak in these areas due to their central role in many sectors. Suggestions for how to do this include critical thinking games, science experiments, problem solving and making use of math manipulatives to develop the logical-mathematical intelligences. To nurture the linguistic intelligences, parent educators could introduce storytelling, word and letter games, journal writing, audio-books, and tactile experiences to engage the child more in the learning process and improve learning.

Parent educators should also be encouraged to understand their learners' primary learning style preferences in order to customize instruction to their needs. For lower elementary learners and younger, complex information should primarily be

introduced using the tactile and kinesthetic perceptual learning styles and reinforced using visual and auditory means. This would ideally result in increased understanding.

This study recommends further research to test the effectiveness of application of the personalization model suggested here. This could be a quantitative study within Kenya to test the application of the combined use of MI and LS to improve learning outcomes and enhance home learning. Further this same research model could be tested with other home educated learners in other contexts where home education is practiced in East Africa as well as internationally to see if the findings would be the same. This model could also be tested for specific home education curricula used within Kenya and internationally.

Future studies may be undertaken to test the conceptual framework proposed in Figure 4.2 using a larger sample of home educators in Kenya or other contexts. The impact of personalized learning using MI and LS may also be explored with regard to specific learning outcomes for learners using pre- and post-evaluation and compared to a control group.

6.5. Limitations

This qualitative study is limited to the realm of home education and specifically that of lower elementary learners in Nairobi. The study cannot be generalised to the whole population of home educators as the findings may differ for different learner age groups. It also cannot be generalised to learners in other educational contexts.

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APPENDICES

APPENDIX A: LETTER OF INTRODUCTION

Date

Dear Parent,

RE: LETTER OF INTRODUCTION

I am writing to request your participation and the participation of your child in a research on the "Personalized Learning in Home Education: An Examination of Parent Perceptions and Use of Multiple Intelligences and Learning Styles in Lower Elementary Learners in Nairobi, Kenya". I am a Strathmore University graduate student studying the perceptions home educators have of the multiple intelligences and learning style preferences of lower elementary aged children who learn in the home context as well as the extent to which personalized learning which takes place in the context of home education uses the two approaches. This is with the aim of enhancing the personalized learning of home educated children through greater use of the two approaches.

If you approve to participate in the study, you will be asked to fill out a multiple intelligence checklist and a learning styles inventory for each of your children between the ages of 6 and 10 years of age. Each should take about 5-10 minutes to complete. You will also be requested to complete a questionnaire which I will be facilitating. I expect it to take about 20 minutes. Your child will be requested to take part in an interview which will last about 15 minutes. You or your child may opt out of the study at any point or may choose not to answer any question you are not comfortable with.

Although this may seem like a lot of time to commit to a study, the overall benefit of the information acquired from this study will be beneficial to the community of home educators in Nairobi corporately and individually.

All information collected will be treated with the utmost confidentiality and your right to privacy and anonymity will not be violated.

If you have any questions or concerns, please email me at: janice.sitati@strathmore.edu

Yours faithfully,

Janice Sitati

APPENDIX B: PARENT/GUARDIAN INFORMED CONSENT FORM

Title of Research Project: "Personalized Learning in Home Education: An Examination of Parent Perceptions and Use of Multiple Intelligences and Learning Styles in Lower Elementary Learners in Nairobi, Kenya"

Identification of Researcher & Purpose of Study: You and your child are being asked to participate in a research study conducted by Janice Sitati from Strathmore University. The purpose of this study is to investigate the use of multiple intelligences and learning style preferences of lower elementary aged children who learn in the home context. This study will contribute to the researcher's completion of her master's thesis.

Research Procedures: Should you decide to allow you and your child to participate in this research study, you will be asked to sign this consent form once all your questions have been answered to your satisfaction. This study consists of a questionnaire, two inventories and an interview that will be administered to you and your child in a convenient location. Your child will be asked to provide answers to a series of questions related to their multiple intelligences and preferred learning styles.

Time Required: Participation in this study will require 20 minutes/hours of your child's time, and about 1 hour of your time spread out over two 15-20 minute sessions and one 30 minute session.

Risks: The researcher does not perceive more than minimal risks from you or your child's involvement in this study (that is, no risks beyond the risks associated with everyday life).

Benefits: Potential benefits from participation in this study include the dissemination of the outcomes of this research to the home educating community as a whole once the research is finalized.

Payment for participation: The researcher will greatly appreciate your participation in this study, however, there is no monetary compensation or otherwise for participating in this study.

Confidentiality: The results of this research will be presented in the research report. You and your child will be identified in the research records by a code number. The researcher retains the right to use and publish non-identifiable data. When the results of this research are published or discussed, no information will be included that would reveal you or your child's identity. All data will be stored in a secure location accessible only to the researcher. Upon completion of the study, all information that matches up individual respondents (including audio/video record, if applicable) with their answers will be destroyed.

Participation & Withdrawal: You and your child's participation is entirely voluntary. You are free to choose not to participate. Should you and your child choose to participate, you (he/she) can withdraw at any time without consequences of any kind. You or your child may also choose not to answer a particular question or questions.

Questions about the Study: If you have questions or concerns during the time of you or your child's participation in this study, please contact:

Researcher's Name:	Supervisor's Name:
Department:	Department:
Strathmore University:	Strathmore University:
Email Address:	Telephone:
	Email Address:

Giving of Consent: I have read this consent form and I understand what is being requested of me and my child as a participant in this study. I freely consent for myself and my child to participate. I have been given satisfactory answers to my questions. The investigator provided me with a copy of this form. I certify that I am at least 18 years of age.

☐ I give consent for me or my child to be (audio) recorded during their interview.

(parent's signature _____)

Participant Code Number _____

_____ _____

Signature of Parent/ Guardian Date

_____ _____

Signature of Researcher Date

APPENDIX C: QUESTIONNAIRE FOR PARENT/EDUCATOR

I have some questions about how you educate your children at home and I'd appreciate you taking the time give your honest response.

Participant Code Number: _____

Gender:_____

Number of Children:_____

Number of years home educating: _____

i) What would you say was your main motivation to home educate your children?

ii) Do you have any formal training in education? If yes, what kind of training?

iii) List the main activities that comprise your home education program.

iv) What do you use to guide your choices of instructional/ learning activities?

v) What is the reason you chose the instructional materials and educational routines which you currently use in your home-school?

vi) What were your main sources of information about designing your home education program?

vii) Do you customize or tailor your home education program according to your child's/children's natural inclinations, and unique interests or abilities? If yes, how? If no, do you think it would make a difference to know your child's unique abilities, or interests? Why?

viii) Do you vary delivery of instructional content to accommodate your children's individual learning needs and to help them understand the material better? If yes, how? If no, do you believe knowing your children's learning needs could contribute to their learning? How?

ix) Based on your experience, what would you say are the strengths of home education with regard to personalizing educational delivery?

x) How do you go about identifying your children's unique learning styles?

xi) How do you go about identifying your children's individual interests, capabilities, strengths, and giftings?

xii) What challenges do you face as a home educator when trying to identify and meet your children's unique learning needs?

APPENDIX D: INTERVIEW GUIDES FOR LEARNERS (CHILDREN)

I would like to find out about how children who are taught by their parents or at home learn. Would it be ok if I asked you a few questions?

Participant Code Number:_____

Date of Birth:_____

Gender: _____

i) Do you go to school? Where?

ii) If I followed you through the day, what would I observe you doing?

iii) What are some things you really like about learning at home?

iv) What is your favourite subject to learn? Why? Who teaches you? What do you do when you are learning it? Do you sometimes learn it in different ways?

v) Which are your least favourite lessons? Why?

vi) What things do you not like about learning at home?

vii) Do you ever use songs or instruments when you are learning? If yes, do you like it?

viii) Do you ever go outdoors to learn for your lesson? If yes, what do you do when you are outside?

ix) When you are learning do you sometimes use toys or blocks or shapes or sticks or pictures?

x) Do you sometimes dance, jump, or move around when you are learning?

APPENDIX E: MULTIPLE INTELLIGENCES CHECKLIST

Kindly complete one checklist per child between the ages of 6 and 10.

Think about your child and what you have observed of them during their learning; how they spend their free time; what they enjoy doing or have a natural affinity for; what they do not enjoy or what they struggle with; and even the ways they constantly misbehave. Use your observations to honestly complete the checklist and check only the items that **clearly apply** to your child. Where you have not noticed or have rarely observed the described behaviour or where you are unsure, leave it blank.

Participant Code Number_____ Date of Birth:_____

Gender: _____

My child has spent _____years in home education and _____years in conventional schools.

My child: (check items that apply)

Musical Intelligence

- ☐ Has a good singing voice and can carry a tune well
- ☐ Remembers the melodies of songs after hearing it once or twice
- ☐ Tells you when music sounds off-key or disturbing in some way
- ☐ Unconsciously hums, drums or sings to himself/herself
- ☐ Enjoys taking music lessons or performing
- ☐ Plays at least one instrument or sings in a choir or other group
- ☐ Taps rhythmically on the table or desk as he/she works
- ☐ Responds favourably when a piece of music is put on and claps or moves to the sound of music
- ☐ Makes up songs just for fun or while playing
- ☐ Can keep the beat to music well by clapping or tapping feet

Other musical abilities:

Spatial Intelligence

- ☐ Enjoys art activities and carefully draws, colours or paints
- ☐ Likes to doodle on workbooks, worksheets, notebooks or presents
- ☐ Works independently on craft activities such as cutting and pasting or making paper airplanes
- ☐ Daydreams a lot and/or reports clear visual images (has to "see" something in his/her mind to explain it)
- ☐ Reads maps, charts, and diagrams more easily than text (or enjoys looking at pictures more than text)
- ☐ Likes to view movies, slides, pictures or other visual presentations
- ☐ Enjoys doing puzzles, mazes, or similar visual activities
- ☐ Builds interesting three-dimensional constructions (e.g. Lego buildings)
- ☐ Likes to take things apart and puts them back together, e.g. household objects, models, Legos
- ☐ Has good hand-eye co-ordination and is good at playing games like catch, tossing beanbags, basketball

Other Spatial Abilities:

Logical-Mathematical Intelligence

- ☐ Enjoys working or playing with numbers
- ☐ Asks a lot of questions about how things work and tries to figure out why and how things work
- ☐ Enjoys math class and easily learned numbers and counting or fractions (for his/her age)
- ☐ Counts easily, can easily do "take away" or subtraction and works carefully with basic math (for

his/her age)

- ☐ Enjoys science lessons and likes to do science activities like experiments, solving problems or measuring
- ☐ Enjoys putting things in hierarchies (big-small), categories (sameness or differences) or other logical patterns
- ☐ Shows interest in science related subjects even in free play or reading
- ☐ Does well on logical thinking tasks, working on logic puzzles or brainteasers
- ☐ Enjoys playing chess or checkers or other strategy games
- ☐ Collects items and tries to learn all he can about it such as horses, dinosaurs, rocks, dolls

Other Logical-Mathematical Abilities:

Linguistic Intelligence

- ☐ Learned how to read easily (and almost intuitively) and quickly learned the alphabet/phonics
- ☐ Can easily identify letters and their sounds or sound out words without a struggle
- ☐ Writes better than average for his/her age
- ☐ Likes to create and tell stories, jokes, says rhymes or makes up words to songs or in conversation
- ☐ Can talk people into doing things his/her way when he/she wants to
- ☐ Quickly and easily understands verbal instructions given by adults
- ☐ Has a good vocabulary for his/her age and quickly learns new words and tries to use the big words that adults use
- ☐ Has created a little book or written a poem or story just for fun (without being instructed to by anyone)
- ☐ Enjoys reading books and/or playing word games
- ☐ Communicates to others in a highly verbal way (and in some cases never seems to stop talking)

Other Linguistic Abilities:

Bodily-Kinesthetic Intelligence

- ☐ Excels in one or more sports (or shows physical prowess advanced for age)
- ☐ Hops, skips, jumps rope or gallops quite well (compared to others of same age)
- ☐ Often wants to do things like swimming, dance lessons, gymnastics, skating, riding
- ☐ Cleverly mimics other people's gestures or mannerisms or is good at drama/ has a dramatic way of expressing self
- ☐ Loves to take things apart and put them back together again (toys, machines)
- ☐ Puts his/her hands all over something he/she has just seen (e.g. always wants to touch things in the store)
- ☐ Enjoys running, jumping, wrestling and is good at sport or physical activities or with playground equipment
- ☐ Enjoys working with clay or other tactile experiences such as finger painting
- ☐ Dances quite well and moves to the beat of music/ is well co-ordinated
- ☐ Can easily manipulate small objects such as blocks, stringing beads, shoe laces, cut with scissors, fasten buttons/snaps

Other Bodily-Kinesthetic Abilities:

Interpersonal Intelligence

- ☐ Likes to offer to help people around the house or in different settings
- ☐ Seems to be a natural leader when doing things among friends or family
- ☐ Enjoys socializing with other children and likes to play games with other children
- ☐ Tries hard to understand the feelings of other children or adults/ has good sense of empathy or concern for others
- ☐ Enjoys informally teaching other kids and gives advice to friends who have problems
- ☐ Has two or more close friends and is sought out for company by others
- ☐ Easily takes turns and finds it easy to be part of a team
- ☐ Finds it easy to understand what a parent or adult in authority expects of him/her
- ☐ Often seems to know the right thing to do or say in a situation that gets a quick response from someone
- ☐ Can easily read their parent's or someone else's mood and can sense when someone is in a "bad mood"

Other Interpersonal Abilities:

Naturalist Intelligence

- ☐ Is good with pets or other animals like horses and knows how to take care of them
- ☐ Ensures pets have plenty of food and water or carefully tends to plants and likes to water them
- ☐ Talks a lot about favourite pets, different animals, or preferred spots in nature

- ☐ Enjoys field trips in nature, to the zoo or national park/wildlife sanctuary, or to a natural history museum
- ☐ Is curious about nature and looks for animals, insects, collects plants, rocks or other natural items to show others
- ☐ Easily recognizes different kinds of animals or plants and can point out distinctive features of each
- ☐ Gets excited when learning about ecology, nature, plants and animals
- ☐ Enjoys doing nature projects such as bird-watching, collecting butterflies or insects, studying trees or raising animals
- ☐ Shows sensitivity to natural formations (e.g. clouds, mountains,)
- ☐ Is concerned about the earth and about living things; protecting the environment and helping animals

Other Naturalist Abilities:

Intrapersonal Intelligence

- ☐ Accurately expresses how he/she is feeling and can keep his/her feelings or temper under control
- ☐ Does well when left alone to play, work or study
- ☐ Displays a sense of independence or strong will and can make up his/her own mind about something
- ☐ Has a realistic sense of his abilities and weaknesses
- ☐ Corrects his/her mistakes before they are pointed out and is able to learn from mistakes/successes in life
- ☐ Has good self-esteem, has a good sense of direction, and is good at making decisions
- ☐ Can concentrate well for his/her age and work on a project until it is completed
- ☐ Can get prepared, organized and complete a task independently (for his/her age)
- ☐ Has an interest or hobby that he/she doesn't talk much about
- ☐ Prefers working alone to working with others

Other Intrapersonal Abilities:

APPENDIX F: LEARNING STYLES INVENTORY

Kindly complete one inventory per child between the ages of 6 and 10 years.

Participant Code Number _____ Date of Birth:_____

Gender:

My child has spent _____years in home education and _____years in conventional schools.

What type of perceptual learner is your child? (pick the **one** that your child is strongest in)

- ☐ Visual – learns best by reading, and seeing/observing
- ☐ Auditory – learns best by hearing/listening and discussing
- ☐ Kinesthetic – learns best by moving and doing (e.g. role play, tapping feet, trips, games)
- ☐ Tactile – learns best by touching and writing (when able to manipulate items with their hands)

Please use the rating scale below to describe how your child prefers to learn or do his/her academic work. Mark one box on each line that indicates where you feel your child's preferences may lie for that style. The boxes at the extreme right or left indicate a strong preference for the style closest to each box, while the box in the middle indicates no preference for either style on the left or right.

Prefers quiet to learn, no distractions	☐	☐	☐	Prefers some sound, music in background
Prefers low/soft light to concentrate	☐	☐	☐	Prefers bright light to concentrate
Prefers cooler temperature	☐	☐	☐	Prefers warmer temperature
Prefers to work seated at a formal desk or table and chairs	☐	☐	☐	Prefers to work lying on floor or bed or seated on sofa/pillows
Prefers to study alone	☐	☐	☐	Prefers to study with other children
Prefers to work with parent/adult present	☐	☐	☐	Prefers to work with peers
Functions best in a single pattern/routine, uncomfortable with new strategies	☐	☐	☐	Functions best with a variety of instructional strategies (bored by repetition)
Prefers to eat or drink while studying	☐	☐	☐	Ignores drink and food when concentrating
Prefers to learn (alert) in the morning	☐	☐	☐	Prefers to learn in the afternoon/evening
Is able to sit still for long periods of time when working/learning	☐	☐	☐	Is not able to sit still for long, needs to move about frequently
Is eager to achieve or learn something new or difficult (internal motivation)	☐	☐	☐	Needs to be challenged by someone else to begin learning (external motivation/rewards)
Is able to remain focused on an academic task until finished	☐	☐	☐	Takes frequent breaks and needs to be reminded to complete the task at hand
Has a desire to do what is required or asked of him/her (conformist)	☐	☐	☐	Does not like to do things just because someone has asked (non-conformist)
Needs structure and depends on directives of others to provide structure to a task	☐	☐	☐	Prefers things his/her way, determines own structure for completing a task
Learns best in a step-by-step sequence (details) and build up to the overall concept	☐	☐	☐	Learn best through initial overview of concept then can focus on facts/details
Pauses to reflect before starting tasks or reaching a conclusion, fear of being wrong	☐	☐	☐	Jump to conclusions quickly, little fear of failure (being wrong), impulsive
Wants to please parents by doing well	☐	☐	☐	Is not concerned about pleasing parents