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A case study of a grade three teacher's mediation of RAVE-O and Instrumental Enrichment

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University of Witwatersrand, School of Education.

M Ed Research Report

Research Title

A Case Study of a Grade Three Teacher's Mediation of RAVE-O and Instrumental Enrichment.

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Abstract

This research examines how a Grade Three teacher mediates the RAVE-O and Instrumental Enrichment (IE) programmes to promote effective learning to enhance children's literacy and thinking. RAVE-O is an acronym for Reading, Automaticity, Vocabulary, Engagement plus Orthography. It is a cognitive and behavioural reading intervention programme. Instrumental Enrichment is a programme designed to teach cognitive skills. The research aimed to examine how a teacher used mediation in the classroom, the frequency and types of Mediation and the language used to mediate across RAVE-O, IE and THEME lessons. This research used a qualitative case study design in one classroom in an Independent Remedial School in Johannesburg. Data was collected from videotaped lessons and interviews with the teacher and children. The data highlighted the critical issue of 'Classroom Talk' as a tool to facilitate a deeper understanding of the world and how meaning is constructed. This research has shown the value of working with well researched programmes that can improve, teacher practice, the level of cognitive functioning in this remedial school as well as mainstream education.

Declaration

I declare that this research report is my own unaided work. It is submitted in partial fulfilment of the requirements for the degree in Masters of Education to the University of the Witwatersrand, Johannesburg. It has not been submitted before for any other degree or examination in any other university.



Fleur Durbach

14 February 2014

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Chapter 1: Introduction

> *So what do we do in a country in which the people responsible for systemic change in schools do not care enough and do not know enough?* (Jansen, 2013:169)

The Education crisis in South Africa has sadly become a recurring phenomenon. In the above quotation Jansen (2013) expresses frustration with the government for repeatedly making the same mistakes. Jansen explains two reasons why the government will not respond to the latest information about what he aptly terms 'Teacher underachievement.' Firstly, he claims that the politicians do not care about educating the majority of the population, who are in lower income groups, because their own children are in fact receiving a good education in the expensive private schools. He criticises the government for fraudulently passing learners and then expecting universities to lower their admission criteria. Secondly, he claims that the administrators 'simply do not know how' to correct the problem of inadequate teaching (Jansen, 2013:169). The competence of teachers is a major issue that impacts on learners' performance and has been a contributing factor to the low literacy and numeracy results (Howie, 2006). Green (2006, 13) argues that,

> Many teachers in South Africa are, through no fault of their own, not immediately in a position to integrate the ideas and practices of cognitive education into their day-to-day work (Naude and Van der Westhuizen, 1996 Wouters and Naude, 1997). Their own educational experiences have not equipped them to be confidently disposed to question and reflect, to notice their own thinking processes or to apply thinking strategies and skills consciously.

Green, (2006) claims that most South African teachers are not reflective in their teaching and only focus on 'what' to teach, instead of engaging learners in the process of 'how' to learn. There is often a lack of depth and lessons are not elaborated to the extent where meaning is communicated. If we are to improve the current situation, South African teachers have to become reflective in their practice and think about their own thinking. Teachers need to abandon traditional methods of teaching facts, focus more on processes

involved in thinking and learning (Skuy, Mentis, Dunn, Durbach, Arnott, Mentis, 1991). In order to address this crucial issue, educators need to be cognisant of the processes involved in learning to learn. It is with this in mind that two specially designed cognitive programmes were implemented in a Grade three class to improve children's thinking and learning. This research study investigates the implementation of these programmes by focusing on the teacher's mediation.

1.1. Aim of the Research

The purpose of this research study is to investigate the implementation of two cognitive programmes, Instrumental Enrichment (IE) and RAVE-O in a Grade three class in an independent Remedial school in Johannesburg. The selection of these programmes was influenced by previous exposure to both programmes in the school. IE is a cognitive programme designed to promote thinking skills and develop independent learners. The lessons are intended to engage learners in discussion and exercises that will provide learners with skills that can be transferred to other situations or life experiences. The concept of Mediation as described by Feuerstein (1991) is central to the IE programme and offers clear guidelines for teachers to modify their method of teaching. It provides teachers with some ideas on how to maximise learning potential.

RAVE-O is a reading programme which was developed at the Centre for Language and Reading at Tufts University in Boston, USA. RAVE-O is an acronym for Reading, Automaticity, Vocabulary, Engagement with Language and Orthography. An experimental version of RAVE-O was initially implemented with a small group of learners who have severe reading difficulties. This intervention was reported on in a Masters Research report (Randleff-Rasmussen, 2010). This initial pilot study prompted further investigation into the advantage of implementing such programmes at the school, which this research takes up.

1.2 Description of the RAVE-O Programme

The RAVE-O programme is a multi-dimensional approach to reading that is based on cognitive principles. The aim of RAVE-O is to help learners understand all the components that make up language. By knowing as much as possible about a word, like how it is made up of different letters or sound patterns, by quickly being able to identify clusters of letters

at the beginning or end of words and knowing what a word means, are all part of being able to read. The RAVE-O programme promotes mediation of every single word in the programme. This encourages speedy recognition of words and their meanings, thus enabling learners to manage the difficult process of reading.

By mediating reading to learners with learning difficulties they are able to make sense of words and make connections to their understanding of the concepts that words represent. The designers of RAVE-O Wolf (2011), like Feuerstein, place an emphasis on the affective motivational aspects involved in reading and realised that the success of this programme would rely on the learner's level of engagement. They have structured the reading lessons to include short games and fun activities that appeal to learners, captivating their attention and promoting the understanding of reading.

1.3 Description of the IE programme

The framework offered in Feuerstein's programme gives teachers a structure of how to interact with learners, where to direct attention, and how to provide the necessary vocabulary and language for the lesson. All these criteria are needed for the learner to understand new concepts and make sense of what is going on in this seemingly chaotic world around him/her. For this interactional exchange to occur between teacher and learner, Feuerstein developed 'Principles of Mediation' as a guide to help teachers ensure that their interaction with the learner is effective (Mentis, Dunn-Bernstein, Mentis, 2008).

In order to understand the thinking processes of the learner, Feuerstein developed a checklist of cognitive functions and dysfunctions which allow the teacher to assess at which phase in the thinking process the learner is having difficulties. This cognitive checklist assists the teacher in establishing if and where the learner is having problems taking in information 'input phase', mentally manipulating information in the 'elaboration phase', or identifying the difficulties that occur at the expressive or 'output phase' of thinking (Feuerstein, 1980)

An understanding of these cognitive functions or dysfunctions gives the teacher insight into the learner's style of learning. It helps the teacher to pin-point where the problem is and where, in the cognitive processing, the learner is experiencing the most difficulty. This depth of understanding cognition assists the teacher as to how the learner should be taught,

which methodology will be most suitable, and what modality to use. For teachers to know the level of complexity of a task, or where to make explicit connections for the learner or which vocabulary to use, Feuerstein has provided a 'cognitive map' (Feuerstein 1980). This provides a structure for the teacher to critically analyse content, activities and materials before teaching them, to ensure the suitability of the task to the learner's level of understanding.

In addition to offering these strategies for teachers, Feuerstein and his team developed tools (Instrumental Enrichment), to intentionally promote thinking skills and develop independent autonomous learners. These activities are presented to the learners with a limited amount of reading material that allows them to develop thinking strategies by completing activities through the perceptual, symbolic, pictorial or linguistic modalities. The aim of the IE lesson is to involve the learners in group discussions, where vocabulary and conceptual development can be enriched.

Feuerstein's programme emphasises the affective motivational aspects of learning. This emotional component is central to thinking and learning (Feuerstein et al., 1991). The motivation, drive and energy to develop thinking, is essential for both the teacher and the learner in order for effective learning to take place. The teacher must have the intention to teach and the learner the desire to engage in this mutual relationship.

Teaching children to think, and developing their cognitive ability and vocabulary, is not enough for learners to be fully functional. In today's world they need to be able to read. The process of reading, for some learners, is completely daunting. In my experience, I believe that if children think about their own thinking and have strategies they can apply to make sense of our world, then perhaps teaching them about how reading works will help them to achieve an understanding of the reading process and enable them to gain meaning from the text. This research aims to examine this intuitive 'feeling' in a more rigorous way.

1.4 Research Questions

The research focus and questions were developed to assess the efficacy of teacher mediation in implementing RAVE-O and IE. The research question is thus:

How does a Grade Three teacher mediate RAVE-O and Instrumental Enrichment to facilitate learning?

The sub-questions are:

1. What kinds of Mediation are observed?
2. How does the teacher use language to mediate learning?

1.5 Rationale for the research

The nature and kinds of difficulties experienced by learners at this school range from physical impairments that are biological, cognitive difficulties that relate to thinking processes or behavioural difficulties that could be as a result of environmental issues. The challenges facing these learners may present themselves in many different ways. They may find it difficult to identify a problem or select relevant information necessary to solve a problem. Many learners have come to this school because they have failed in the mainstream school system, which requires them to learn in a structured and academic environment. They may have spatial difficulties which make it difficult for them to find their way around the building or continually lose their place when trying to work out maths calculations. Organising their books, bags or sports clothes are obstacles for some of these learners. Abstract concepts, such as time, are not easily grasped, making it difficult for them to follow schedules or timetables. Some of the learners may present with delayed language acquisition which makes expressing themselves problematic. Any of these difficulties can leave them feeling despondent or frustrated. This school takes on the challenge to rebuild feelings of worth and give these children strategies to cope with the obstacles facing them on a daily basis.

The teachers are often confused as to how they should go about teaching these learners. They are concerned that what they taught previously has not been retained by the learners. When assessments are done teachers often feel as if they have never taught specific information to the learners. Teaching is challenging, but learners all have the potential to improve and it is up to us to find a way to meet every learner's individual needs. As a reflective experienced teacher I have consistently used 'Feuerstein's work in an attempt to achieve effective learning. The grade three teacher and I collaborated and decided that

these programmes used in tandem could perhaps enhance learning in this particular class. Feuerstein's work and innovative methods show that people have the potential to learn and change if they are exposed to the right kind of interaction (Skuy et al, 1991). He calls this interaction: 'Mediated Learning'.

> The mediator enriches the interaction between the child and the environment with ingredients that do not pertain to the immediate situation but belong to a world of meanings and intentions derived from generations of culturally transmitted attitudes, values, goals and means (Feuerstein, 1980:16).

As educators in this school we have a responsibility to find the correct approach and guide each learner to becoming a fully-functioning participant in society. This involves developing their thinking skills and teaching them to read. There are many different theories, approaches and programmes that promise to have the answers to meeting these children's needs, but any programme is dependent on delivery. The way in which the teacher utilises, adapts and interacts with the learners in the process is what will make the learning happen. The teacher needs to explicitly direct and engage children to ensure that learning is taking place. When concerns have been raised about teacher knowledge and the value of cognitive education, understanding what this may look like in the classroom is important. I believe that teachers should be positive and adopt a pro-active stance to engage on a personal level with every child, to create opportunities for effective learning to take place.

As a member of the School Management Team, one of my responsibilities is to guide and inform staff about the most effective approaches to teaching and learning. The cognitive approach and detailed intervention suggested in both these programmes were considered suitable for learners in our school. RAVE-O and IE both emphasise the affective aspects of learning and motivation. They focus on how to connect information so that learners can develop cognitively in all aspects. Both programmes emphasize the vital role of the teacher as 'Agents of Change', who need to be passionate and enthusiastic in creating a sound learning environment. It is crucial for learners at our school to develop both thinking skills that enable them to make sense of their world, and reading skills that enable understanding of text. These programmes RAVE-O and IE are currently implemented separately.

This research was prompted by a need to ascertain the benefit of teaching these two programmes in a Grade Three class to increase children's learning strategies. Children learn through different modalities. Learners who have good perceptual ability and an affinity for subjects such as geometry, technology and design, do not experience much competence during the school day, as most of the demands placed on learners require competence in literacy. The IE programme which has a limited amount of written text is presented in a graphic, pictorial modality which appeals to the learners who experience language difficulties. However, the emphasis on oral discussion and the use of accurate vocabulary to describe their thinking processes is promoted. On the opposite extreme, there are learners who have good vocabulary and literacy skills. The RAVE-O programme appeals to these learners. They have an affinity for language, and have developed phonological skills which enable them to identify the riming words, recall and retrieve new vocabulary and make obvious connections between similar words patterns. Thus the simultaneous implementation of these two programmes was intended to address both the strengths and weaknesses of all learners and integrate strategies from both the verbal and non-verbal modalities. The cross-pollination of these programmes we believed would allow the learners to experience competence in some areas of the school curriculum.

Ms G, the Grade Three teacher, and I collaborated to document two aspects of implementing the RAVE-O and IE programmes in her class. Ms G focussed specifically on the impact on the learners' literacy while this research study focusses on the methods used for effective teaching. Ms G's research evaluates the influence of this intervention to measure the progress the children made in reading comprehension. This research investigates mediation as a cognitive model for effective teaching practice. Reporting and analysing classroom interaction can provide insight for teachers and assess the cognitive theories involved in thinking and learning. The findings of these research studies will shed light on the use of these particular programmes and ascertain whether or not they are well-suited to the learners in our school.

The success of any programme is dependent on the passion and energy of the delivery, which makes the role of the teacher crucial to any teaching and learning situation. The focus of this research study is to place the teacher in the spotlight and observe her interaction to

see if this interaction does assist learners applying cognitive strategies to improve their learning.

1.6 An Outline of the Chapters

Chapter One, provides an introduction to the research, Chapter Two presents a review of the literature related to this study. Chapter Three describes the research site, the participants, an overview of the intervention programmes, the data collection and the methodology used for qualitative data analysis, as well as ethical considerations. Chapter Four, presents the data and findings of the study. Chapter Five summarises the findings and suggests implications for the future.

Chapter 2: Literature Review

2.1. Introduction

In order to investigate how a grade three teacher mediates RAVE-O and IE a selection of literature has been reviewed. Aspects of literature that relate to effective teaching and learning are debated. First, the review will discuss aspects of literature which describe Theories of Cognitive Development a brief overview of Piaget and Vygotsky. The second section outlines Feuerstein's Theory of Structural Cognitive Modifiability and Mediated Learning. Feuerstein's approach to cognitive development and the explicit teaching of the IE programme implemented in this study will be discussed. The third section looks at the science of learning to read and the RAVE-O programme, a cognitive approach to reading. Thirdly, as this case study takes place in a remedial school, a brief overview of the diverse learning difficulties experienced by these learners will be outlined.

2.2. Theories of Cognitive Development

Two leading researchers in the field of cognitive development, Jean Piaget and Lev Vygotsky provide teachers with a clear understanding of children's mental processes and thought patterns (Cook and Cook, 2005). Piaget's cognitive construct theory is classified with in the constructivist realm, meaning that the external environment is understood and interpreted according to an individual's existing knowledge. Knowledge is not passively absorbed but constructed by each individual. The basis upon which knowledge can be constructed is what Piaget termed schema (Cook and Cook, 2005). Schemata (the plural of schema) are defined as 'mental structures by which individuals intellectually adapt to and organise the environment' (Wadsworth, 1998: 10). Schemata can be thought of as mental categories that one uses to identify external stimuli. As children interact with the environment they develop more abundant and complex schemata that are continually changing. This cognitive process is known as accommodation and assimilation (Wadsworth, 1989).

Throughout the learning process as cognitive development takes place the schema develop. They become more complex, larger mental structures which are continually reorganised (Flanagan, 2008).

Piaget's theory on the stages of development describes how children learn, develop and grow; each stage is defined by the age of the children and has specific skills and limitations. There are four main stages, namely: the sensory - motor stage (0-2 years), the pre-operational stage (7-11 years) and the formal operational stage (11 years and above) (Cook and Cook, 2005). Operations are defined by Piaget as, 'logical mental rules such as arithmetic' (Flanagan, 2008: 286).

Piaget's cognitive constructivist theory had a revolutionary impact on learning and teaching. Piaget's work assisted educators in realising that 'children actively seek to understand their environment and enthusiastically initiate events simply to see how things work' (Cook and Cook, 2005:5). Piaget's stage theory enabled teachers to identify the level of each child's cognitive development and know what to expect from children at different stages of their development. The limitations and skills described in Piaget's stage theory enable educators to provide assistance and realistic instruction that is within the child's level of cognitive development (Charles, 1974). Piaget's theory has been criticised for its absence of socio-cultural environmental factors. However, Lev Vygotsky's social constructivist theory emphasises the role of the social and cultural environment in the construction of knowledge.

Vygotsky stated that knowledge is formed through social and cultural interaction with people (Meece and Daniels, 2007). He explained that listening to spoken language and paying attention to one's social surroundings is a vital tool necessary for cognitive development. Vygotsky differentiates between three stages in the child's use of language. Social speech is considered as language used for communication. The second stage of language, private speech, is used when the children regulate thoughts by talking to themselves. At a later stage, private speech is internalised and is termed verbal thought or inner speech which guides a child through tasks and activities (Meece and Daniels, 2007).

Interactions and relationships between people in the social environment are central to Vygotsky's theory. The interaction between a child and a more skilled peer or adult is called mediation. Mediation is considered to be a fundamental mechanism in learning and the process of cognitive development (Karpov and Haywood, 1998). Vygotsky noted that children were able to create their own constructs through the process of mediation. He

explained that mediation would be effective if structures taught to a child were at an appropriate level, naturally, a child would experience difficulty understanding and comprehending information if it is too complex, and would lose interest or already have internalised information that was too familiar or too easy. This phenomenon prompted Vygotsky to introduce the Zone of Proximal Development (ZPD) (Cook and Cook, 2005). The ZPD is defined as the 'the distance between the actual developmental level as determined by individual problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers' (Vygotsky, 1978: 86) The ZPD can be understood as the gap between a child's present level and their potential level which can be reached with mediation. The theory underlying the ZPD links directly to mediation it reinforces the importance of contributing to, challenging and extending a child's ZPD.

According to Vygotsky, it is important that instruction or mediation offered to a child is appropriate, and does not take ownership of learning away from the child (Brunce, 2003). It is necessary to manage the extent to which an adult guides or assists a child. The concept of scaffolding is referred by Cook and Cook (2005) as temporary support structures that assist a child's cognitive development and supports the child in developing new mental functions. Once the child has matured and is able to work independently the support structures can gradually be removed. The concept of ZPD and mediation explained by Vygotsky's theories provide teachers with substantial reasoning to challenge a child, mediate the learning process, and play an active role in their construction of knowledge to extend them beyond their present cognitive abilities (Sutherland, 1992).

It is evident that the works of both Piaget and Vygotsky influenced the field of education and provided the foundations to constructivist approaches to teaching and learning. Piaget and Vygotsky both believe that children need to form their own understanding of the world they live in. However with regard to learning, Piaget has a more cognitive approach whereas Vygotsky focuses on the role of social contexts in cognitive development.

The differences in application to the classroom are contrasted in that Piaget places an emphasis on the developing child whereas Vygotsky focusses on the role of the teacher. A Piagetian teacher will provide a stimulating environment for the child and see their role as

an observer or facilitator rather than an active instructor. However a teacher who is influenced by Vygotsky will play a more didactic role and provide steps for the learner to achieve a level of competence in the process. Feuerstein's theory of cognitive development is based on principles of both these theorists but tends to favour Vygotsky's theory that learning is promoted through mediation which in turn promotes and contributes to cognitive development (Flanagan, 2008).

2.3. Instrumental Enrichment Feuerstein's Intervention programme for Cognitive Modifiability

The importance of effective teaching and learning is crucial in any social setting. Feuerstein (1980) believes that a 'Mediated Approach' to teaching results in effective learning (Mentis, et al, 2008). According to Feuerstein, in order for learning to be effective the teacher has to engage in 'Metateaching'. Mentis (2008) describes Metateaching, as consistently thinking about teaching, asking oneself, what, how, and whom you are teaching. Metateaching requires the teacher to direct, guide and interpret the 'world of stimuli' for the learner (Mentis et al., 2008). A Mediated Learning Experience can only take place if the teacher believes the learners have the potential to learn, and is prepared to become actively engaged in modifying the learners' thinking process (Feuerstein, 1991).

2.3.1 Structural Cognitive Modifiability

Feuerstein's (1980) theory of Cognitive Development examines the internal processing involved in making sense of the environment. He expanded on the direct approach to teaching, stressing the importance of a Mediated approach to learning. A direct approach to learning was developed from Piaget's formula in which the learner (organism) interacts directly with a stimulus, which in turn arouses a response, Stimulus, Organism, Response, (S-O-R). For example a child walking alone through a garden may interact directly with (*stimulus)*, a flower. The child (*organism)* may notice the scent of the flower or shape of the petals or even observe an insect settling to collect nectar (*response)*. This direct interaction with the flower may result in some incidental form of learning. According to Feuerstein the incidental learning that has taken place through this direct approach is not sufficient, so he developed an active modification approach by including the human factor. A teacher or parent facilitates the learning process making it an active modification approach. Stimulus,

Human intervenes, Organism, Human intervenes, Response (S-H-O-H-R) (Feuerstein et al., 1991). Feuerstein's research has shown that individuals have the potential to change and are modifiable, if provided with the opportunities to engage in the right kind of interaction. He developed a holistic model of the learning process which includes the teacher, the learner and the task. This is illustrated below in Figure 2.1.

Figure 2.1 Feuerstein's Triad of the learning process

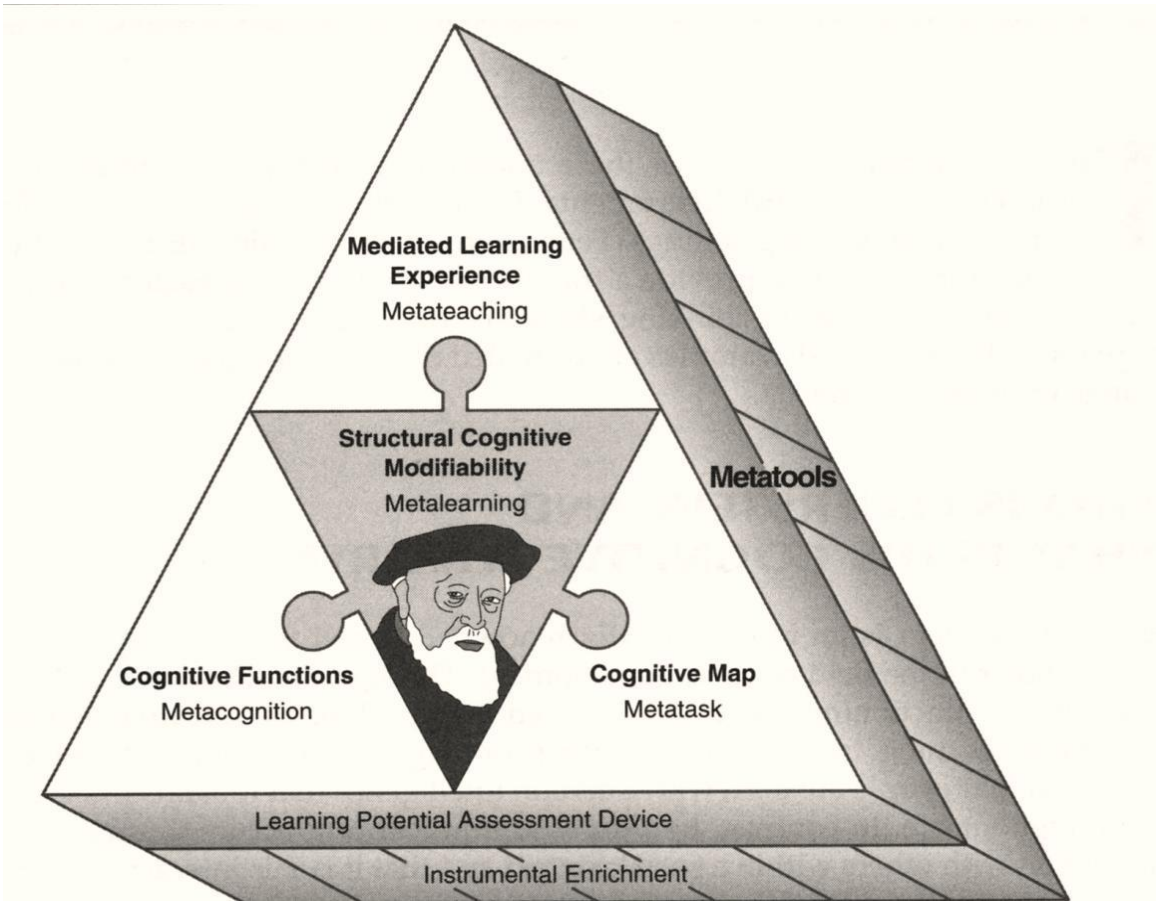


Figure 2.1 A diagram illustrating Feuerstein's Triad of the learning process, involving the teacher, the learner and the task (Mentis et al., 2008: xii). The concept of Metacognition, Metateaching, and Metatask form the three points of the triangle. As illustrated in the diagram and central to Feuerstein's work is the belief in the 'potential to change'. This is described as 'Structural Cognitive Modifiability'. The 'right kind of interaction' is the communication that takes place in the relationship between teacher and learner, known as 'Mediated Learning Experience' (Feuerstein, 1980). Mediated learning is a method used to develop thinking skills that will enable children to be more effective learners.

To return to the example of the child walking through the garden: if the child is accompanied in the garden by a mediator, the mediator intervenes between the child (*organism)* and the flower (*stimulus*) to interpret, guide and enhance the interaction of the child with its surroundings. The mediator may explain that an insect is pollinating the flower, or collecting nectar which could be used to make honey, thus drawing attention to the connections between the flowers and the honey eaten by the child a few hours prior to this interaction. This detailed interaction between the child, teacher and the flower is a Mediated Learning Experience. The learning is intentional and details are made explicit, resulting in accurate thinking that will enable the child to become self-directed in future learning situations. During a mediated learning experience, instead of being left to seek out meaning on his/her own, the learner is provided with language to elaborate the object or situation.

Feuerstein (1991) believed that both direct and mediated learning are necessary for optimal learning to take place. A teacher who adopts a mediational approach takes responsibility, firstly by deliberately choosing to interact with the learner and ensuring that there is a reciprocal relationship between teacher and learner (Mentis et al., 2008).

2.3.2 Mediated Learning

A mediated learning experience is defined as:

> The interactional process between the developing human organism and an experienced adult who, by interposing himself between the child and the external source of stimulation, mediates the world to him by framing, focusing and feeding back environmental experiences in such a way as to create appropriate learning sets (Feuerstein, 1991:11).

In the Triad describing Feuerstein's model, the top point of the triangle relates directly to the teacher. When a child does not interact effectively with the environment, or experiences difficulty with learning, we as educators should adopt what Feuerstein calls a 'stiff finger' (Mentis et al., 2008:120). Instead of pointing the finger in the direction of the child indicating that there are problems with the child, the fingers have to be pointed in both directions. The mediator needs to ask what he/she can do to make the learning more accessible to the child.

Feuerstein has developed twelve criteria that are fundamental for mediation. The first three criteria he believes are essential for interaction to be considered mediation. The remaining nine criteria may occur at different times when or where appropriate to serve a balance and reinforce interaction in a dynamic fashion. These criteria are used as a framework to evaluate the type of interaction used by the teacher during this research.

Intentionality and Reciprocity

Intentionality and Reciprocity is achieved through a reciprocal relationship. The mediator invites the learner to engage with stimuli. The learner responds showing a willingness to engage in the learning process. Learning involves creating meaning from the vast amount of stimuli which continually impact on our senses (Mentis et al., 2008).

Meaning

Mediation of Meaning occurs when the teacher shares her aims for the lesson. It answers the learner's questions about the purpose or significance of an activity. The process of investing meaning often involves ethical and social values. Mediation of Meaning is 'the process by which knowledge, values and beliefs are transmitted from one generation to the next' (Feuerstein, 1980:13).

Transcendence

Transcendence is the transfer or bridging from the immediate experience to underlying principles and related activities and ideas. Every single activity has in it potential for transcendence. Transcendence is the bridge that connects related activities and ideas, and links immediate concepts and ideas to ever-expanding knowledge networks. Mediation of Transcendence occurs when the mediator links a specific issue or activity with others. The mediator stimulates the learner to search for relationships between things. By linking learning that takes place in the classroom to a broader context, knowledge or skills are integrated and can be applied or transferred into new or different contexts (Feuerstein et al., 1991).

Competence

Mediation of Competence involves developing self-confidence. Through Mediation of Competence the learner adopts a positive belief in his or her own ability, is motivated to try and determined to persevere. Mediation of Competence is not necessarily associated with

an absolute definition of success but rather with the perception of having been successful by the learner. Competence should be seen as a process of reaching one's goal. Mediation of Competence anticipates that the teacher knows the learners well enough to set tasks that are stimulating and challenging but manageable. Creating this balance encourages intrinsic motivation and a desire to continue learning. Instilling a sense of achievement requires selecting tasks at an appropriate level, phrasing questions to suit the learner's level of development, interpreting reasons for success, responding to positive behaviour and making students aware of their progress (Skuy et al., 1991).

Self-Regulation and Control of Behaviour

Self-Regulation and Control of Behaviour is an integral part of the IE programme. 'Wait a moment let me think' (Feuerstein, et al, 1980), is the motto that appears on each of the thinking skills booklets. The `motto aims to encourage learners to take responsibility for their own learning and behaviour. It involves teaching children to 'think about their own thinking' and respond appropriately in certain situations. Self-Regulation and Control of Behaviour occurs when the mediator intervenes to make the child conscious of the need to self-monitor and adjust behaviour. Mediation of Self-Regulation is particularly useful as a behaviour modification strategy for children who have Attention Deficit Hyperactivity Disorder. The learners analyse a task or situation and control or adjust their behaviour appropriately. This may involve breaking complex tasks into smaller parts or engaging in a systematic approach rather than wild guessing. Self- Regulation and Control of Behaviour empowers teachers to assess, modify and improve their teaching (Mentis, et. al, 2008).

Sharing

Mediation of Sharing is the mutual co-operation that takes place through social interaction. Sharing promotes sensitivity towards others and emphasises working together. Sharing is the reciprocal need for co-operation at both an intellectual and an emotional level. It involves listening to another point of view and being sensitive to the feelings of others. Mediation of sharing emphasises co-operation and the result is intended to promote competence in social interaction. Self-concept is improved when successful experiences are shared and failures are worked through with an empathetic listener. Sharing ideas can help to clarify confused thinking and develop cognitive process. Although Feuerstein emphasises

sharing he also recognises the value of maintaining one's individuality (Feuerstein et al., 1991).

Individuality

Individuation is the acknowledgement and appreciation of uniqueness and independence. Mediation of Individuation involves the development of an individual's autonomy and unique personality. The teacher or mediator acknowledges the differences between individual abilities, behavioural styles, learning styles, emotions and other characteristics and encourages the learner to reach his/her own potential. By Mediating Individuality the learner becomes self-empowered to take control and responsibility for activities in their daily lives (Mentis et al., 2008). In schools an 'Enabling Curriculum', which enhances individuation would be adopted. This type of classroom would be: learner orientated, teaching would be process based, and learners would take responsibility for their own learning. In Mediating Individuation the learners are expected to be self-disciplined and develop an internal locus of control (Feuerstein, 1991). In Mediating Individuation the learner strives to meet his/her own potential through Goal Planning.

Goal Planning

Mediation of Goal Planning occurs when the teacher guides and directs the learner through the process involved in setting, planning and achieving goals by making the process explicit. This process should be guided by the teacher who encourages the learner to conceptualize, understand and identify their goals. These goals should be achievable, that is within the learner's level of capabilities. Goals set by the learners should be monitored and if necessary adapted. The learners must have the desire to achieve their set goals. Mediation of Goal Planning is linked to the other Criteria of Mediation as it develops a sense of Competence, encourages Self-Regulation and Control of Behaviour, Individuation and Challenge. The excitement of achieving a goal reinforces a sense of Challenge (Feuerstein, 1991).

Challenge

Challenge is the feeling of excitement and determination experienced by a learner when confronting new and difficult tasks. Mediation of challenge encourages appropriate risk taking. 'Novelty is there to be challenged and complexity is there to be mastered' (Feuerstein, 1989). In a world that is constantly changing, novelty and complexity become

the norm and Mediating Challenge helps prepare learners to master these changes. Mediation of Challenge involves overcoming fear of the unknown. This can be achieved by encouraging the learner to be creative, curious and spontaneous in confronting new tasks. In Mediating Challenge the learner is rewarded for success and reflects back on feelings of satisfaction and becomes aware of personal growth that has taken place (Skuy et al., 1991).

Self-Change

Self-Change is the recognition, acceptance and monitoring of continual changes that occur within oneself. Awareness of self-change is like plotting one's achievements and failures on a graph. The overall picture will give an indication of how much one changes. The learner needs to welcome and accept changes that occur from within. Feuerstein (1991) believes that changeability is the most stable characteristic of human beings. It is an inevitable process, even though one may be unaware of it or not take full responsibility for such changes. There is also amongst some a resistance to change. It is easier to remain in 'comfort zone', an area where one's level of competence is not challenged (Mentis et al., 2008).

Search for an Optimistic Alternative

Mediation of the Search for an Optimistic Alternative is when the mediator motivates the learner to choose a positive attitude to an approach or situation. This Criterion of Mediation is linked to Feuerstein's concept of active modification, where intense intervention or mediation assists the learner in overcoming difficulties in learning (Mentis et al., 2008). By Mediating a Search for an Optimistic Alternative the teacher can create opportunities for learners to see things from a different perspective, to allow different points of view to be expressed about a single event, promoting understanding that there are many solutions to be generated to solve a problem (Feuerstein, 1991).

Sense of Belonging

Mediation of a Sense of Belonging occurs when the mediator explains the benefit of being part of a family, group, community or cultural group. Feuerstein emphasizes the idea that all cultures have practices, beliefs, rituals and customs that need to be mediated to the next generation so that they are able to understand and make sense of the world. Tolerance and empathy are developed by encouraging learners to recognize, celebrate and share their

cultural difference thereby improving their understanding of diversity (Feuerstein, 1991). Feuerstein (1991) stresses the importance of family values and traditions being passed on to the next generation, thus instilling in the learner a Sense of Belonging.

2.3.3 Cognitive Functions

The second concept of Feuerstein's Triad is a list of cognitive functions. These are tools of change, which could be used by the teacher to understand and identify positive and negative aspects in each individual child's way of thinking. The learners' cognitive functions are categorised into the three phases of thinking: input (taking in information), elaboration (thinking through the situation or problem) and output (communicating a response) (Feuerstein, 1980). By identifying the areas of dysfunction in each individual learner the teacher is able to adapt learning situations to best address the learners' area of difficulty. Feuerstein (1980) claims, that cognitive functioning is necessary to develop independent and life-long learning. The cognitive functions may be useful to individual learners for self-reflection and self-management (Feuerstein et al., 2010). Mentis (2008) explains that Cognitive functions need to be seen in their cultural, developmental, situational and emotional contexts. By this statement she implies that behaviours that maybe necessary in one situation could be irrelevant in another (Mentis et al., 2008). This is an important consideration as learning occurs contextually and adaptations and allowances for diversity need to be considered. The list of cognitive functions drawn up by Feuerstein is the essence of his theoretical model. This has been categorised into three stages of processing the 'mental act'. These three stages, Input, Elaboration and Output, do not necessarily occur separately in natural situations (Skuy et al., 1991).

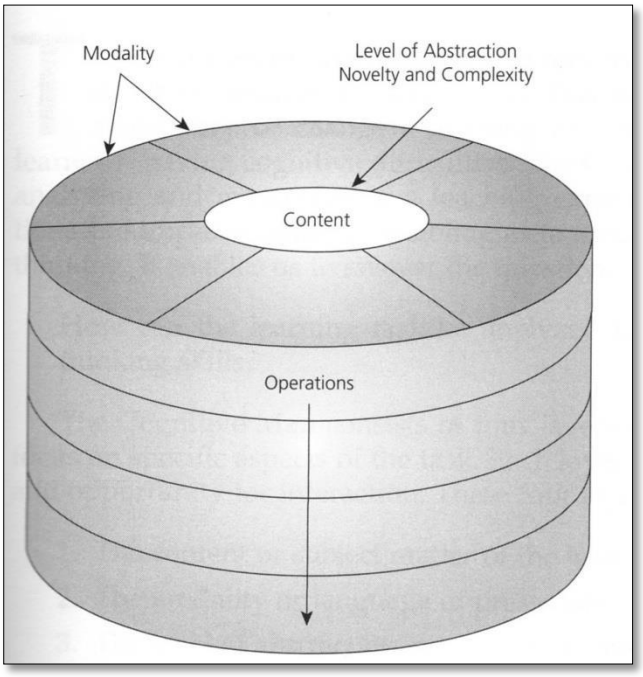
The list of cognitive functions and dysfunctions assists the teacher in identifying specific areas of difficulty and provides a more in-depth understanding of the difficulties experienced by the learner. For example if a learner experiences difficulty at the input phase he/she may rush into a task without taking time to examine all the necessary information (Skuy, et al., 1991). At the input phase, information is taken in through the senses and sufficient detail to solve the problem is gathered (Mentis, 2008). This could also be called the receptive phase. The elaboration phase describes the process of working through a problem. This is where the information gathered is processed. The output phase involves various forms of expression and a response is communicated. At this phase accurate and

efficient communication skills are needed (Mentis, 2008). Feuerstein has been criticized for using an ’over-mechanical’ analogy of a computer to explain the way children think, but for the purpose of training teachers ‘what to look out for’ it has proved to be a useful system (Sharron, 1987). A complete list of the cognitive functions and dysfunctions is provided in Appendix A.

2.3.4 Cognitive Map

The third concept, a cognitive map is provided for the teacher to assess and adapt tasks to suit the needs of a specific individual or group of learners. The cognitive map breaks down tasks into four layers. The first layer looks at the content or subject included in the task, the second, at the modality in which the task is presented. The third layer looks at the level of abstraction, novelty and complexity of the task, to assess if the level is suitable for these particular learners. The final layer addresses the actual thinking skills required by the task. As the name suggests, the ‘cognitive map offers a map whereby the teacher can navigate the learning situation to mediate cognitive functions’ (Mentis et al., 2008:197). The questions listed to the right of Figure 2.2 promote ‘metateaching’ and developing the teacher’s awareness to think about responses to these questions.

2.2 Figure of Cognitive Map (Mentis et al., 2008:195).



- How can the learning experience be modified?
- What are the thinking skills needed to solve the task?
- How is the task presented? Can the subject matter be varied?
- Is the task concrete or abstract?
- How unusual or difficult is the task?

The theoretical concepts that make up Feuerstein's Triad led to the development of 'Metatasks', Instrumental Enrichment (IE), a thinking skills programme. The intervention consists of fourteen different 'instruments' each with a specific emphasis on a particular thinking skill (Feuerstein, 1980). In this research study only the Organisation of Dots was taught. Organisation of Dots, involves creating order from unconnected items or events by finding connections between them (Mentis et al., 2009). An example of the 'Organisation of Dot's lesson' is available in Appendix D.

2.3.5 Instrumental Enrichment

The IE programme is an information processing approach that provides the learners with the 'how' of thinking (Feuerstein, 1991). The rationale for using the Instrumental Enrichment is because it is a novel approach to developing thinking skills. IE presents perceptual, organisational, comparative and spatial exercises that develop both thinking and language. It appeals to learners because it is presented in a pictorial and symbolic mode,

using limited written language which makes it easy for learners with reading difficulties to engage with it.

New and extensive vocabulary is developed through discussion. The shared vocabulary is used by the learners to express their ideas and strategies with one another. Instrumental Enrichment 'provides learners with new knowledge they can use to develop learning strategies to overcome problems with thinking, feeling and motivation' (Greenberg, 2000:6). Research conducted using IE has been successful in helping learners, learn how to learn and understand their own thinking (Skuy, and Mentis, 1990). IE gives learners a personal frame of reference, allowing them to interact independently in the world (Feuerstein 1980).

2.3.6 Research studies using Instrumental Enrichment

Feuerstein's IE programme has been used to improve and develop thinking skills in many countries (Israel, USA, UK, Venezuela and Brazil). Research in teaching IE to whole-school populations by Romney and Samuels (2001) showed improved verbal and spatial cognitive ability. However the quality of teacher mediation is critical to the success of this programme (Howie, 2011). Howie (2011) stresses the importance of specialised training to ensure the complex bridging of these cognitive skills to related academic subjects and real-life.

Additional studies conducted in South Africa have used IE in relation to developing a positive sense of identity (Skuy, Goldstein, Mentis and Fridjhon, 1997). This study used a selection of instruments to develop the four stages of multicultural awareness (Hoopes, (1997). The four stages involved, 'knowing me', 'knowing others', 'me and others' and 'this is us'. The results of this study showed that the measures used to assess changes in self-esteem were not accurate enough to provide evidence of these changes (Hoopes, 1997). The Instrumental Enrichment programme used in this study has been used in a gifted child programme in Alexandra, a township in South Africa (Skuy, Mentis, 1990).

Additional research carried out in South African was conducted by Moonsammy. This study examined the impact of Cognitive Enrichment Advantage (CEA) and metacognitive intervention strategies on comprehension in Grade Six learners at two mainstream schools in Gauteng. Moonsammy's findings show that metacognitive instruction promotes reflection, evaluation and monitoring of thinking and learning processes.

Over the past three decades Feuerstein's programme has been researched by educators in many institutions around the world. The research findings that emerge from these studies on Feuerstein's work, make it a suitable programme for implementation in this class. There are numerous versions and modifications that have been developed from Feuerstein's original work, (Brightstart, developed by Carl Haywood and Cognitive Enrichment Advantage, developed by Katherine Greenberg). The school management team decided to use IE in its revised version authored by Feuerstein and Hoffman (1995) together with RAVE-O and to assess its effectiveness in this class before implementing it in other Foundation Phase classes in the school.

Central to Feuerstein's' model are the affective and motivational aspects of learning. He stresses the interactive relationship between the three phases of the mental act and the emotional and motivational features. He explains that for learners to complete a task they need to be energised by their desire to learn (Feuerstein, 1991).

2.4 The Science of Reading and RAVE-O

Our understanding and insight into how literacy changes the brain is transforming the way we teach. In Daniels and Diack (1979) reading is described 'as a skill of translating the letters of words, in a given order, into sounds that have meaning'. This definition written thirty years ago may still be applicable today. However, the depth and understanding of how reading occurs has changed drastically since then and there have been many controversial debates in the field. Dehaene (2009), a cognitive neuroscientist has documented research studies to explain how we process reading in the brain. His work on brain imaging has highlighted the areas of the brain that are activated during reading and explains how the brain learns to read (Dehaene, 2009). This new theory of reading is altering the approach to teaching children with learning difficulties.

Reading involves a complex circuit of language and thinking processes, which play an equal role in decoding and understanding print. Success in reading is dependent on speedy identification of letters and words while automatic links in the brain are made to establish meaning within a context (Wolf et al, 2009). Scientific studies of the brain have shown that rewiring of neural pathways needs to take place in order for reading to be mastered (Shaywitz, 2003; Pugh et al, 2003). These pathways are rewired through repeated exposure

to patterns and words enabling the brain to instantly retrieve and recognize words (Wolf, 2006). This repetition is an important aspect as it helps to 'hard wire' these pathways, promoting simultaneous functioning in the various components which in turn results in fluent reading and comprehension.

Learners who are exposed to books and reading materials from an early age are more likely to develop phonological awareness. Through discussion with parents, learners begin to develop an understanding that print represents language. Their vocabulary is extended and they begin to acquire strategies that facilitate sound symbol relationships (Bloch, 2006; Torgesen, 1998).

2.4.1. RAVE-O, A Cognitive Approach to Reading

RAVE-O is an acronym for Retrieval, Automaticity, Vocabulary, Engagement with Language and Orthography. It is a cognitive approach to teaching reading and was developed at the Centre for Reading and Language Research, Tufts University, by Maryanne Wolf and her colleagues (Wolf, 2006). RAVE-O applies a variety of approaches to teaching reading and includes a number of linguistic, cognitive and affective systems (Wolf et al., 2009). It includes all the components of written and spoken language: namely phonology, morphology, syntax, semantics, pragmatics and orthography. These various aspects of language stimulate different parts of the brain in the reading process. Wolf et al., (2009:87) says that, 'RAVE-O is designed to address as many cognitive processes as possible. The programme represents our evolving knowledge from the cognitive neurosciences, linguistics, and education and its integration with best classroom practices'.

The overall aim of RAVE-O is to stimulate neural pathways in the brain to put together and link information being received from the visual, cognitive, linguistic areas and quickly access these in the process of reading (Wolf and Katzir-Cohen, 2001). 'The program attempts to stimulate what the brain does when it tries to read a single word with fluency and comprehension'(Wolf et al., 2009: 87). The activities used in RAVE-O are supposed to, increase children's ability to read fluently with comprehension, and to expand children's knowledge of language by extending their vocabulary. By familiarizing learners with grammar and developing an understanding of how language is constructed, the learners' memory and automaticity in letter and word recognition improves. RAVE-O incorporates a

variety of activities and games designed to develop a love of language. The reading intervention engages the learners motivating them to use language in meaningful contexts. An emphasis is placed on developing phonological awareness of letter and word patterns, and using repetition to train visual and auditory memory for rapid retrieval (Wolf, 2006).

Five areas that need to be covered in a comprehensive plan for teaching reading and language in the RAVE-O programme are interconnected and emphasise the reciprocal relationship between language, vocabulary and reading. The initial letters of the five components make the word 'POSSuM' Phonology, Orthography, Semantic, Syntactic, and Morphology. First, **phonology,** a basic understanding of the relationship between sounds and symbols, is reinforced. Phonemic awareness is developed when the learner can hear, discriminate, segment, manipulate and rhyme phonemes presented in words. The P also represents the pragmatic use of words. Wolf (2006) explains pragmatics as the learner's ability to 'perceive and use the socio-cultural rules of language in its natural contexts' (Wolf, 2007:7). The RAVE-O programme is seen as an addition to and not a substitute for regular initial phonic programmes (Wolf, 2006). The authors of RAVE-O are explicit in this matter and have recommended that the intervention of RAVE-O takes place only once sound-symbol relationships have been introduced.

Second, **orthography**, which aims to identify individual letters and letter patterns such as digraphs and tri-graphs that are present in words. The exposure to orthography develops the visual connection between the representation and the sound. This increases speed in recognising the clusters of letters that produce a specific sound. Understanding and retrieving, root words or parts of words such as 'harder starters' (blended consonants) is emphasized in this component (Wolf, 2009).

Third, **semantics**, deals with the understanding and meaning of words used in a specific context. The extensive research conducted in three schools in Boston, documented by Wolf et al. (2009), informs us that extensive knowledge and exposure to words and their meanings increases the rate of retrieval.

Fourth, **syntax** the understanding of grammar and rules used in language are applied, for example, changes in verbs when used in the past tense, where, for instance, swim changes to swam. As the syntax increases in complexity, the learners through exposure to language,

acquire an increased awareness of contextual clues. The learners realise that core words can be used in a variety of contexts. In RAVE-O the concept of, 'Many Interesting Meanings' (MIMs), is intended to extend and develop the children's vocabulary.

Finally, the component of **morphology**, focuses on rapid recognition of morphemes such as, 'ed' or 'ing', when added as suffixes to words, changing their meaning. The learner immediately associates the addition of 'ed' at the end of a word to past tense use.

Traditional reading programmes have concentrated on a few important aspects at a time but the success of RAVE-O is attributed to the fact that learners connect all 'the parts' of the reading circuit at the same time a word is read is a critical dimension to reading proficiently and deeply,' (Wolf, 2009:2).

An important aspect of the RAVE-O programme is engagement, which involves active participation from the teacher. Props in the form of detective hats, magnifying glasses, pictures, word cards and posters and games are used to enhance the lessons. These activities can be adjusted to varying levels of speed and to suit the competency level of each individual learner, 'all key to engagement', (Wolf 2008). Wolf has built the concept of learner engagement into the RAVE-O programme to ensure reciprocal participation from both the teacher and the learner involved in the lesson (Wolf 2008).The social interaction that takes place during a RAVE-O lesson compliments Feuerstein's idea of creating opportunities for learners to engage with the complexities of language. The RAVE-O team while designing the programme took into consideration the importance of engaging learners through play (Wolf 2008). For children with learning difficulties the idea of playing while learning is most appealing.

Similarly, IE is designed to appeal to learners through the visual, pictorial modality. The developers of both the IE and RAVE-O programmes have created activities to ensure a sense of competence and success in the children. This has an additional effect in that it aids the recall of linguistic concepts covered, the result of which are reciprocal to both learners and teachers (Wolf 2008). This reinforces the vital role of the teacher, who in the process of teaching RAVE-O becomes an active part in the process of teaching reading, bringing to each lesson her own realm of experience and expertise.

2.4.1 Research studies using RAVE-O

Extensive research, conducted by the Centre for Reading and Language Research at Tufts University, has formed the complex theoretical rationale on which the RAVE-O programme was developed (Wolf 2007). This new research, which studies the science of the reading brain, has highlighted the importance of retrieval of phonological representations from memory (Wolf and Bowers, 2000). The studies indicate that learners with dyslexia named all the letters more slowly than learners in the control group. Wolf and her colleagues have taken cognisance of these findings and included the rapid naming component into the RAVE-O programme. The multi-dimensional approach offered by the RAVE-O programme is one the few reading programmes that simultaneously develops vocabulary and emphasises multiple meanings of words, depending on context, which in turn facilitates speedy word recognition from the brain, which assists in comprehension.

Previous research carried out in Boston, Atlanta and Toronto (Wolf et al., 2009; Wolf, Gottwald and Orkin, 2009), investigated the effectiveness of RAVE-O. The Organisation Reading for the Blind and Dyslexic (RFB&D) also used RAVE-O. After four weeks of intervention they were able to report a significant increase in standard scores for listening, comprehension, phonological awareness, analysis and blending, rapid naming and reading comprehension (Recording for the Blind and Dyslexic, 2006).

In a follow up study children listened to RAVE-O stories using RFB&D's Audio Plus text at a rate slightly increased from their normal reading speed, the children followed the text. Learners with delayed phonological and naming skills showed significant gains in phonological skills, listening comprehension and reading comprehension. (http:/www.learningthroughlistening.org).

Additional research on the RAVE-O 'experimental version' was conducted at the Florida Centre for Reading Research. These findings showed both short and long term effects on word reading and decoding, significantly higher scores in reading comprehension, reading accuracy and rate, as well as spelling pattern recognition. The researchers commented positively on, the materials, the strong research base which informed instruction, the learner engagement and participation as well as the built in monitoring and progress

support. They did comment that the quality of the phonics program selected to use in conjunction with the RAVE-O programme could be problematic. (http:www.fcrr.org.)

With the exception of Randleff-Rasmussen (2009), most of the research conducted on RAVE-O has been conducted in the USA. An interesting aspect that emerged from implementing the RAVE-O programme in a South African context is that certain aspects of the RAVE-O programme were not socially or culturally appropriate to learners in this context (Randleff-Rasmussen 2009). For the previous research the experimental version of RAVE-O was implemented but for this research a new published updated version was used. This research was designed to span twelve weeks. It was noted at the outset that adaptations to the programme may need to be made to suit the remedial context. Some of the concepts needed additional activities and time for consolidation. Spontaneous adjustments were made as the teacher continually assessed and evaluated the programme. This earlier study carried out at our school showed excellent improvements in some cases but only partial improvements in others. These partial improvements may have been due to difficulties in implementation of the pilot study or the specific learning or language difficulties of the learners in the experimental group. The present research study aims to provide greater clarity on these problems. Concern about the implementation of teaching this programme is that it assumes the teacher has a depth of understanding in the linguistics. This research study may highlight issues that need to be incorporated into in-service teacher training in the future.

2.5 Learning Difficulties

The remedial school where this study takes place caters for children with learning potential who experience specific or generalised learning difficulties. An important factor to consider is that many learners may experience more than one learning difficulty. This is referred to as co-morbidity (Kelly and Philips, 2011).

A common difficulty the learners have is Dyslexia, 'a learning difficulty that primarily affects the skills involved in accurate and fluent word reading and spelling' (Rose 2009: 10). The three main areas of difficulty that manifest in dyslexia are phonological awareness, verbal memory and processing speed. Dyslexia is present across a range of intellectual abilities and is best described as a continuum. Recent studies have found that learners with Dyslexia may

manifest with additional difficulties in motor co-ordination, concentration, mental arithmetic, language difficulties, working memory and organisational difficulties (Gathercole and Baddeley 1989). There have been many theories around the causes and treatment of dyslexia but the most recent description by Snowling (2009:212) states;

> Dyslexia is not a 'category' but a dimensional disorder which is more or less handicapping depending on co-occurring conditions such as Specific Language Impairment or Attention Deficit Hyper Activity. Theoretically and practically, it is more fruitful to think of risk factors rather than the causes of.

Problems experienced by dyslexics are difficulties with short term memory, poor phonological skills, processing speed and visual stress (Mortimore, 2007:51). Children with dyslexia can easily segment larger words into segments but find it difficult to access small units or phonemes. The working memory model designed by Gathercole and Baddeley (1995) looks at verbal short term memory, explaining that learners with dyslexia show a difficulty in short term retention of phonemic information (Gathercole and Baddeley, 1993). Auditory information is held in temporary storage for less than four seconds, causing 'rapid decay', resulting in an inability to retain verbal information (Snowling, 2009; Ramus and Szenkovits, 2007). Rapid naming tasks require speedy retrieval of words from long term memory, but learners with dyslexia have slow retrieval of phonic representations from long term memory (Wolf and Bowers, 1999, Ramus and Szenkovits, 2007). Improving reading fluency in children with dyslexia requires an improvement in processing speed, so that the brain can learn to process easy phonics quickly enough to allow the learner time to comprehend what is being read (Bowers and Wolf, 1993). Rave-O is one of the few reading intervention programmes available that addresses rapid naming. In addition to learners with dyslexia, our school caters for learners who present with either one or more of the following.

Dyscalculia is a rare condition which affects the learners' ability to acquire mathematics and abstract numerical concepts. Learners with dyscalculia have difficulty understanding simple number concepts and they find it difficult to retain number facts or procedures. These learners may also experience additional difficulties with spatial tasks, which involve direction or interpretation of diagrams and maps (Dfes, 2001). Due to the complexity of

Mathematics, these learners usually experience either all or some additional difficulties these include emotional and psychological functioning, language difficulties, spatial difficulties, memory difficulties and difficulties in processing numbers (Gifford, 2005).

Williams Syndrome (WS) is related to poor Mathematics performance. Learners with WS characteristically have specific facial features, are sociable but have severe learning difficulties. These learners often have a weakness in the visual systems of their brain, resulting in poor depth perception and experience difficulty with analysis and synthesis (Fredrickson and Cline, 2009). The Organisation of Dots instrument has a specific focus in assisting leaners with spatial difficulties to project imaginary lines as a means of orientating themselves to a new environment (Feuerstein, Hoffman, 1995).

Learners with Dyspraxia and Developmental Co-Ordination Disorder present with a weakness in the development of motor functioning; this may affect speech and language, motor movements, balance of fine motor activities such as writing. Young children with Dyspraxia may present as clumsy and experience difficulties walking, crawling, sitting, tying shoe laces and buttoning shirts. Older children with dyspraxia find it difficult to assemble puzzles, play ball games and write (Fredrickson & Cline, 2009). The RAVE-O programme promotes the building of words with small cards which contain morphemes in sequential order, as a means of addressing difficulties with Dyspraxia.

Attention Deficit/Hyperactivity Disorder (ADHD) and Attention Deficit Disorder are developmental disorders that change the thinking and functioning in the brain, making it difficult for these children to control their thinking and behaviour (Tannock, 2010). Children with ADHD/ADD need to learn behaviour modification and cognitive strategies to assist them with attention, focusing, and inhibiting their impulsivity. Similarly, learners with ADD who are not hyperactive but are easily distracted by visual or internal stimuli, find it difficult to stay on task. The motto of Feuerstein's IE programme 'Just a minute let me think' (Feuerstein 1980), cues the learners with ADD to inhibit impulsivity in their approach to ask. In RAVE-O the think thrice poster reminds learners to, 'Think ahead, Think back, Think for yourself,' before asking for assistance or giving up on a specific task (Wolf, 2009).

Autistic Spectrum Disorder is a term to describe a number of impairments. These include impaired social functioning, verbal and non-verbal communication and imagination (Wing

and Gould, 1997 cited in Frederickson & Cline, 2009). Learners with autism and other similar conditions such as Asperger' Syndrome, Rett's disorder, Pervasive Developmental Disorder and other disorders not specified present with difficulties in relationships and abstract thinking. The pragmatic and social aspects of both RAVE-O and IE engage learners in participatory dialogue to better understand and engage in their social situations (Feuerstein, 1991; Wolf, 2009)

The description of Specific Language Disorder is complex and difficult to define. Learners with this disorder could present with hearing loss, general learning difficulties, environmental factors, emotional problems, speech and articulation as well as language difficulties. A useful definition is provided by Lees and Urwin (1997:15).

> A language disorder is that language profile which although it may be associated with a history of hearing, learning, environmental and emotional difficulties cannot be attributed to any one of these alone, or even just sum of these effects, and in which one or more of the following is seen:
>
> - A close, positive family history of specific difficulty in language development
> - Evidence of cerebral dysfunction, either during development or by the presence of neurological signs.
> - A mismatch between the various subsystems of language in relation to other aspects of cognitive development
> - A failure to catch up with 'generalized' language.

The cognitive aspects of RAVE-O which addresses the semantic and syntactic aspects of language are aimed at assisting learners with specific language disorders (Wolf, 2009). Feuerstein places an emphasis on the expression of language to explain thought processes.

The difficulties experienced by learners described above may contribute to, or prevent children from acquiring skills in literacy and/or numeracy. However, diagnosing, assessing, categorizing or labelling learners' difficulties is only appreciated if it is in fact going to assist in finding the correct intervention. The authors of both programmes have focussed their

work and research specifically on learners who experience difficulties, which has resulted in comprehensive and detailed programmes, which can be used in all educational settings.

Teachers need to be metacognitive in their relationships with children and in selecting appropriate strategies to meet the needs of individual learners. This research study focuses on the intervention provided by the teacher and investigates it. The literature reviewed describes the depth of research, and comprehensive detail of both the RAVE-O and IE programmes. The cognitive theory and approach to teaching is central to ensuring effective learning, not only with learners who experience difficulties but for all learners in the South African context. The following chapter describes the research methods applied in this study.

Chapter 3: Methodology

3.1 Introduction

This research examines how a Grade Three teacher mediates the RAVE-O and Instrumental Enrichment programmes to facilitate effective learning to enhance children's literacy performance. It is a qualitative design that uses a case study to provide perspectives on learning and teaching practice in the school. The qualitative data collected is analysed to show the kinds of Mediation the teacher uses and how language is used to mediate learning.

This chapter describes the research design and methods of data collection suitable for this case study. A brief description of the research site and the research participants is provided. An overview of the intervention programmes used and how these were implemented is discussed. Finally the ethical considerations and limitations of the study are discussed.

3.2 Research design

The main aim of the research was to observe and document how a Grade Three teacher mediates RAVE-O and IE to facilitate learning. As qualitative research focuses on naturally occurring, real life experiences of learners and teachers this method was deemed suitable. Qualitative research methods are used to ' explore complexities that are beyond the scope of more 'controlled approaches' and to study the 'informal reality' of what is really happening in a social setting such as a classroom' (Gillham 2000:2). Qualitative research methods give a general overview of what is happening in the classroom by using, observation, description and interpretation. This research is intended to provide a deeper understanding of the quality of teacher mediation and the responses it elicits from the learners' engagement in thinking and reading. The advantages of using qualitative research are that it can be applied to any sample size and it describes complex real life situations in context.

There are many ways in which qualitative research can be designed, I have selected the case study as it makes use of multiple methods of data gathering as evidence to be interpreted and analysed (Gillham, 2000). According to, Macmillan and Schumaker (2010), a case study

is an in-depth analysis and exploration of a single event based on extensive qualitative data. This is a case study based on intensive observation of classroom practice. The case study is appropriate as a means of evaluating the strengths and weaknesses of these specific programmes and how they are taught in this particular classroom. This case study illustrates the complexities of interactions which occur in a classroom setting. A number of different aspects are simultaneously considered to show the effects on learner behaviour over the twelve weeks the intervention took place. I observed classroom behaviour to consider the influence that the teacher's mediation has on the learners, in this setting. The materials collected for interpretation include field notes, videos of lessons, artefacts from lessons observed and interviews held with the participants.

3.3 Research Site

The research was conducted in an independent remedial school in Johannesburg. The school was initially established by parents of children with learning difficulties. The children who attend the school experience a wide range of learning difficulties. These difficulties may be biological, cognitive, behavioural or environmental. The school caters for approximately 200 learners, ranging from Grade Nought to Grade Seven.

The philosophy of the school is for children to return to mainstream education once their difficulties have been remediated. This is a reality for about seventy five percent of the school population. The remaining twenty five percent are placed in alternative schools or home schools for their high school education. Although they may experience difficulties in learning, most of the children have learning potential, and achieve in other areas of their lives. However, the academic school programme is seen to be both challenging and frustrating for them.

Learners are grouped in small classes with a maximum of fourteen learners per class. The small class size aims to provide a nurturing environment which accommodates the individual needs of the learners. In addition the school employs a number of trained professionals, occupational therapists, speech and language therapists, remedial therapists and psychologists all of whom work as a team, to provide suitable intervention for each learner.

The school adheres to the guidelines of the National Curriculum but in order to be more inclusive and accommodate the needs of learners with difficulties the school has included additional programmes which emphasise the development of cognitive thinking skills, co-operative learning, behaviour management and specific remedial programmes. The additional programmes relevant to this study are: The Cognitive Enrichment Advantage (CEA), (Greenberg, 2000), Instrumental Enrichment and Structural Modifiability (IE) (Feuerstein, 1980) and RAVE-O (Wolf, 2011). The Cognitive Enrichment Advantage is an adaptation of Feuerstein's programme of Instrumental Enrichment and Structural Cognitive Modifiability. For the past ten years aspects of cognitive development from both CEA and IE have been integrated into the school day at various levels depending on the teacher or therapist's individual style of intervention.

3.4 Research Participants

The participants for this case study are the teacher Ms G and learners in one of the Grade Three classes. I chose to conduct my research with this class teacher as we had previously collaborated on developing lessons and innovative ideas. Ms G is a passionate teacher who is interested in improving literacy and learning using cognitive programmes. She has seventeen years of teaching experience, thirteen of which have been in Education for children with special needs. This was her tenth year of teaching at the school. Ms G has obtained a Bachelor of Primary Education from University of Cape Town, she has a Bachelor of Education in Special Educational Needs, from Rand Afrikaans University. Ms G is currently enrolled at the University of the Witwatersrand reading her Master's degree. Her research evaluates the impact of this intervention in terms of the progress the children made in their reading comprehension. This research documents Ms G's teaching practice.

Ms G has received in-service training in Instrumental Enrichment and formal training in the RAVE-O reading methodology. As Ms G is an experienced, highly trained and motivated teacher I felt she would be an ideal person for this research.

The fourteen learners in the class are made up of two girls and twelve boys. The average age of the children in the class is nine years, eight months. The children in this Grade Three class have a range of abilities and difficulties. Some of the learners have been diagnosed with specific difficulties but others have multiple difficulties. For the purpose of understanding

the nature of the learners as recipients in this research they have been classified according to their predominant learning difficulty, two learners have Dyslexia, two have Asperger's syndrome, high functioning autism, two have Specific Language Impairment, one has William's syndrome, one has Epilepsy, three have ADD and ADHD, one has Cerebral Palsy and two have Non Verbal Learning Difficulties. (The learner with ADHD died in an accident during the course of the research project.)

Table 3.1: Summary of Learning Difficulties experienced by participants

Learning Difficulties	**Quantity and Gender**	**Age**
Dyslexia	2 Males	9:2 9:1
Asperger's Syndrome High Functioning Autism	1 Male 1 Female	9:10 10:2
Specific Learning Impairment	2 Males	9:4 9:2
Williams Syndrome/Dyscalculia	1 Male	10:7
Epilepsy	1 Male	9:1
Attention Deficit Disorder ADD Attention Deficit Hyperactive Disorder ADHD	1 Female 2 Males	9:4 9:9 Deceased
Cerebral Palsy	1 Male	10:2
Non Verbal Learning Disability NLD	2 Males	10:2 10:5

3.5 An overview of the Intervention

From our previous experience with these programmes Ms G and I discussed the advantages of both the RAVE-O and IE programmes. We designed the intervention so that it could be scrutinized on two levels. My research study focuses on her mediation when implementing the two programmes, RAVE-O and IE. In my role as Remedial Therapist for this class I was able to observe and record the interactions that took place. The RAVE-O programme's instruction was executed for half an hour Monday to Wednesday and for one hour on Thursdays, following the explicit structure of the RAVE-O programme and where possible integrating concepts and strategies from IE. The learners received one hour of IE every week. The presentation of these lessons followed explicit directions outlined in the IE teacher's manual. Both programmes provide guidelines for teachers to follow. The RAVE-O programme covers all aspects of literacy, providing exposure and practice in reading and grammar. In order to establish whether or not there was sufficient transfer from these programmes I also observed THEME lessons. The theme lessons, designed by the class teacher, incorporated and reinforced literacy skills such as comprehension as well as the strategies and skills from both the RAVE-O and IE programmes. Table 3.2.Timetable showing these lessons.

Table 3.2: Grade Three G Time table

	7:55-8:25	8:25 -8:55	8:55 -9:25	9:25 -9:55		10:10 -10:40	10:40-11:10	11:10-11:40	11:40-12:10		12:30-1:00	1:00-1:30	1:30-2:00
Monday	Mathematics		DNT		Break	**RAVE_O**	Literacy		Music	Break	Life Orientation		Literacy
Tuesday	Literacy		PE	Guided Reading		**RAVE_O**	Afrikaans	Mathematics			Literacy		Reading Lab
Wednesday	Mathematics			Guided Reading		**RAVE_O**	Afrikaans	Library	ITC		**Literacy Theme**		Literacy
Thursday	Mathematics		Guided Reading	PE		**RAVE_O**		Afrikaans			Art		Literacy
Friday	Mathematics		**Literacy Theme**			**IE**		Music	Afrikaans		Assembly		

3.5.1 An overview of the RAVE-O Programme

Within the constraints of this research it is impossible to give a comprehensive description of the RAVE-O programme but I will attempt to give an overview of it. The RAVE-O programme has a consistent instructional design that moves progressively from accuracy, to fluency and to fluent comprehension. The learners explore core words, discover related words and meanings, read words in context and respond to what they have read. A typical RAVE-O programmes unit incorporates five areas, Phonology, Orthography, Semantics, Syntax, and Morphology, 'POSSuM'. Connecting all the areas involved in reading at the same time is crucial in developing reading fluency. The following summary describes the five areas included. Each unit follows a similar sequential order.

- Introduce Core Words, These have common letter patterns, two or three possible meanings, and at least two grammatical functions
- Explore how core words become the foundation for learning many related words
    - Reviewing sounds/symbol correspondence (e.g. 'a' says 'a' as in ant).
    - Examining word parts (e.g. jam m ing).
    - Exploring Many Interesting Meanings (MIM) of words (e.g. traffic jam, apricot jam).
    - Many Interesting Connections (MIC) (e.g. spread jam on bread).
    - Identify parts of Speech and Grammar associated with Core words, this is done through a series of different activities, (e.g. jam can be a noun or a verb).
    - Learn how affixes change word meanings, (e.g. jamming, jammed)
- Exploring words in Context, learners practice and apply skills

Each Lesson follows the same procedure, by starting with a Welcome. In this step words or concepts previously taught are reviewed, or students are asked about 'Sightings'. Sightings are personal experiences reported by the learners following the introduction of a new core word. An example of a sighting for the word 'lap' may be, a child reporting that they saw their pet cat lapping up a saucer of milk

The second step is the Warm up, which may involve identifying, Many interesting Meanings, or recognising Rime Patterns of words previously introduced (e.g. words that rime with, 'dip' are hip, sip, slip, pip).

The third step is a discussion of Nouns and Verbs

In the fourth step, New Core words are introduced.

In step five 'Many Interesting Meanings' of the new core words are discussed.

Step six involves the phonological Sound Symbol Exploration of the Core word. Steps 4, 5 and 6 are repeated for each new core word introduced.

Step seven Examines the Rime Patterns of the Core words

Step eight uses the new Core words. Learners build words or phrases to show understanding of how language works (Demonstrating understanding of Syntactic and Orthographic language use).

Step nine, a Word Web is used to Explore Many Interesting Meanings and Words connected to each meaning.

Step ten at the conclusion of each lesson is when the learners receive a 'Ticket out the door'. This activity reviews the nouns or verbs of core words, by using oral sentences to demonstrate their understanding of Semantics and Syntax (Wolf, 2011).

A number of additional teaching aids are used to enhance the teaching and learning.

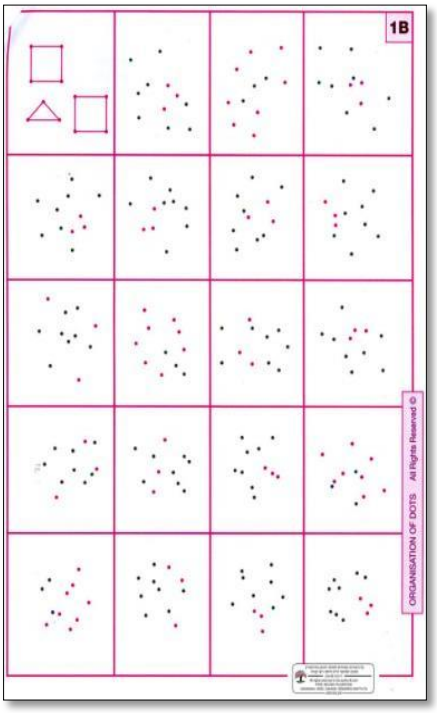
3.5.2. Outline of 'Organisation of Dots'

In addition to the five RAVE-O lessons per week, the learners received a one hour lesson of Instrumental Enrichment lesson. Like the RAVE-O programme IE lessons have a cognitive focus and are explicitly designed. The implementation of the lessons involves following the detailed lesson plans in the manual.

The IE programme makes up the learner application of 'Feuerstein's Triad of the learning process' (Chapter 2 figure 2.1). It consists of fourteen different 'instruments' each with a specific emphasis on a particular thinking skill (Feuerstein, 1980). In this research study I observed only the first instrument, 'Organisation of Dots, which was the learners' first exposure to IE. Organisation of Dots, involves creating order from unconnected items or events by finding connects between them (Mentis, Dunn, Mentis, 2009).

During the IE lesson the learners have to organise the dots in each frame, into shapes illustrated in the model. They are expected to construct a plan to achieve their objective (Feuerstein, Hoffman, 1995). Once the objective has been achieved the learners are asked to express the strategy they used to complete the task. *The Teacher's Guide to Organisation of Dots,* (Feuerstein, Hoffman, 1995) gives explicit mediation for the teacher to follow, ensuring that precision and accuracy of mediation takes place. The verbalisation of strategies expressed by the learners is an important aspect of the thinking process and is vital to the development of cognitive abilities and expression of thought (Feuerstein, et al,

Figure 3.1: Presents an example from the workbook.



(Feuerstein and Hoffman, 1995:44)

At the beginning of each lesson the relevant vocabulary is mediated to ascertain clarity and understanding of terms to be used during the lesson. Relevant vocabulary is listed for explanation and use during the lesson.

The Teacher's Guide explicitly shows which kind of Mediation and Cognitive Function is required and exactly what the teacher should say. Possible responses from the learners are also indicated. The advantage of scripted dialogue is that it develops a 'Metacognitive Awareness' which eventually becomes internalised by the teacher (Feuerstein, Klein,

Tannenbaum, 1991). The following example of the dialogue was used by the Ms G, based on the scripted dialogue from the IE teacher's manual. Example of Lesson Plan Appendix D

Before we start a task, what do we have to know? *(Mediation of Self-Regulation behaviour, definition of the problem, generalization)*

- What do you think we are supposed to do on this page? *(Mediation of Goal seeking, inference)*
- What gives you that information? *(Mediation of Transcendence, Using several sources as basis for inference)*
- Is there anything else on the page that helps us to define the task? *(Mediation of Transcendence, Systematic exploration)*
- We will call those figures in the frames models. *(Mediation of Meaning, Verbal stimulation; labelling)*
- Can we use those separate pieces of information - the models, the large dots, the blue dots, and the numbers of dots - to help us decide what we are supposed to do? *(Mediation of Competence; call for a synthesis of given information for extrapolation; preparation for goal setting; definition of task by extrapolation)*

(Feuerstein & Hoffman, 1995:30)

The teacher mediates the discussion elaborating and extending the ideas and concepts thus developing cognitive thinking strategies that eventually lead to success. The learners engage in classroom dialogue, constructing meaning through oral expression. Many of the tasks require the learners to decide on 'labels' and terms for the figures represented in the model. Strategies and rules for how the task should be completed are shared and differences in learning styles are communicated.

Only after the in-depth discussion is completed do the learners attempt the activity page. The verbal exchange that takes place sets the learner up for success. If they still experience difficulty they may call the teacher or a peer to assist them in a step by step process of questioning. The cognitive strategies learnt are carried over to the more complex tasks. The learners are encouraged to adhere to the 'rules' and are often heard using 'Self Talk' as a method of 'Self Mediating'. The activity pages of each instrument increase gradually in the

level of complexity which is done intentionally to challenge the learners to reach a higher level of abstraction.

3.6 Qualitative Data Collection

Qualitative data collection is used to produce findings not arrived at by means of statistical procedures or other means of quantification', (Strauss and Corbin, 1990:17). Qualitative data collection is used in this study to add depth of understanding about both the efficacy of the programmes and the teaching praxis. In order to provide rich detail into the participants' experience of a situation and to answer the three sub questions of this research study and provide detailed information to future teaching practice the data was collected using different research instruments.

The primary means of collecting qualitative data for this study was by participant observation. According to Swann (1994) a participant observer is someone who takes part in the event she is observing (Swann, 1994:27).As the remedial therapist assigned to the class, I am frequently involved in class activities or engaged in assisting individual learners. This allowed me to observe in a natural and unobtrusive manner. To accommodate my own teaching timetable I chose to observe one hour of RAVE-O, one hour of IE and one hour of THEME lessons per week over the twelve week period during which this research study took place. As a participant observer during these times I was included in the discussions and viewed as the supportive therapist. Being involved with and assisting individual learners when necessary, I was able to formalise my observations using, digital recordings, frequency tables and field notes of these lessons. At varying intervals during this time I video recorded thirteen lessons, seven videos of the RAVE-O lessons, three of IE lessons and three of THEME lessons.

Answering the sub-question, 'What kinds of Mediation were observed?' was done using an adaptation of the Mediated Learning Rating Scale (Skuy et al, 1991). I decided to complete the frequency observation schedules from nine of the videos, three lessons from each of the various types of intervention. This was done after the lessons and not while in the classrooms so that I could go back and check the video for reliability and accuracy (Pirie, 1996). Also, as a participant observer, I needed to be available to assist learners in the

classroom. An example of the Mediated Learning Rating scale from one lesson is presented below.

Figure 3.2: Mediated Learning Rating Scale (Skuy et al, 1991).

Learner number	Int & Rec	Meaning	Trans-cendence	Self Regulation	Competence	Goal Planning	Individuation	Sharing	Challenge	Self Change	Optimistic Altrnatice	Sense of Belonging
1							•		•			
2		•		•					•••			
3					•							
4				•					•			
5				••								
6					•			•				
7												
8					•							
9							•					
10				••								
11		•			•••		•					
12					•							
13									••			
Whole Group	••• •••	•••• •••	••••• •••	••••• •••	•••••	••••		•	••	•	•	
Total	6	9	8	14	12	4	3	2	9	1	1	

Mediated Rating Scale used to count the Frequency and Type of Mediation which occurred during lessons (Skuy et al, 1991).

A separate spread sheet recording the frequency and kind of mediation (Mediated Learning Rating scale 3.1) which occurred was used for each of the nine lessons. These were categorised and collated into the three different types of lessons. The Kinds of Mediation recorded for RAVE-O, IE and THEME lessons were totalled and plotted on graphs to provide a visual representation of the frequency and Kinds of Mediation that took place in the different lessons. Extracts from the lessons were described to illustrate the language used by the teacher to Mediate during these lessons.

Nine videos were used to collect the data on the Mediated Learning Rating Scale. Table 3.2 shows the dates of recorded lessons when frequency counts took place.

Table 3.3: indicates the dates when video recording took place.

RAVE-O lessons	19 September 2011 2 October 2011 31 October 2011
IE lessons	11 October 2011 25 October 2011 2 November 2011
THEME lessons	4 October 2011 18 October 2011 25 October 2011

The advantage of using video recording is that it provides a wider focus and allows one to go back and re-observe what happens in the classroom. Field notes allow the researcher to reflect and interpret observations and so the use of both methods allows for deeper exploration of what actually took place during the lessons. Although qualitative research is subjective, because it relies on individual interpretation, Patton suggests that, the researcher should strive for, 'empathic neutrality' (Patton, cited in Hoepfl, 1997). The researcher tries to be non-judgmental and descriptive in order to record actual comments and uses a two column method of writing field notes. The left hand column is used for actual, comments made in context, while the right hand column is used to document thoughts and suggestions about the observations (Swann, 1994). Notes were taken in the

lessons which were not videoed to capture critical moments and document interesting observations.

Following the intervention, semi-structured interviews were conducted to investigate how the learners perceived the intervention of the 'new' programmes and whether or not they found the strategies useful. Two focus group interviews were conducted with a representative group of the learners (Tape recording 25/11/2011). For logistical reasons learners who were available at the time were selected to take part in the focus groups. One group consisted of three boys and the second group of three boys and one girl. The researcher explored the themes and used a tape recorder. It is recognised, that the use of a tape recorder may have an effect on the learners' responses, so the use of a tape recorder was discussed with the learners' to explain that it would allow for accurate and detailed documentation (Knobel and Lankshear, 1999). Informal discussions on the progress and behaviour of learners which form a natural part of colleagues working together occurred throughout the intervention period. On completion of the intervention period a semi-structured interview was conducted with the teacher. The questions used in these interviews were based on observations made by the researcher during lessons. These interviews provided insight into the teacher's and the learners' understanding of the process, their own perceptions of their thinking processes and acquired strategies. (Interview questions in Appendix B).

3.7 Qualitative Data Analysis

Qualitative data analysis provides rich detail into the participants' experiences of RAVE-O, IE and THEME lessons (Hoeplf, 1997). The researcher plays an interpretive role in constructing and describing the mediation which occurred in this classroom. Video recordings of lessons observed were analysed and used to identify the ways in which Ms G mediates to the children. The learners' responses to mediation were noted. The teacher interaction was observed to specifically identify explicit links made between the programmes and the standard curriculum. The videos were watched several times to identify instances of mediation recorded were consistent. These were analysed and recorded on the Mediated Learning Rating scale. The frequency and types of mediation which occurred in the lessons were tallied and the information was represented on graphs. The information represented

on the graphs was read in relation to the theory and in relation to the RAVE-O and IE programmes. Differences in the types of mediation which occurred in lessons were extrapolated to find out what effective mediation looks like when an experienced teacher uses both these cognitive programmes in her class. This was triangulated with the teacher and focus group interviews and field notes. Video footage also provided supportive evidence to show learners' use of self-mediation or 'peer mediation.' Observation of video recordings enabled identified visible signs of engagement, motivation and enjoyment experienced by both teacher and learners. Additional anecdotal information and critical learning instances were captured to provide unexpected insights and significant moments in the classroom (Swann, 1994).

In response to the second sub question, 'How does the teacher use language to mediate learning?' the videos and field notes were explored in greater depth to analyse the discourse and identify specific strategies used by the teacher to mediate effectively. The video recordings of lessons were transcribed in order to look more closely at qualitative aspects of teacher talk. Open-ended explorations of extracts from lessons videoed provide information on the function that language fulfils, in the Mediation of Meaning, Transcendence, Self-Regulation, Competence and Challenge of how learners achieve understanding of a new concept. These excerpts from transcripts are used to preserve the actual mediational phrases used by the teacher in the various lessons (Swann, 1994). This approach may be considered biased as it is dependent on the researcher's interpretation and selection. I am aware of the subjective nature of my involvement in this intervention. Although I was involved in the planning I merely observed lessons and never taught. My observations were checked against video recordings and the class teacher to avoid potential bias. The researcher may notice characteristics of dialogue that support her aims without considering counter evidence (Swann, 1994). It is for this reason that additional evidence from interviews and field notes was also scrutinised.

3.8. Ethical Considerations

In order to protect the children at the remedial school who are considered vulnerable subjects, ethical principles stipulated by the School of Education Ethics Committee of the University of Witwatersrand, were followed (Protocol number: 2011ECE074C).

Letters outlining the aims of the study were explained to the principal of the school, the teacher and the learners. Letters of consent obtaining permission to conduct this research project and video the learners in their classroom were completed by parents and the learner participants before the study commenced. Permission to research the impact of the RAVE-O was obtained from the staff at the Centre for Reading and Learning Research at Tufts University in Boston. Assurances of confidentiality were guaranteed as the researcher would use pseudonyms for the learner participants. The teacher and the school would not be identified.

Ethical considerations of having two researchers on the same site were considered upfront and managed as the focus of each study is different. Ms G focussed on the learners while I focussed on her teaching practice. Both this research study and the class teacher's research study were discussed with the participants. Permission to video and interview the learners, was obtained by both the class teacher and myself. The culture of the school accommodates a co-teaching approach where the relationship among staff members is respectful and uncomplicated. Ms G and I together conceptualised the intervention and although some videos and interview data were used by both researchers the analysis and interpretation was done separately. As Ms G was conducting her own research she did not regard my presence as intrusive and appreciated my contribution to the process. Ms G has had access to this research report to confirm that she has been accurately represented. Results of the research will be available to all participants and will be used to discuss the benefit of replication (with colleagues) in this school as well as the broader education community. The findings of the qualitative data analysis are discussed in the following chapter (4).

Chapter 4: Data Analysis

4.1 Introduction

The purpose of this research project is to establish the efficacy of combining the teaching of RAVE-O with a cognitive programme IE and identify the way mediation is used in teaching concepts. This chapter draws on data collected from classroom observations, videos of lessons, interviews with the teacher and learners, and field notes. The analysis of the teachers' interaction is based on Feuerstein's twelve Criteria of Mediation (Feuerstein, Feuerstein and Falik, 2010:25). The Criteria of Mediation designed by Feuerstein are intended to guide the teacher in communicating with learners to develop their thinking. The Instrumental Enrichment tasks are intended to engage the learners and provide opportunities to practice the thinking skills. The Criteria of Mediation frame the structure of this chapter. The chapter is divided into two sections each answering the sub questions of the research report. The first section presents the types of mediation which occurred in the various lessons. The rationale for identifying the specific types of mediation used by the teacher in her lessons is to understand which types of mediation are most frequently used and their relationship in promoting effective thinking. The second section focuses on the role of language and explores the ways in which language is used in this classroom to mediate meaning. Explicit teaching of strategies may provide learners with novel and effective ways of breaking down linguistic concepts, which can result in demystifying the learning process.

4.2 Types of Mediation

Feuerstein (1980:16) argues that,

> The relationship between MLE and the direct exposure modality of learning can be formulated as follows, the more a child has been afforded MLE and the more optimal the mediational process, the greater the capacity of the child to benefit and become modified by direct exposure to stimuli.

Feuerstein (1980) places the responsibility of learning on the teacher whose role it is to manage and optimise the mediational process when she intervenes, guides, gives meaning, provides relevant language and makes connections while interacting with the learner. The

teacher needs to construct appropriate learning sets by interpreting the environment and interacting with the learner.

Feuerstein, describes two approaches to learning, first is the direct approach, where learning is incidental and the second in the mediated approach, which is intentional and involves a mediator interpreting, guiding and giving meaning to the situation (Mentis et al. 2008). Intentionality described by Mentis (2008:10),'occurs, when the mediator deliberately guides the interaction in a chosen direction by selecting, framing and interpreting, specific stimuli'. Intentionality can be interpreted as inviting the learner to focus their attention on the process that is about to happen. Reciprocity explained by Greenberg (1997:33) is, 'to establish a dynamic and positive feedback loop between the mediator and the learner'.

During the interview with Ms G she reflects on her teaching and claims that she has changed her teaching practice to be more intentional.

Researcher asks: *Do you think it is worthwhile to have a time slot for thinking programmes in the timetable?*

Ms G responds *Yes, I do, I used to think that…….I used to think a lot of incidental things happened and they do incidentally but following this, I have changed my thinking. Teaching needs to be intentional. So while incidental learning happened, we as teachers need to make sure that everything we want to teach is done intentionally. That's what both programmes speak about.*

This excerpt from the transcript shows how through the process of engaging with these programmes Ms G has discovered for herself the importance of explicit and intentional teaching. The idea of self-discovery is important, Ms G has been through training courses and professional development where this has been emphasised but the cognitive approaches offered by both RAVE-O and IE are explicit and in engaging with these teacher guides and manuals she has internalised the approaches advocated (Teacher interview 3/12/2011). The learners also developed an awareness of cognitive strategies. This may have been as a result of all the opportunities provided to verbalise their thinking while

engaging in the required tasks. In the interview (3/2/2012) three of the learners specifically commented on their use of strategies:

Researcher: Are you good at reading?

Doron: Not really but I have learnt In RAVE-O to try to find the smaller words in it then I use the words I know to get the whole word.

Steven: Sometimes even I get stuck on a word. I will change my strategy; read half the word.

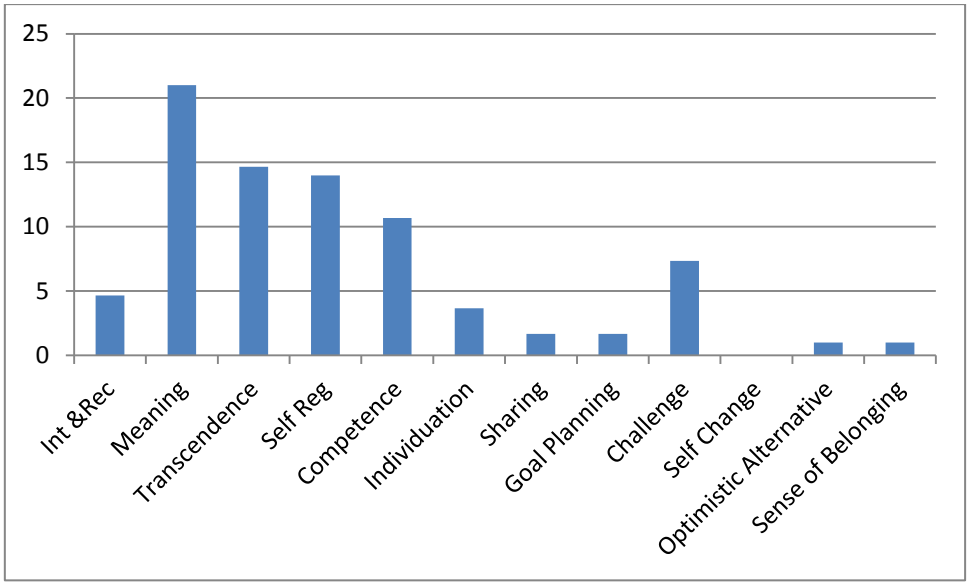
Dennis: I have another strategy, I read on…

The twelve Criteria of Mediation or types of interaction developed by Feuerstein can be used to enhance teaching and bring about changes in the learners thinking. Feuerstein (1980) believes the first three criteria, Intentionality and Reciprocity, Meaning, and Transcendence are essential for an interaction to be considered mediation. A Mediated Learning rating scale was used to assess the frequency and type of mediation that occurred during the RAVE-O, IE and THEME lessons. During the lessons the types of mediation that occurred were recorded. They were later collated and categorised, and represented on graphs to show the most frequently used type of mediation in the three different sets of lessons. By identifying the most frequent types of mediation used by the teacher, patterns in her teaching emerged. This information provides insight into the ways in which different types of mediation can be used as an effective method of communication for inclusive teaching.

4.2.1 Types of Mediation in RAVE-O lessons

Figure 4.1 illustrates the types of mediation that occurred across the three RAVE-O lessons observed. Meaning, Transcendence, Self-Regulation and Competence were the most frequent criteria of mediation. The criteria of mediation that were least frequent were Mediation of Challenge, Intentionality and Reciprocity, Individuation, Sharing, Goal Planning, a Search for an Optimistic Alterative and a Sense of Belonging. In the lessons reflected on this graph there was less evidence of Mediation of Self-Change. Certain criteria of mediation such as Self-Change, Sharing, Goal Planning, Optimistic Alternative and Sense of Belonging are not dominant on the graph and may not have been explicit in these particular lessons but these are usually observed over a longer period of time. Self-Change in learners would be observed at the end of a section, when the learners reflect on their progress. All the criteria of Mediation have value but for the purpose of this research because of the constraints of a project this size I focus on the most frequently observed criteria of mediation during RAVE-O lessons: Meaning, Transcendence, Self-Regulation and Competence as these are effectively used by Ms G to promote the acquisition of thinking and literacy.

Figure 4.1: Frequency of types of Mediation that occurred during RAVE-O lessons



Mediation of Meaning occurred most frequently, 21 times in RAVE-O lessons. Mediation of Meaning according to Feuerstein (1980:13) 'is a process by which knowledge, values and

beliefs are transmitted from one generation to the next'. For Mediation of Meaning to occur the teacher is expected to explain the meanings of words, cite different examples and encourage the learners to use the new vocabulary in relevant contexts. The teacher enhances learning by engaging with the learners. This may involve the use of different modalities, for example, acting out what the words mean, drawing pictures or telling stories and real life situations to ensure understanding takes place.

It is not surprising that Mediation of Meaning occurs most frequently in these lessons since the primary focus of the RAVE-O programme is to develop comprehension as well as an understanding of word meanings. Wolf (2008), like Feuerstein (1980), emphasises the need for explicit interaction as a key factor in teaching and developing improved reading fluency and comprehension. Wolf (2011:14) argues that, '[t]he richer the semantic networks are in the brain, the better and faster students can retrieve and understand words and their meanings'. The RAVE-O programme does this through the systematic use of the character Miss MIM, an animated spider, to enrich learners' vocabulary by providing multiple meanings of words and what they mean in various contexts. This aligns with Feuerstein's contention that the meanings of words need to be explained through the use of different examples so that the learner can use new vocabulary in order to develop an understanding of new concepts (Feuerstein 1980).

Mediation of Transcendence is the second most frequent type of mediation used occurring 14.6 times. Mediation of Transcendence occurs when an interaction goes beyond the immediate thereby enlarging and diversifying the extent of knowledge for the learner (Mentis, et al., 2008:27). Developing Mediation of Transcendence assists the learner in developing a deeper understanding of the world and how things are interrelated. Transcendence stimulates curiosity, encouraging learners to find out more about the topics and words being discussed. This can be associated precisely with the RAVE-O programme's notion of extending the current concept to different situations or events:

Doron: I learnt what there is to a word, I learnt about rime, Fat Rats, MICS, MIMS, and RAVE-O makes your vocabulary bigger. (Interview 25/11/2011)

Mediation of Transcendence was evident in the RAVE-O lessons through Ms G'S introduction of the RAVE-O Town character Mayor MIC, (Wolf, Gottwald, Orkin, 2009). He invites learners to make 'Many Interesting Connections'. These characters are designed to captivate the learners' attention and direct them to the connections that can be made to an idea or word, thus extending their knowledge and experience of a word. The Question Words who, why, what, where, when and how, displayed on a poster, prompt the learners to develop a frame of reference and make connections to the core words. The RAVE-O programme frequently and explicitly emphasises connecting all the information about a word as it is encountered (Wolf, 2011).

The third most frequently used criteria of mediation in RAVE-O lessons, Mediation of Self-Regulation and Control of Behaviour occurs 14 times. Mediation of Self-Regulation and Control of Behaviour involves prompting learners to adjust their behaviour and respond appropriately. It promotes accepting personal responsibility for learning and teaches learners to think about their own thinking, their 'metacognition' (Mentis et al., 2008:46). Self-Regulation invites the learner to be active and independent as opposed to a passive recipient of knowledge. Regulating behaviour in different circumstances may require the restraint of impulsivity or engaging in a systematic approach to tasks. The motto for the IE programme, 'Wait a minute let me think…' emphasises the need for self-discipline in the classroom (Feuerstein, Hoffman 1995:12).This active thinking through Self-Regulation is evident in the 'Think Thrice' strategy used for reading in the RAVE-O lessons. The 'Think Thrice' strategy promotes active engagement with the text: 'think ahead' suggests previewing or predicting what may happen, 'think back' monitors understanding and 'think for yourself' promotes synthesizing learners own understanding (Wolf, 2011:20). During the reading of the minute stories in the RAVE-O lessons, the learners are encouraged by Ms G to use this strategy and are given time to express their understandings of the text and think about the content they are reading. Mediation of Self-Regulation is demonstrated in RAVE-O lessons as this links to the 'Think Thrice' strategy directed to learners who do not comprehend what they are reading. In the recorded interview with the learners, Douglas said:

Douglas said: I have another strategy,….So I read on if there's a word let's say bullets, and I can't read it. I read on and if I come to a word like shoot, then I know that the other word could be bullet. (Interview 3/2/2012)

By reading ahead Douglas has been able to apply contextual clues, by thinking back he now realises the word he could not read, must have been bullets. Mediation of Self-Regulation is evident here as Douglas has been able to apply his thinking to the current activity.

Mediation of Competence is the criteria of mediation which emerged with the fourth highest frequency, an average of 10.6 times during the RAVE-O lessons. Feuerstein's view on Mediating a Feeling of Competence is that self-belief enhances one's intrinsic motivation to learn (Feuerstein et al., 1991). Feuerstein et al. (2010) differentiate between being competent and experiencing a feeling of competence. They place an emphasis on the latter as it is an expression of personal self-esteem and self-worth.

The RAVE-O programme similarly is designed to engage learners in straight forward tasks where a high level of success is achieved. Ms G plans her lessons to ensure the learners experience systematic success (Interview 2/12/2011). As a result the learners' self-esteem is enhanced and they are motivated to continue learning and attempt more challenging tasks. Ms G quoted one of her learners as saying:

Ms G, I feel a Feeling of Competence that was much better than before, (2/12/2011)

According to Wolf (2011:21) 'RAVE-O instruction helps students move away from what is too often a static unchangeable view of their own intelligence'. In this way, RAVE-O ensures that learners view themselves as successful. They realise that their consistent efforts assist them to learn to read'. The need for learners to develop a positive belief in their own abilities aligns with Feuerstein's philosophy that Mediating a Feeling of Competence instils in the learner a belief that he/she can realise his/her potential. Positive feedback given by Ms G (see section 4.2) communicates reasons for the learners' achievements, thus ensuring they understand the process necessary for successful completion of a task.

The success of implementing RAVE-O as a literacy programme relies on the mediation provided by the teacher. The high level of Mediation of Meaning, a critical component of the RAVE-O lessons, is evident as Ms G actively engages in Mediating the Meanings of words

to ensure a deeper level of understanding. She ensures that the learners have grasped the multiple meanings of words and are able to relate their knowledge of the new words and concepts in a variety of situations. The attention and self-discipline required for successful learning to occur is evident in the Mediation of Self-Regulation. As illustrated above, Ms G. effectively manages the behaviour of the learners ensuring focus and self-restraint thus maintaining a positive working environment. One of the learners offers an interesting perspective:

Researcher: '*What makes RAVE-O different from other lessons?*'

Doron: *'We need our full attention, same with other things you don't sometimes think, OK say you pay full attention sometime you need to pay full attention with other parts, like with your ears but like that you need full attention with your eyes you obviously need self-regulation.'* (Interview 25/11/2011)

Doron's response communicates that he applies self-regulation during these lessons and he offers a reciprocal response using, 'egocentric' language. Doron is using language to explain how he pays attention. Establishing a culture of learning and an atmosphere in which success is desired depends on the intention of the teacher to teach and the learner to accept the challenge, self-regulate and learn how to learn.

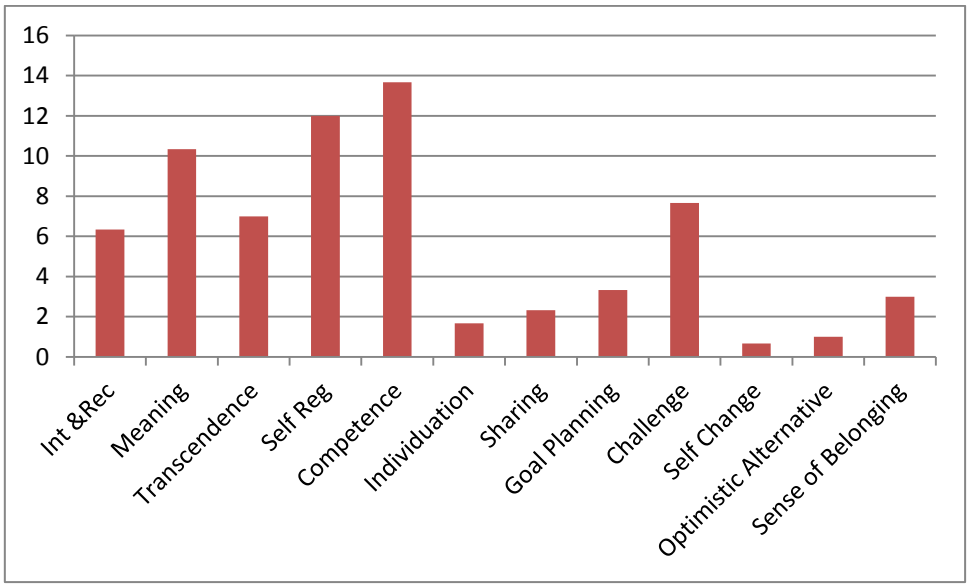
4.2.2 Types of Mediation in Instrumental Enrichment lessons

Figure 4.2 illustrates a slightly different pattern of mediation which occurred across all IE lessons observed. All twelve types of mediation were evident. It is interesting to observe that Mediation of a Feeling of Competence is the most frequent kind of Mediation that occurred during IE lessons compared to Mediation of Meaning in the RAVE-O lessons. The least frequent types of mediation illustrated in ascending order were, Self-Change, Mediation of a Search for an Optimistic Alternative, Mediation of Individuation, Sharing, Sense of Belonging, Goal Planning, Intentionality and Reciprocity and Transcendence. The four criteria with the highest frequency are elaborated in the following discussion.

Mediation of Competence is intended to promote a positive process towards success, reinforcing a perception of self-change. Mentis et al., (2008:39) state that, 'The perceptions that parents and teachers have of children and convey to them, both explicitly and implicitly

have a profound impact on their sense of competence. Children often live up (or down) to others 'expectations resulting in a self-fulfilling prophecy'.

Figure 4.2: Frequency of types of Mediation that occurred during Instrumental Enrichment lessons



Competence is mediated an average of 13.6 times during the three IE lessons observed. The Instrumental Enrichment programme, like RAVE-O, is designed to afford learners a degree of success. The activities are arranged to gradually increase in the level of complexity, this promotes confidence in the learners, encouraging intrinsic motivation (Feuerstein 1980). Mediation of a Feeling of Competence contributes to the realisation of goals and promotes a feeling of success which in turn develops determination to persevere. Ms G focuses on parts of an activity that have been completed successfully even though there are aspects that may be incorrect. In accordance with the IE guidelines observations indicate that the complexity of tasks given during the IE lessons prompt Ms G to be generous in her praise of the success achieved.

Mediation of Self-Regulation and Control of Behaviour had the second highest frequency, an average of 12 times in the IE lessons observed. Mediation of Self-Regulation requires restraint of impulsivity and working systematically to complete tasks successfully (Feuerstein, 1980). The Organisation of Dots activity presented to the learners requires careful consideration and visualisation before drawing in the lines. The learner is required to superimpose the model onto the dots to ensure the form is accurately replicated. The tasks in the IE programme are designed to teach the learners to adjust their behaviour in

accordance with the demands of the activities. Impulsive or unplanned connections in the organisation of dots may result in an error which provides the learner with immediate feedback of their impulsivity. A lack of self-regulation and the use of incorrect dots, results in inappropriate dots remaining to complete the exercise. The IE programme explicitly teaches learners a strategy for planning, encouraging a systematic approach to working through the activity (Feuerstein & Hoffman 1995). Learners at this school, many of whom are diagnosed with Attention Deficit Disorder (ADD), find it extremely difficult to control their impulsivity and consequently their work is incorrect demonstrating unplanned behaviour (Feuerstein1980). Observations indicate that Ms G continually reminds learners to consider the strategy for planning before rushing to complete the task. This is internalised by the learners as illustrated by Doron:

Researcher: '*What have you learnt from Organisation of Dots?'*

Doron: '*I always liked dot-dot, it was fun then I got to Grade Three it got a bit more challenging because I had only done the one with numbers but no numbers, No Yup but now you have to figure it out for yourself.' And it also um means um accuracy and um you mustn't rush and you must work it carefully'* (Interview 29/11/2011)

In this excerpt Doron verbalises that he has to be accurate, not rush and work carefully. He has internalised the need to self-regulate. He also spontaneously mentions that the tasks were challenging.

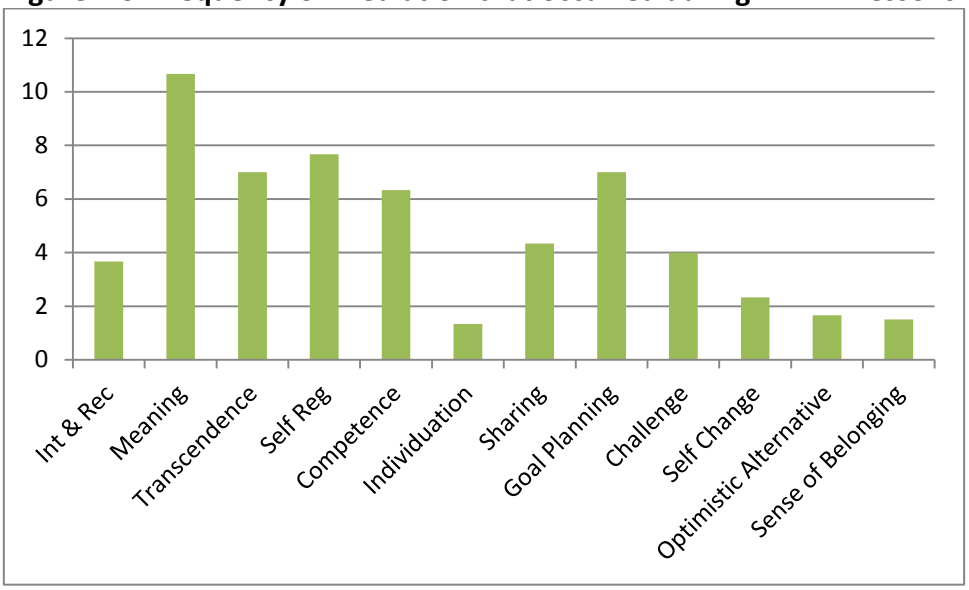
Mediation of Meaning emerges as the third most frequent mediation, occurring 10.3 times during the IE lessons. Feuerstein believes that Mediation of Meaning is essential in communicating important values on both an intellectual and an emotional level to the learners (Feuerstein et al., 1991). Mediating meaning explains why specific content is taught or certain routines are necessary to complete an activity. The Organisation of Dots activities are intended to assist learners in finding links or developing an understanding of how certain objects or events in our environment can be connected. The teacher is expected to convey the universality of meanings of words to the learners. This is illustrated when Ms G directs the learners to precise definitions, *'A square is a closed figure with four equal sides and four right angles and it has two pairs of parallel lines'*. The use of precise and accurate labelling emerges as an important aspect in the Mediation of Meaning.

The fourth most frequently used type of mediation observed in the IE lessons was Mediation of Challenge which occurred 8 times across all three IE lessons observed. Mediating Challenge takes place when the teacher motivates learners to tackle unusual and complex tasks with determination. The learners are shown how to approach complex tasks by identifying the steps involved in completing the task. The IE programme provides strategies which guide learners to solve problems (Feuerstein & Hoffman 1995). Explicitly teaching the 'elements of a plan' equips learners with a strategy that can be used in many other situations. Feuerstein (1995) emphasises the need for Mediation of Challenge as it encourages learners to persevere, 'in a world that is constantly changing' thus preparing learners to cope with changes and rise above apprehension of the unfamiliar tasks and situations (Mentis et al., 2008:78). Mediation of Challenge and Mediation of Competence are interrelated. Experiencing a personal sense of competence inspires learners to attempt novel and challenging tasks. In the IE lessons Ms G rewards success by reflecting on the learner's Feeling of Competence and providing opportunities for learners to achieve mastery through practice and then engage in progressively more complex and challenging tasks.

4.2.3. Types of mediation in THEME lessons

The types of mediation illustrated in Figure 4.3 differ from the previous graphs as the THEME lessons are created and developed by Ms G as opposed to the RAVE-O and IE lessons that had scripted guidelines for teachers to follow. These lessons designed by Ms G followed a more traditional teaching style. The learners were expected to complete written literacy activities such as comprehension or identifying parts of speech. The frequency of the types of mediation illustrated in the graph is more evenly distributed. The types of mediation with the lower levels of frequency in ascending order are: Mediating Sharing Behaviour (4.3 times), Mediating Challenge (4 times), Intentionality and Reciprocity (3.6 times), Mediating Self-Change (2.3 times), Developing an Optimistic Alternative (1.6 times), a Sense of Belonging (1.5 times), Individuality (1.3 times).

Figure 4.3: Frequency of Mediation that occurred during THEME lessons.



The kind of mediation more frequently observed was mediating a Feeling of Competence (6.3 times). This was observed when Ms G modified her questions according to the learners' level of ability. The selection of materials around the theme of 'detectives' was explicitly selected by Ms G to relate to the RAVE-O concept of word detectives and the organisation of connecting the dots in the IE programme. Mediation of a Feeling of Competence should be seen as a process of developing self-confidence, developing independent thinking and encouraging motivation, (Mentis et al., 2008). Mediation of Transcendence and Goal Planning both occurred 7 times during the THEME lessons. The aim of Mediating Transcendence is to generalise issues beyond the present situation. The observations show Ms G teaching learners strategies used by detectives to solve problems. These same strategies are used when decoding a difficult word in RAVE-O or planning to solve a problem in the Organisation of Dots instrument.

Mediation of Goal Planning is made clear during the 'detective' THEME lessons, as the learners, like detectives, need to conceptualize and understand a problem in order to generate ideas on how to solve the mystery. Drawing from the *Feuerstein Teacher's Guide to Organisation of Dots, Instrumental Enrichment,* (Feuerstein & Hoffman, 1995) Ms G explains that effective Goal Planning requires five aspects: setting realistic and appropriate goals, planning how goals can be achieved, taking necessary steps towards achieving goals,

evaluating and reviewing the process of achieving goals and modifying these goals (THEME lesson 25/10/2014). Impulsive learners tend to need instant satisfaction and rush to complete tasks without checking to ensure they have followed the correct procedure, this often results in failure and requires redoing the task. Goal directed behaviour provides strategies for setting, planning and achieving aims. It develops independence and self-confidence (Mentis et al., 2008).

Mediation of Self-Regulation and Control of Behaviour is the mediation with second highest frequency, 7.6 occurrences in the THEME lessons. This cognitive strategy is significant not only due to the nature of the learners in this school as mentioned previously, but also because of the need to self-monitor impulsivity and develop strategy thinking when solving complex problems as detectives are expected to. In these lessons Ms G reminds the learners to take time before responding to a question and check relevant information before making decisions. The need to self-monitor and engage in goal directed behaviour becomes very apparent with the learners at this school. Ms G is aware of the need to develop the learners' self-esteem and prevent failure (Interview 2/12/2011). This requires constant guidance and direction. In this classroom, Ms G is a manager who overtly provides the structure for the learners often stating the obvious or asking questions to construct a thinking process that motivates the learners to refocus on the immediate task.

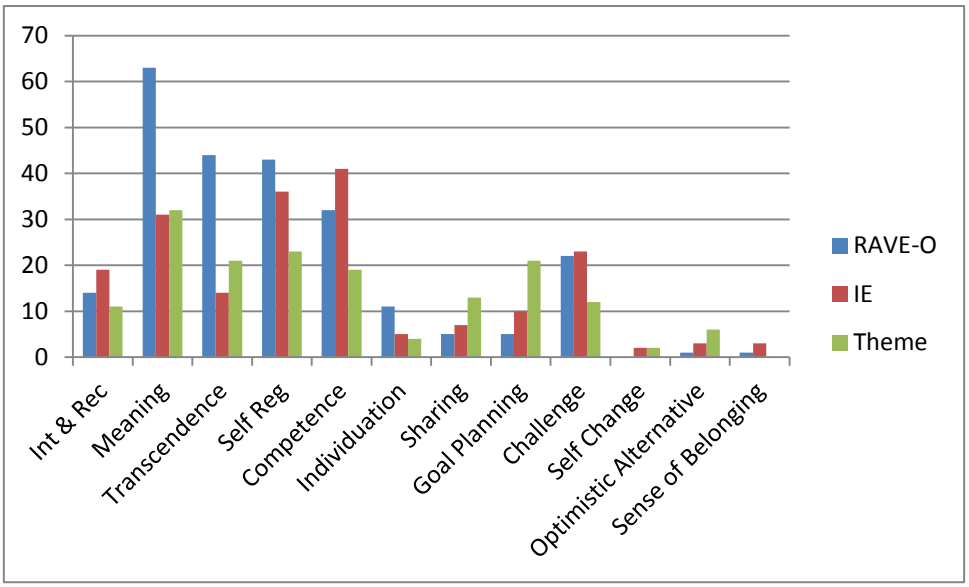
The most frequent type of mediation recorded during THEME lessons is Mediation of Meaning. Feuerstein promotes Mediation of Meaning as it 'creates a motivational and emotional force that drives our activity and our behaviour' (Feuerstein et al., 2010:46). During the THEME lessons Ms G engages the learners by inspiring them to actively engage in problem solving behaviour. She plans activities and poses problems that develop a sense of curiosity and require careful thinking and problem solving strategies that can in turn be transferred to both RAVE-O and IE lessons. This reinforces the kind of teacher Ms G is. She is reflective in her practice, lesson planning goes beyond content and considers the value of teaching strategies which develop thinking skills. It is also important to remember that Ms G considers the learners in this school who have delays and need to maximize every opportunity to catch up to their peers in mainstream schools. This places the emphasis on developing autonomous learners who will acquire both cognitive and metacognitive skills. This research only covers a fraction of the lessons taught over the year, yet the videos

provide evidence to show that the learners have been actively engaged and developed self-confidence in their thinking and learning. Ms G. has carefully followed the guidelines made explicit in the RAVE-O and the IE programmes and has also incorporated a number of skills and strategies taught in these programmes in her own lessons. These skills and strategies have become an important aspect of Ms G's teaching practice.

4.2.4. Comparative Analysis

It is interesting to note that the three types of mediation Feuerstein foregrounds as essential for a mediated learning experience to take place are prominent in RAVE-O lessons but also feature as important in the IE and THEME lessons (Figure 4.4). The personal philosophy expressed by Ms G is to promote learning despite genetic conditions or degrees of dysfunction (Interview 2/12/2011). This graph paints a picture of a competent and experienced teacher and although Mediation of Intentionality and Reciprocity is low in frequency, one could argue that Ms G usually communicates her intended aims only once, at the start of each lesson. The videos (RAVE-O 2/102011, IE 2/112011,THEME 25/11/2011) show evidence of Ms G expressing the intention to engage the learners and the willingness of the learners to be responsive, attentive and available for learning to take place (Mentis et al., 2008). The IE lessons show a high frequency of Mediation of Competence and Self-Regulation. This could be because teaching learners to think and encouraging them to explain how they completed tasks requires intense discussion and respectful turn taking. By comparison, the lower frequency of mediation during the THEME lessons illustrates the advantage of using structured, well researched programmes. Although these may take more time for discussion and dialogue the depth of learning may result in acquiring strategies. The use of structured cognitive programmes guides a teacher through the critical issues and has benefits in teaching reading and thinking.

Figure 4.4: Frequency of types of mediation of RAVE-O, IE and THEME lessons



Mediation of Meaning features prominently across all lessons observed as it is the interaction that develops understanding of language, cultural values and explains the reasons why certain subject, skills or routines need to be learnt. According to Feuerstein (1991) there are several modalities through which mediation can occur but language is the most efficient (see section 4.3). Both Feuerstein (1980) and Vygotsky (cited in Howie, 2011) acknowledge that language in relation to thought develops higher mental processes that enable the ability to generalise and engage in abstract relational thinking. However, the high frequency of Mediation of Meaning in the RAVE-O lessons can be attributed to the emphasis placed on understanding the meanings of words and word segments. According to Wolf (2008) when children learn more about the meanings of words their semantic and pragmatic knowledge is developed. Mediation of Meaning is important within the context of RAVE-O as it empowers the learners with knowledge and insight of how language is structured. Ms G appears to have been influenced by the IE and RAVE-O programmes as she engages in Mediation of Meaning across all three types of lessons observed, stressing the relevance of the specific content. Teaching vocabulary is a critical aspect of both RAVE-O and IE. In the interview (2/12/2011), Ms G comments on the learners' acquisition of vocabulary and their newly acquired knowledge of words.

Researcher: 'Would you say that teaching vocabulary is what ultimately improves comprehension and understanding in both reading and thinking?'

Ms G: Definitely, vocabulary is important but what RAVE-O has also taught me is that it's not on its own you've got to address the vocabulary but you've got to address the orthography and morphology of words and I think it's that part for me that's made the biggest difference. For me when the children spoke about those things it was the biggest difference from any other lessons so when they spoke about, 'so does y make it or give it a characteristic or 'ed' is past tense or there is a thing and mine's a verb'. You know you've always had children who understand vocabulary but rarely have we ever talked about orthography.

Ms G's comments show how both the teacher and the learners have gained knowledge and a deeper understanding of how language is constructed from the RAVE-O intervention.

Mediation of Transcendence features as a shared and important type of mediation across all lessons observed as it enables the learners to generalise a concept or skill to other areas. Ms G chooses the theme of detectives specifically because the idea of detectives is utilised in the RAVE-O lessons with the purpose of searching for word clues and in IE for systematically searching for the correct dots to form the figures. This planning on the part of Ms G allows for reinforcement of generalisations across literacy, numeracy and real life situations.

The other types of mediation which reflect Ms G's teaching and dominate across all lessons observed are Self-Regulation, Competence and Challenge. These are all linked to the learner's sense of self. The aim of mediation according to Feuerstein's (2011) theory is to empower the learners, stressing the importance of understanding oneself. For Feuerstein, the notion of self-actualisation of the human mind means working through mediated learning experiences to set the stage for cognitive modifiability (Feuerstein 1991).

Mediation of Competence can be linked to the Mediation of Challenge. In the IE lessons the activities require careful monitoring as well as precision and accuracy. Feuerstein (1991) instructs the teacher to be a role model of Self-Regulation and Control of Behaviour by reflecting on learners' answers before responding. Asking learners to plan and organise their work, prioritizing it according to submission dates, and reminding learners to check their

work cues the learners to Self-Regulate. Adapting individual behaviour to the circumstance is vital in a dynamic environment and forms a critical component of the IE programme (Feuerstein et al.,1991). Ms G allows the learners to complete their answers before commenting, thus role modelling Self-Regulation and Control of Behaviour (IE lesson video,2/11/2011).

Mediation of Challenge plays a critical role in motivating learners to extend their potential by shifting to the 'Zone of Proximal Development' (Vygotsky, cited in Feuerstein 1991:125). Feuerstein, Rand & Rynders, states the importance of providing learners with challenging opportunities to extend them beyond their current level of functioning (Mentis et al., 2008).The motivational aspects of both RAVE-O and IE are an important factor in engaging learners to learn. This is not as evident in the THEME lessons as Ms G may not have considered all the criteria of mediation for each lesson.

The frequency of Mediation reinforces the belief in modifiability. This is essential in developing effective and diverse learning. Mediators need to work actively to create a belief in each learner, that he or she has the capacity to change. Mrs G demonstrated active modification and serves as a positive role model for others in the profession. The classroom observed was continually buzzing, with learners engaged in discussion. Vygotsky and Feuerstein both believe that mediation is the heart of learning and it is essential for effective learning to take place. This aspect is confirmed by Ms G. in her interview

> *Researcher: Do you feel that the Criteria of Mediation has taught you to teach or be a better teacher?*
>
> *Ms G:I think that's the most important thing, so somebody else who may have been teaching RAVE-O and may have been teaching IE but not mediating the concepts, not to say that I did, but somebody who gave them without focussing on the mediation or wasn't skilled at mediating. I don't think that those programmes would have had the same impact. I think it's the mediation that the teacher brings to it and her ability to mediate that makes those programmes effective.* (Interview 2/12/2011)

The fact that mediation occurs more frequently in the scripted programmes than in the THEME lessons, opens the debate about whether or not giving teachers scripted lessons is a

good idea. In this research study the depth and design of both RAVE-O and IE set the stage for the teacher and provide opportunities for mediation to take place. In the reflective interview with Ms G she admits that for her, following a scripted lesson format was difficult.

> *Researcher: Are there any aspects of the programme you would change?*
>
> *Ms G: For my personality, the script of the programme, I didn't focus on it enough, I did read it and use what's in it. But one of my colleagues is implementing it, she is a by the book girl and what she is doing is she's divided the lessons. …….so definitely it should be followed more closely.* (Interview 2/12/2011)

However, in the preparation of her lessons reading through the script heightened her awareness of critical issues in the lesson, which in turn led to a higher level of mediation.

4.3 Language used by the teacher to Mediate Learning during RAVE-O, IE and THEME lessons.

This section provides a detailed description to answer the research question, 'How does the teacher use language to mediate learning?' Important aspects of 'classroom talk' are illustrated by excerpts from the lesson transcripts. Due to the limitations of this research report, only five of the most frequently observed types of mediation, Meaning, Transcendence, Self-Regulation, Competence and Challenge will be discussed.

The role of language in establishing a positive learning environment cannot be underestimated. It is essential for teachers to carefully consider the choice of words used for teaching and reflection in response to learner's behaviour. Vygotsky, (cited in Howie 2011:146) claims '[t]hat knowledge is constructed as a result of dialogue in the learning environment. Understanding the meaning of language and concepts occurs as a result of active learning where teacher and learners together are engaged in dialogue.' The role played by the teacher in assisting learners to shift from current knowledge and skills to the acquisition of new learning needs to be emphasised at all stages in the learning process (Feuerstein, 1991 Howie, 2011). Effective teaching and learning occurs through collaborative active engagement, where learners are encouraged to construct their own meaning. Moonsammy (2011) states that verbal explanations result in developing better learning processes because the exchanges between the teacher and learner are reciprocal.

Difficulties in understanding can be identified by the teacher who intervenes giving additional support. The additional support provided can be in the form of a definition, an example, a question or a strategy. An experienced teacher senses the learner's uncertainty and selects the most appropriate response to ensure learning occurs. Moonsammy (2011), claims that the desired learning outcome is dependent on the teacher's response to learners. Feuerstein (1991) believes that the teacher plays a pivotal role in assisting learners to acquire new knowledge, develop thinking and apply learning processes to different contexts. It is therefore essential to understand the language of instruction used by the teacher, as well as how learners receive instruction to ensure effective learning occurs.

4.3.1 Language used to Mediate Meaning

The findings of this research highlight the importance of dialogue in Mediating Meaning in the classroom. Mediation of Meaning can occur in a variety of different ways: providing definitions, giving instructional explanations, citing examples and using multimodal methods such as drawing, pictures or dramatization. I have used these categories to identify and analyse the ways in which Ms. G uses language to Mediate Meaning for the children. Table 4.1. shows some excerpts from lesson transcripts to illustrate how Ms G Mediates Meaning by using language to define concepts.

Table 4.1: Mediation of Meaning by providing Definitions

RAVE-O lesson 23/10 Discussion of core word 'Club'	*Steven: A club is like a big place where lots of people go.* ***Ms G: A club is like a big place where lots of people go, you described that really well.***
IE lesson 7/11 Organisation of Dots	***Ms G: These are vertical lines because they going up and down.***
THEME lesson 17/11 Comprehension	***Ms G: "Cutting class" means bunking the lesson.***

In the RAVE-O example Ms G repeats the learner's definition thus modelling a strategy for internalising learning. Joseph (2006) points out the importance of teachers modelling and demonstrating cognitive strategies as an effective method for metacognitive instruction.

Ms G also repeats the phrase, 'it is like'. This simple strategy is used to cue the learners when teaching comparisons. Comparison is taught to develop the learner's understanding of similarities and differences and ultimately extends to the appreciation of literacy concepts such as simile and metaphor (Feuerstein, 1995). It is interesting to note in the THEME lesson example, that Ms G uses the colloquialism, 'bunking' to convey meaning to the learners, this word is easier than using a word like 'truant'. The choice of simple vocabulary, the use of colloquial speech or slang is easily understood as the kind of language learners in this class use. In order to establish clear definitions, brief statements are made. This is illustrated in the IE example, where Ms G uses a brief definition to explain terminology, *'These are vertical lines because they going up and down'.* This is intentional as learners with auditory processing difficulties can only attend to the short sentences and process the meaning conveyed. Ms G also regularly asked learners to define words for their peers, in this way she Mediates Competence and encourages learners to participate in the dialogue (Wolf, 2006).

Table 4. 2. presents excerpts from lesson transcripts to show how Ms G uses the language of 'Instructional Explanations' to Mediate precision and accuracy of language in order to clarify concepts.

Table 4.2: Excerpts from transcripts to illustrate: Mediation of Meaning by using Instructional Explanations.

RAVE-O lesson 23/10 Discussion of core words	*Doron: What about the house of clubs?* ***Ms G: Yes, Okay, he's talking about, in fact if you reverse your words a little you get… house of clubs like in cards. Oh ya, remember we talked about that, and here's the queen of clubs, but you can have the one of clubs, the two of clubs…okay.***
IE lesson 7/11 Organisation of Dots	***Ms G: Tell me, these lines, when there is two that are the same distance apart and they can go on in that way. Do you remember? Starts with a P.*** *Jake: Para, paragraph, paragraph, parallel.* ***Ms G: Parallel lines. Yes those are parallel lines, because they are the same distance apart. So if we are looking for this shape, we know we've got four straight lines, we've got two parallel lines, and in fact that line is parallel to this line as well. We've got three right angles and we've got our curved section.***
THEME lesson 17/11 Comprehension ' Case of the missing roses'	***Ms G: What does it mean to replant the roses?*** *Doron: Dig them up and put them back again.* ***Ms G: Replant the roses. Look at the word replant, 're' is the starter, plant is the root word.*** ***So 're' means do it again***

Wittwer and Renkl (2008:53) describe instructional explanations as, '[a]n inquiry to gain more information, which may result in understanding or further questions'. In the example from the RAVE-O lesson, Ms G uses an instructional explanation to show how changing the sequence of the words in a sentence can change the meaning, *'a club house'* is not the same as '*a house of clubs'* (RAVE-O lesson23/10/2011). To develop the pragmatics and semantics of language learners need to be assisted with explanations from the teacher. Discussing how the sequence of words has changed the meaning develops the learner's knowledge of how words work and what they mean.

In the IE example, where the learner is searching for the correct word, *'Para, paragraph, paragraph and parallel'* Jake repeats the prefix 'para' a number of times to cue his process of word retrieval. Ms G gives the learner time to think, and process words. Being silent in the classroom, role models for learners the value of taking time to get through the thinking before responding. (It also links to the Mediation of Self-Regulation). What is also interesting in this example is how the learner uses semantic and morphological understanding of words. One could argue that the influence of RAVE-O instruction is evident and has provided the learner with an understanding of language structures as well as cognitive strategies.

Mediation of Meaning through instructional explanations also occurs during the IE example when Ms G gives an explanation providing the learners with the correct mathematical terminology and an explanation of specific geometric terms, *'Yes those are parallel lines because they are the same distance apart*'. The teacher provides clarity to ensure understanding of parallel lines by using instructional explanations and extends the learners vocabulary.

In the THEME lesson, Ms G says *'Look at the word replant, 're' is the starter, plant is the root word'.* She illustrates the purpose of Mediating Meaning by instructional explanation. Ms G explains that this prefix has a specific meaning. Although this occurs in the THEME lesson it illustrates how the teacher has transcended from the RAVE-O lesson by making the morpheme 're' explicit . She reminds the learners about root or 'core words'. Directing the learner's attention to this prefix enables learners to see how language is constructed (Wolf, 2006). These verbal exchanges develop a cognitive understanding of syntax, and as stated

by Moonsammy (2011) the active participation in dialogue helps to develop deeper meaning. This strategy was useful to both Henry and Doron who commented:

Researcher: Are you a good reader?

Henry: I'm not really a good reader. If I get stuck with a word I read the first half, then I read the second half and join it together.

Researcher: Do you think RAVE-O has helped you to improve your reading?

Doron: Definitely, Before I knew tap but I didn't know the 'ing' part. Hey that's tapping, who knew! It helped me read faster through the RAN charts. (Interview 25/11/ 2011)

Table 4.3 provides excerpts to illustrate how Ms G uses examples to illustrate or elaborate on new examples.

Table 4.3: Mediation of Meaning by providing Examples

RAVE-O lesson 23/10 Discussion of core word, 'Club'	***Ms G: That's the one, the place where you gather, okay it can be a sports club, it can be a children's club, it can be a scouts club, it can be a church club, it can be anything like that , okay so we have spoken about that one, and we've spoken about our golf club. The instrument we use to hit a golf ball when we are playing on the green.*** *Henry: He is clubbing his friend with a club.* ***Ms G: You can't say clubbing in that way, you mean clobbering. But I'll tell you something when I was young, we used to go to dance clubs and we would say to our friends, 'let's go clubbing tonight and that meant going to different night clubs. So, is clubbing a noun or a verb?***
IE lesson 7/11 Organisation of Dots	***Ms G: Frames in this instance organise the dots but let's think of another kind of frame for example around a picture. Frames improve the look. Let's pretend this is my picture, if I frame it, I put something around the edge that actually makes your eyes stay in the picture.***
THEME lesson 17/11 Comprehension ' Case of the missing roses'	***Ms G: Can you think of other 're' words?*** *Learners: Repeat, rewrite, relay, redo, recycle.* ***Ms G: Yes! Repeat means say it again, relay means to run the distance again, redo means to do it again, recycle means to use it again….***

For instruction to be applicable and the transfer of learning to be effective, it is important for the teacher to give appropriate and relevant examples. Ms G rephrases different examples of *'Clubs'* generated by the learners. These examples highlight the diversity among learners and shows that they have grasped the RAVE-O concept of 'Many interesting Connections' but it does not necessarily ensure a clear understanding of the word 'club'. Moonsammy (2011) indicates the importance of teachers, identifying the need for elaboration and immediately providing examples to ensure learning occurs. The challenge lies in providing sound examples on the spur of the moment. Henry's use of 'clubbing is in fact correct. It may also have been more relevant to talk about the 'Art Club' which some of the learners in this class attend on Friday afternoons. This would be a more relevant example. However, in the same lesson Ms G discusses the verb 'clubbing' (RAVE-O example 2), *'we would say to our friends, let's go clubbing tonight and that meant going to different night clubs. So is clubbing a noun or a verb?'* This example given by Ms G invites further elaboration of semantics, and the syntactics of language. By adding the 'Ender Bender' 'ing' Ms G shows the learners, the meaning of the word has changed. She also asks a question cueing the learners to think about how the word is used.

The content of the lesson influences the types of examples used. In the RAVE-O lessons terms such as, 'Core Words', Ender Benders', nouns and verbs are of importance and the structure of the language, for example; 'club can be used as a noun or a verb' is emphasised. This cognitive approach advocated in the RAVE-O programme is carried over to the theme lesson where Ms G gives an example, '*Recycle means to use again'*. Developing rapid recognition of morphemes assists learners with reading difficulties to recognise words in small chunks, this contributes to developing reading fluency and comprehension. According to Wolf, (2006) morphological development not only adds to the meanings of words and their grammatical function but also assists learners in easy recognition of common visual orthographic patterns. The term, *'frame'* in the IE lesson is used more contextually and the meaning is elaborated and defined as an area in which the dots are contained. This is relevant as it shows how the context in which the word is used may change the meaning, thus providing learners with syntactic and semantic knowledge about the word. In RAVE-O terms this is called 'developing rich semantic neighbourhoods'.

This use of 'many interesting meanings' advocated in the RAVE-O programme is carried over to the THEME lesson. Here Ms G explains the meaning and then extends this explanation, by relating the context and generating additional everyday examples *'Yes! Repeat means say it again, relay means to run the distance again, redo means to do it again, recycle means to use it again.'*

Table 4. 4. Presents descriptions of additional strategies used by Ms G to convey meaning. 'Multimodal methods' refer to a range of other modes through which meaning is communicated.

Table 4.4: Excerpts from transcripts to illustrate: Mediation of Meaning using Multimodal methods

RAVE-O lesson 3/11 Discussion of core word, 'Club'.	*Jake: A club which you use to hit someone. And what about that bat club, you know that bat, you called it a club.* ***Ms G: Yes, so that's the one which you use when you hit someone, here look here (***she points at the picture of the bat/club***) here's a club that I can hit someone with.***
IE lesson 27/9 Organisation of Dots	***Ms G: What is a frame used for?*** *Sipho: To cover a picture* ***Ms G: So if I put a frame on top of something to cover it,(***Ms G picks up a cardboard cut out frame and places it on top of the picture covering the detail so it can not easily be seen***) will I be able to see my beautiful picture?***
THEME lesson 17/11 Comprehension 'Case of the missing Roses'	***Ms G: So he says the crime could've happened anywhere between nine and ten. Cause when he looked out at ten the roses had been dug up. I'll draw clocks showing the times.*** Ms G draws two clocks on the board, one showing nine o clock and the other showing ten o clock.

The examples in Table 4.4 are all aligned with the Piagetian theory of Intellectual Development and show the use of Multimodal methods to ensure meaning is constructed. In the RAVE-O example, Ms G points at the picture of the bat/club***)*** *'here's a club that I can hit someone with.'* The visual image facilitates accurate interpretation and clear communication. Understanding of vocabulary is an explicit aim of the RAVE-O programme as 'image cards' are provided for the core words (Wolf, 2011). These picture cards illustrate the 'Many Interesting Meanings' which develop the semantic knowledge of words (Wolf,

2006). The use of pictures as a semi-concrete method of constructing knowledge are aligned with the fourth stage of development described in Piaget's (1968) theory of cognitive development. Pictures may be helpful for learners who are moving from the concrete operational stage which requires manipulation of concrete objects to the formal operational stage which requires comprehension of abstraction, intuitive thinking and logical reasoning (Flanagan, 2008).

In the IE example, when Ms G says *'So if I put the frame on top of something to cover it, will I be able to see my beautiful picture?'* she wants to ensure accurate use of prepositions. To facilitate accurate communication she places a cardboard cut-out frame on top of the picture. By, asking the question Ms G directs Sipho to discovering for himself that he used the incorrect preposition. The use of concrete examples to demonstrate accurate expression of terms is important. Concrete apparatus and demonstration accommodate personal discovery. Initially, Sipho said, '*a frame covers a picture,*' but by demonstrating with a concrete frame Ms G shows Sipho that a frame borders or surrounds a picture. The use of a physical cut-out frame accommodates learners who may still be in the concrete operational or third stage of development described by Piaget (Moonsammy, 2011). Multimodal methods are critical in situations where learners experience language difficulties, pictures, drawings and dramatization make learning accessible to learners with specific learning styles.

In the THEME example Ms G is discussing the 'time of the crime' Time is an abstract concept which is difficult for learners to grasp. Ms G draws two clocks on the board to show the different times being discussed in the text. She is again reinforcing the cognitive strategy of Comparison by providing an opportunity for the learners to compare the drawings. Observing the similarities and differences on the clock faces, facilitates deeper understanding of time. This is in accordance with the Piagetian semi-concrete stage of development describing learners who have not yet reached the developmental level of abstraction (Moonsammy, 2011). Ms G is aware of the learners' level of development as well as their linguistic ability. She makes a conscious effort to supplement the process of learning with concrete aids when necessary.

These excerpts provide evidence of how Ms G varies her use of language to suit both the lesson content and the needs of the learners to ensure meaning is constructed.

Ms G uses Instructional Explanations, Definitions, Examples and Multimodal methods to Mediate Meaning. In the interview, one of the learners mentions how much he learnt about meanings of words in RAVE-O.

> *Researcher: How do you feel about the RAVE-O lessons?*
>
> *Doron: Um they taught me different meanings and um, they also taught me what Ender Benders are and what and how these two like closing a word like you know trapping and you know like tapping. Doron said: I learnt what there is to a word, I learnt about rime, Fat Rats, MICS, MIMS, and RAVE-O makes your vocabulary bigger.* (Interview 3/2/2012)

Erikson (2007) claims that this process of constructing knowledge facilitates memory and motivation in learners. If teachers place thinking at the centre of all that happens in school learners will understand, be motivated and achieve a true education (Perkins, 1991). It can be argued that effective instruction facilitates memory and transfer of learning (Moonsammy, 2011).

If learners can understand and apply what they have learnt at school, then, we as teachers have been effective mediators. Mediation of Transfer equips learners to participate fully in a society which is discussed in the next section.

4.3.2. Language used to Mediate Transcendence

Feuerstein (1991:265) explains Mediation of Transcendence as, 'Behaviour directed towards the expansion of a child's cognitive awareness beyond what is necessary to satisfy the immediate need'. Mediation of Transcendence assists learners in linking objects, events, or methods. It can be expressed by explicitly showing learners how and why the current topic or ideas being discussed are related to other events, situations or activities. Finding or making the connections from one lesson and relating the content, skills or concepts to other lessons or real life situations help to develop a deeper understanding of how things are interrelated. Both Feuerstein (1991) and Wolf (2006) advocate the same strategy of linking the learning that takes place in the classroom to the broader context. But, Greenberg (2000)

explains that transfer does not happen automatically. The mediator needs to assist children in 'bridging' learning to real life situations (Greenberg, 2000).

Mediation of Transcendence also takes place when the teacher asks 'how' or 'why' questions. The ultimate aim of posing questions is that learners will eventually internalise these thought processes and ask the questions themselves (Fisher, 2008).

Table 4.5: Language used to Mediate Transcendence

RAVE- O lesson 22/10 Sharing 'Sightings'	At the beginning of every RAVE-O lesson the learners are asked to share 'sightings' they may have had. ***Ms G: When we are 'Word Detectives' we have sightings. Now have you had any sightings lately about the words we've been doing last week?*** *Doug: If we in a car and the word was 'stand' and we saw a person stand on the road, that would be a sighting.*
IE lesson 2/11 Organisation of Dots	At the start of IE lesson, Ms G asks learners which 'Cognet Tools' they think they may need to complete the activity. ***Ms G: Can you tell us which 'Cognet Tool' we could use to complete this activity?*** *Doron : We need thought integration cause when we draw a square we can't just draw a line we have to think where it goes to make a square.* ***Ms G: Also you have to think about what you learnt in Maths, what a square is and use it now. So you have to integrate your thoughts from different lessons and your lives.***
THEME- lesson 20/10 Literacy Word building	The learners have cut up and coloured in cards with different letter groups on them. ***Ms G: What do you think is going to be a good strategy to start with?*** *Steven: You separate them* *Sipho: You put them into groups so we can see.* ***Ms G: That's right! We group them by colour and organise them into, Harder Starters, Rhyme families and then into Ender Benders and then we have columns.***

In Table 4.5 Ms G makes a statement,' *When we are 'Word Detectives' we have sightings. Now have you had any sightings lately about the words we've been doing last week?*' The

word ‘sighting’ in the context of RAVE-O refers to the ‘Many Interesting Connections’. Ms G uses a statement of intent to orientate the learners as to what is expected. The IE lesson is phrased in the form of a question asking for application of a specific *Cognet Tool*. By asking a question Ms G activates the learners’ thinking.

‘Cognet Tools’ referred to by Miss G are the cognitive strategies described in the Cognitive Enrichment Advantage Handbook written by Katherine Greenberg, this programme is followed on a daily basis as part of a whole school thinking skills intervention.

Both the RAVE-O and IE examples accommodate the individuality and diversity of the learners, Saying *‘Have you had any sightings’,* and *‘can you tell us’*, allows the learners an opportunity to share from their own life experiences and allows them to use expressive language to communicate their thoughts. Asking which *Cognet Tools* the learners will use implies that there are a number of options to choose from and alternatives need to be explored. This cues the learners to think and process information before selecting an appropriate response to the question.

Mediation of Transcendence for application also occurs in the second example of the I E lesson when Ms G emphasises the naming of shapes to understand and express clear definitions. She explicitly prompts the learners to think about, ‘*what a square is?’* She is clear in telling the learners that transfer needs to take place *‘you have to integrate your thoughts from different lessons and your lives’.* By reminding the learners of the concepts and vocabulary used in the Mathematics lesson, integration across the curriculum is taking place. The excerpt from the THEME lesson illustrates spontaneous transfer from both the IE and the RAVE-O lessons. The ‘morphology’ concept learnt in RAVE-O and the ‘organisation’ of arranging word parts comes from the Organisation of Dots. In all three examples Ms G is encouraging the learners to think about possibilities. Their thinking involves comparative behaviour and evaluation before answering the question. By asking these questions Ms G promotes exploration of alternatives. According to Fisher (1998) one of the characteristics of skilful thinking is exploration. This is important because too many classroom teachers ask reduced questions which only have one answer. Ms G’s uses of questions imply an awareness that learners can have diverse responses and she makes space for these to be

explored. They have the ability to draw on their own experiences in order to respond meaningfully to the questions:

Researcher: Did you feel the IE programme had value?

Ms G: In one of our interviews Alan said, like in IE in RAVE-Owe need to make connections, so they spontaneously started to link the kind of things they were, link the two programmes and of course extrapolate that to other subjects.

(Interview 2/12/2011)

Mediation of Transcendence is evident in the interview with Devon, he comments on the IE lessons (25/11/2011):

Researcher: What have you learnt about Organisation, by doing the dots?

Devon: Like doing things right, organising, like putting them in the right place…. I like everything about IE because all the shapes turn and also when they become harder it gets confusing but I really like it. I actually organise something very quick. I organised my sister's dummies… You can organise your clothes and your colours… and your stationery.

Devon shows that he has internalised the concept of Organisation and he can apply it in different situations, this shows that Transcendence on a practical level of application has occurred. Jake adds a different perspective:

Researcher: Did you think IE helped you?

Jake: In real life you know, when you have a business and someone steals from you, you will need IE to help you see what's wrong,…. You see a pattern, IE helps you to plan. (Interview 29 /11/2011)

Jake has internalised the strategy for problem solving and can see the value of transferring what has been learnt in IE to real life situations.

Developing thinking through dialogue requires 'turn-taking' and an understanding of socially appropriate behaviour. For dialogue to be effective, all participants need to exercise a form of discipline and self-control. This is discussed in the following section.

4.3.3 Language used to Mediate Self-Regulation and Control of Behaviour.

One of the key factors in learning is the level of accountability, from both teachers and learners. Taking responsibility for one's own learning, self-monitoring and self-regulation of behaviour involves teaching learners to think about their 'metacognition'. This involves selecting appropriate responses to specific situations. By restraining impulsivity, engaging systematically or breaking down complex problems to smaller manageable components the learners demonstrate Self-Regulation and Control of Behaviour but this requires Ms G'S use of language to help them control their behaviour.

Table 4.6: Excerpts of language used to Mediate Self-Regulation

RAVE-O lesson 7/11/2011 Discussion - Meanings of new core words.	***Ms G : What does deck mean?*** ***Ms G: I want you to think about it for a minute I am not going to ask you straight away, Put your hands down I want you to think about what it means, just giving everyone a chance to think*** Waits about a minute ***Is your hand up, Jake. Have you had a chance to think what deck means ?***
IE lesson 25/10/2011 Organisation of Dot's	***Ms G*: *Why do we need self-regulation while we doing this?*** *Jake: Because if you talking to your friend while you doing the worksheet you won't be concentrating and then you draw the wrong shape.* ***Ms G Exactly and sometimes you can be drawing the right shape and you get distracted for a second and you joining this dot and that dot and then suddenly you look there (***looks away out of the window) ***and you've joined it to that dot and then you don't realise you have made a mistake.***
THEME lesson 7/11 Investigating A Crime Scene	***Ms G: A detective has to be good at solving problems but before, you become a good problem solver what do you have to do?*** *Owen You have to try and think what you need to do.* ***Ms G: You have to think but before you can solve a problem you***

	have to know. *Alan: He needs to put the evidence together.* ***Ms G: But before he can solve the problem he has to know what the problem is, don't you.***

Lesson excerpts in Table 4.6 show Ms G explicitly discussing the need for and ways in which to manage Self-Regulation and Control of Behaviour. Self-Regulation is mediated in the RAVE-O example when Ms G takes on the role of the responsible teacher manager. She insists that the learners take time to think before responding to her answer. Developing the habit of thinking before impulsively shouting out the first answer that comes to mind is a primary focus of the IE programme. Feuerstein's motto for the IE programme 'Just a moment let me think' has two goals. The first is to ensure learners take time to, 'gather all the information,' (Feuerstein & Hoffman, 1995: 36) at this stage the learners ask themselves if they have seen all the details necessary to solve the problem. The second is an evaluation or assessment of the problem or situation, where the learners think about and ask themselves how they are going to respond to the question. Ms G attempts to develop reflective thinking habits, developing a classroom culture of patience (Feuerstein, 1991).

As this research took place in the later part of the year, I observed how both the teacher and the learners had established a good rapport, where mutual respect and patience had become the 'norm'. By instructing the learners to '*Put your hands down I want you to think about what it means, just giving everyone a chance to think*' Ms G explicitly tells the learners what to do, but she also gives them the reason why. They are more likely to comply with her request as they now know the reason for her control of their behaviour. Feuerstein (1991) would argue that by giving learners time to think, the teacher is setting the learners up for success. This is also an act of Mediating Competence, as the time to think helps learners process their verbal responses to the questions.

In the IE excerpt Ms G explicitly asks the learners for reasons for using a cognitive strategy. The use of a question places the responsibility for Self-Regulation on the learners. They have to assess and evaluate for themselves why this would be necessary. One could claim that in the RAVE-O excerpt Ms G is the external regulator asking for learners to take responsibility but in the IE example the focus has shifted and been personalised and Jake's response

indicates this when he realises how talking can affect his concentration and result in mistakes. Jake has thought about the situation and come up with his own personal reasons. He is aware of the behaviour he needs to exercise, thus taking responsibility for his future behaviour. Ms G reinforces what Jake said by giving the class an example describing what could 'go wrong' if they do not Self-Regulate. By developing this 'Metacognitive strategy', Jake is empowered to become independent in his learning and is being equipped with strategies for life (Howie, 2011). In the THEME excerpt Ms G mediates Self-Regulation and Control of Behaviour in a slightly different way. Ms G directly asks the learners '*what do you have to do?*' This enquiry prompts the learners to think through their responses. Directing the learners to think and give reasons. She instructs the learners to work through a process of exploration in order to find a solution to the problem. By using an analogy of a detective, Ms G illustrates for the learners the importance of Self-Regulation*. 'A detective has to be good at solving problems but before, you become a good problem solver what do you have to do?* She has chosen to use a detective (a character from RAVE-O) as someone adept at scrutinising the evidence in order to solve problems. Ms G addresses the learners as if they are the detectives. Ms G's method of direct instructions to '*think*' and '*problem solve*' encourages a deeper level of engagement. The children also enjoyed acting as detectives.

4.3.4 Language used to Mediate Competence

Mediation of Competence occurs when a mediator assists the learner in achieving success. This sense of accomplishment empowers the learner, thus developing a positive attitude and building their self-confidence (Feuerstein, 1991). Learners with a positive Feeling of Competence are more resilient to failure and have the ability to 'bounce back' from negative experiences. Instilling a sense of Competence in learners is achieved by, affirming learners' responses, selecting materials suitable for the learners' level and providing learners with strategies that result in successful learning (Mentis et al., 2008).

Table 4.7: Language used to Mediate Feelings of Competence

RAVE-O lesson 9 /10 Many Interesting Connections	The learners have thought of and written down on pieces of paper, many interesting connections to the word 'Plot'. They are being called on to place their suggestions on the word web board. ***Ms G: Henry, let's see yours , Planning, he remembered 'Double Trouble' Well done, Plotted Okay, so we've got***

	plotted already, Okay it means you did already plot something, <u>Good!</u> ***Ms G: Okay, let's see yours Owen.*** *Owen:… Map* ***Ms G Okay! So we can put map over there <u>Good Boy!</u>*** ***Book! <u>Excellent</u> we don't have book so <u>Well Done!</u>***
IE lesson 2/11 Organisation of Dots	***Ms G: Why do we need Precision and Accuracy when we doing IE*** *Devon: We need precision and accuracy cause let's say you doing like a rectangle and you draw an enormous square, so we need precision and accuracy or we not gonna get it right.* ***Ms G: <u>Exactly</u> Because sometimes the shapes in those dots sometimes there's a rectangle and sometimes there's a slightly fatter rectangle that you can make and although it's a rectangle it's not the exact size is it?*** *Doron: It 's hard cause we need to like Okay say, we find a shape and but it's just bigger, its hard because, it's hard because we can actually make the shape it's just too big so we draw it smaller.* ***Ms G: <u>Exactly</u>***
THEME lesson 25/11 Crime Scene	*Jake: He needs to see things like footprint.* ***Ms G: What does a detective have to be aware of what's going on around him, he needs to notice all the little things, like he notices footprints like other people, they don't notice things but the detective he needs to notice that there is somebody following him. He needs to look at all the small details and be aware of what's going on. <u>GOOD ONE!</u>*** ***H+O In your group what did you notice, what characteristic did you come up with? I saw you and your partner talking the most so I thought you would have good ideas.*** *Owen: He has to be good at trying to solve the problem* ***Ms G: <u>Brilliant! that's good</u> , I was hoping someone was going to say that! He has to be a good problem solver an in order to be a good problem solver, what do you have to do before you can solve the problem.***

From the three lesson excerpts shown in Table 4.7 it is obvious that Ms G frequently responds to learners with short positive affirmations. In the excerpt from the RAVE-O lesson she responded to the learners with '*Good!' 'Good Boy!' 'Well Done! Excellent!'* and in the IE lesson with '*Exactly!'* These short positive affirmations, serve to praise the learners for their responses and develops a Feeling of Competence. In the THEME excerpt Ms G extends her

praise acknowledging and personalising the response, *Brilliant! That's good, I was hoping someone was going to say that! He has to be a good problem solver, and in order to be a good problem solver, what do you have to do before you can solve the problem*?' It is interesting to see that Ms G frequently rephrases the learner's responses. This helps other learners in the group who did not quite hear or understand the response to follow the discussion. An example of this can be seen in the THEME lesson where, Jake makes the comment, '*He needs to see things like footprint.'* Ms G rephrases this changing it to a question form to guide the learners' thinking. She asks, '*What does a detective have to be aware of?*' and then lists the possibilities, *'what's going on around him, he needs to notice all the little things, like he notices footprints*.' Competence is also mediated, when Ms G prepares the learners with the necessary skills to complete a task. This can be seen in the excerpt from the IE lesson, *'Why do we need Precision and Accuracy when we doing IE?'* Here Ms G cues the learners to consider which strategies they need to follow prior to attempting the task. By asking the learners the question why, Ms G continually promotes logical thinking and reasoning.

4.3.5. Language used by the teacher to Mediate Challenge

Mediation of Challenge involves inspiring learners to persevere even when tasks are complex and difficult. Teachers are often too eager to help learners by providing the solution to the problem. This denies learners the opportunity to practice the necessary skills to succeed in mastering tasks. Slavin's (1987) concept of 'neverstreaming', relates to the process of inclusion where all learners are challenged to extend their learning potential is useful. The concept of inclusion challenges teachers and peer learners to find ways of supporting all learners to succeed. Feuerstein claims that changes must be made to accommodate learners who are different (Mentis et al, 2008). By creating challenging learning environments teachers enable learners to overcome their feelings of fear of the unknown. In this class the learners gain confidence in their abilities and this success leads to further successes.

Table 4.8: Excerpts of language used to Mediate Challenge

RAVE-O lesson 29/10 Working with words	The learners are all seated on the carpet in front of the Word Wall. On the Word Wall are a number of RAVE=O words previously discussed. ***Ms G: 'Let's look at the Wall and think which words tell us what a peacock may have?'***
IE lesson 11/10 Organisation of Dots	The learners are at their desks with the IE workbook open on a new page. ***Ms G: 'Today, I want you to name the shapes? The real name of the shapes. 'What name would you give to this shape?'***
THEME lesson 18/10 Spot the Evidence- A crime scene	The learners are seated at their desks, they each have a printed picture of a crime scene in front of them and the same picture is projected on the' Smartboard'. ***Ms G: 'What can we see in the Crime scene?'***

The questions posed by MS G in all the excerpts in Table 4.8 challenge the learners to engage with the activity: '*Let's look at the word wall and think which words tell us' 'What name would you give this shape?*' *'What can we see in the crime scene*?' Ms G is expressing her intention. She prompts the learners to think for themselves and find solutions to the problem. At the same time she is communicating an expectation of reciprocity from the learners. Mediation of Challenge in all the examples is supported through the use of stimulating and thought provoking materials. In the RAVE-O lesson curiosity is usually evoked by the challenge to think of many interesting meanings of words. The image cards stimulate curiosity in the learners. The IE pages have a specific design hidden in the dots, these pages often hook the learners', sense of intrinsic motivation and the learners express the desire to continue with the activity. In the interview, Henry said *'I just loved doing the dots'* (29/11/2011). Ms G stimulates the learners in the theme lesson by providing an illustration of a crime scene, in which the learners have to look for evidence. The level and modalities needed to complete each of the challenges in these three examples show a progression in complexity and I would argue that this challenges the diverse levels of learners in various lessons over the course of the day. In the RAVE-O lesson the learners are asked to identify from a given list of words which is a fairly easy and manageable task. In IE the learners have to analyse the shape, form an association and retrieve the precise word from memory. For learners at this school with language difficulties this is a challenge which requires the teacher to carefully talk the learners through the problem.

In the Theme lesson the learners have to survey the scene, collect information, apply analytic skills, make assumptions, express their ideas and substantiate their answer with supporting evidence. Teaching the learners cognitive strategies, of step-by-step problem solving in the IE lessons are entrenched. This can be used in other areas to break complex problems into smaller manageable parts.

The focus on language used by the teacher to mediate different criteria in various ways has highlighted the critical issue of 'Teacher Talk'. In Mediating Meaning, Ms G provided definitions, used instructional explanations, provided examples and used multi-modal methods to facilitate the construction of meaning. The kinds of questions used by the teacher in this case study were examined to show that although she encourages the learners to think about possibilities, she does not yet question the learners on a complex analytical level. The teacher's language used to Mediate Self-Regulation and Control of Behaviour plays an important role in structuring a 'culture of learning' in schools. The teacher in this case study shows how the structure and organisation in a class is based on the learners' understanding and application of mutual respect. The positive use of affirmations is discussed as a means of Mediation of Competence which builds the learners' self-esteem and belief system. The teacher's language used to Mediate Challenge is seen through the invitation from the teacher to the learner, who then responds that he has to apply thinking strategies in order to learn,

> *Researcher: What do you like about the IE lessons?*
>
> *Steven: You have to figure out for yourself, it takes a lot of thinking to do it.* (Interview 3/02/2012)

Ms G is a skilled mediator who demonstrates an ability to use all the Criteria of Mediation in her lessons. When teaching to develop a particular set of skills or knowledge the greater structure of the RAVE-O and IE programmes appear to reinforce particular types of mediation aligned to specific goals as opposed to the more general pattern of mediation from the THEME lessons. The benefits of working with programmes and the level of self-regulation they require is an aspect for further investigation.

Chapter 5: Conclusions

5.1 Introduction

This research study investigates the efficacy of teacher mediation in implementing two cognitive programmes in a Grade 3 class in a remedial school. The research takes the form of a case study of one teacher, Ms G, and describes and analyses the way in which she mediates meaning to learners in her class. The aim of these intervention programmes is to improve the children's literacy and thinking skills.

As educators in a remedial school we have a responsibility to select the most effective approaches to teaching and learning. The children at this school all experience learning difficulties and need to be taught through different modalities. Some learners are good at perceptual skills and do well in subjects like design, mathematics and technology but struggle to read and comprehend text. Others have an affinity for languages but are spatially challenged and experience difficulties in subjects such as mathematic and geography. In an attempt to meet these needs it was decided to implement these two programmes simultaneously in this class. The IE programme, which has a limited amount of text, is presented in a graphic, pictorial manner which appeals to learners who are not yet competent in reading. It aims to increase learners' vocabulary and teaches cognitive strategies that can be generalized to all areas of the curriculum as well as everyday life situations. As a literacy programme RAVE-O has a greater focus in language and thus is more likely to suit learners who have good verbal ability. But, because its origins lie in understanding reading and dyslexia it is designed in ways that make vocabulary learning and language structure explicit. Despite the different focuses of each programme they share a number of characteristics that are designed to develop children's engagement, meta-cognition and feelings of competence by providing a range of strategies with which children can make meaning.

Both IE and RAVE-O have been well researched, but this research study explores the use of these programmes specifically in the context of a remedial school. Very little work has been done on using such programmes in combination with each other despite the recent recognition that this may be valuable. This research contributes to this thinking.

This research then considered how Ms G mediates the RAVE-O and Instrumental Enrichment programmes to facilitate learning. The research focused specifically on identifying the types of mediation that were observed in nine video-taped lessons, three RAVE-O lessons, three IE lessons and three THEME lessons which integrated content and skills from the previous two programmes. It also considered the frequency and types of mediation the patterns that emerged from this as a way to begin to understand how these might promote effective thinking. Finally, the research considered the ways in which Ms G used language to mediate meaning to her class.

5.2 Summary of Findings

The twelve Criteria of Mediation developed by Feuerstein (1980) were used to frame the data analysis. A Mediated Learning Rating Scale (Skuy et al., 1991) was used to assess the frequency and type of mediation that occurred during RAVE-O, IE and THEME lessons. During the lessons the types of mediation that occurred were recorded. These were collated and categorised to show the most frequently used type of mediation used by the teacher. Patterns which emerged show the advantages that specific interaction has on mediating learning experiences.

All the Criteria of Mediation have value and the data indicates that Ms G used all types of mediation across the lessons. The most frequently observed types of mediation, Criteria of Mediation of Meaning, Transcendence, Self-Regulation, Competence and Challenge were effectively used by Ms G to promote the acquisition of thinking and literacy. Mediation of Meaning occurred most frequently. In the RAVE-O lessons this was characterised by Ms G explaining the meanings of words and providing the learners with different examples thus encouraging them to use the new vocabulary in relevant and different contexts. During RAVE-O lessons Ms G stimulates curiosity, encouraging learners to find out more about the topics and words being discussed. This is precisely what the RAVE-O programme advocates, linking the current concept to different situations. Similarly the IE activities mediate meaning through the use of novel and engaging activities. The reasons for understanding and developing cognitive skills are to extend learner's vocabulary and develop thinking skills such as organization which help structure 'mental sets.' The activities in the IE lessons are novel and engaging. The theme of detectives was intentionally selected by Ms G to

incorporate problem solving activities as she felt it would incorporate the skills advocated in both RAVE-O and IE.

Mediation of Transcendence is the second most frequent type of mediation which occurred. Mediation of Meaning and Transcendence is evident in the IE lessons through connecting the specific skill to other subjects or situations. The universality of certain labels is mediated in IE as a need for clear and accurate communication takes place. This is linked to the conservation of constancy in Mathematics and the constancy of letters in the alphabet, even though fonts may change. The tasks in IE were challenging for learners but there was a level of competence because mediation from the teacher was available. The RAVE-O programme incorporates Mediation of Transcendence through the concept of many interesting connections MICS. The learners make interesting connections to the core words taught. This develops the learners' semantic knowledge, linguistic concepts and ideas related to the specific word. The THEME lessons focused on reinforcing the skills of exploration and problem identification.

Mediation of Self-Regulation had the third highest frequency in RAVE-O lessons. This links to the 'Think Thrice' strategy directed to learners who do not comprehend what they are reading. In the recorded interview with the learners, (25/11/2011) Douglas mentions how he reads ahead and then thinks back. He has been able to apply contextual clues, by thinking back he is able to make the connection to the word he could not read. Mediation of Self-Regulation teaches learners to apply their thinking to the current activity. Mediation of Self-Regulation and Control of Behaviour had the second highest frequency, an average of 12 times in the IE lessons observed. Mediation of Self-Regulation requires restraint of impulsivity and working systematically to complete tasks successfully. Self-Regulation and Control of Behaviour is particularly relevant for learners in this class who have attention difficulties. From the video recorded lesson (25/10/2011) Jake mentions that if you don't concentrate you will make mistakes. Some of the learners grasped the importance of Self-Regulation.

The Mediation of Competence and Challenge are interrelated and visible in the RAVE-O lessons. The use of RAVE-O as an inclusive language programme is advocated as the vocabulary and linguistic complexity can be varied to meet the learners at their level. For

example, one learner may use the word stand in a simple sentence, 'I stand up to leave the room', whereas another learner uses stand in a more abstract context, 'I would like to stand in the student elections'. The dynamic approach in RAVE-O allows teachers and learners to have fun and play with language and words (interview 25/11/2011). The Instrumental Enrichment programme, like RAVE-O, is designed to afford learners a degree of success. Competence is mediated an average of 13.6 times during the IE lessons observed. Ms G is generous in her praise of the success achieved by the learners.

During the THEME lessons the types of mediation most frequently observed were Mediation of Meaning. Ms G plans activities and poses problems that develop a sense of curiosity and require careful thinking and problem solving strategies that can in turn be transferred to both RAVE-O and IE lessons. Mediation of Self-Regulation and Control of Behaviour is the mediation with the second highest frequency, 7.6 occurrences in the THEME lessons. This cognitive strategy is significant not only due to the nature of the learners in this school, as mentioned previously, but also because of the need to self-monitor impulsivity and develop strategy thinking when solving complex problems as detectives are expected to do.

Transcendence and Goal Planning both occurred 7 times during the THEME lessons. Transcendence generalises issues beyond the present situation, a simulated crime scene to real life situations. The observations show Ms G teaching Goal Planning strategies used by detectives to solve problems. Mediating a Feeling of Competence occurred 6.3 times. Ms G modified her questions according to the learners' level of abilities. The selection of materials around the theme of 'detectives' which was explicitly selected by Ms G to relate to the RAVE-O concept of word detectives and the organisation of connecting the dots in the IE programme. This proved to be popular with the learners.

It is interesting to note that the three types of mediation Feuerstein foregrounds as essential for a mediated learning experience to take place are prominent in the RAVE-O lessons but also feature as important in the IE and THEME lessons. The comparison between all three types of lessons indicates that the highest levels of mediation occur during the RAVE-O lessons. The frequent and intense level of mediation indicated in the data analysis show that Ms G is positive and pro-active and continually creates opportunities for effective

learning. She understands the importance of intentionally teaching specific strategies that can be utilised in the learning process.

The language to mediate in the lessons show how Ms G varies her use of language to suit both the lesson content and the needs of the learners to ensure meaning is constructed. Ms G uses instructional explanations, definitions, examples and multimodal methods to Mediate Meaning. Ms G is aware of the learner's level of development as well as their linguistic ability. She makes a conscious effort to modify her language to engage all the learners.

Despite the proven success of these cognitive programmes, the focus on language used by the teacher to mediate different criteria is indicative of her success as a skilled mediator. Even though Ms G did not always strictly adhere to the scripted teacher guides in RAVE-O and IE she intentionally includes the use of these strategies in her teaching practice (interview 2/12/2011). The data highlighted the critical issue of 'Classroom Talk' as a tool to facilitate a deeper understanding of the world and how meaning is constructed. This in turn leads to improved comprehension of text.

5.3 Implications

The social dialogue advocated by RAVE-O and IE are extremely time consuming and the prescribed school curriculum does not allow sufficient time for these dynamic conversations to develop. However, the influence of cognitive programmes has far reaching implications for education. Time should be made available to advantage all learners by providing these strategies to enrich their learning potential. We are fortunate in this school to have small groups of learners which enables maximum participation from learners. Using RAVE-O and IE with larger groups of learners may not give the learners the same level of participation. However, educators should not be discouraged by large class sizes and research is needed to evaluate the ways in which these types of social dialogue can be incorporated into classroom practice.

Mediation requires the teacher to respond spontaneously to each individual learner's needs. For this, teachers have to think on their feet, as it is not always easy to supply an appropriate response. A reflective teacher, who is confident in her ability, will acknowledge

that she does not always get it right but will be open to modify her own use of language to correct any inaccuracies. Ms G was able to reflect critically on her own teaching and the ways in which the structure of both programmes improved her ability to mediate meaning to her class. This benefited the learners and despite her experience, enhanced Ms G's teaching practice. (Interview 2/12/2011)

The cognitive design of both RAVE-O and IE assist children in the process of learning by teaching explicit strategies that can be generalised to all content areas involving both language and thinking. Understanding how language is constructed and developing information about the meanings of words helps children comprehend text. It is unfortunate that due to time constraints, only the Organisation of Dots instrument from the IE programme was used. Cognitive strategies of planning and problem solving can structure the thinking needed in all academic subjects. (Learner Interview 25/11/2011) If these programmes are successful with learners who have difficulties then it is possible that the advantages to learners in South African mainstream education would be even more pronounced.

Feedback from the research conducted in this class is intended to promote an emphasis on in-service training for staff in cognitive programmes. This research suggests that the allocation of time for teaching RAVE-O and IE programmes in the whole school may be beneficial. Documenting this process has developed an awareness of the need for consistent monitoring of implementation and learners progress. Further work is needed to understand the benefits in higher grades.

This school is pro-active in sharing knowledge and resources with neighbouring school communities. The IE programme can be modified to suit different communities, cultures and ethnic language groups. However, the replication of RAVE-O to different language groups will require modification and restructuring. One cannot always generalise that advantages will reoccur in different environments but the success of this intervention shows that it is worth attempting.

Motivating learners in the 21st Century is challenging and these programmes together with teachers who mediate effectively offer a solution to the challenges of the school system. If teacher training included metacognitive instruction and comprehensive cognitive

approaches to teaching reading, South African learners may be in a better position to solve problems and be independent thinkers.

Jansen (2013) argues that nations need to set their standards high and expect more, it is his belief that if we raise the expectations the learners will do better. As class teachers, it is our duty to expect the best from our learners so that we can ultimately improve the level of education. As teachers we need to recognise that our voice is our most powerful tool. We can use it to build or break the learners in our care, so it is critical that we take time to think before we speak. This research has shown the value of working with well researched programmes that can improve teacher practice.

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Appendix A: List of Cognitive Functions and Dysfunctions

A chart of cognitive functions and dysfunctions.		
	FUNCTIONS	**DYSFUNCTIONS**
	INPUT	
1.	Clear	Blurred and Sweeping
	Perception / Data Gathering	
2.	Systematic	Impulsive
	Exploration of a learning situation	
3.	Precise and Accurate	Impaired
	Receptive Verbal Tools and Concepts	
4.	Well developed	Impaired
	Understanding of Spatial Concepts	
5.	Well developed	Lack of Impaired
	Understanding of Temporal Concepts	
6.	Well developed	Impaired
	Ability to conserve Constancies	
7.	Precise and Accurate	Impaired
	Data gathering	
8.	Well developed	Impaired
	Capacity to consider more than one source of information	

ELABORATION		
1.	Accurate	Inaccurate
	Definition of the problem	
2.	Ability to	Impaired ability to
	Select relevant cues	
3.	Ability to	Inability to
	Engage in spontaneous comparative behaviour	
4.	Broad and wide	Narrow and limited
	Mental field	
5.	Need for	Impaired need for
	Spontaneous summative behaviour	

ELABORATION CONTINUED		
6.	Ability to	Inability to
	Project virtual relationships	
7.	Need for	Lack of need for
	Logical evidence	
8.	Ability to	Inability to
	Internalize events	
9.	Ability to use	Restricted use of
	Inferential-hypothetical thinking	
10	Ability to use	Impaired
	Strategies for hypothesis testing	
11	Need for	Lack of
	Planning behaviour	
12	Adequate	Impaired
	Elaboration of cognitive categories	
13	Meaningful	Episodic
	Grasp of reality	

OUTPUT		
1.	Mature	Egocentric
	Communication modalities	
2.	Participatory	Blocking
	Output responses	
3.	Worked through	Trial and error
	Output responses	
4.	Adequate	Impaired
	Expressive verbal tools	
5.	Precise and Accurate	Impaired
	Data Output	
6.	Accurate	Impaired
	Visual Transport	
7.	Appropriate	Impulsive / Acting-out
	Behaviour	

Appendix B: Interview Questions

Focus Group interview questions 25-11-2011

Focus Groups with Learners

1. Have you enjoyed your lesions using IE/RAVE-O? Why, Why not?
2. What do you like best about these lessons?
3. Which was your favourite lesson?
4. Was there anything you didn't like about the lessons?
5. Do you think that RAVE-O has helped to improve your reading?
6. Do you think well since you have done RAVE-O?
7. Did you learn new words in these programmes?
8. Can you remember any new words?

Interview with teacher

1. Have you enjoyed using the RAVE-O/IE programme?
2. Did the children enjoy the lessons?
3. Was there a difference in their motivation when participating in the different programmes?
4. Did you notice more encouragement during any particular lesson?
5. Do you think RAVE-O/IE has contributed to learners' vocabulary acquisition?
6. Has reading fluency and accuracy improved?
7. Do you think their reading comprehension has improved significantly as a result of using RAVE-O?
8. Has their thinking improved as a result of IE?
9. Have you noticed any similarities in using the two programs?
10. Do you feel the learners were able to transfer skills learnt in these programmes to other lessons?

Focus Group interview questions 3-02-2012

RAVE-O

1. What is reading?
2. Why do we need to read?
3. Do you ever read books that are not for homework?
4. Are you a good reader?
5. What part of reading is the hardest for you?
6. Do you always understand what you are reading? What do you do if you don't understand?
7. Have you enjoyed the RAVE-O lessons? Why
8. What did you enjoy the most about RAVE-O?
9. What didn't you enjoy about RAVE-O?
10. What did you learn from RAVE-O?
11. Do you think RAVE-O has helped to improve your reading?

IE

1. Did you enjoy organisation of dots?
2. Was it difficult for you in the beginning?
3. Did it get easier?
4. Have you learnt new words?
5. How can you use organisation in reading?
6. Has IE helped you to improve your school work?

Appendix C: Permission Letters

Letter of Consent to the school

31 May 2011

To The principal of -------- School

Re: request to carry out research at …….School with a Grade Three class

Dear Mrs …… I am preparing to carry out a study for my M.Ed degree at The University of Witwatersrand. The research will be investigating the effect of mediating RAVE-O and Instrumental Enrichment to monitor teacher practice and observe the impact on the success of the programmes for continued intervention in our school.

This research will be carried out in Ms G'S Grade Three class where she will be implementing IE and RAVE-O as part of the regular timetable. The IE, RAVE-O and THEME lessons will be videoed and observed by myself, with a focus on documenting the types of Mediation and the language used by Ms G during these lessons.

I would be grateful if you would give your permission for me to carry out this research project. I will certainly keep you updated of the findings so that you will be able to use the data to guide future implementation.

The strictest confidentiality measures will be taken. The school learners' names will be kept completely confidential at all times. Privacy will be maintained in all published and written data resulting from the study.

There are no foreseeable risks to the school or the participants in the study as most of the study takes place within the regular day to day running of the class. Instead the school and the participants stand to benefit from the programmes implemented during the study as well as the results of the study, which can be used to inform best practice at the school. Neither the school nor the participants will receive remuneration for their participation. Any information learned by the researcher during this study, will have no impact on the school, the grade three participants or the teacher.

If you have any concerns about participation, or any questions about the study, I would be happy to share more information about the study with you. Please be advised that if after having read this form and you agree to …… School's participation in the study, your participation is voluntary and you have the right to withdraw your consent or discontinue participation at any time without penalty.

Please complete, sign and return the form below, indicating whether you agree or do not agree for the study to be conducted at ……School. Please also state that you are 18 years or older.

Yours faithfully,

FLEUR DURBACH

Letter of Consent to the Teacher

31 May 2011

Re: request to carry out research at …….School in your Grade Three class.

Dear Ms G

I am preparing to carry out a study for my M.Ed degree at The University of Witwatersrand. My research is aimed at observing the type of Mediation used by you during the implementation of RAVE-O, IE, and THEME lessons to assess the use of these programmes for children at our school. My research topic is a case study of a Grade Three teacher's mediation of RAVE-O and Instrumental Enrichment. The findings will be used to guide choice and implementation of reading and thinking programmes in this school.

This research will take place in a Grade Three class where IE and RAVE-O are implemented as part of the regular timetable. I would be grateful if you would give your permission as the teacher to participate in this study. The strictest confidentiality measures will be taken. The school name, learner names and your name will be kept completely confidential at all times. Privacy will be maintained in all published and written data resulting from the study.

There are no foreseeable risks to the participants in the study as most of the study takes place within the regular day to day running of the class, and your current teaching practices will not be impacted on. You will not receive remuneration for your participation in this study. Any information learned by the researcher during this study, will have no impact on the school, the grade three participants or yourself.

If you have any concerns about your participation, or any questions about the study, I would be happy to share more information about the study with you. Please be advised that if after having read this form and you agree to participate in the study, your participation is voluntary and you have the right to withdraw your consent or discontinue participation at any time without penalty.

Please complete, sign and return the form below, indicating whether you agree or do not agree to participate in the study. Please also state that you are 18 years or older.

Yours faithfully,

Fleur Durbach

Consent Form

For the research study titled: The implementation of Instrumental Enrichment and RAVE-O in developing comprehension of text.

I _____ am willing / not willing to participate in the research study on; The role of the teacher in implementation of Instrumental Enrichment and RAVE-O. To be conducted at _____School, in 2011 by Fleur Durbach with the Grade Three learners.

I am 18 years or older (Please tick) yes _____ no _____

Signature: _____ Date: _____

Information Letter

Information and consent to participate in research study.

Dear Research Participant and Parent

My name is Fleur Durbach, I am conducting research for the purpose of obtaining my Master's Degree at the School of Education, University of Witwatersrand.

My area of focus is the role of the teacher in the implementation of RAVE-O and Instrumental Enrichment: A case study.

In my position as deputy principal it is essential for me to inform staff about approaches to teaching and learning that are most suitable to meet the needs of our learners. Evaluating the success or limitations of IE and RAVE-O will be a deciding factor in the future use of these programmes.

The aim of the research is to investigate what kind of interaction, questioning and facilitation used by a teacher will bring about the most positive changes in a learners' ability to read with meaning.

In order to conduct my research, I will observe the level of mediation used by the teacher and document responses of learners during the lessons. Participation in this research is voluntary. Should you agree to participate, please complete the attached consent forms giving permission to be observed, interviewed and video recorded.

Your identity and that of your child will remain anonymous in all academic writing about the study. The research data will be secured in the school archives for a period of three years and then destroyed. Please take special note of the following:

- It is anticipated that all learners' reading comprehension and thinking skills will improve during this study.
- There are no foreseeable risks in participating in this study.
- You will not be paid for your participation
- Video clips taken from this research may be used for teacher training.

The results of this research will be used to improve the quality of teaching and you participation would be appreciated. If you have any concerns or questions please contact me at the email address below.

Kind Regards

Fleur Durbach

fleur@iafrica.com

Letter of Consent for Observation

To be completed by learners and parents.

I_____ consent to be observed by Fleur Durbach for her study on the role of the teacher in implementing IE and RAVE-O.

I Understand that:

- Participation in this observation is voluntary.
- I may refuse to be observed.
- I may withdraw from the study at any time.
- My identity will remain anonymous in the research report.
- All research documents will be destroyed after a period of three years.

Signature:_____ Date:_____

I_____ parent /guardian of _____

consent to my child being observed by Fleur Durbach for her study on the role of the teacher in implementing IE and RAVE-O. . I understand and have made my child aware of his/her rights as mentioned above.

Signature:_____ Date:_____

Letter of Consent for Video Recording

To be completed by learners and parents

I_____ consent to be video recorded by Fleur Durbach for her study, on the role of the teacher in implementing RAVE-O and IE.

I understand that:

- Participation in this video recording is voluntary.
- I may refuse to be recorded, if I would prefer not to.
- I may withdraw from the video recordings at any time.
- Video recordings may be used as teaching tools and viewed by staff at this school or teacher training conferences.
- All video recordings will be destroyed after a period of three years.

Signature:_____. Date:_____

I _____ parent/ guardian of _____

Consent to my child being video recorded by Fleur Durbach for her study on the role of the teacher in implementing IE and RAVE-O. I understand and have made my child aware of his/her rights as mentioned above.

Signature:_____ Date:_____

Letter of Consent for Interviews

To be completed by learners and parents.

I _____ consent to be interviewed by Fleur Durbach for her study on the role of the teacher in implementing IE and RAVE-O.

I understand that:

- Participation in this interview is voluntary
- I may refuse to be interviewed, if I would prefer not to.
- I may withdraw from the study at any time.
- My identity will remain anonymous in the research report.
- All research documents will be destroyed after a period of three years.

I _____ parent/ guardian of _____

Consent to my child being interviewed by Fleur Durbach for her study on the role of the teacher in implementing IE and RAVE-O. I understand and have made my child aware of his/her rights as mentioned above.

Signature:_____ Date:_____

Appendix D: Example of Instrumental Enrichment Lesson

(Teacher's Guide to Organisation of Dots: Feuerstein in collaboration with Hoffman.1995)