University of KwaZulu-Natal

Teachers' experiences of a learning styles approach to curriculum implementation: Dunn and *Done*?

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Teachers' experiences of a learning styles approach to curriculum implementation: Dunn and *Done*?

A case study of the contributions, complexities and contradictions of the Dunn and Dunn (1978) learning styles approach to teaching South Africa's *National Curriculum Statements* (2002) and the *Curriculum Assessment Policy Statements* (2012) in the Intermediate Phase.

By

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Declaration

I, Desiree' Eva Moodley, hereby declare that this dissertation, *Teachers' experiences of a learning styles approach to curriculum implementation: Dunn and Done?* is my own work and the opinions expressed and conclusions drawn are equally my own. The works of all others, published and unpublished, is acknowledged in the text to the best of my knowledge. This full thesis has not previously been submitted for a degree in this or any other university.

07 November 2014

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Prof Reshma Sookrajh Date

Dedication

This work is dedicated to the belief among the many at the forefront and on the periphery into alternative, creative and innovative pedagogies, that unstintingly and at odds continue to contribute toward changing the world and education for the better of all, a belief in the value of every individual in community.

Acknowledgements

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"…*because instead of teaching a class as a class, you're now teaching a class as individuals, which is a great benefit."*

"Complacent Compliers", "Defiant Designers", "Pioneering Protagonists" –

Could matching learners to their individual learning styles influence successful curriculum implementation and classroom delivery in South Africa? Does successful classroom delivery in schools depend on understanding teachers' experiences as curriculum implementers? What are teachers' experiences as curriculum implementers of a learning styles approach to teaching?

ABSTRACT

Critical times demand daring teachers, creative responses and innovative approaches.

Teachers' experiences of curriculum implementation in schools are unavoidably dynamic and diverse daring innovation and change. The demise of outcomes based education in South Africa since 1994 has resulted in several revisions with questionable success for learners, teachers and schools. Learning styles, a cognitive, psycho-biological, brain-based approach, claims to be able to contribute to, influence and address how teachers teach best for curriculum and schooling success (Dunn, 2009; Kazu, 2009; Kiguwa, 2003; Maribe Branch, 1995; Serife, 2008).

This empirical study is a case of teachers' experiences of the implementation of South Africa's *National Curriculum Statement Policy* (2002) and the *Curriculum Assessment Policy Statements* (2010) through the Dunn and Dunn (1978) learning styles approach to teaching in the intermediate phase. This thesis examines the experiences of professionally qualified practising teachers at a suburban primary school in Pietermaritzburg. It attempts to deeply describe and intensively understand contributions, complexities and contradictions experienced by this school's community through data sets from interviews, document reviews, photo data and artifacts.

At the heart of this study is the need to understand successful curriculum implementation through innovative teaching approaches, increasing repertoire of teaching strategies (*Curriculum News*, 2010). It brings to light that matching learners to their learning styles may influence successful curriculum implementation in schools. In so doing it claims to contribute to understanding issues of respect, rights and dignity, problem-solving and creativity, among others, adding to the body of knowledge around teacher awareness and insight, teacher and learner identity and potential, brain-based teaching and learning, metacognition, and diversity. It also reveals such implementation complexities around costly training and equipment, school and teacher buy-in, time and creativity demands. This investigation further highlights contradictions around curriculum overload, pace and systemic/departmental compliance, creativity in teaching, brain profiling against the 21 elements of the Dunn and Dunn (1978) learning styles model and demographic (*in*) differences.

Understanding teachers' experiences of learning styles theory now is novel and necessary since it involves a holistic approach to the development of learners. Compelling a potential to resonate with most teachers, advancing learning styles theory as an approach is worth investigating for what counts for sound learning, further stirring interest in learning styles research, a visible gap (Grosser and de Waal, 2008).

List of Key Words

Auditory learning

Alternative pedagogy

Brain based approach

Brain lateralisation

Cognitive style

Creativity

Curriculum and Assessment Policy System

Curriculum implementation

Differentiation

Diversity

Dunn and Dunn Learning styles approach to teaching

Experiential learning

Holistic approach

Individual pedagogy

Intermediate phase

Kinesthetic learning

Learner-centred teaching

Learning styles

Learning styles Inventory

Modality

National Curriculum Statements

Tactile learning

Visual learning

List of Abbreviations

CAP	Contract Activity Pack
CAPS	Curriculum and Assessment Policy System
EFT	Education and Training Framework
FfL	Foundations for Learning
FSLSM	Felder-Silverman Learning Style Model
HBDI	Herrmann Brain Dominance Instrument
LSI	Learning Styles Inventory
MIP	Multisensory Instructional Packages
NCS	National Curriculum Statement
NECC	National Education Crisis Committee
NEPI	National Education Policy Investigation
NQF	National Qualifications Framework
NTB	National Training Board
NTSI	National Training Strategy Initiative
OBE	Outcomes Based Education
PLS	Programmed Learning Sequence
VAK	Visual, Auditory, Kinesthetic
VAKT	Visual, Auditory, Kinesthetic, Tactile
VARK	Visual, Auditory, Reading, Kinesthetic

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CHAPTER ONE

INTRODUCTION

The dichotomy between learner success and labour market demands to deal with mass poverty, unemployment and skills shortages gravely facing South Africa leave little for higher, deeper, creative ways of learning for academic and global significance. The latest OECD, UNESCO and TIMMS reports present a bleak picture for South Africans. An even bleaker, disturbing reality emerges through such critiques as Professors Jonathan Jansen (University of the Free State), Doctors Charles Simkins and Nicholas Spaull (Centre for Development and Enterprise, University of Stellenbosch) among several others. Jansen (Weekend Argus, July, 13, 2013, p. 1) commenting on South Africa's 2012 matric pass rate as an *'absolute disgrace'* and South Africa's education system *'falling into a sinkhole of mediocrity from which we are unlikely to emerge…a crisis on our hands'* and Simkins and Spaull (The Witness, October, 21, 2013, p. 4) advocating as a recommendation from their recent research report that the problem needs to be *'fixed on the primary level*'. At the heart of this lie school-based teachers and the implementation of the National Curriculum Statements/Curriculum and Assessment Policy System NCS/CAPS (2012).

According to Moodley (2009), given the existing skepticism, suspicion and pedagogic ignorance around which learner-centredness and its outcomes-based preconception as one of its pillars in the NCS/CAPS (2012) of South Africa prevail, reconciliation between how teachers teach and learners learn best for success has to be understood / made. Consequently, for any measure of success for all, teaching professionals face the challenge of being able to more effectively and efficiently adapt their instruction to cater to each of their learners' unique learning styles. Fitting strategies and resources to specific learning content when formulating teaching – learning situations, demands daring teachers that are willing to change to a creative flexible and differentiated learner-centred classroom setting (Stewart, 1990).

Understanding teachers' experiences of curriculum implementation through learning styles and the gap between how teachers teach and learners learn best for success as asserted by Moodley (2009) is a daunting yet compelling challenge. It is thus of empirical interest that teachers' experiences of a learning styles approach to curriculum implementation be understood. A cognitive, psycho-biological, brain-based response to meeting the needs of today's classrooms, learning styles theory, according to Dunn and Dunn (1978), based on the assumption that how individual children learn, their learning styles do influence how they perform, and that most learners can learn given the awareness of their learning styles is the object of this case study.

The aim of this study, therefore, is to explore, explain and understand what teachers' experiences of a learning styles approach to teaching are for curriculum and schooling success. It employs an interpretivist, qualitative, case study approach. Through the use of interviews, document reviews, photo data and artifacts, analysis and findings focus on contributions, complexities and contradictions of a learning styles approach to teaching in understanding curriculum implementation as experienced by professionally qualified teachers in a suburban former Model C primary school in Pietermaritzburg. This case study on this school's experience aims to understand school-based teachers' experiences of the Dunn and Dunn (1978) learning styles approach to curriculum implementation. This case study attempts to provide a cameo glimpse through the analysis and findings of the contributions, complexities and contradictions of a learning styles approach to teaching in understanding curriculum implementation of the NSC/CAPS (2012) intermediate phase policy of South Africa.

Thus in exploring and understanding teachers' experiences of curriculum implementation through matching learners to their individual learning styles, this study asks the following succinctly discursive key question:

What are school-based teachers' experiences of a learning styles approach to teaching South Africa's Intermediate Phase NCS/CAPS (2012) Policy? This case study attempts to respond to the above key research question through an intensive empirical investigation of the following sub-questions:

1. **What is curriculum implementation?**
2. **What are learning styles?**
3. **Why a learning styles approach to teaching in this case?**
4. **How do school-based teachers implement the Dunn and Dunn (1978) learning styles approach to teaching the Intermediate Phase NCS/CAPS (2012) policy?**
5. **What are school-based teachers' experiences of the contribution, complexity and contradiction of the Dunn and Dunn (1978) learning styles approach to teaching in the Intermediate Phase?**

To enable adequate comprehension, provide a context, and a response to sub-questions 1 and 2, further creating a tiered approach upon which this study may be viewed, significant terms used are defined and explained to reveal the conceptual/theoretical background and framework discussed in Chapter Two. Here the concepts of learning style theory and core theories undergirding it, that of cognitive style theory and brain lateralisation theory (Hlawaty, 2001) in understanding a cognitive, deep learning response to

curriculum implementation, are presented. Henning (2010, p.25) suggests that a theoretical/conceptual framework positions research into the discipline or subject of the work enabling the researcher to theorise and make assumptions about the interconnectedness of the way things are related in the world. This study's conceptual framework found in Chapter Two uses the concept of learner-centredness as a lens through which the researcher has viewed this case providing an orientation/stance to frame this study.

The concept of learner-centredness, a principle of the South Africa NCS/CAPS (2012) Policy, has been traced in this study from Rousseau to Vygotsky and forms the bedrock upon which this case has been made. Building upon it are the theories around cognitive styles, brain lateralisation and learning styles. This study aims to draw a thread from the above theories to the Dunn and Dunn (1978) learning styles theory embodied in their Learning Styles Instrument (LSI). This has been used as a means to understand curriculum implementation of the NSC/CAPS (2012) through the Dunn and Dunn (1978) learning styles approach. In so doing, further aiming to understand the implementation of a learner-centred pedagogy in South Africa. This thread, suggested by the researcher, is purposefully provided as one means to understand successful curriculum implementation in South Africa. In a daring stance this study thus makes a significant case for understanding individual pedagogy within a Piagian developmental model through weaving a constructivist thread from Rousseau to Vygotsky thus creating a trajectory for understanding learning styles theory and the Dunn and Dunn (1978) approach in particular.

Subsequently, Chapter Three argues and critiques learning styles theory through a review of literature. This chapter pits data against literature and writings of the different authors sourced for its Literature Review. It aims to compare and contrast views of the main proponents of key theories and concepts employed, to the experiences and practices of the sample used for this study. This study further aims to confirm or refute what the different authors and especially Dunn and Dunn (1978) (the Dunns) state on learning styles theory, noting possible similarities and/or differences experienced.

Trustworthily, as discussed in Chapter Four, as proposed by Denscombe (2007), in confronting and addressing reform and change, this case is not a situation that has been artificially generated specifically for the purposes of research but is something that already exists, an already 'naturally occurring phenomena' (Denscombe, 2007, p.37) that existed prior to the research project and is hoped to continue well after.

However, not intended to be generalised, this study has the potential for transferability to similar contexts for the benefit of understanding teachers' experiences as curriculum implementers of what makes for innovative, successful and educationally sound curriculum implementation strategies. Aimed at understanding and addressing significant deep learning and teaching experiences, transferability to similar contexts may help to bridge the dire gap between how teachers teach and learners learn best for schooling and academic success (Moodley, 2009). However, in making its case, this study candidly submits to Curry's (1990, p.50) critique of the inadequacies reflected in the semantic confusion which permeates this field also highlighted by Moodley (2009). Curry (1990) contests the reliability and validity of research done in the field, claiming bias, lack of triangulation and blaming hasty pursuits to print and market ideas that have weakened and over-extended the construct of learning styles theory.

Yet in some ways this study serves to counter that submission in its attempt to postulate a model of learner-centredness within a learning styles framework for understanding curriculum implementation through the empirical research undertaken at this site. This may be found in Chapter Five. As a result, in using an interpretivist, qualitative, case study approach, the value behind Fullan's (1991) claim that curriculum implementation/classroom practice/delivery is a dynamic, complex social process, this case study serves to add to previous, mainly international research done in this field even by a small token in understanding dynamic and complex local contexts and beliefs around teachers' experiences of curriculum implementation and learning styles.

Furthermore, confirming also that for any measure of understanding of successful classroom practice/curriculum implementation as contended in Moodley (2009) much depends on how well present and emerging problems are approached and how well innovative cultures are supported as espoused by Brain. *tools* (2010). The historical relevance out of and within which the lived experiences of which this case under study has emanated has been dichotomously singular within a South African context. Similar to sites like these in an international context, the concerted attempts at understanding and managing change and reform at this site has made for a noteworthy case for investigation. In doing so this study aims to explore, describe and explain teachers' experiences of implementing the NCS/CAPS (2012) curriculum through the Dunn and Dunn (1978) learning styles approach. Teachers' experiences of working with a brain-based, cognitive, individual pedagogy approach embedded in 21 elements (the LSI) in meeting the needs of diversity and

differentiation within the context of learner-centredness in 21st century classroom environments makes for a persuasive study.

Learning styles theory therefore may have the potential to resonate with those concerned and involved with the holistic development and deep learning of individual learners, an approach demanding of academic attention and intellectual interest worthy of investigation. Admittedly aberrations encountered can only over time and further rigour begin to acquire the desired value sought by all invested in a 21st century authentic deep learning for all. Thus this study makes for a willing obligation to investigate, interact and influence further the value of a creative, learner-centred model of curriculum implementation as learning styles with the kinds of results that may impact and uphold what still counts for sound classroom praxis.

Thus in exploring in depth the experiences of teachers at this school, who have approached their classroom practice and the new South African curriculum policy through a learning styles approach to teaching, this study aims to understand, describe and present findings around the implementation experiences of the Dunn and Dunn (1978) learning styles approach in the Intermediate Phase, its contributions, complexities and contradictions. Aiming to influence in part the need to understand innovative approaches that may increase the repertoire of teaching strategies needed for successful innovative curriculum implementation (Curriculum News, 2010), this case study further inevitably raises such questions as how could:

- teachers be better understood as curriculum practitioners;
- matching learners to their individual learning styles become a crucial link in understanding teaching and
- learning for diversity and differentiation;
- a learning styles approach to teaching meet the urgent need of school and curriculum reform in South Africa;
- teaching through a learning styles approach achieve its goals of individualised pedagogy and success for all (Moodley, 2009)
- the Dunn and Dunn (1978) learning styles model become one possible, creative solution in addressing the concerning rising gap between how teachers teach and learners learn best also raised in Moodley (2009)

- the Dunn and Dunn (1978) learning styles model as critiqued in Lovelace (2005) become one of a crucial cognitive solution awaited by teachers to turn the tide of mass failure and disillusionment (Moodley, 2009) so characteristic of 21st century diverse South African classrooms.

Crucially, in the search for new and creative pedagogies to meet the diverse, complex and individual needs of the 21st century learner for academic, schooling and life-long learning success, understanding teachers' experiences and praxis against such possibilities are imperative. Furthermore, such questions as whether traditional teacher-centred teaching, seen in contest with learner-centred innovative ways of teaching to the 21st century learner, be completely ignored as outmoded and obsolete in diverse teaching environments, and can South Africa's education system afford to ignore how learners need to be taught for life in the 21st century to reach their full potential, are the kinds of questions that emanate from and speak to creative classroom praxis like that of this case.

Finally, Chapter Six of this study presents a summary of the key findings of this empirical study, providing some significant insights for understanding a possible model of understanding teachers' experiences as curriculum implementers, designers and pioneers. Furthermore, in forwarding a strong advance for research in this field, this case study attempts to bring to light that matching learners to the best ways that they can learn, their learning styles, may have a profound influence on how classroom practice and policy may be successfully understood in schools like this one in meeting national and international expectations. In so doing it is hoped that this study provides a cameo for a larger study at a later stage, thus stirring interest, dialogue and debate in the field of learning styles research, a visible gap (Grosser & de Waal, 2008).

Thus in provoking such dialogue, debate and a call for further research, this case study recognises that any limitations posed ought not to discourage, but ignite and challenge the significance of further relevant understandings of curriculum implementation in learner-centred diverse environments within innovative institutional cultures in confronting change and reform. In so arguing, this qualitative study attempts to understand in part the lack of in-depth qualitative research in the field of alternate, creative and authentic methods of learning and teaching to the 21st century learner especially in South Africa, provoking interest and dialogue and adding to current understanding in the light of what counts for traditional best practice and pioneering innovation in implementing and communicating them within a 21st century South African context. A visibly less researched field, this study, compellingly daunting, has the potential for immense impact and value

on what counts for sound education for all in understanding teachers' experiences of curriculum implementation through learning styles.

The following section of this chapter describes the background to and focus of this study, the personal positionality of the researcher, the purpose of this study and an outline of the key research questions raised in this study. This study, thus, is steered by a fourfold purpose. Firstly as a teacher with a significant role in preparing learners for a rapidly changing world, secondly as a teacher consultant and curriculum facilitator with interactions among several South African teachers that reveal though curriculum implementation is left to individual interpretation and choice, many teachers have very limited pedagogical content knowledge and a narrow repertoire of implementation approaches to appropriately deliver the curriculum in diverse situations,thirdly, as a member of a school's management team where experience shows that there is growing pressure on schools from parents and bureaucrats for higher learner achievement standards that may account in part for a rise in academic frustrations among learners often leading to poor discipline, a lack of motivation and depression, and lastly, as researcher where significant international trends show several quantitative studies conducted in the field of learner-centredness and learning styles revealing fairly little known about this phenomenon and still further very few qualitative studies conducted in this field (Grosser & de Waal, 2008) with little attention given to differences in learning, the rationale behind this case. The urgency to adapt teaching to accommodate learning styles is an intriguing yet inevitable area of interest that personally begs attention.

1.1. BACKGROUND TO AND FOCUS OF STUDY

In its efforts to address reform, disadvantage and development in a new democracy, South Africa embarked on the adoption of an education curriculum policy constructed around an Outcomes-Based (OBE) approach to schooling since 1994. However, this curriculum policy has been received with much skepticism, suspicion and ignorance among many teachers. One of the pillars of this curriculum, learner-centredness (Meier, 2009), calling for a pedagogy that is new, strange and challenging for many teachers, has been closely linked to the demise of this curriculum (Jansen, 1999), the call for several revisions and its removal as an approach to teaching. Though international trends reveal that educational policy change and development does not

necessarily equate to successful implementation and practice as is the case in South Africa, according to Fullan (1999, in Moodley, 2009) curriculum implementation is dynamic and a complex social process. For any understanding of its success there has to be sufficient capacity and will for change that calls for individual motivation, beliefs central to local school contexts, and stable school conditions (Fullan, 1999).

Thus, accordingly, in their Report of the Ministerial Committee on *Schools That Work*, Christie, Butler and Potterton (2007; Sayed, 2011) found that 'teachers make the greatest difference of all 'inschool' factors' in respect of school effectiveness and quality education. Whilst socio-economic status might be significant, according to the Resource Documents Teacher Development Summit (2009, p.6), 'good teachers defined as motivated teachers with the mastery of content knowledge and experience' are believed to be the 'most important determinants of quality educational outcomes'.

Yet, motivation, mastery and experience devoid of supportive, innovative cultures within our institutions may equally render our teachers, schools and education ineffective and unsuccessful. Therefore, understanding successful curriculum implementation 'depends greatly on how well we solve present and emerging problems and how well an innovative culture is supported by our institutions' (Brain. tools, 2010).

Therefore, understanding of and support for creative, problem-solving and innovative pedagogies and innovative approaches to the implementation of curriculum is crucial to understanding successful curriculum implementation as an art (Hoban, 2005). An enhanced, learner-centred, active and authentic pedagogy founded on deep knowledge and understanding as opposed to a 'one-size-fits-all' generic approach (Resource Documents Teacher Development Summit, 2009, p.6, Darling-Hammond, 2000) is at the heart of this understanding and debate.

Understanding teachers' experiences of curriculum implementation through learning styles, therefore, implores an exploration into the extent to which local contexts of our institutions are supported, and creative, problem-solving and innovative internal cultures and conditions are established. This, against a rapidly changing, technologically advancing 21st century world characterised by complex heterogeneous environments, makes for a challenging study. Still the idea of an enhanced, personalised, learner-centred pedagogy contributing highly to success in curriculum implementation (Dunn & Dunn, 1978; Tomlinson, 2009) has a forcefully challenging appeal. Consequently, how teachers teach is fundamental to this dilemma. Herein lies the concerning gap of how teachers perceive, understand and address innovative curriculum implementation

within a learner-centred, individualised pedagogy that may or may not be supported by innovative cultures within our institutions.

Thus, provocatively, a learning styles approach to teaching claims to address this gap through an enhanced, personalised and highly innovative approach to curriculum implementation. According to the literature, learning styles is a cognitive, brain-based response founded on deep knowledge and understanding. Inclusive of implementation complexities and theoretical contradictions, such protagonists as Kolb, Felder-Silverman, Grasha-Reichman and Dunn and Dunn (1978) among others, claim learning styles may contribute to, influence and address how teachers teach best for success in curriculum implementation (Maribe Branch, 1995; Kiguwa, 2003; Serife, 2008; Dunn, 2009; Kazu, 2009).

It is against this background that this study is focused. This study aims to explore, describe and understand what teachers' experiences of implementing South Africa's National Intermediate Phase Curriculum Statement are, and why and how it was implemented through a Dunn and Dunn (1978) Learning Style Approach in a suburban primary school. It attempts to deeply describe and intensively understand possible contributions, complexities and contradictions of a learner-centred pedagogy as experienced by this school's community. Significantly, it presents a wide angle brief look at curriculum implementation in South Africa since 1994. Furthermore, it focuses on learner-centredness in particular drawing a thread from Rousseau to Vygotsky taking a narrower gaze within the current South African National Curriculum Policy and its relationship to Constructivism (Moodley, 2009). In so doing, creating a trajectory of understanding for learning styles theory.

The following section expresses a personal impetus and drive for this study and has been part of a previous unpublished submission as a forerunner to the thinking behind this study (Moodley, 2009). .

1. 2. PERSONAL POSITIONALITY, PURPOSE AND RATIONALE

1.2.1. AS A TEACHER

Firstly, as a teacher I have a significant role in preparing learners for a rapidly changing world. This world is one that is increasing in social and individual complexity, technological and informational advancement and a greater need for personal empowerment and emancipation. A growing concern for teachers to be better prepared exists. This is further catapulted against demands of educational reform, public and school

expectations, higher standards, innovative teaching, deeper knowledge, global competence, and, flexibility in diverse situations, as Calderhead & Shorrok, (1997), Furlong, et al. (2000) and Mansilla & Jackson (2011) also allude to.

Schools, as Moodley (2009) and Calderhead and Shorrok (1997) say are sites for acquiring knowledge and skills, and, learning socialisation, co-operation, the world of work, and preparation for citizenship. Shulman (1987) and Darling – Hammond (2000) further assert that effective teachers are able to combine subject matter understanding and pedagogical skill flexibly, organise, assess, adapt and appropriately convey learning material, effectively using different learning approaches according to individual learner needs.

Within my growing complex classroom realities of cultural, linguistic, racial and religious diversities, socio-economic disparities, heterogeneous personal identities and divergent capacities and capabilities, my experience shows that teaching has come to include more than a teacher-centred imparting of subject knowledge for itself. I believe being at the forefront of seeking and growing individual learner potential, purpose and significance, I have to explore and include other creative, innovative, problem-solving and learner-centred approaches/pedagogies to meet constantly changing learning dynamics.

Yet, I doubt, innovative/creative pedagogies can be approached or successfully implemented as a solitary endeavour. For any means of relevant, long term meaningful impact, hierarchical support, progressive institutional conditions and collegial interaction have to be created and sustained within school communities of practice. Thus through this empirical process, grappling through and understanding issues of a learner-centred curriculum and conditions that promote or hamper its successful implementation is of significant value for me as a teacher.

1.2.2. AS AN IMPLEMENTER OF THE SOUTH AFRICAN NATIONAL CURRICULUM POLICY

Secondly, teaching to individual strength and ability has been radically captured within the principles of the new South African national curriculum policy (Revised National Curriculum Statement Grades R – 9, 23406, 2002; Curriculum Assessment Policy System, 2011; www. Education.gov.za) requiring a pedagogy that is equally new and strange, one that places learners at the centre. Concepts such as life-long learning, learner-centred education, mediated and differentiated learning among others are keys to understanding curriculum policy change in the New South Africa. The 'what and why' to teach were and still are, with much furor (Resource Documents Teacher Development Summit, 2009) summed up within the new curriculum policy

framework, Curriculum 2005(hsrc.ac.za) and its subsequent Revised / National Curriculum Statement revisions, Foundations for Learning (FfL), Curriculum and Assessment Policy System (CAPS, 2012).

As a teacher consultant and curriculum facilitator my interactions with several South African teachers reveal that though implementation has been left to individual interpretation and choice, many teachers have very limited pedagogical content knowledge and a narrow repertoire of implementation approaches to appropriately deliver the curriculum in diverse situations. This is supported by several local and international studies and submissions (Chisholm, 2005; OECD, 2008; Council, 2009). It may be said a glaring deficit into the 'how to' of the new South African national curriculum statement exists. And this among others has led to much confusion, disgruntlement and resistance among teachers affecting complete acceptance of the new curriculum to the point of failure (Jansen, 1998; Harley & Wedekind, 2004).

Yet the need to understand curriculum practice within a learner-centred, life-long learning paradigm may be paramount to effectively serving the interests of the 21st century classroom. This study has the potential to provide some essential in - depth empirical data in understanding teachers' experiences of implementing a learner – centred, innovative curriculum through a differentiated individual pedagogy proposed by the Dunn and Dunn (1978) Learning Styles approach to teaching dispelling fear and igniting hope.

1.2.3. AS A MEMBER OF SCHOOL MANAGEMENT TEAM

Thirdly, as a member of my school's management, my experience shows that there is growing pressure on schools from parents and bureaucrats for higher learner achievement standards. This may account in part for a rise in academic frustrations among learners often leading to poor discipline, a lack of motivation and depression. Generally, schools have tended to deal with these pressures by differentiating and tracking their learners into ability groupings. Yet research conducted by Houtte (2001), Oakes (1992), Lacey and Ball (1970, 1981, cited in Houtte, 2001) and Cohen (1955, cited in Houtte, 2001) reveal the tremendous negative impact this has on learners who are lower tracked.

Furthermore, schools generally cater to the auditory and visually strong learner who are often deemed high flyers and academically proficient. They are usually higher tracked into the 'express or A classes'. Those who might learn through other styles – tactually, kinesthetically or globally seem to be regarded as weak, incompetent, incapable or learning deficient and are often at the fringes frequently becoming referrals for

psychological or medical evaluation. These learners are often lower tracked or in 'mixed ability classes'. Those who may learn differently are often not fully catered for.

Curriculum practice with this in mind may reveal a serious gap between how teachers understand and teach to diversity. Understanding curriculum implementation through a learning styles approach to teaching may be very revealing. Thus, at my school (a former Model C suburban primary school in Pietermaritzburg) creative solutions through planned and costly staff development programmes are often sought and provided for. The Dunn and Dunn (1978) learning style approach to teaching was thus encountered, engaged with and implemented in the intermediate phase. However, similar to Stahl's (1999, p. 5) study of teachers trained to teach through a learning styles approach, 'after one year, they (also) had all stopped trying to match children by learning styles.'

Thus undertaking this study may provide my school a deeper understanding of the processes and interpretations of the experiences of teachers toward the value of this approach. I contend that this empirical study may provide a necessary opportunity and platform for research into what teachers at my school experience in approaching their practice through the Dunn and Dunn (1978) learning style approach to teaching in the Intermediate Phase. It is hoped that in some measure their experiences may specifically or generally resonate with school management teams near and afar offering some sound alternatives for best practice.

1.2.4. FOR THE SAKE OF RESEARCH

Fourthly and significantly, international trends show several quantitative studies conducted in this field especially in the US, Britain and the Middle and Far East. Yet, research reveals fairly little is known about this phenomenon and still further very few qualitative studies have been conducted in the field of learning styles. In her student paper Moodley (2009) points out that according to Grosser and de Waal (2008), very little attention has been given to differences in learning among learners in South Africa. She further states that in their pilot study investigating pedagogical needs and fundamental rights at school through the use of diverse learning styles among learners and teachers in the Gauteng Department of Education, Grosser and de Waal, using Kolb's Learning Style Inventory, concluded that teachers need to adapt their teaching to accommodate learning styles. In a quantitative questionnaire completed by teachers, the authors found it disconcerting that the fundamental pedagogical needs of learners, namely protecting, safeguarding and upholding their best

interests and fundamental rights were not ranked as important. The authors include learning styles among fundamental pedagogical rights of learners.

Thus I believe through the intrinsic interest of this in-depth study a potential exists of influencing theory, practice and policy (McMillan & Schumacher, 2001, p. 399) contributing in part to the work already done whilst qualitatively exploring classroom practice through the Dunn and Dunn (1978) learning styles approach to teaching, offering a rare and unchartered South African glimpse.

It is thus with the aforesaid fourfold personal experiences, thoughts and influences that this empirical search is embarked on. In exploring in depth the experiences of teachers at this school, who have approached their classroom practice and the new South African curriculum policy through a learning styles approach to teaching, this study aims to understand, describe and present findings around the implementation experiences of the Dunn and Dunn (1978) learning styles approach in the intermediate phase. It is envisaged that through the analysis of this school's experience, contributions of an individual pedagogy using learning styles may reveal an understanding of such issues as respect, rights and dignity, problem-solving and creativity, among others. Complexities around language, culture, race, age and gender may also surface. Contradictions surrounding natural developmental stages of learning, impacts of zonal proximity of learners to their environments and play in the process of learning, whether learning styles are to be credited for gains or losses may also emerge allowing these to be described during this research pending data.

These may address in part the need for innovative approaches to increase the repertoire of teaching strategies needed for successful innovative curriculum implementation (Curriculum News, 2010). Learning styles theory may have the potential to resonate with all those concerned and involved with the holistic development and deep learning of individual learners, an approach convincing of academic attention and intellectual interest and worth its investigation. Admittedly aberrations encountered can only over time and further rigour begin to acquire the desired value sought by all invested in a 21st century authentic deep learning for all. Thus the researcher willingly obliges to investigate, interact and influence further the value of a creative, learner-centred model of curriculum implementation as learning styles with the kinds of results that could impact and uphold what still counts for sound classroom praxis.

Therefore, in understanding these most pertinent issues, this case study may bring to light that matching learners to the best ways that they can learn, their learning styles, may have a profound influence on how classroom practice and policy may be successfully understood in schools like this one in meeting national and

international expectations. In so doing it is hoped that this study may provide a cameo to a larger study at a later stage. It is hoped that this study may also have the potential of stirring interest in the field of learning styles research, a visible gap (Grosser & de Waal, 2008).

CHAPTER TWO

CONCEPTUAL FRAMEWORK

THE CONCEPTS/THEORIES OF CURRICULUM IMPLEMENTATION WITHIN THE SOUTH AFRICAN NATIONAL CURRICULUM POLICY (NCS/CAPS, 2012), LEARNER-CENTREDNESS AND LEARNING STYLES

A theoretical framework provides the philosophy and thinking behind, authority of and foundation for a research project. According to Henning (2010, p.26), a theoretical framework may also be called a conceptual framework. Henning (2010, p.25) suggests that a theoretical/conceptual framework positions the research in the discipline or subject of the work enabling the researcher to theorise and make assumptions about the interconnectedness of the way things are related in the world. The conceptual framework is the lens through which the researcher views the world further providing an orientation or stance toward framing the study (Moodley, 2009). Positioning this study in the field of Curriculum Studies, this chapter presents the concepts/theories underpinning research. The chapter provides a broad framework for discussion around the concepts of curriculum implementation of the South African National Curriculum Policy as it has evolved within South Africa's democratic dispensation since 1994. More particularly it focuses on the theories inherent in a learner-centred pedagogy, pedagogy at the heart of South African National Curriculum Policy within a constructivist paradigm.

However, of more specific significance, this chapter examines the theory of learning styles which is concerned with how the brain works in acquiring, storing and using knowledge (Moran, 1991, Moodley, 2009) and its place within a learner-centred pedagogy. It seeks to define and explain learning styles theory in understanding a cognitive, deep learning response to curriculum implementation within a learner-centred approach (Moodley, 2009). This chapter looks at Cognitive Style theory and Brain Lateralisation theory, two key influential theories undergirding learning styles theory.

Furthermore this chapter aims to further the argument as offered in Moodley (2009) for the development of a thread/connection from Rousseau's early learner-centred *Education Naturelle (1762)*, to Dewey's (1859 – 1952) Experiential Education Theory, to Piaget's (1896-1980) Trivial/Cognitive and Vygotsky's (1896-1934) Social Constructivist Theories, to Jung's (1921-1971) Cognitive Style Theory, Brain Lateralisation Theory of Sperry (1964) and Herrmann (1995) and then to the Dunn and Dunn (1978) Learning Style Theory (Dunn & Dunn, 1978, 1990, 2003), the focus of research. In postulating a thread/interconnection among these

theories, drawn by the researcher, this chapter seeks to present a background, frame and rationale for debate, further providing a bedrock for discourse and understanding of learning styles theory and thinking, especially that of the Dunn and Dunn (1978) learning styles model within the South African National Curriculum Statements (2002) and Curriculum Assessment Policy (2012) employed in this study.

Discussion and understanding of these selected theories are aimed at exploring possible linkages for a learner-centred pedagogy that could merge discovery, experiential, constructivist learning with psycho-biological developmental phases, brain hemispherical function and learning styles. In so doing postulating a theory for a learner-centred pedagogy founded on sound deep learning principles whilst acutely aware of individual learning needs. This as a construct is further aimed as a possible response to a need for understanding learner-centredness and learning styles for successful curriculum implementation. It is proposed that the NCS/CAPS (2012) and its implementation may have the potential to be better tackled and understood through the Dunn and Dunn (1978) learning styles approach to teaching given the awareness and application of these theories that may be seen as a confluence diverging from it. It is assumed that knowledge around Piaget's developmental stages and Vygotsky's constructivist theory are known.

Thus the chapter begins with a wide angle view of the concept of curriculum implementation which necessitates a definition of curriculum and curriculum implementation as it is positioned in this study. It continues with a sweeping background and understanding of the principles inherent within the new South African National Curriculum Policy. It concludes with a cameo gaze into the theories of learner-centredness, tracing a thread from Rousseau to Hermann and Sperry as they diverge from curriculum implementation and converge toward the Dunn and Dunn (1978) learning styles theory as postulated in this study. This discussion is aimed to reveal understanding of how the concept of learner-centredness within the implementation of NCS/CAPS (2012) using the Dunn and Dunn (1978) learning styles approach to teaching may be understood. Thus, through this chapter and the next the ontological and epistemological framework and paradigm employed in this study are provided. Subsequently, providing a bedrock for this study's qualitative data generated around the use of the Dunn and Dunn (1978) Learning Styles Inventory (LSI) in implementing the intermediate phase curriculum intensively engaged with in Chapter 5 and 6.

2.1. WHAT IS CURRICULUM

According to Lovet and Smith (1995) there is no one definition of curriculum. Moodley (2009) drawing from Marsh (1997, p. 3) contends that 'because key players in education represent a diversity of values and experiences, it is extremely difficult to get wide public or professional consensus' on a clear definition for curriculum. Having its origins in the Greek, '*currere'* meaning, *to be running,* with the analogy of a competitive running track, the word curriculum is about knowledge (Lovet & Smith, 1995, p.16). The nature of curriculum, according to Moodley (2009) reflects and creates knowledge, truth and reality for its learners. Attesting for this knowledge, truth and reality are epistemological questions that education seeks to answer through curriculum. Marsh (1997, 4 – 5) among others concur that curriculum has sometimes seen knowledge as detached from the knower and at other times personal and generated by the knower. It has been experientially driven as a social, group encounter or as disciplinary, syllabus directed courses of study. It has also been viewed as plans to be followed or as planned learning outcomes of the school (Moodley, 2009).

However, any definition of curriculum takes into account the socio-economic, political and historical context within which it is made and implemented (Marsh, 1997, p.3). Importantly, curriculum has been perceived as a product and as a process (Moodley, 2009). These, informed by the many contextual factors of its time, create the given reality and truth for its learners. Though the intention, planned or explicit curriculum, often captures the ideal and outlines what is to be included in a plan, programme or document, what really pans out in the classroom may not always reflect this. Curriculum practice, or process, the actual implementation or operational curriculum, often reflecting the truth of how curriculum happens in the classroom, is not always captured in the plan (Marsh, 1997, p.4-5). Lovet and Smith (1995, p. 16) advocate that 'any useful definition of curriculum must include both product and process'.

Thus, as Oliva (1997) in Moodley (2009) explains the explicit curriculum is that which is written as part of formal instruction of a school. It is a document of theories and beliefs, texts and supportive materials overtly chosen to support the intentioned instructional programme of teaching, learning and knowledge. Meighan and Siraj-Blatchford (1998, p.67) say that it is

> *'all of the planned experiences provided by the school to assist the pupils in attaining the designated learning outcomes to the best of their abilities'.*

However, Eisner (1994) asserts that the explicit curriculum is only a small part of what schools actually teach. Moodley (2009) records that the hidden curriculum, according to Eisner (1994), is what a school teaches because of the kind of place it is. The hidden curriculum includes a school's reward and discipline system,

organisational structure, physical characteristics, plans, furniture and surroundings that are created and employed to sustain its existence. These components are inherently recognised by parents, learners and teachers and are among the most important lessons children learn. Moreover, Wilson (1995) states that the hidden curriculum distinguishes between what is meant to happen and what teachers and learners actually do and experience.

Carl Rogers (Meighan & Siraj-Blatchford, 1998, p. 229) states that 'learners do not participate in choosing the goals, the curriculum, or the manner of working'. They have no choice in teaching personnel or educational policy. Thus they are powerless to exercise responsibility (Moodley, 2009). The hidden curriculum includes the transmission of norms, values, and beliefs conveyed during social interactions within schools. The null curriculum, that which teachers choose to leave out, according to Eisner (1985) may be as important as what they include and often supports the hidden curriculum. Sometimes relegated to factors of economy and efficiency, the messages relayed to learners are that these elements are not important. Yet, within a learner-centred and more particularly learning styles paradigm, the suggestion exists that learners may be able to contribute to, participate in and effect their learning responsibly and successfully. However, much depends on teachers and institutions in creating and supporting such possibilities, opportunities and environments.

Additionally and appropriately, for the purposes of this study, the reconceptualist concept of curriculum theory as espoused by Pinar (2004) serves to guide and position the understanding of curriculum theory and practice. Pinar reconceptualised a definition of curriculum radically shifting it from seeing it only as a noun as ascribed by the aforementioned definitions and understandings. Pinar (2004) advocated an understanding of curriculum as a verb, seeing curriculum as a dynamic experience. Thus curriculum is dynamic, progressive and holistic with the aim of understanding curriculum rather than just implementing or evaluating it moving beyond narrow prescriptions and procedures (Pinar, 2013).

Though this study does not aim to focus on what constitutes South Africa's curriculum specifically, there is an understanding that what constitutes as valuable knowledge, skills and learning; the learned curriculum, encompasses everything that goes on within the school (Moodley, 2009). Taking on a holistic approach, this involves the explicit, hidden, null and ideological curriculums, among others. Schools are the institutionalised response to the teaching of an official curriculum. Understanding and knowledge of this point of departure is vital to understanding curriculum implementation especially within environs of reform and change. In this study the definition most suited is that of the reconceptualist's definition of curriculum as a process and a product.

Implementation and delivery of the curriculum as a process and a product as it unfolds through the understanding and work of teachers, those who give it life and meaning within their classrooms, are at the heart of this empirical study.

Thus it is necessary for the purpose of this study to further conceptualise and define curriculum implementation. Moodley (2009) avers that according to Fullan (1991) curriculum implementation is a dynamic, complex social process and that for any measure of its success there has to be sufficient capacity and will for change. This requires individual motivation, beliefs central to local contexts, and, stable internal institutional conditions. Furthermore, for any understanding of successful curriculum implementation much 'depends greatly on how well we solve present and emerging problems and how well an innovative culture is supported by our institutions' (Brain. tools, 2010).

Below are brief descriptions of two views of curriculum development and design as a concept for curriculum implementation as offered by Moodley (2009). The first sees curriculum as a text and or experience put into practice effectively and efficiently according to different phases and purposes. Successful implementation of curriculum here depends on artfully applying and meeting developmental, social and cultural objectives and goals. The second view, one that is espoused in this study, takes the view of curriculum implementation, that is, classroom delivery and teaching practice as an art. Here the value and experience of the individual teacher in making the curriculum his/her own, bringing himself/herself into its understanding in and through curriculum delivery, seeing teaching as an art, are advanced.

2.2. TWO VIEWS OF CURRICULUM DEVELOPMENT AND DESIGN: A CONCEPT FOR CURRICULUM IMPLEMENTATION

2.2.1. THE ART OF CURRICULUM IMPLEMENTATION

Carl (1995, p. 49) contends that curriculum implementation is part of a six phase process of curriculum development involving Initiation, Planning, Development, Testing, Implementation and Summative evaluation. Moodley (2009) furthermore, explains that this process has four distinct phases that may be identified comprising Design; where curriculum is planned or reviewed, characterised by purposefulness, contents,

methods, learning experiences and evaluation, Dissemination; focusing on preparing 'curriculum consumers' (Carl, 1995, p.49) for implementation through information distribution, ideas, in-service training, Implementation; where the design is put into practice, and, Evaluation; a phase to determine success and effectiveness.

Providing a theoretical framework for curriculum implementation, Carl (1995) moreover offers the following four models or approaches to curriculum development and implementation that influence curriculum develop and ultimately implementation (Moodley, 2009). First, the Academic Approach, a systematic approach claiming to be objective and universal, is led by academic rationality and theoretical logic. It believes that curriculum planning is above the school situation. Curriculum content is drawn from subject disciplines that are research and theory driven. This approach has been expanded to include intellectual or cognitive skills. The academic approach to curriculum may be seen integrated in the theoretical underpinnings of the Dunn and Dunn (1978) learning styles approach, an approach critiqued in this study. It has also seen the development of combined 'broad fields' of study in the light of the knowledge explosion of the 20/21st Century (Moodley, 2009).

Second, the Experiential Approach, expounded by Dewey, also appropriate to this study, regards experience as subjective, personal, heuristic and transactional. Moodley (2009) says that the experiential approach sees teachers and learners in a co-operative role in curriculum decision making using self-directed, unstructured and personalised, self-paced instructional programmes. Personal feelings, values and experiences are necessary content and active involvement of learners is crucial in obtaining maximal learning outcomes. Advocating a learner-centred, affectively-driven model for education within the psychological, social and cultural developmental processes of learners become important goals and part of the syllabus content for progressive innovative curriculum implementation. Yet, as Moodley (2009) reveals these are directional objectives within this model since no specific aims are spelt out. Such protagonists as Friere (2001), Vygotsky (1995), Gardener (1991, 1999, 2006, 2011), Spady (1994, 1999, 2001, 2009), Pinar (1975, 2004, 2013), Dunn and Dunn (1978, 1992) among several progressive and contemporary educationists and curriculum reformists have been influenced by the experiential model of Dewey. They generally accept that learning stems from and is individually created by what is personally meaningful through selective perception, intelligence and learning styles (Moodley, 2009).

Third, the Technological approach has developed out of the rise of the technological advancement of computers and such media (Moodley, 2009). This approach is designed around technical management systems and functionality within industrial and economical dynamics. It values knowledge that can only be used for the functions of life. These must be able to be reduced into its component parts which are predictable, systematic and controlled. Learning is seen as changes to behaviour are demonstrated. These are quantified and measured (Carl, 1995). This change in performance informs whether learning has occurred. The total system comprises a logical sequencing of the components through analytical procedures of needs assessment, task and structure analysis, synthesis and operational refinement from assessment to achieving the outcome; a model highly favoured by learning institutions and relevant to this study in as much as valuing the benefit of information technology and media for education and teaching and learning.

Last, the pragmatic approach is an antithesis of the above seeing curriculum as a dynamic, complex, irrational, fragmented and reactive process involving much interaction (Moodley, 2009). The pragmatic approach sees curriculum as a political and eclectic process based on a number of theoretical concepts and principles using academic, experiential and technological elements through give and take of interest group, deriving eventually at a consensual curriculum. This has been referred to as a naturalistic model and a co-operative curriculum change curriculum.

These four approaches are further characterised, according to Carl (1995) by three main orientations/ attitudes of communities and schools that influence curriculum development and implementation. These are Transmission; where content and product are more important than pupil involvement, Transaction; seeing learners more involved, and, Transformation; which is a more humanistic, social orientation that sees learners and curriculum totally integrated and teachers fully involved. This last approach is significant within the South African context as later discussed (See 2.3)

2.2.2. CURRICULUM IMPLEMENTATION AS AN ART

The concept of curriculum implementation as an art, also referred to as the 'nature of teaching' by Hoban (2005), pedagogy, curriculum delivery, classroom instruction, learning and teaching and schooling, among others, is that encounter between teacher, learner and learning material, the focus of this study. Hoban's (2005) conception of curriculum implementation or the nature of teaching, like Pinar (2004), is that of teaching as a profession or an art that is complex and involving personal judgments. Here teaching is not seen as mere application of 'prescribed knowledge' and techniques acquired over time, but as 'a dynamic

relationship' (Hoban, 2005, p.9) within classrooms, comprising several integrated elements. These, according to Moodley (2009) include curriculum, learner response and interest, learner numbers, their prior knowledge, available resources, flow from previous lessons, lesson content, learning styles, special needs, assessments, behaviour management and sensitivity to socio-cultural backgrounds of learners (Hoban, 2005, p.5). Informed by theory and strategy (Moodley, 2009), this conception places much value on personal judgments and beliefs of teachers to handle individual and unique daily interactions within their classrooms. Day (1999, cited in Hoban, 2005, p. 9) refers to this as 'holistic judgment'.

Moreover, curriculum implementation as defined by Darling-Hammond's (2000, p.647, 662, 664) 'pedagogy of understanding' through 'an infrastructure for adaptive, learning-centred education' is against the growing pluralistic, diverse character of 21 century society. Moodley (2009) says that according to Darling-Hammond (2000), relevant implementation is one that sees learners actively construct their own knowledge building on their past experiences and being able to apply them to new situations through critical thinking, invention, production and problem solving. This requires teachers to be proficient in deep, disciplinary content knowledge and pedagogical content knowledge (Darling-Hammond, 2000, Moodley, 2009). Creating opportunities for flexibility and variety in experiential ways for learners to access knowledge, and, moving away from what Glaser (1990, p. 643) refers to as the 'selective mode' of teaching with minimal variation and limited success that may have served homogenous groups.

Teaching thus, according to Moodley (2009) drawing from Adler (2002, p.3) recognises the 'world-wide curriculum reform movement' within today's technologically and globally advancing world, and, is also in touch with issues of learner-centred practice, multilingual classrooms, critical issues of redress, diverse socio-economic contexts, flexible and integrated knowledge, and, a need for high level of skills and knowledge, among others. This holistic, interrelated approach to the nature of teaching, according to Darling-Hammond (2000, p.166), 'produce teachers who are more effective'.

Thus, as also observed in Moodley (2009) the conception of teaching as an art with an 'interpretive/constructivist' value on reflective practice encourages the idea of life – long learning, as teachers continually 'develop opportunities for self - improvement' (National Framework for Teacher Education in South Africa, 2005, p.58), within their profession. More so, knowing that there is no one 'fail – proof' (Hoban, 2005, p.9) teaching strategy permits dynamism and creativity within a professional environment when seen as an art.

Hence, against the above, in the light of this study growing out of a review of selected literature (Moodley, 2009), to appropriately understand some of this culture a brief background to and development of South Africa's current curriculum policy is necessary.

2.3. THE SOUTH AFRICAN NATIONAL CURRICULUM STATEMENT POLICY (2012)

According to Moodley (2009) South Africa's education curriculum constructed around an outcomes-based approach adopted post 1994 has received much criticism. She states that South Africa's new curriculum may be seen as a dichotomous tool against anti-democratic struggles vitally serving specific ideologies and goals and a democratic means of education for all. Its origins may be traced to the mid-seventies (Moodley, 2009). The 1976 Soweto uprising marked the beginnings of the role education was to play in the struggle against apartheid. The concept of 'people's education for people's power' infused with a revolutionary populist thrust in the 1980s was a rejection of the apartheid social system (Moodley, 2009).

The National Education Crisis Committee (NECC) co-ordinated this resistance (Moodley, 2009). In her unpublished paper (Moodley, 2009) states that the quest for a democratic model of education to challenge and eradicate racial, sexist and class differences, and, an alternative curriculum of equality and redress led to a wide-scale, systematically researched investigation, the National Education Policy Investigation (NEPI, 1993). A process model that encouraged learners to think critically and creatively, based on Frierean principles was endorsed. The process rather than the goal was to be more important in the understanding of learning processes and procedures. It saw learners as active agents of their own learning and educators facilitating learning experiences through methods, modes of presentation and relevant resources that illuminate the relationship of parts within the whole context through integration (Moodley, 2009).

The release of Mandela and the unbanning of the ANC in 1990 proceeding the gigantic fall of communism in Eastern Europe in 1989 saw a distinct shift in the language of negotiations between the National Party and the ANC, from a socialist discourse to one of democracy (Moodley, 2009). Following the first democratic elections in 1994, the rapid engagements in education policy development to reflect pluralism, human rights, liberty, equality, justice, peace and a pursuit of life-long learning are seen in the new government's White Paper on Education and Training (1995). Here, the problem of a national system of education and training, central to society in terms of health and economy, was addressed in the government's commitment to changes in education and training in South Africa (Moodley, 2009).

The already influential de Lange Report of 1981 on Education Provision in the Republic of South Africa highlighted, among others, the failing economy, increasing unemployment of school leavers, and the education system's failure to adapt to changing demands of complex skills required in the labour markets (Moodley, 2009). It called for improved quality of life in economic, social, religious, moral, work and cultural domains. It advanced a technical and industrial training model advocating vocational education. Now the 21st century realities of constant change, competitive pressures, challenging world-class performance standards and implications of globalisation on economy and the dire response from education and training to prepare for new skills and knowledge saw a swift shift towards systemic discourse in the ANC and Congress of South African Trade Unions (COSATU) led policies (Harber, 1997; Jansen and Christie, 1999; Pretorius and Lemmer, 1998).

The approach to integrate education and labour/training with a view towards life-long learning and flexibility, rejecting the rigid division between academic and applied, theory and practice, knowledge and skills, forms an integral understanding in how education was to be used for redress and access (Reconstruction, Development and the National Qualifications Framework, 1997). Emanating out of the national training strategy of the National Training Board (NTB), the National Training Strategy Initiative (NTSI), NEPI and the ANC's Education and Training Framework (ETF), the South African Qualifications Authority Act of 1995 with its enabling National Qualifications Framework (NQF) was enacted. Premised on the recognition of prior learning, the NQF is a facilitative tool for human resource development in a lifelong learning model. Specifying learning in terms of nationally and internationally accepted outcomes, the NQF aims to create an integrated national framework for learning achievements to enhance access, mobility and quality (Moodley, 2009).

Outcomes based education (OBE) was adopted as the enabling vehicle. C2005 was the product. C2005 was a political project. It was an overtly political product with a vision and imperatives in opposition to its apartheid counterpart. C2005 was premised to unite all citizens as equals in a democratic South Africa. On the 24 March 1997, Prof Bengu, the then Minister of Education, launched C2005. Stating in Cape Town,

> *'Due to the concern about the effectiveness of traditional methods of teaching and training, which are currently still content-based, the curriculum will in future be couched in terms of learning outcomes. It will cut across traditional divisions of skills and knowledge, with the emphasis on what the learners should know and can do at the end of a course of learning and teaching, instead of the means which are to be used to achieve those results.' (http://www.ecdoe.gov.za).*

C2005 was underpinned by and rooted in the new South African National Constitution. It consisted of 7 critical and 5 developmental cross-field outcomes and 66 specific outcomes. These were spread across 8 learning areas over 4 school-based phases; Foundation, Intermediate, Senior and Further Education and Training Phases. This was encapsulated in the NQF. C2005's enabling OBE approach, founded, among others, by American educationist and sociologist, Dr. William Spady, emanated out of a competency-based/constructivist approach. It aims to equip learners with skills to learn for themselves rather than merely being filled with often contested knowledge. Here, learners are meant to describe, explain and develop knowledge, designing/doing something with it (Moodley, 2009).

OBE focuses on what learners can actually do after a learning experience. It begins at the end point; the goal or outcome of learning and specifies what a learner should know and be able to do at the end of a period/process of learning. Based on the assumption that all children can learn and succeed not necessarily at the same time and in the same way, OBE is principled on clarity of focus, designing down; which means working back from the desired final outcome in planning the teaching and curriculum to reach it, expanded opportunity and high expectation. Learners are meant to have a clear understanding of each learning outcome in order to know what, why and how they should learn, and be able to demonstrate this knowledge. It requires that educators start their curriculum and instructional planning at the point where they want learners to end, that is, what learners are to achieve at the end of the learning process (Spady & Schlebusch, 1999, p. 18; Killen, 2000a, p. 3; Koma, 2006, p. 29 - 30). Once formulated, strategies of learning facilitation and assessment that best assist learners in achieving the learning outcomes are selected with no one particular strategy of learning facilitation meant to fit every child. According to Spady (1994, p.19-20) designing back is like drawing a clear map that is designed from end to start, so as to show learners what they need to know and do in order to be able to successfully achieve the outcomes. The alignment of learning outcomes, learning facilitation and assessment are to be kept in mind throughout the process (Moodley, 2009).

OBE is thus an approach or method of teaching that has come to incorporate aspects of instrumentalism, rationalism and pragmatism and has become synonymous in South Africa with C2005. It is about learner *output*. To quote Bengu on the launch of C2005:

> *'At its core are fundamental ideals of human resource development, learner-centredness, relevance, integration, differentiation, redress and learner support, nation-building, critical and creative thinking, flexibility, progression, credibility, quality assurance and non-discrimination, especially mutual respect for diverse religious and value systems, cultural and language traditions; multilingualism and*

> *informed choices regarding the language/s of learning; co-operation, civic responsibility and the ability to participate in all aspects of society; an understanding of national, provincial, local and regional developmental needs'(HTTP://WWW.ECDOE.GOV.ZA).*

Furthermore, C2005 was a strongly values-based response to education. Its inherent philosophy was to foster a democratic, pluralistic society of mutual respect. This was constructively designed within its features of knowledge, skills, attitudes and values built into each of the specific outcomes and across its learning areas. Whilst the old, NATED 550 curriculum focused solely on teacher driven content, C2005 had an expanded ideology that valued learners' holistic development towards transformation, reconstruction and development. In addition, the fundamental values incorporated within C2005 were formally initiated in a Manifesto on Values, Education and Democracy in 2001. It ensconces 10 fundamental values of the constitution and its relevance for education (Moodley, 2009).

C2005 saw knowledge as a means to an end. Through an integrated approach, both of theory and practice, knowledge and skills, head and hand, a learning by doing, problem solving, skills development approach was valued as part of curriculum, learning and teaching. Teachers now had a greater space in curriculum development. Through Outcomes Based Assessment of formal and informal formative, continuous, criterion-referenced and summative assessment, all learners were meant, according to their pace and strengths, to progress towards achieving the learning outcomes. This approach was at once democratic and contextual (Moodley, 2009).

Yet 'implementational dilemmas' within the system as regards 'finance and support', 'conditions of schools and classrooms' and of 'administrative burden' and 'capacity of educators' (Jansen,1998), lack of understanding and resistance to change among others legitimate concerns surrounding support for C2005 arose. Harley and Wedekind (2004) asserted 'when teachers are uncertain there will be failure'. Bertram, Fotheringham, and Harley (2000) strongly contend that teachers are 'crucial to the success of any innovation'. Inadequate and inappropriate training of educators, misinterpretations and lack of understanding of its design features, the need for suitable resources and appropriate materials and substantive professional support are strong reasons for its demise (Moodley, 2009).

This may be supported by some 35 recent research studies spanning a variety of subject areas and schools types that found most South African teachers have not been adequately trained in the use of OBE teaching approaches and needed training to be able to do so (Taylor & Vinjevold, 1999, Onwu & Mogari, 2004). Taylor and Vinjevold (1999) found many classrooms characterised by lessons dominated by teacher talk and

low-level questions, a lack of structure, the absence of activities which promote higher order skills such as investigations, understanding relationships and curiosity. Real world examples are often used, but at a very superficial level, little group work or other interaction between pupils, little and very rudimentary reading and writing. Further, the rushed timeframes to plan and learn new skills and practices, along with competing local demands has made for poor implementation attempts (Moodley, 2009).

Thus a curriculum review and revision process commissioned by the then Minister of Education, Prof Kader Asmal, took place in 2000 under the chairmanship of Professor Linda Chisholm. It culminated in 2002 with a streamlined, sequenced and simplified version. The Revised National Curriculum Statements for Grades R to 9 and later the National Curriculum Statements for Grades 10 to 12 were developed based on recommendations and involvement from various stakeholders including the Department of Education, Institutes of Higher Education and Trade Unions (Moodley, 2009).

According to Professor Chisholm (2005, p. 194) interpretation of South Africa's curriculum policy and development is dominated by two main approaches, that of curriculum as policy and of curriculum as knowledge. These clouded in much debate, the latter is a focus on how knowledge is constructed and the role school has in teaching and learning. Seated in constructivism and outcomes-based education, at its heart is a learner-centred character and an emphasis on the everyday knowledge and realities of learners. Believing that through this real learning can take place it is seen as challenging and at odds with school-based knowledge and processes (Moodley, 2009).

The review committee found among the main areas of focus were the confusing terminology, quantity of specific outcomes and time for development of effective foundational skills, and weaknesses within its design features for promoting sequence, pace and progression and inadequate training of educators(Chisholm, 2005). A general support for C2005's underlying principles was strongly felt. However, the difficulties that educators experienced of ensuring conceptual coherence and progression of learning in respect to integration and the need for clarity with regards to assessment were heard and addressed. The issue of quality learner and teacher support materials to cope with the new curriculum was felt to be of priority (Moodley, 2009).

Given the performance of the first cohort of matriculants it was noted, according to the Eastern Cape MEC speaking at the release of the 2008 results that:

> *'OBE has taught them to think and not to recite… However, the process of transforming the system at all levels has not been without its challenges… Key to the challenges was, and is, the capacity of teachers to translate the policy and methodology to make an impact in the classroom and make our learners to succeed.' (http://www.ecdoe.gov.za/)*

Currently in South Africa, the new (Revised) National Curriculum Statement currently streamlined for pacing and sequencing of content into the CAPS (2012) used in this study is founded among others on the *Lifelong Learning through a National Curriculum Framework* document of 1996 (Revised National Curriculum Statement Grades R-9, 2002, p.4, 8, 10, 12). It is informed by a number of curriculum principles. Among these is the enabling principle of Outcomes Based Education which 'considers the process of learning as important as the content' Moodley (2009) contends that this approach to teaching according to the NCS/CAPS is meant to 'emphasise participatory, learner-centred and activity – based education'. It aims to

> *'create a lifelong learner who is confident and independent, literate, numerate and multi-skilled, compassionate, with a respect for the environment and the ability to participate in society as a critical and active citizen'* (NSC, 2002).

The design features of the NCS/CAPS (2012) and more particularly the Intermediate Phase Curriculum on which this study focuses consists of eight Learning Areas. These are unique fields of knowledge, skills and values that are also connected to each other comprising of Languages, Mathematics, Natural Sciences, Technology, Social Sciences, Arts and Culture, Life Orientation and Economic and Management Sciences for Grades 4 to 9. According to the Overview Document (2002, p.10) the 'relationship between human rights, a healthy environment and social justice is addressed in each Learning Area'.

Furthermore, emanating from the South African Constitution are seven critical and five developmental outcomes out of which learning outcomes and assessment standards for each of the Learning Areas are designed down. These critical outcomes envisage learners who will be able to engage in: critical, creative decision making and problem solving; work effectively and cooperatively with others; organize and manage themselves independently; work with information gathering, analysis and evaluation; use of various modes of communication; effective and responsible use of science and technology, and understanding of the relatedness of the world and its systems. Among the developmental outcomes is a focus on strategies to learn more effectively, citizenship, cultural and aesthetic awareness, career orientation and entrepreneurship.

The understanding then that teachers are responsible for and required to develop Learning Programmes; 'the structured and systematic arrangements of activities that promote the attainment of outcomes and assessment standards (that) specify the scope of learning' (Overview Document, 2002, p. 15) through

planning of work schedules that pace and sequence activities, are based on the principles of high levels of skills and knowledge attainment, conceptual progression and integration of linked and related experiences. According to Moodley (2009) of significance, outcomes and assessment standards are meant to emphasise

> *'participatory, learner-centred and activity-based education (leaving) considerable room for creativity and innovation on the part of teachers in interpreting what and how to teach.'* (Overview Document, p. 12)

However, regardless of policy attempts toward innovative, creative and learner-centred approaches for teaching in diverse situations, seeing teaching as an art, education, schools and teachers in particular continue to face grave endemic challenges in an endevour to educate all. For most teachers these concepts are alien and strange. Furthermore, abysmally of the 386 595 educators in ordinary schools' employ and 24 118 in independent schools, many are semi or unqualified with limited empirical knowledge of pedagogical strategies (OECD, 2008).

Thus to fully understand the inherent learner-centred, life-long learning fundamental philosophy within South Africa's NCS/CAPS (2012) curriculum policy, and more recently the sequenced and paced Curriculum Assessment Policy (2012) emanating out of the NCS/CAPS (2012), an understanding of and background to the concepts and theory of learner-centredness and constructivism are needed (Moodley, 2009). This further creates the necessary background, understanding and theoretical framework ensconced in curriculum delivery investigated and understood in this study where a learning styles approach has been used to understand and implement the NCS/CAPS (2012). In so doing creating a further framework and reference for this study which aims to understand teachers' experiences of implementing the NCS/CAPS (2012) through the Dunn and Dunn (1978) learning styles approach to teaching, a learner- centred comprehensive model of teaching. Even further, this study attempts to offer/ recognize/reconceptualise and extend the concept of curriculum theory and practice within its learner-centred framework to incorporate a brain-based approach to learning through the influence of Hermann and Sperry on the Dunn and Dunn (1978) learning styles model.

This section offers the reader a thread from Rousseau to Dewey to Piaget, Vygotsky, Jung, the progressive movement towards cognitive style and brain lateralisation theories, the bedrock of the Dunn and Dunn (1978) learning styles theory (Moodley, 2009). It concludes by featuring two influential models of learning styles, those of Kolb and Felder-Silverman. This section aims to set the background for Chapter 3 where the Dunn and Dunn (1978) learning styles approach to teaching is presented and critiqued.

2.4. LEARNER-CENTREDNESS: A POSTULATED INTERCONNECTION OF ROUSSEAU, DEWEY, PIAGET, VYGOTSKY, JUNG, SPERRY, HERRMANN AND DUNN AND DUNN (1978).

A learner-centred education according to Hirsch (1996, 2001, cited in Horn, 2009) is a romantic style of education whose philosophy lies in the goodness of nature and natural processes. It assumes that human development is a natural process. As part of the progressive view, it holds that all cognitive, intellectual powers develop automatically within the course of natural developmental. Rooted accordingly in a maturationist concept of development, experience and environment serve as 'necessary nourishment' the naturally developing 'innate, inborn, inherited, or genetically' (Wadsworth, 2004, p.2) predetermined stages of development. It further holds that what comes from within the child is inherently good and more important. Thus pedagogical/ educational environments should be permissive of this to unfold (Wadsworth, 2004, p.2). Education that follows the child's own natural pace of development therefore is optimally possible (Stone, 1996:6 cited in Horn, 2009).

Hence, this 'learning though unfolding' (Bigge & Shermis, 2004, p. 31) stemming from this theory; that people are naturally good and active in relation to their environment, assumes that all people are free, autonomous and forwardly active, reaching out from themselves, until and unless they are corrupted by outside influences (Bigge & Shermis, 2004, p. 31). It deems that each person has his or her own choice and responsibility to account for his or her own life.

Thus historically and conceptually, the origin of the above thinking on learner-centredness is found in romantic developmentalism. This concept originated with Jean Jacques Rousseau's *education naturelle.* In his book *Emile* (1762), Rousseau argued for the subordination of learning content to the natural stages of child development (Horn, 2009). Rousseau (1712–1778) lived during the time of the Enlightenment, a western historical period before Romanticism. The Enlightenment philosophers glorified human freedom, but did not extend this to the child. Rousseau did. He exalted human emotions above the intellect.

Among Rousseau's core premises (Horn, 2009) were that the child is naturally good, intellectual development is a process of natural growth and the child's main characteristic is activity. Rousseau's position was that in a natural environment free from corruption human beings were hereditarily basically good. He conceded that a bad social environment produced bad human beings (Bigge & Shermis, 2004, p.31). Thus social institutions were not natural. He believed children learnt best in a natural way and formal tuition was not only inferior but "harm(ed) children by violating their natural propensities" (Green, in Stone, 1996:7, Bigge and Shermis, 2004,

p. 31. He asserted that sensory experience is the best teacher, and self-activity and discovery learning should replace verbal instruction.

About a hundred and fifty years later, another learner-centred model that may be seen flowing from the above was that of the cognitive interactionist model; the Experiential Learning Approach of Professor John Dewey (1859 – 1952). Dewey saw experience as interaction within one's perceived environment (Wadsworth, 2004, p. 150). He stated that,

> *'An experience is always what it is because of a transaction taking place between an individual and what , at the time, constitutes his environment. (that) …to learn from experience is to make a backward and forward connection between what we do to things and what we enjoy or suffer from things in consequence.'*

Affectively driven as part of a developmental process of psychological, social and cultural characteristics, the experiential approach to learning, expounded by Dewey (Kelly, 2009), regards experience as subjective, personal, heuristic and transactional. It sees teachers and learners in a co-operative role in curriculum decision making and delivery. It uses self-directed, unstructured and personalised instructional programmes that are self-paced. Personal feelings, values and experiences are necessary content. Active involvement of learners is crucial in obtaining maximal learning outcomes (Kelly, 2009). Thus learning stems from and is individually created by what is personally meaningful through selective perception. It sees needs of the learners as important goals.

Providing a psychological basis for a problem-centred, exploratory understanding level of teaching and learning, Dewey saw a problem as a means to possessing personal goals. Having a chosen goal, a person would then behave in a manner intended to achieve that goal. Dewey also argued for using learner interests to facilitate schooling developmental goals, skills and content. He strongly affirmed the educational value of using children's interests as adults did with great enthusiasm and energy (Wadsworth, 2004, p. 160). Advocating for mutual respect between school and learner Dewey believed teachers should work as collaborators and equals than authoritarian figures.

Likewise, according to Matthews and Stone (2003, p. 54; Horn, 2009), learner-centredness received noticeable scientific validation from Swiss developmental psychologist, Piaget (1896-1980), and Russian psychologist, Vygotsky. Their work confirmed that learning is an active process of knowledge construction. Piaget believed that knowledge is actively and individually constructed by the learner through 'intellectual

engagement and investment in personally meaningful tasks' (Conceicao-Runlee and Daley, 2005), not merely passively from their environment. Piaget referred to this as trivial or cognitive constructivism.

Piaget's contribution of *genetic epistemology;* his life-long study of the innate developmental stages of children and their knowledge acquisition at different ages, are of immense benefit to education as regards the nature of the learning process (Bigge & Shermis, 2004, p. 18). Biologically oriented, he gave 'psychobiological developmental factors preeminence and cultural learning factors only a secondary place in the explanation of human behaviour' (Bigge & Shermis, 2004, p.18) replacing Behaviourism of the 1960s with a focus on inner mental activities. Such mental processes as thinking, memory, knowing, and problem-solving are seen as schemata or symbolic mental constructions that are to be explored. Learning happens when there is a change in schemata. Piaget saw learners as rational beings that needed active participation in order to learn not as animals that are programmed to merely respond to external stimuli.

Rejecting the Darwinian and Lamarckian positions that for biological reasons such negative human activity as war is inevitable, Piaget argued that human development and the effort to understand move human beings toward cooperation and altruism (Wadsworth, 2004, p.6). He advanced that human development is a process of interaction between the biological individual and the environment. Announcing his 'blinding discovery' (Wadsworth, 2004, p.6) he pronounced that where science gives knowledge of good and evil and is able to explain everything, it could not pronounce on values. He concluded that it was faith that spoke to values and that faith is not knowledge but action and therein lays its conflicting resolution (Wadsworth, 2004, p.6).

Thus in influencing learner-centred theory, Piaget's action-led cognitive constructivist theory provided a clear and coherent description of how and why intellectual development proceeds through a course of reliable milestones and developmental sequence that are universal to all human beings. Believing that as part of adaption to the world around them, children actively construct cognitive, affective and social knowledge, they arrive at these developmental milestones in a natural way (Wadsworth, 2004, p.146). For education which primarily focuses on skills acquisition and content learning, developmental or natural learning processes of development, he claimed are thwarted and denied often resulting in ' closed gates, bad affect, boredom, and mindlessness among learners and teachers' (Wadsworth, 2004, p.146).

Piaget's constructivist theory envisioned that educational practice and natural learner development could be compatible with the learning of skills and content. Herein lay authentic, deep construction of knowledge. Yet, these developmental skills and content goals of school learning could not and should not be assumed accidentally (Wadsworth, 2004, p. 148). It has to be consciously decided upon and ensured. Piaget's cognitive constructivist theory envisaged how this might be accomplished; namely, through process and exploration within his four-stage model of how the mind processes new information; that of sensorimotor, preoperational, concrete and formal operations.

Conversely the influential Russian literary scholar, theorist and researcher Lev Semenovich Vygotsky (1896-1934) maintained that knowledge is socially and culturally constructed (Boudourides, 1998, p. 2, Wadsworth, 2004, Gredler and Shields, 2008, p.26). Through his Social Constructivism Vygotsky emphasized that learning takes place through interactions with others. Whilst Piaget focused on knowledge formation/construction inside the mind; his theory of invention, Vygotsky's theory of transmission is concerned with the influence culture and society has on intellectual development (Wadsworth, 2004, p. 10).

Arising from his central assumption that reality is a complex process of ongoing change, Vygotsky characterised cognitive development as constantly undergoing change. Basic to his view was the recognition of both external and internal factors influencing intellectual processes and transformation of an individual's cognitive development which differed from early stages to processes later on (Gredler and Shields, 2008, p.26). Vygotsky determined that new information is linked to a person's prior knowledge which rendered mental representations subjective. Learning is seen as active, contextualised and constructed on personal experiences and hypothesis of their environment and learners are never seen as empty vessels.

Still further, Vygotsky argued regarding school instruction that for successful methods of instructing learners in acquiring systematic knowledge it was necessary to differentiate between the development of scientific knowledge and everyday spontaneous knowledge and concepts (Bigge & Shermis, 2004, p. 129). Vygotsky determined that there was a need for teachers to keep tasks within a learner's zone of proximal development; that is focusing on recent information and new cognitive processes within a learner rather than those that may have been mastered from the past (Bigge & Shermis, 2004, p. 129).

Vygotsky believed with proper input, learners would be able to do much more than what their current levels indicated (Bigge and Shermis, 2004, p. 129). He saw the role of education providing learners with experiences

that are within their zones of proximal development yet challenging them further with activities that with sensitive adult guidance they could accomplish and promoting thus a scaffolded approach to learning (Bigge & Shermis , 2004, p.129; Gredler & Shields, 2008, p.87). The role of teachers is to provide learning tasks centred or slightly higher above individual learners' zones of proximal development. Learner's personal and social backgrounds, use of small group collaboration, projects and tasks valuing meaningful activity are inherently recognised.

Thus constructivism grounded in postmodernist thinking believes that the mind is constitutive of the reality that it experiences (Horn, 2009). It is a theory that supports the idea that learners uniquely construct their own knowledge. Miller (2000, p. 92, cited by Miller, 2002, p.1) states that this theory of learning

> *'allows learners to develop and construct their own understanding of the material based upon their own knowledge and beliefs and experiences in concert with new knowledge presented in the classroom'.*

Instructional strategies therefore need to support this.

Entrenched in the above learner-centred concepts is Progressivism coined by Stone (1996, cited in Horn, 2009). Progressivism sees teaching to the intellect as an act of creating situations that stimulate natural learning. Here the teacher's role is seen as a guide, facilitator and helper. Progressivism believes that the cognitive state of the child; what he/she knows and/or can do, must be used to decide on what is to be included in a child's learning; curriculum design and implementation. Thus the explicit curriculum; the product, is the elevation of natural states, and processes; its implementation is the condemnation of all that is artificial. So for education, artificial methods such as direct instruction give way to natural learning, involving discovery and study of the characteristics of natural development (Horn, 2009).

Significantly, over the last century, learner-centredness has received wide-spread popularity. According to Maribe Branch (1995), a learner-centred approach to learning sees the need for educational environments to promote lifelong learning, enhance critical thinking, regard teachers and learners as teachers and learners and encourage confidence. Gijbels, Dochy, Van den Bossche and Segers (Serife, 2008) strongly advocate that the use of a deep learning approach, associated with learner-centred approaches to teaching, contributes positively and produces higher quality learning outcomes while a surface approach generates lower quality learning.

This further affirmed by Kiguwa and Silva (2007, citing Entwistle, 2001a; Peng & Bettens, 2002) that a deep approach involves active engagement with learning content leading to extensive use of the learning material

while gaining personal understanding. It thus is important that learners be afforded the opportunities to adopt a deep approach to their learning. This is not only seen as learner-dependent characteristics. When proper strategies are applied, it might be possible to move learners' approaches to learning from a surface to a deeper orientation. An approach to learning accordingly is a concept about learners' motivation on their own learning; metacognition, and the use of appropriate strategies; learning styles (Serife, 2008).

More recently in 1990 on appointment by the American Psychological Association (APA) of a special Task Force on Psychology in Education, for the purposes of integrating research and theory from psychology and education to extract best practice principles that could provide a framework for school redesign and reform, a definition of learner-centredness encompassing fourteen principles emerged (McCombs, 2001, p.185-186.). The resulting document, APA of 1993 and 1997, provided an integrated perspective on factors influencing learning for all learners giving attention to diversity and standards. It categorised learner-centred principles into four 'research-validated domains' important to learning which included metacognitive and cognitive factors, affective and motivational factors, developmental and social factors, and individual difference factors. It defined learner-centredness as,

> *'the perspective that couples a focus on individual learners—their heredity, experiences, perspectives, backgrounds, talents, interests, capacities, and needs—with a focus on learning—the best available knowledge about learning and how it occurs and about teaching practices that are most effective in promoting the highest levels of motivation, learning, and achievement for all learners'.* (McCombs, 2001, p.185-186.)

Relating to beliefs, characteristics, dispositions, and practices of teachers, it stated that from an understanding of the principles teachers are able to include learners in decisions about how and what they learn and how that learning is assessed, value each learner's unique perspectives, respect and accommodate individual differences in learners' backgrounds, interests, abilities, and experiences, and treat learners as co-creators and partners in the teaching and learning process. McCombs (2001, p.186) claims that the term also incorporates learning new beliefs and visions of practice that are responsive to and respectful of the diverse needs of learners and teachers. She states that learner-centredness provides time for reflection and offers opportunities that enhance learning, motivation, and achievement.

In sum therefore, the above section offers a strong theoretical connectedness and basis for learner-centredness from Rousseau's self-activity discovery learning of his *education naturelle,* to the progressive-cognitive interactionist views of John Dewey on experience, learning and development, to Piaget's individual

psychobiological trivial/cognitive constructivism, Vygotsky's social cultural constructivism to Stone's Progressivism and Natural Learning among others. These see maturation; the stages of development and the environment central with mental development. The learner viewed as product and enquirer, and his or her environment and development; the process, together critically construct and organise the world. Motivation, primarily internal is key to learning and development.

However, critics of learner-centredness (Chisholm, 2005, p.194) have found that 'educational progressivism's learner-centred 'romanticism' has been disadvantageous especially of the disadvantaged. Chisholm (2005, p. 194) claims that educations' focus on the local, known, and every day is not education. Education rather should be an endeavour in leading learners away from the known, familiar, and everyday into universal processes. Contending that it denies access to universal processes of knowledge-creation, she believes it renders education merely functional (Chisholm, 2005, p.194). And still further several questions regarding whether current approaches used in implementing the curriculum will necessarily improve the quality of education and transform South African schools have also been raised (Botha, 2002).

It is thus significantly in this space of learner and development and teacher and school that a critical gap has emerged within institutionalised learning in general and in South Africa in particular. This crucial gap between learner and learning material and the role of the teacher in bridging this gap offers a further theory that is central to this study. In addressing this gap between a learner's personal cognitive experience and development, as product, and curriculum implementation, as process, learning styles theory radically offers to provide an authentic and allied learner-centred solution. Claiming to serve a vital cognitive response in education curriculum implementation in bridging the gap between teaching and learning, learning styles theory is about individual learner input (Dunn & Dunn, 1978). Primarily, learning styles is concerned with how the brain works in acquiring, storing and using knowledge about the world (Moran, 1991).

Thus arising out of the above concepts and theories are the awareness, recognition and understanding of a relationship between learners, teachers and learning through learning styles. Thus, foundationally, learning styles theory and especially that of the Dunn and Dunn (1978) Model investigated in this study is rooted in two distinctive learning theories, firstly, that of Cognitive Style Theory and secondly, Brain Lateralization Theory (Dunn & Dunn, 1978; 1992, p. 4). The following section takes a cameo view into these two founding theories of learning styles.

2.5. TWO DIVERGING/CONFLUENCING THEORIES: COGNITIVE STYLE THEORY AND BRAIN LATERALISATION THEORY

Firstly, the term cognitive style denotes an individual's fundamental consistent preferences and characteristics for particular ways of gathering, processing, storing, organising and representing information intake and experiences and his/her ensuing decision-making and values (Serife, 2008; Pencheva and Papazova, 2006, p.1; Cassidy, 2004). As a construct, according to Globerson and Zelniker (eds., 1989, p. 21), it is not so much concerned with whether a goal is achieved but with how it is achieved. Cognitive Style accordingly may be broadly defined

> '*as a preferred approach to problem solving that characterises an individual's behaviour across a variety of situations and content domains but is independent of intellectual competence.*' (Globerson and Zelniker, eds., 1989, p. 21)

Notwithstanding its concerning uneven scope for application enabled mainly through deduction and its vast number of variables extracted essentially through observation (Pencheva & Papazova, 2006,p.1), the concept of Cognitive Style, according to Lucas-Stannard (2003) thus is one that has crossed several disciplines. These include psychology, education, computer programming and information science research all of which seek unavoidably to understand and pronounce on individual differences and diversity in the cognitive sphere.

The study of cognition; that of a collection of mental processes including awareness, perception, reasoning and judgment can trace its origins among the Gestalt psychologists in Germany around 1900 (Claxton & Murrell, 1987, p.3; Lucas-Stannard, 2003). They include Max Wertheimer, Wolfgang Kohler, Kurt Kofka and Jean Piaget (working with children) who were already considering the concept of style in learning. Among them at the beginning of the 20th Century who was to greatly influence theory on personality types was Carl Jung (1921-1971). His work on Psychological Types (1923) came to be known as Cognitive Style Theory in American literature (Carland & Carland, 1990; Pencheva & Papazolva, 2006, p.1).

Jung postulated three facets of personality, that of attitude; which could range from the outgoing extrovert to the inward-focused introvert, perception; an individual's method of dealing with stimuli from meaning-oriented to detail-oriented types, and judgment; a person's approach to decision-making that designated a 'thinking person' as analytical and logical and a more values-driven 'feeling person'. Jung's theory has seen its influence in such standard personality test instruments as the Myers-Briggs Type Indicator (MBTI) used in several cognitive style experiments (Lucas-Stannard, 2003).

However, debate exists around its definition and use (Lucas-Stannard, 2003). According to Goldstein and Blackman (1978, p. 4, cited in Lucas-Stannard, 2003), Cognitive Style is seen as a hypothetical construct to explain stimulus response, referring to ways in which individuals conceptually organise the environment, and of an information transformation process of interpreting stimuli into meaningful schema. Cognitive Style, nonetheless, has come to expand into overall personality and cognitive processes, linking cognition/intelligence and personality measures and becoming synonymous with learning styles (Lucas-Stannard, 2003).

Within education, Cognitive Style is also a learning-centred approach (Pencheva & Papazova, 2006, p.3). Distinguished by three major features; a greater interest in the impact of individual differences upon pedagogy, the development of new constructs and concepts of learning style and the presentation of an assessment instrument as a foundation for the theory, Pencheva and Papazova (2006, p.3), believe it conceptualises a particular dimension of the learning process. Citing Witkin's et al. (1962) approach that sees personality as a system, the authors further make the significant intrinsic link between psychological differentiation and the development of own learning strategies.

Furthermore in this regard, Marton and Saljo's (1976, cited in Lucas- Stannard, 2003) Deep-level/ Surface-level Processing research study involving how learners approach materials for learning, found surface-level rote methods focusing on the sign and deep-level processing where learners focused on what was signified; the intended meaning, is significantly based on Cognitive Style Theory. Their findings reveal that surface-level processors were extrinsically motivated and missed the global view of a problem whilst concentrating on memorising quantity. Deep-level processors focused on the point of the matter and quickly grasped the whole overall concepts and were generally intrinsically motivated but could miss detail. Of significant understanding is the value of both processors required to develop complete understanding of a topic with the wisdom lying in how materials are initially approached (Lucas-Stannard, 2003).

Even further, Serife (2008) acutely extends this belief in determining that a number of variables such as the characteristics of learners, learning environment and learning outcomes are to be included when the relationship of learners to learning according to their individual learning styles, are considered. In intersecting cognitive/behavioural with environmental factors in considering an approach to learning as a bridge between the learning environment and cognitive styles, a further notable connection is proposed within Cognitive Style Theory. A connection between self-knowledge, self-enhancement and self-approval and social context is thus

radically made. The understanding of Self in relation to social cognition and social behaviour - motives and strategies are intended. This is related to how people think about the social world within which they interact. Thus the construct of Self-social behaviour has emerged focusing on how individuals behave from and within collective social contexts and identity (Pencheva & Papazova, 2006, p.6).

Hence, imperatively and foundationally influenced by the above, the Dunn and Dunn (1978) Learning Styles model diverging/confluencing out of Cognitive Style Theory believes that individual people process information differently based on learned or inherent strengths (Dunn & Dunn, 1978; 1992, p.4) and that people have consistent individual differences in the way they perceive the world, conceptualise meanings, learn a range of tasks or solve problems (Biggs & Moore, 1993, p. 187).

Secondly, Brain Lateralisation theory, the other vitally enabling theory by which learning styles theory is influenced surged through the rapid intensification of brain research made possible by the advancing rise in technological development (Brandt, 2002, Tileston, 2000). According to Abbott (2002) medical and cognitive sciences, new technologies, and pedagogic research have helped to appreciate the complex workings of the brain. Referred to by Coveney and Highfield (Abbott, 2002) as the 'Cathedral of Complexity', the brain weighs about five kilograms and contains billions of cells; neurons and glials, with a total length between neurons of about one hundred thousand kilometers. It is the most complex living organism on Earth (Abbott, 2002). With no two brains exactly the same, Abbott (2002) states that all brain activity occurs spontaneously or automatically in response to challenges. Amazingly, he affirms that the brain does not have to be taught to learn.

Yet, as Tileston (2000, p. 1) states it is important to examine how learning takes place in the brain. According to Sousa (Tileston, 2000, p. 1), when neurons communicate with each other learning takes place. This occurs as the neuron; cell body, dendrites (finger-like extensions from each neuron) and axon (the neuron stem) sends information down its axon to communicate with the dendrite of another neuron without actually touching the other. Messages are transmitted through a space between each neuron called the synapse. The brain grows dendrites and strengthens its synapses as neurons make their connections. The glial cells help to support and hold neurons together and are significantly important regarding how well we think. Research shows the greater the glial cells per neuron the greater the capacity of the brain.

Notably, brain research and technology such as magnetic resonance imaging (MRI) have raised new understandings around why some children experience learning difficulties (Tileston, 2000). It has opened up

new possibilities in exploring effective teaching practices than that of any other time in history (Tileston, 2000). The intent to provoke divergent/convergent thinking and deepen understanding is offered through new brain-based teaching and learning strategies to extend neural networks (brain pruning/brain branching) of the brain (Cardellichio & Field, 2002). Teaching strategies that provide diverse opportunities for opening up brain pathways for selection and assimilation of greater range of data forcing challenge of misconceptions and creating new conceptions is about restructuring and educating the brain to accommodate far more information than before (Cardellichio and Field, 2002). According to Cardellichio and Field (2002) curriculum and methodology must provide learners opportunities to make sense of data presented to them through how the brain works.

A major goal of brain research is the study of localisation of function, referring to the specific areas of the brain that control specific skills and behaviours (Sternberg, 2009, p.34). The idea that the two halves of the brain's cerebral cortex (only found in humans and in some higher mammals); left and right hemispheres, execute different functions helps in the understanding of behaviour, personality, creativity and ability in using the proper mode of thinking when performing particular tasks (Stout, 2010; Dunn and Dunn (1978; 1992, p. 4; Sternberg, 2009, p. 58-59).

The seminal work of Marc Dax in France in 1836 on hemispheric specialisation in the human brain was the earliest trace to the relationship between speech and the left hemisphere. Scientist Paul Broca of France in 1861 took this discovery further when he made the claim that the left hemisphere is critical in speech (Sternberg, 2009, p. 59). Another early researcher, Carl Wernicke, a German neurologist, further traced the precise location in the left hemisphere for language ability and comprehension in particular. Karl Spencer Lashley, described as the father of neuropsychology, in 1915, though inhibited by the available technology of the time in studying localisation, found that specific locations correlated with specific motor responses. However, it is in the work of American Nobel – prize winner, Roger Sperry that is most notably attributed to the development of Brain Lateralisation theory. In 1964, Sperry asserted that each hemisphere of the brain behaves separately in many ways.

Brain lateralisation theory believes that the function of each hemisphere is very specific. The left hemisphere is responsible for analytical thought and deals with hard facts like abstractions, structure, discipline and rules, time sequences, mathematics, categorising, logic, rationality and deductive reasoning, knowledge, details, definitions, planning and goals, words; written, spoken and heard, productivity and efficiency, science and

technology, stability, purposeful movement, extraversion, physical activity and the right side of the body. It is that side of the brain's functions emphasised most within the educational system and most encouraged in general society. The right hemisphere includes such aspects as intuition, feelings and sensitivity, emotions, daydreaming and visualization, creativity including art and music, colour, spatial awareness, first impressions, rhythm, spontaneity and impulsiveness, the physical senses, risk-taking, flexibility and variety, learning by experience, relationships, mysticism, self-recognition, play and sports, practical language use, introversion, metaphor and humour, motor skills, the left side of the body, and a holistic way of perception that recognises patterns and similarities and then brings them together to create new forms (Stout, 2010; de Boer, Steyn and du Toit, 2001, p.185; Sternberg, 2009, p. 61.)

Thus the assumption as forwarded among learning styles protagonists that some tasks require the left hemisphere primarily and others predominantly the right, are embedded in brain lateralisation theory. Brain lateralization theory asserts that one hemisphere is more dominant while the other participates to some extent in every task (Stout, 2010) though brain dominance remains the same, the ability to develop skills for each half to be more effective is possible (Stout, 2010). Understanding brain lateralisation hence creates a more efficient, beneficial approach in teaching for specific learning. Employing appropriate teaching strategies to enhance the non-dominant hemisphere allows for education to develop both hemispheres.

Influenced by MacLean 's triune and Sperry's left-brain right-brain model, Ned Herrmann developed his Four Quadrant Whole Brain Model; a metaphoric whole brain model by which human thinking style preferences may be described (Herrmann, 1995; Ornstein, 1997, cited in de Boer, Steyn and du Toit, 2001, p.185). It further establishes the specialised functions which are associated with the left and right hemisphere as mentioned above. Accordingly, the four quadrants of this model, A, B, C and D represent the brain's four thinking structures; the left and right hemispheres - cerebral processes and the two halves of the limbic system feeling-based processes with each quarter holding very distinct cognitive functions (de Boer, Steyn and du Toit, 2001, p.185).

Citing Herrmann (1995, 1996, 1998), de Boer, Steyn and du Toit (2001, p.185-187) explain that a person's preference for the A-quadrant (left cerebral mode) means that a person favours activities that involve logical, analytical and fact-based information. A preference for the B-quadrant (processes of the left limbic mode) implies a linear approach to activities. Individuals with a B-quadrant preference favour organised, sequential,

planned and detailed information. They are conservative in their actions and like to keep things as they are. A preference for the C-quadrant (processes of the right limbic mode) indicates favouring information that is interpersonal, feeling-based and involves emotion. A preference for the D-quadrant (processes of the right cerebral mode) is mainly characterised by a holistic and conceptual approach in thinking.

Thus to foster awareness for the whole brain concept and the existence of diversity in thinking style preferences, the Herrmann Brain Dominance Instrument (HBDI) is a profile to determine brain dominance. According to de Boer, Steyn and du Toit (2001, P.185-186), The Herrmann Brain Dominance Instrument (HBDI) is an assessment tool that quantifies the degree of a person's preference for specific mental thinking modes which function together situationally and interactively making up a whole brain in which one or more parts become naturally dominant. And though each hemisphere is specialised in a different way, they state that physical connections (corpus collosum) secure integrated brain activity. Although a person may favour cognitive activities associated with a specific quadrant, yet `both hemispheres contribute to everything, but contribute differently' (de Boer, Steyn & du Toit, 2001). Hermann's model challenges learners and teachers to construct their own meaning on the principles of learning style differentiation in practice (de Boer, Steyn & du Toit, 2001).

Significantly therefore and influenced by the above, are the VARK (Visual, Auditory, Reading, Kinesthetic), VAK (Visual, Auditory, Kinesthetic) and VAKT (including TACTILE) perceptual style models that determine dominant learning preferences of learners combining perception and memory (Morris, 2010; Conner, 2007). Learning styles thus emanate from three main schools of thought; the biologically-based 'how of learning' Perceptual Modality, the 'process of learning' Information Processing Model, and the Personality Patterns Model with a focus on interaction with the environment and genes. These have had a profound influence generally on learning styles theory but more particularly come together in the design and composition of the Dunn and Dunn (1978) learning styles model covered more extensively in the next chapter that focuses on and critiques the Dunn and Dunn (1978) model.

What follows are two significant models of learning styles, those of psychologist David Kolb's Experiential Learning Theory inspired four strand model, especially applied in adult learning, and The Felder-Silverman Dimensions of Learning Style Model for adaptive educational environments.

2.6. TWO INFLUENTIAL MODELS: KOLB'S LEARNING STYLES MODEL AND THE FELDER-SILVERMAN DIMENSIONS OF LEARNING STYLE MODEL

One of the most cited and influential learning style theorists in the field (Desmedt & Valcke, 2004) is David Kolb, an American psychologist. Kolb, influenced by Jung, believes that through past and present experiences and particular patterns, learners grasp reality based on four modes of learning; concrete experience, reflective observation, abstract conceptualization and active experimentation. His Experiential Learning Theory forms the basis of his learning style model (Kazu, 2009). It explores the use of experiences in the learning process. His Learning Style Inventory (1976) was created to assess orientations towards learning. According to Grosser and de Waal (2008) and Kazu (2009), Kolb's model maintains that learners can be divided into four major categories according to their preferred style of learning. Convergers/sensors and feelers learn by intuition and being sensitive to feelings and atmosphere. They like to see, hear and feel in order to learn. They rely on experience and intuition. The characteristic of this learning style is that individuals rely on abstract conceptualization and concrete experience. They need to perceive the whole and then move to the parts.

On the other hand, divergers/watchers prefer to learn through perception and observation (Desmedt & Valcke, 2004). They like lectures, demonstrations and similar activities where they can observe. Divergers are thinkers, aware of values and meanings. They require concrete experiences and learn through reflective observation. They are able to adjust by observing concrete situations from different angles. They construct their ideas patiently, objectively and carefully in the learning process. But they avoid action while taking their ideas into consideration. At the same time they are aware of their own feelings and ideas. They are called divergers because individuals bring different ideas together and show better performance when desired.

Assimilators/thinkers prefer to analyse logically and create understanding for themselves. They like to read theory and study well by themselves. They create conceptual models and are characterised by reflective observation. They focus on abstract concepts and ideas during the learning process. Accommodators/doers prefer to learn by trying things out. They are willing to take risks. They prefer practice to theory and enjoy learning activities that enable them to do something. They enjoy projects, tasks, discussions and similar activities. Planning and carrying out decisions characterise the learning style. They are able to easily adjust to changes since they are open-minded in the learning environment. Learning occurs by doing and experiencing actively. These learners are always in a state of invention. Kolb (1984, cited by Grosser & de

Waal, 2008) asserts that although learners may have a preference for a particular learning style, it is necessary that teachers expose learners to all. This is essential for the successful achievement of learning outcomes that require learners to see, feel, think and do.

Moallem (2007) and Graf, et al. (2009) concur that while most learning style models classify learners as belonging to a few groups, the Felder–Silverman Learning Style Model (FSLSM, 1988) describes the learning style of a learner in more detail, distinguishing between preferences on four dimensions and thus enabling adaptive learning systems to provide programmes which are better tailored to the learners' preferences. FSLSM is based on tendencies, indicating that learners with a high preference for certain behaviour can sometimes act differently, enabling the learning style model to consider exceptional behaviour. Importantly also is that the FSLSM is widely used in adaptive educational systems. They contend that it seems to be the most appropriate model for learning styles.

According to Moallem (2007), Felder and Silverman developed their learning style model based on a composite of several theories. Including Jung's psychological types of information processing, dimensions presented in the Myers-Briggs model of sensing/intuitive and Kolb's information processing dimension of active/reflective, their model is easily accepted since it avoids the complexity of the Dunn and Dunn (1978) model. The core idea of Felder and Silverman's model is that teachers should not teach each learner exclusively according to his or her preferences, but rather strive for a balance of instructional methods. Moreover, according to Felder and Henriques (1995), teaching styles with which learners feel most comfortable may not necessarily correspond to the style that enables them to learn most effectively.

According to Moallem (2009; Sadler-Smith, 2001), Felder and Silverman (1988) classify learners' learning styles according to five questions. Using these they developed the Index of Learning Style (ILS). A 44 question, self- scoring instrument, it assesses preferences on four dimensions of learning: active/reflective, sensing/intuitive, visual/verbal, sequential/global. This is used to identify and integrate learning style theory into the design of instructional material. Graf et al. (2009) concludes that learners with a sensing learning style learn facts and concrete learning material. They are more patient with details and more practical than intuitive learners. They relate the learned material to the real world. Intuitive learners prefer abstract learning material such as theories and their underlying meanings. They enjoy discovering possibilities and relationships and tend to be more innovative and creative than sensing learners.

The active/reflective dimension distinguishes between an active and a reflective way of processing information. Active learners learn best by working actively with learning material, through application and trying things out. They enjoy communication with others and prefer to learn in groups where they can discuss the learned material. In contrast, reflective learners prefer to think and reflect on their material. They prefer to work alone. The visual/verbal dimension differentiates learners who remember best what they have seen; pictures, diagrams, flow-charts, and those who get more out of textual representation, written or spoken (Moallem, 2009).

Three key characteristics are defined for developing instructional materials tailored to the multiple needs of learners (Moallem, 2009). First, instructional materials are meant to increase self-awareness and meta-cognition. They believe that self-awareness about strengths and weaknesses as learners is crucial for success. Second, materials should balance learning tasks and activities so that they accommodate all learners taking into account the four dimensions. Third, they strongly agree that while learners should be able to choose to learn in their preferred manner, they should be challenged to learn other ways which would provide practice and feedback in ways of thinking and solving problems. Felder and Solomon (Graf, et al. 2009) believe that a central component is a pattern of behaviour that represents how learners behave during lessons or in performance they achieved on specific tasks. Detecting learning styles also include the time span for gathering data about these patterns of behaviour. They contend that the more information is available, the more accurate the learning styles can be identified.

Thus the above two influential models provide a further glimpse into what and how learning can be optimised for all. Meeting curriculum needs of learners through understanding their psychological and mental constitution, and providing meaningful materials for curriculum delivery, these learning style protagonists have helped to open up a spectrum of ways teaching in the 21st century may be approached.

2.7. IN SUM

Thus in sum this chapter has presented the theoretical/conceptual framework for this case study. In providing the ideological authority of and foundation for this research project, positioning this case study into its discipline, this chapter on the conceptual/theoretical framework has provided a bedrock for its theorising later in chapter 6. Allowing the researcher the liberty to make assumptions about the interconnectedness of

the way things are related in the world (Henning, 2010, p.26) this chapter has provided a lens through which the researcher may view the world, further providing an orientation or stance for framing the study. Positioning this study thus in the field of Curriculum Studies, this chapter presented the concepts/theories underpinning research. It provided a broad framework for discussion around the concepts of curriculum implementation of the South African National Curriculum Policy as it has evolved within South Africa's democratic dispensation since 1994. More particularly it focused on the theories inherent in a learner-centred pedagogy; a pedagogy proposed within the South African National Curriculum Policy within a constructivist paradigm.

However, of more specific significance, this chapter examined the theory of learning styles and its place within a learner-centred pedagogy. It sought to define and explain learning styles theory and the core theories undergirding it; Cognitive Style Theory and Brain Lateralisation Theory in understanding a cognitive, deep learning response to understanding curriculum implementation within a learner-centred approach. This chapter aimed at developing an argument for understanding a thread/interconnection between Rousseau's early learner-centred theory of *Education Naturelle*, Dewey's Experiential Education Theory, Piaget's Trivial/Cognitive theory, Vygotsky's Social Constructivist Theory, Jung's Cognitive Style Theory, and Brain Lateralisation Theory of Sperry and Herrmann and its relationship to the Dunn and Dunn (1978) Learning Style Theory, the focus of this case study research and too be discussed in greater depth in proceeding chapters. In postulating this thread/interconnection, drawn by the researcher, this chapter sought to present a background, frame and rationale for debate, further providing a base for discourse and understanding of learning styles theory and thinking especially that of the Dunn and Dunn (1978) learning styles model employed in implementing the South African National Curriculum Statements (NCS/CAPS, 2012) in this case.

The chapter began with a wide angle description of the definition of curriculum and curriculum implementation as it is positioned in this study. It continued with a sweeping background and understanding of the principles inherent in the new South African National Curriculum Policy also part of the Curriculum Assessment Policy emanating out of the NCS/CAPS (2012). It concluded with a cameo gaze into the theories of learner-centredness, tracing a thread from Rousseau to Hermann and Sperry as they diverge from curriculum implementation and converge toward the Dunn and Dunn (1978) learning styles theory as postulated in this study.

In providing the ontological and epistemological framework and paradigm for this study and the qualitative data generated around the use of the Dunn and Dunn (1978) Learning Styles Inventory (LSI) in implementing the Intermediate Phase Curriculum in this case intensively engaged with in the next few chapters, the discussion here aimed to reveal understanding of how the concept of learner-centredness within the implementation of NCS/CAPS (2012) using the Dunn and Dunn (1978) learning styles approach to teaching may be understood, valued and contested. Acceding especially to Pinar's (1975) reconceptualist and Lovet and Smith's (1995) view of curriculum as that of product and process enlivened through individual teachers; implementers of curriculum policy, this chapter presented the definitions and descriptions of some of the different kinds of curriculum as it impacts this study. It propounded two views for curriculum development and design in understanding the concept of curriculum implementation that of the art of curriculum and, as esteemed in this study, curriculum as an art. For the purposes of understanding its historical location and experience within the South African context, the setting of this study, this chapter included a brief discourse on South Africa's curriculum policy development since 1994.

Lastly, in understanding the pedagogical value and debate around learner-centredness, a pillar of the South African national curriculum policy, and the researcher's proposed conceptual/theoretical connectedness of Rousseau, Dewey, Piaget, Vygotsky, Jung, Sperry and Herrmann's theories to learning styles theory, two influential models were presented, Kolb's Learning Styles Model and The Felder-Silverman Dimensions of Learning Style Model. It is the assertion of this study that these theories may be seen as a confluence and amalgam within the Dunn and Dunn (1978) learning styles theory as discussed in depth in the next chapter, Chapter Three, a proposed alignment for a learner-centred pedagogy.

CHAPTER THREE

LITERATURE REVIEW

3.1. INTRODUCTION

Against the catapulting advances in technology and science, the escalating knowledge surge, the demand for quality and excellence, and, the ever-growing complexities within 21st Century society, are the deafening cries from school-based teachers to keep teaching simple (Moodley, 2009). Yet, the increasing reality faced by teachers in classrooms is that classroom teaching is nothing but simple. Consequently, there is growing concern against the demands of educational reform, public and school expectations, higher standards, innovative teaching, deeper knowledge, and, flexibility in diverse situations (Calderhead & Shorrok, 1997, Furlong, et al., 2000) for appropriate curriculum implementation. Understanding curriculum implementation may provide an appreciation for contributions, complexities and contradictions around creative solutions that

are often sort after especially within supportive institutional environments. It may also help to understand novel ideas and innovative methods that may assist in successful classroom delivery and curriculum reform.

Germanely, one of Hoban's (2005, p.8) conceptions of teaching, that of teaching as an art, discussed in the previous chapter, attests to and confirms the need for curriculum implementation and classroom pedagogy to be understood in these terms. Schools are sites for acquiring knowledge and skills, and, learning socialisation, co-operation, the world of work, and preparation for citizenship (Hoban, 2005, p.8). Shulman (1987) and Darling – Hammond (2000) assert that effective teachers are able to combine subject matter understanding and pedagogical skill flexibly, organise, assess, adapt and appropriately convey learning material, effectively using different learning approaches according to learner needs. Furthermore, empirical studies show classrooms as places where learners are task and learning oriented with minimum disruption and distraction.

Therefore, according to Shulman (2004) and Little (2007) there is an urgent need to create conditions for school reform that convey values, world views and a vision of what it means to learn and be educated. It requires teachers to be individually and collectively able to 'act as shapers, promoters, and well-informed critics' (Little, 2007, p.2) scrutinising assumptions against their beliefs and practices. Pappas (2009), like Shulman (2004), states that it should be premised on what one wants to see in the classroom, encouraging teachers to create conditions in which their learners become creative and inventive, problem-solvers and innovators. According to Shulman (2004), nearly all reform calls for deepened disciplinary and interdisciplinary understanding among learners requiring complex social classroom structures and greater challenges for teachers to understand, organise, learn and adapt. Inherent in this is the need for teachers to be continuous learners.

In South Africa, the setting of this study, the adoption of an Outcomes Based Education approach to schooling since 1994 has been received with much skepticism, suspicion and ignorance. One of the pillars of the new outcomes based national curriculum is learner-centredness (Meier, 2009), calling for a pedagogy that is equally new, strange and challenging for many teachers. Even more challenging is the reconciliation between learner-centred teaching and learner performance. There is an ever growing concerning gap between how teachers teach and how learners learn best for individual and collective success for learners and the country at large. More so, the highly debated and recently amended, Norms and Standards for Educators in the country have seen teachers in seven distinct roles including 'mediators of learning, interpreters and designers of learning programmes and materials, researchers and lifelong learners and assessors, and, learning area/phase specialists' (Government Gazette No 20844, 2000, p. 9). The national curriculum further assumes

teachers as 'qualified, competent, dedicated and caring' (Government Gazette No 20844, 2000, p. 9) leaving 'considerable room for creativity and innovation on the part of teachers in interpreting what and how to teach' (Government Gazette NO 20844, 2000, p.12).

However, Jansen (1999, p.57) postulates that in South Africa the emphasis of curriculum reform has been a 'symbolism of change and innovation' and is not concerned with that of learning objectives, content to be covered, teaching strategies, assessment procedures, and such. Jansen (1998) states curriculum 'implementational dilemmas' within the South African education system as regards 'finance and support', 'conditions of schools and classrooms' and 'capacity of educators' have not allowed for the National Curriculum Statements (NCS/CAPS, 2012) to be fully realised. Harley and Wedekind (2004) further assert that 'when teachers are uncertain there will be failure'. Bertram, Fotheringham, and Harley (2000) also strongly contend that teachers are 'crucial to the success of any innovation'. Inadequate and inappropriate training of teachers, misinterpretation and lack of understanding, the need for suitable resources and appropriate materials and substantive professional support especially at institutional level among others may be said to have led to the demise of the successful implementation and delivery of South Africa's curriculum policies.

Yet, amidst the aforementioned complexities in education in South Africa emerges a learner-centred, creative and noteworthy response to understanding curriculum delivery through a learning styles approach. A learning styles approach claims to bridge the gap between the what, why and how of curriculum implementation. Learning style theory is a cognitive response in understanding the gap between how teachers teach and learners learn best in diverse situations, and within technologically advancing 21st Century environments. It is based on the assumption that how individual children learn - their learning styles do influence how they perform, and that most children can learn given the awareness of their learning styles (Dunn & Dunn, 1978). The Dunn and Dunn (1978) Learning Styles theory claims to open such learner-centred possibilities for curriculum implementation providing a conceptual and theoretical framework for transporting teaching practice into a 21st century dimension for all.

The key research question of this empirical case study, *What are school-based teachers' experiences of a learning styles approach to teaching South Africa's Intermediate Phase* NCS/CAPS (2012) *policy* provides the platform for critique and understanding of this literature review. Thus the main objective of this literature review

is to recognise the influence teaching through a learning styles approach has on how children learn and perform. Through a review of journal articles, books and reports based on research into learning style theories and practice conducted among American, British, Middle Eastern, Chinese and South African learners and teachers, the assumption that how children learn, their learning styles, do influence how they perform is critiqued.

This literature review thus recognises what the literature says about the definition of learning styles, its purpose and benefits for curriculum implementation, how it is implemented and used (learning style instruments), and, its influence on learner performance. There is general consensus that meeting the cognitive, emotional and psychological needs of individual learners especially within heterogeneous environments of diverse cultures and abilities has increased since the latter part of the 20th century (Dunn & Dunn, 1978, Tomlinson, 2009). This has in turn increased demands on schools and teachers. However, the overall trend is that there is almost equal consensus in support for as there is against learning styles based approaches to teaching as a response to meeting individual learner needs. Significantly also, research shows that teachers after one year of implementation discontinued matching learners to their individual learning styles (Stahl, 1999). Understanding the rationale and reasons for this change is of noteworthy investigation for this study.

Thus positioning itself in the field of Curriculum Studies, this literature review defines and explains Learning Style Theory. The problem of a clear definition of the topic is handled in the section on what the literature says about the meaning of learning styles. Gaps in research are highlighted through review of the purposes and benefits of a learning styles approach to teaching. Conflicts in theory, methodology, evidence and conclusions are pointed out within the influence of learning styles on learner responses. This literature review will not include a comprehensive review of learning or teaching theories, outcomes-based education and assessment, or tracking of learners directly. It will further not include a review of Multiple Intelligences or Emotional Intelligences.

This chapter also includes an in depth description, explanation and critique of the Dunn and Dunn (1978) learning styles approach to teaching in understanding curriculum implementation. The focus though applicable to all age groups will especially be delimited to school-going ages, pre-primary to high school. Thus, the main objective of this literature review is to recognise and understand the influence teaching

through the Dunn and Dunn (1978) learning styles approach to teaching has had on how children learn and respond. Through a review of several journal articles and books based on research into learning styles theories and practice, the assumption that how children learn best - their learning styles, do influence how they learn and perform. Essentially, further how teachers teach through this approach, may help to understand teachers' classroom experiences and the demands of curriculum implementation.

Briefly through the research and work of such learning styles advocates as Kolb and Felder-Silverman among others, and especially through Dunn and Dunn (1978), conducted among American (Matthews, 1991; Dunn & Dunn, 2009), British (Rayner, 2007), Chinese (Graf, Kinshuk & Liu, 2009), Middle Eastern (Rosenfeld & Rosenfeld, 2008, Serife, 2008) and South African (Grosser & Waal, 2008) learners and teachers, this literature review recognises what the literature says about the definition, purpose and benefits of learning styles. It presents the Dunn and Dunn (1978) learning styles model and describes how it is implemented and used (learning style inventory). It looks at its influence on learner involvement and significance for curriculum implementation.

Agreeably, there seems to be general consensus that meeting the cognitive, emotional and psychological needs of individual learners especially within heterogeneous environments of diverse cultures and abilities have increased since the latter part of the 20th century (Dunn & Dunn, 1978, Tomlinson, 2009). This has in turn increased demands on schools and teachers. However, the overall trend is that there is almost equal consensus in support for as there is against learning styles-based approaches to teaching as a response to meeting individual learner needs. Of immediate interest is the call in most of the reports for further rigorous work in this field to establish a firm and stable theory of matching learning and teaching styles, a simple and user-friendly instrument of identifying learner styles, and, a cost, time and labour saving means of generating and implementing a learning styles approach to teaching.

However, it is envisaged that through this literature review and study recognition of learning styles theory and research may provide awareness into teacher experiences of teaching through a learning styles approach with a further understanding of the relationship between learners, teachers and learning. This may serve as a vital cognitive response in education to bridge the gap between teaching and learning. If recognised curriculum implementation woes may be better understood and appropriate efforts made to

address them. And the call to a learner-centred pedagogy in South Africa may be better understood and handled, dispelling fear and inspiring hope.

In order to position and understand curriculum implementation through the Dunn and Dunn (1978) learning styles approach to teaching, the case of this study, it is imperative to first look at and explain in general the definition and background to learning styles theory. Thus locating what is learning styles in the context of this study. The following section focuses thus on what the literature says on the definition of and background to learning styles theory. In so doing the problem of a clear definition and meaning for the term learning styles is illuminated and reviewed.

3.2. DEFINITIONS OF AND BACKGROUND TO LEARNING STYLE THEORY

The concept of an approach to learning was first identified by Marton and Saljo in 1976 (Serife, 2008; Moodley, 2009). Though several definitions of learning styles exist, a common theme is the idea that people display consistencies in their preferences for and processing of information in different situations (Moran, 1991, p.1). Learning style theory assumes that people are different from one another in the way they process information. These individual differences are called learning styles and is the cornerstone of research on learning styles.

Learning styles may be defined in general 'as people's consistent ways of responding to and using stimuli in the context of learning' (Claxton and Ralston, 1978, Moran, 1991, p.1). Learning style is when individual preferences are central (Kazu, 2009). It claims that every learner has his/her own learning style. These differences, which may include personality, perception, ability, and intelligence, affect motivation and attitude towards lessons affecting the effectiveness and success of the lesson (Moodley, 2009).

It is also about the nature of the relationship between learner, context and task (Biggs, Kember, & Leung, 2001, Kazu, 2009, Moodley, 2009). Thus the concept of learning styles has been used to assign a variety of learner attributes and differences (Serife, 2008). Felder and Brent (2005, cited by Serife, 2008) confirm that some learners are comfortable with theories and abstractions; others feel comfortable with facts and observable phenomena; some prefer active learning and yet, some others lean toward introspection; some

prefer visual presentation of information, and others prefer verbal explanations. Thus, citing Duff (2000), Serife (2008) concludes that learning style is the composite of cognitive, affective, and psychological factors that serve as an indicator of how an individual interacts with and responds to the learning environment.

According to Serife (2008) in Moodley (2009), the concept of an approach to learning was first identified by Marton and Saljo in 1976. He states that even after numerous researchers have conducted studies on learners' approaches to learning, there still appears considerable confusion in the literature concerning the terms cognitive styles and learning styles. There seems to be ambiguity between the two styles. Although various authors and researchers use the terms interchangeably, many authors draw a distinction between cognitive and learning styles (Altun & Cakan, 2006, cited by Serife, 2008). The term cognitive style as discussed above denotes an individual's consistent preferences for particular ways of gathering, processing, and storing information and experiences (Cassidy, 2004; Riding, 1997, cited by Serife, 2008). However, Pitts (2009) concurs when he asserts that much confusion about terminology abounds in learning styles research. Citing Hoagies' (2006) article on Gifted Education, he reports approximately 127 different factors identified by researchers as contributing to learning styles. Curry (1990, p.50) cited by Moodley (2009) more directly refers to this confusion as a 'bewildering array' of definitions around learning styles conceptualisations. Moran (1991, p.1) affirms that there are at least 21 different models of learning styles which make it difficult to provide a 'widely-agreed upon definition of this construct.'

Nonetheless, Moran (1991, p.1.) cited in Moodley (2009) believes a common theme in these definitions is the idea that people display consistencies in their preferences for and processing of information in different situations. He states that people are different from one another in the way they process information from the environment. These individual differences are called learning styles and is the cornerstone of research on learning styles. Citing Claxton and Ralston (1978), he defines learning styles 'as people's consistent ways of responding to and using stimuli in the context of learning.' He adds that it is concerned with how the mind works in acquiring, storing and using knowledge about the world. Tomlinson (2009), on the other hand, defines learning styles from an environmental perspective and states that it refers to preferences in regard to environmental elements, interactions and personal needs. She contends that one person might feel more comfortable learning in a quiet setting or one in which there are minimal visual distractions while another person may feel more comfortable as a learner in a setting with some noise or one in which there is a great deal of visual stimulation. Whereas some learners, she believes, seem readily able to take segments of

knowledge and make meaning of the big picture, other learners need a clear sense of the landscape of meaning before smaller elements make sense to them.

For Kazu (2009), learning style is when individual preferences are central (Moodley, 2009). From a cognitive, behavioural framework, he posits, that every learner has his/her own learning style. These differences, which may include personality, perception, ability, and intelligence, he contends, affect motivation and attitude towards lessons. As a result, these differences affect the effectiveness of the lesson. Serife (2008) intersects cognitive/behavioural with environmental factors when he considers an approach to learning as a bridge between the learning environment and cognitive/learning styles. He extends this belief in determining that a number of variables such as the characteristics of learners, learning environment and learning outcomes are to be included when the relation of learners' approaches to learning are considered. He argues that the approaches to learning cannot only be seen as learner-dependent characteristics. When proper strategies are applied, Moodley (2009) referencing Serife (2008) maintains that it might be possible to move learners' approaches to learning from a surface to a deeper orientation. An approach to learning accordingly is a concept about learners' motivation on their learning and the use of appropriate strategies (Zhang & Stenberg, 2000, cited by Serife, 2008).

In contrast, Slack and Norwich (2007) contend that learning style is a disposition or trait about how someone approaches learning, that is, how they learn and is not about a state or specific way of learning particular skills or knowledge (Moodley, 2009). Cognitive abilities differ from general or specific cognitive abilities, which are about differential capacity for learning and attainment (Moodley, 2009). Slack and Norwich (2007) see learning styles as independent of cognitive abilities, and this for them provides possibilities for teaching which can impact on learning and attainment across the ability range. Citing Riding and Rayner (1998), they explain that learning style is more focused on typical modes in learning situations and is more habitual and automatic.

However, Biggs, Kember, & Leung (2001, cited by Serife, 2008) describe learning styles as the nature of the relationship between the learner, the context and the task. Thus the concept of learning styles has been used to assign a variety of learner attributes and differences (Serife, 2008). Felder and Brent (2005, cited by Serife, 2008) confirm that some learners are comfortable with theories and abstractions; others feel comfortable with facts and observable phenomena; some prefer active learning and yet, some others lean

toward introspection; some prefer visual presentation of information, and others prefer verbal explanations. Thus, citing Duff (2000), Serife (2008) concludes that learning style is the composite of cognitive, affective, and psychological factors that serve as an indicator of how an individual interacts with and responds to the learning environment (Moodley, 2009).

The following researchers, according to Peacock (2001) and Kazu (2009) may be viewed as key proponents of learning style theory (Moodley, 2009):

- Reinsert (1976) states that the learning style of an individual is the style that he or she aims at learning actively. It is the style which the individual uses and develops ways to take in, retain the new information and put it to use later.
- Dunn and Dunn (1978) state that learning style is comprised of eighteen elements which are designed according to four basic stimuli having relations with the person's adequacy in assimilating and acquiring a subject. The coherence and variation of these components show that few people learn in the same way.
- Della-Dora and Blanchard (1979) believe that learning style is a personal and preferred way in assimilating the knowledge and the experience in the learning situation independent from the context.
- Keefe (1979) defines learning styles as cognitive, affective and psychological characteristics and traits that learners use as constant determinants to some extent in their perception, interaction and reaction that are relatively stable. They are indicators of how learners perceive, interact with, and respond to the learning environment.
- Entwistle (1981) feels that learning style is the tendency to absorb a special strategy.
- Schmeck (1983) says learning style is a learner's own tendency to absorb a special learning strategy independent from the environment.
- Kolb (1984) measured learning styles by a self-announced scale known as a Learning Style Inventory. Differences in learning ways are based on four kinds of learning processes in relation to each other.
- Reid (1987) defined learning styles as variations among learners in using one or more sense/s to understand, organize, and retain experience.
- Willing (1988) saw learning styles as natural, habitual, and preferred ways of learning. A clear, comprehensible and coherent set of likes and dislikes.

- Felder-Silverman (1988) asserts that learning style is the characteristic difficulties and preferences in the process of an individual's acquiring knowledge, holding and processing it.
- Spolsky (1989) views learning styles as identifiable individual approaches to learning situations.
- Dunn and Dunn (1978; 1993) establish that learning style is a way of getting and processing knowledge starting with the learners' dealing with new and difficult information.
- Jonassen and Grabowski (1993) contend that learning styles consist of the learner's preferences in different educational and instructional activities. These are the general tendencies which are preferred in processing data in different ways.
- Rossi-Le (1995) claimed that learning style is the preferred mode for perceiving, organizing, and retaining information.
- Reid (1995) defined learning styles as a natural, habitual, and preferred way(s) of absorbing, processing, and retaining new information and skills.
- Grasha-Riechmann (1996) believes learners' responses to actual classroom activities rather than a more general assessment of personality or cognitive traits is more likely to be reliable and valid.
- Legendre (1998) maintain that learning style is the person's style in learning, solving a problem, thinking and the style he or she likes reacting in within an educational situation.

Curry (1983, cited by Serife, 2008; Slack & Norwich, 2007; Cassidy, 2004) using an onion model, simplified the different perspectives of learning styles by classifying them into four layers each progressively deepening (Moodley, 2009). The outer layer is described as 'instructional preference'; learners' preferred choice of learning environment, including activities and setting. This outer layer is the most observable and open to influence. The next layer, described as 'social interaction' involves social interaction during learning. These include types and levels of interaction such as collaborative versus competitive and participant versus avoidant. The third layer is termed 'informational processing style' and represents the person's intellectual approach to processing information. This layer involves a more stable disposition. The innermost layer is described as 'cognitive personality style' and represents the most stable personality dispositions that relate to behaviours across a range of situations (Moodley, 2009).

Curry (1990) contends that the various learning styles concepts predict a wide variation in the scale and scope of learning in school achievement and in behaviour. She states, citing Friedman and Stritter (1976), that some definitions focus only on an individual's free choice between a lecture-style instructional method

with small group instructional method while others endevour to predict habitual responses across all learning acts, as seen with Yando and Kagan (1970). Definitions of operation, she maintains, also vary widely with a loose distinction made between style, referring to information processing routines that function in a trait-like manner and personality levels as seen in Entwistle (1988), the term strategy, referring to cross-situational consistency in how learners approach school learning, noticeably in Ramsden (1988), and, tactic used to describe the specific, observable activity of learners in a specific learning situation, as posited by Snowman(1989). Curry's model, according to Serife (2008) helps to structure in a number of different approaches towards individual differences in learning (Moodley, 2009).

Klein (2003), citing Barbe and Milone (1980), Dunn and Dunn (1978; 1993) and Carbo (1997b), on the other hand, refer to a modality theory of learning styles which claims that groups of learners prefer to learn through different perceptual channels and that by matching instruction to these preferences teachers can maximize learning. According to him, the term learning styles refers to qualitative differences among individual learners' habits, preferences or orientation toward learning and studying (Reiff, 1992, Messick, 1994, Sternberg, 1997, Carbo, 1997b). He defines the subset of learning style theories that refer to perceptual channels, modality theories. He reveals that all modality theorists posit at least two styles; visual and verbal or auditory or aural (Richardson 1977, Plass et al. 1998, Specht and Martin 1998, ibid), while some authors identify a kinesthetic or motor style (Barbe & Milone 1980, 1981, Leaver 1997), a tactile or tactual style (Dunn & Dunn, 1993, ibid), or an emotive style (Keefe 1988, Dunn and Dunn, 1993).Tomlinson (2009), also contends that numerous learning style instructional preferences described in theoretical, research and practice-oriented literature include preferences of visual-auditory-kinesthetic, light verses dark, warm verses cool, working alone verses working with others, abstract verses concrete, expressive verses controlled, reflective verses action oriented, and information oriented verses feeling oriented (Moodley, 2009).

Of significance, based on the results of citation analysis, Desmedt and Valcke (2004) provide a geographic and impact perspective of learning style theory. They identify three distinct theoretical orientations ; two of which form the American tradition in learning styles research related to the work of Kolb, seen as the author with the strongest impact on learning styles literature and at the core of learning styles research, and, the third, the British-European orientation which focuses on approaches to learning, This is concurred by Cuthbert (2005, cited by Serife, 2008) who concludes that the learning styles model is in line with mainly

American writers and those writing in the field of management education while the approaches to learning model appears to have been adopted mainly by the non-management educators in the UK and Australia (Moodley, 2009).

For the purposes of this study, the definition most preferred is that of Dunn and Dunn (1978; 1993, 1999) who establish that learning style is the way in which each person begins to concentrate on, process, internalise and remember knowledge beginning with new and difficult information and academic content (Dunn, 1990, Dunn & Burke, 2003, Dun & Dunn, 1978, 1992, Dunn, Stephen & Lovelace, 2001, Moodley, 2009). This definition is particularly chosen since it underpins a teaching approach that proposes to be holistic, comprehensive, sound and successful for teachers and learners. This preferred Dunn and Dunn (1978) definition allows for an investigating of the value and benefit of the Dunn and Dunn (1978) model in understanding its claims while critically understanding a learner-centred curriculum as that of the NCS/CAPS (2012).

Of further critical value to this study, the quest for whether matching learners to their individual learning style for schooling success is sought. It is therefore expedient to review what the literature states around the purposes and benefits of a learning styles approach to teaching. The following section presents a critique of the purposes and benefits of a learning style approach to teaching. In so doing advantages for and gaps in research around learning styles theory are revealed and highlighted further establishing the rationale behind this study and the need for further research in this field.

3.3. THE PURPOSE AND BENEFITS OF A LEARNING STYLE APPROACH TEACHING

A learner-centred approach to teaching and learning sees the need for educational environments to promote lifelong learning, enhance critical thinking, regard teachers and learners as teachers and learners and encourage confidence (Maribe Branch, 1995, Moodley, 2009). Gijbels, Dochy, Van den Bossche, & Segers (2005, cited by Serife, 2008) strongly advocate that the use of a deep learning approach, associated with learner-centred approaches to teaching, contributes positively and produces higher quality learning outcomes while a surface approach generates lower quality learning. Kiguwa and Silva (2007, citing Entwistle, 2001a; Peng and Bettens, 2002) affirm that a deep approach involves active engagement with learning content leading to extensive use of the learning material while gaining personal understanding. It is

thus important that learners be afforded the opportunities to adopt a deep approach to their learning (Moodley, 2009). A learning styles approach to teaching claims to do just that.

In this regard, Kazu (2009) claims that it is essential for a learner to know his/her learning style. He believes that one of the most significant issues for effective learning is a learner's taking responsibility for his/her own learning (Moodley, 2009). For this purpose, learners should know what their learning styles are, their characteristics, and thence behave accordingly. In this way, Kazu (2009) adds, individual learners can acquire increasing amounts of information without the need for assistance of others. He believes that when learners take responsibility for their own learning, they attribute meaning to the process of learning, develop understanding of their form of learning style and become more satisfied with the environment they interact in. Thus, Moran (1991) highlights the imperative of insight into the issue of prior knowledge; what a learner already knows about a particular topic since this has a major influence on learning success. He further alerts to the fact that people who monitor their own mental processes tend to learn better than those who do not. This is the issue of meta-cognition according to Moodley (2009). Jones, Simon, Black, Fairbrother and Watson (1992) and Bahar (2009), concur that learner motivation is vastly improved if a sense of ownership is felt and greater control given to learners (Moodley, 2009). Meta-cognition is deeply seated within the rationale of a learning styles approach to teaching.

Kazu (2009) in Moodley (2009) provides three vital reasons for the importance of considering learning styles. First, he maintains, people's learning styles vary because everyone is different from one another naturally. Moran (1991) also shares the assumption that people differ consistently from each other in their preferences. This is especially in ways of processing information; the individual differences assumption. Secondly, Kazu claims, that learning styles offer the opportunity to teach by using a wide range of methods in an effective way. Moran (1991) citing Gorham (1986) says that these individual differences are measurable; the measurement assumption and matching or mismatching learners' learning styles with instructional techniques affects learning significantly; the matching hypothesis. Kazu (2009) contends utilizing a single model unthinkingly creates a monotonous learning environment of mere words, not rooted in reality and with little enjoyment for all in the lesson. Thirdly, he believes, that individuals will be able to manage themselves better if they recognize the groups they are called to. He rightly affirms that teachers may not know every detail about their learners; however, being aware of learners' learning styles, psychological qualities and

motivational differences will help regulate lessons appropriately and according to their environmental conditions (Moodley, 2009).

Further compelling reasons why learning styles benefit the education and training process, according to Kazu (2009) and Moodley (2009), may be summarized as follows:

- Individual differences can be perceived when learning style is known. When characteristics like age and gender are known, differences are also recognized. A teacher who is aware of his/her learners' learning styles is one who is more fully able to serve education.
- Recognising individual learning style contributes to effectiveness. Effectiveness is likely to decrease if a learner learns in an environment incompatible with his/her learning style.
- Although education is meant to be learner-centred, a strong tendency toward teacher-centred approaches still remains. Consequently, learner interests, expectations and needs are ignored. It is important to know that every individual behaves according to his/her personal needs and that s/he is still responsible for his/her learning. It is a fact that learning is a personal process. This is one of the reasons demanding that learning styles should be taken into consideration in the teaching process.
- The realisation that learners cannot learn comprehensively in an environment in which the teacher is the only active person and learners are passive. This raises the awareness of learning styles in the teaching process. The majority of learners cannot be reached when ordinary and monotonous methods and techniques are used which do not use different learning and teaching approaches. Each individual is different and learns through different methods and techniques.

However, Kavale and LeFever (2007), Muse (2001), Moran (1991) and Curry (1990) raise a number of gaps in research and problems in these assumptions. Although Moran contends that these assumptions seem reasonable, he argues that they have generated both theoretical and methodological problems for researchers in this field. In critiquing the individual differences assumption, he agrees that differences between people in information processing preferences are important determinants of their learning, and, applauds learning styles researchers for exploring an issue which has been largely ignored. However, he believes, the enthusiastic and, what he terms, 'a theoretical pursuit of correlates of these differences has resulted in a lack of conceptual rigour in the field.' Curry points to the inadequacies reflected in the semantic confusion which permeates this field. She contests the reliability and validity of research done in the field,

claiming bias, lack of triangulation and blames hasty pursuits to print and market ideas to weakened claims and over-extension of the construct of learning style (Moodley, 2009).

As a case in point, according to Moodley (2009) is the problem illustrated by Dunn et al.'s (1989, p.56 cited by Moran, 1991) claim that learning style encompasses such diverse behavioural indices as 'individual responses to sound, light, temperature, design, perception, intake, chronobiological highs and lows, mobility needs, and persistence . . . motivation, responsibility (conformity) and need for structure'. Moran (1991) contends that it is surprising that little attempt has been made to clarify which of them represent 'superficial, transient or whimsical reactions, and which represent deep-seated cognitive preferences'. He further questions the theoretical basis for a learner's preference for eating a snack while studying (Dunn et al, 1987, Moran, 1991) being equated in importance with a person's emotional reasons for learning something. He argues that the paucity of attempts to distinguish between important and peripheral correlates of learning styles hampers the development of a theoretical understanding in this field. Unless this conceptual and semantic confusion is resolved, Moran (1991) claims the scope of learning styles research will continue to expand haphazardly and the meaning of the construct will remain diluted.

The following section focuses on the influence and impact of learning styles on learner performance and response as a meaningful and relevant component within teaching and learning through a learning styles approach in education. Conflicts in theory, methodology, evidence and conclusions are pointed out within this section further revealing the vulnerability and value of this study in its attempt to seek alternative ways of understanding curriculum implementation through a learning styles approach to teaching.

3.4. THE INFLUENCE OF LEARNING STYLES ON LEARNER RESPONSE

Research on learning styles and achievement has shown that teaching learners how to learn and how to monitor and manage their own learning styles is crucial and essential to their academic success (Moallem, 2009, citing Atkinson, 1998; Biggs & Moore, 1993; Matthews, 1991, Moodley, 2009). Kazu (2009) concurs when he claims that research has suggested that learners who have experienced learning through their styles are more successful. Klein (2003), further posits that learning style theorists as Barbe and Milone (1980, 1981), Jenkins (1988), Dunn and Dunn (1993), Carbo (1997b), Leaver (1997) and Sarasin (1999) all claim that learners learn best when taught through their preferred modalities. This has great impact for learning.

Thus when teachers deliver content in ways that better match learner' strengths, Lovelace (2005, cited by Dunn et al, 2008) attests it leads to increased academic performance and improved attitudes toward school. Kazu (2009) agrees that this brings about improvement. Studying with knowledge of the learning style helps an individual reach his/her goals quickly. Matching teaching with the preferred learning style of a learner is an effective form of teaching and learning (Grosser & de Waal, 2008). It is necessary for educators to recognise, acknowledge and cater for the diverse needs of learners in order to promote learner performance and competency (Grosse & de Waal, 2008). The goal, according to Kazu (2009) is to realise learning and to encourage learners to revise outside of school and at home. In this way, learners will transfer their learning into real life (Moodley, 2009). Success is achieved through recognition of individual learning styles as a responsibility toward independent life-long learning is adopted.

Critically, the value and positive influence of a learning styles approach to teaching may be seen through evidence gathered from numerous research studies done across the world (Moodley, 2009). Through a small-scale, experimental study aimed to test the reliability and validity of a learning styles approach to teaching spelling among nineteen children, aged 7–10 years in the UK, Slack and Norwich (2007), using Smith's (1998) visual, auditory and kinesthetic styles inventory found that the visual and auditory scales, but not the kinesthetic scale (not provided for), were reliable (internally and re-test). The three groups of pupils with different learning styles—visual only, auditory only and mixed visual and auditory—showed different gains to teaching that matched these styles (visual and auditory teaching approaches). Retention of word spelling was higher one week after the teaching when the teaching matched the learning style (Moodley, 2009).

Similarly, Peacock (2001) working with Chinese English Foreign Language (EFL) learners in Hong Kong, tested Reid's hypothesis that all learners have their own learning styles and strengths and weaknesses and found it to be generally true for these learners (Moodley, 2009). Based on results from his study, according to Moodley (2009) though having validity and transferability limitations because of the context and constraints of the study, he was able to establish positively identifiable learning styles that differed among learners and teachers. On testing Reid's hypothesis that a mismatch between teaching and learning styles causes learning failure and frustration, the study found this to be generally true also for his sample. Peacock's arguments that matching learning and teaching styles promotes more efficient second language

acquisition, more learner confidence and trust in EFL teachers and a more positive attitude to English, has tremendous implications for both learners and teachers. Of further importance to research conducted on the Dunn and Dunn (1978) learning style strategies compared with traditional teaching for at-risk learners in America, the overall data reported significantly higher test scores using the approach (Dunn et al, 2008; Moodley, 2009).

Furthermore, in South Africa, very little attention has been given to differences among learners (Grosser & de Waal, 2008) and even less research done in this area. However, in one of the few studies conducted in this field in South Africa, a pilot study by Grosser & de Waal investigating pedagogical needs and fundamental rights at school through the use of diverse learning styles among learners and teachers in the Gauteng Department of Education employing Kolb's Learning Style Inventory, concluded that teachers needed to adapt their teaching to accommodate learning styles. In a quantitative questionnaire completed by the teachers, the authors found it 'disconcerting that the pedagogical needs of the learners, namely protecting the best interest of the child, safeguarding the interests of the learner and upholding the fundamental rights of the learner' were not ranked as important. They caution that the danger to teach in one way could result in classroom situations where some learners will enjoy lessons and do well while others will struggle and feel uncomfortable (Moodley, 2009).

The above may be further verified through several impact studies done on the work of Dunn and Dunn (1978; Dunn, et al, 2008; Moodley, 2009). Dunn and Dunn (1978) claim that learning styles, as a dimension of diversity, encourages everyone to respect and accept a variety of appropriate behaviours in the teaching and learning process. Teachers become self-motivated, internally reflect on their philosophy of education and its impact for everyday interactions with learners and colleagues. They believe that the concept makes the delivery of subject matter value driven and personal and promotes a sense of social justice and equity reducing bias (Moodley, 2009).

Significantly, the findings in Slack and Norwich's (2007) exploratory study suggest the importance of learning styles for classroom-based teaching (Moodley, 2009). According to the authors, this study has shown that it is possible to evaluate systematically the reliability of a learning styles inventory and to examine differential responses to teaching. It makes a sharp contribution in the claims for a learning styles approach to teaching. However, essential for academic success is the need for improved perceptions of personal abilities and encouragement to strive beyond what has been previously accomplished. According to Geiser (1998, cited

by Dunn et al, 2008), when learners understand how they learn best, they adjust conditions and devise strategies for facilitating their progress. They become able to study more effectively and realize that it is not what, but how they study that really counts. Peacock (2001) strongly advises that learners take more responsibility for their own learning. Since they know their own needs and learning preferences best, they should try to meet those needs through their own efforts both in and outside the classroom. However, he contends that pedagogical changes should also be made, informed by teacher beliefs about good teaching practices (Moodley, 2009).

Kazu (2009) along with Weeden, Winter and Broadfoot (2002) and Moodley (2009) contend that the learner's gender, intelligence and personal characteristics influence the learning style as well. According to Weeden, Winter and Broadfoot (2002), research findings reveal that learning styles appear to have a different impact on the performance of girls to boys (Moodley, 2009). Citing Murphy they say that girls use learning styles that engage dialogue and collaborative approaches that validate their understanding of knowledge. Boys tend not to use these approaches. This implies that teachers need to also be aware of gender differences.

In direct opposition to the above, Hall (2005) has found several significant problems in the research on learning styles. She claims that there is an emphasis away from learning on to learner characteristics which underplays the importance of both acquiring subject knowledge and skills and obscures the differences between the learning cultures of different academic subjects (Moodley, 2009). In a review of 13 models, Hall (2005) attests that none passed on reliability and validity criteria (Moodley, 2009). This results in the fact that no one can be sure that all the items on the learning styles instrument measure what they intend to or that the results will be the same if the test is repeated. Most importantly, is her finding of 'little good evidence' to suggest that using a learning styles pedagogy will significantly affect achievement or motivation. Likewise, Muse (2001, p.5) cited in Moodley (2009) strongly argues that the term 'learning styles' implies the promise of increased learner learning in those whose learning style is identified and taught being a 'warm, fuzzy' term that one may easily adopt and remember. He declares that because it seems to be intuitively correct, it elicits little discussion regarding its merits.

Hall (2005) further believes that learning style theory is complex and demanding and the desire to provide categories and groups inevitably leads to dangerous simplifications in practice. Her views are similar to Moallem (2007), whose review of research on learning style theory for online learning environments do not

point to a list of conclusive results. He says for each research study supporting the principle of matching instructional style and learning style there seems to be a study rejecting the matching hypothesis. He further contends that designing and developing instructional materials that address multiple learning styles are costly, time consuming and require careful design, development, implementation and evaluation. He claims that the results of his study do not completely equate to the time and effort needed (Moodley, 2009)

Tomlinson (2009) soundly cautions that while research supports the use of learning style and intelligence preference theories in the classroom and points to the importance of addressing gender- and culture-based approaches to learning, respected protagonists say at least some of these approaches are misguided. She guides that the use of learning styles to improve learner achievement is only one kind of differentiation in the classroom. While potentially beneficial it should not be a replacement for attending to readiness needs. She believes that it should serve as a comfortable beginning point and not be the end. Awareness that learner's learning preferences are more fluid than fixed means that a learner may prefer one approach to learning in one area and another in another subject. Offering learners options for learning, helping learners attend to which approaches work best for them at a given time, guiding learners to be attuned to whether they are learning effectively and to develop alternative ways of approaching content when learning, she claims, is not proceeding productively (Moodley, 2009).

While potentially useful in supporting learner learning, Tomlinson (2009) strongly argues that developing a learning profile should not be viewed as a way to bypass important elements of quality teaching, such as building learner-teacher relations, establishing a positive learning environment, developing and/or teaching high-quality curricular, using assessment to inform teaching and learning, and helping learners be partners in their own learning. When the application of a learning profile in the classroom enhances these elements, then it is worthwhile. She concludes that teachers teach more responsively when they consistently seek to understand what's working for individual learners and what's not, when they can design and engage learners in multiple tasks simultaneously to ensure learner academic growth and when they can help learners be more knowledgeable about and responsible for their own success. Under those conditions, she attests that more learners will perform better (Moodley, 2009).

In order to understand and critiques the claims made by learning styles proponents, it is thus imperative to understand what the literature states about how learning styles theory unfolds in practice. The following

section delves in depth into the implementation of a learning styles approach to teaching especially that of the Dunn and Dunn (1978) model employed by the participants of this study.

3.5. THE DUNN AND DUNN (1978) LEARNING STYLES APPROACH TO TEACHING

Professors Rita Dunn and Kenneth Dunn define learning style as 'the way in which each learner begins to concentrate on, process, internalise, and retain new and difficult information' (Dunn & Dunn, 1978, 1993, p. 2; Dunn and Griggs, 2000, p. 8; Lister, 2004; Dunn et.al.; 2009; Moodley, 2009). According to Lister (2004) it is one of only three comprehensive models for teaching to learning styles. In 1967 Professor Rita Dunn was approached by the New York State Department of Education to 'design and direct a programme that would help "educationally disadvantaged'' children to increase their achievement' (Dunn & Dunn, 1993, p. 3). Moodley (2009) reviews that through focusing on individual response to alternative instructional approaches and observing the diverse effects of exposure to identical methods and teaching styles on same-age/grade learners, Professor Rita Dunn, together with her husband, Professor Kenneth Dunn (Dunn & Dunn, 1993, p.3), working out of St. John University's Center for the Study of Learning and Teaching Styles at Columbia University, New York, studied the educational and industrial literature around how people learn (Dunn & Dunn, 1993, p. 3).

Drawing from over eighty years of data that confirm individual differences among learners in the way each begins to concentrate on, process, absorb and retain new and difficult information or skills, Dunn and Dunn (1978) established that learning styles is a way of getting and processing knowledge starting with learners' dealing with new and difficult information (Dunn & Dunn, 1993; Dunn, et al., 2001; Moodley, 2009). Dunn and Dunn (1978) theorise that learning styles comprise of both biological and developmental characteristics (see 3.2. above) that make identical instructional environments, methods, and resources effective for some learners and ineffective for others (Dunn & Griggs, 2000, citing Restak, 1979; Thies, 1979, 1999/2000; Dunn & Dunn, 1992; 1993). They posit that people have learning style preferences that individually differ significantly from each other (Dunn & Dunn, 1993; Moodley, 2009).

Having written more than twenty books and three hundred manuscripts on how people of all ages learn differently from each other, their experimental research using the Dunn and Dunn (1978) Learning Style Model spans three decades (www.learningstyles.net; Dunn & Dunn, 1992; 2000; Dunn et al., 2001). Conducted at more than a hundred and twenty institutions of higher education across several countries with

a variety of model-related instructional approaches at every grade level, data documented from these studies according to Moodley (2009) reveal,

> *'that when academic underachievers were taught new and difficult (for them) content through instructional approaches that responded to their learning style strengths, they achieved statistically higher standardised achievement test scores than they did when the approach was dissonant from their style'* (Dunn & DeBello, 1999; Dunn & Dunn, 2000, cited in Dunn et al., 2001).

Thus they drew the radical and ground-breaking conclusion that 'because curriculum is learned differently by individuals, it should be taught differently to individuals' (Dunn & Dunn, 2001). Their vast empirical work in this field reveals that a coherence and variation of these elements show that few people learn in the same way (Moodley, 2009).

Rooted accordingly in two distinct learning theories; Cognitive Style Theory and Brain Lateralisation Theory; the former suggesting that individuals process information differently based on learned or inherent traits and the latter proposing that the two hemispheres of the human brain have different functions, Dunn and Dunn (1978) in Moodley (2009) developed their Learning Style Model based on the following theory and assumptions that (Dunn & Griggs, 2000):

- Most people can learn;
- Instructional environments, resources, and approaches respond to diverse learning strengths;
- Everyone has strengths, but different people have very different strengths;
- Individual instructional preferences exist and can be measured reliably (Burke, Guastello, et al., 1999/2000, cited in Dunn & Griggs, 2000);
- Given responsive environments, resources and approaches, statistically higher achievement and attitude test scores can be achieved in congruent, rather than in incongruent treatments; learners also behave better in style responsive environments (Dunn & Dunn, 1992, 1993; Dunn, Dunn & Perrin, 1994; Oberer, 1999; cited in Dunn & Griggs, 2000);
- Teachers can learn to use learning styles as a cornerstone to their instruction (Dunn & DeBello, 1999, cited in Dunn & Griggs, 2000);

- Learners can learn to capitalise on their learning style strengths when concentrating on new and difficult information.

Dunn and Dunn (1978) believe that identification of each individual's learning style through observation alone is expected to be inaccurate. They assert that the use of valid and reliable instruments to assess learning styles for preschool children, grades three to five and six to twelve and adults is essential. Using the above theories and model following intensive research (Dunn & Dunn, 1992; 2005; Dunn & Giggs, 2000; Brand, Dunn, & Greb, 2002; Dunn et al., 2008; Pitts, 2009). Dunn and Dunn (1978) made the following poignant claims:

- the majority of school-age learners have tested as global processors
- most learners have between zero to six perceptual modalities or strengths; auditory, visual/picture, visual/print, tactual, kinesthetic and/or verbal kinesthetic
- perceptual strengths enable children to learn easily, with difficulty, or not at all, depending on how they are introduced to new and challenging information or skills
- learners officially classified with Attention Deficit Disorder have no well-developed perceptual strengths prior to their high school years
- exposure to learning styles requires a recognition of the need for diverse strategies to complement individual differences
- there is urgent need for the eradication of a 'one-size-fits-all' approach
- a concerted effort to acknowledge that teachers need to modify their classrooms, instructional practices, and assessments
- for educational success the real purpose of using a learning styles instrument is to most effectively differentiate instruction.
- once learners' approaches to learning as global or analytical are identified, the teacher can implement different strategies to benefit the different learners
- differentiated instruction has become part of the school system but without learning styles as its cornerstone, differentiated instruction cannot be implemented.
- teachers in primary school through to college across the United States have increased learners' academic performances significantly by responding to their diverse learning styles
- at both primary and junior secondary school levels, learners used their style strengths to teach themselves complex units

- the less well learners perform with traditional instruction, the more important it is to accommodate their learning style preferences

Thus grounded in these theories , growing out of a learner-centred paradigm and influenced by psychobiological/ socio-constructivist thinking (Moodley, 2009), Dunn and Dunn (1978) developed a learning style model/instrument in 1978 that comprised initially of 12 then 18 variables that significantly differentiate among learners (Dunn & Dunn, 1972, cited in Dunn & Dunn, 1992, p.3). By 1979, having included hemispheric preferences and global/analytic inclinations into the framework, they devised 21 elements (Dunn & Dunn, 1992, p. 3) designed according to four basic stimuli. These relate to a person's adequacy in assimilating and acquiring a subject.

According to Dunn and Dunn (1978) and Moodley (2009), learning styles is an individual's personal reaction to each of the 21 elements when concentrating on new and difficult academic knowledge or skills (Dunn & Dunn, 1992, 1993, 1998, 1999; Dunn & Griggs, 2000) stating that learners need to be made aware of their

1. reactions to the immediate instructional *environment* as regards sound versus silence, bright versus soft lighting, warm versus cool temperatures, formal versus informal seating;

2. own *emotionality* in terms of their motivation, persistence, responsibility; conformity versus non-conformity, structure versus choices;

3. *sociological* preferences for learning, that is whether alone, with peers, with either a collegial or authoritative adult, and / or in a variety of ways as opposed to patterns or routines;

4. *physiological* characteristics; their perceptual strengths (auditory, visual, tactual, and or kinesthetic strengths), time-of-day, energy levels, intake (snacking while concentrating), and/ or mobility needs;

5. brain hemispheric global versus analytic *psychological* processing as determined through correlations among sound, light, design, persistence, sociological preference, and intake (Dunn, Bruno et.al.1990; Dunn, Caanaugh, Eberle & Zenhausern, 1982; Guastello & Burke, 1998, 1999, cited in Dunn & Griggs, 2000).

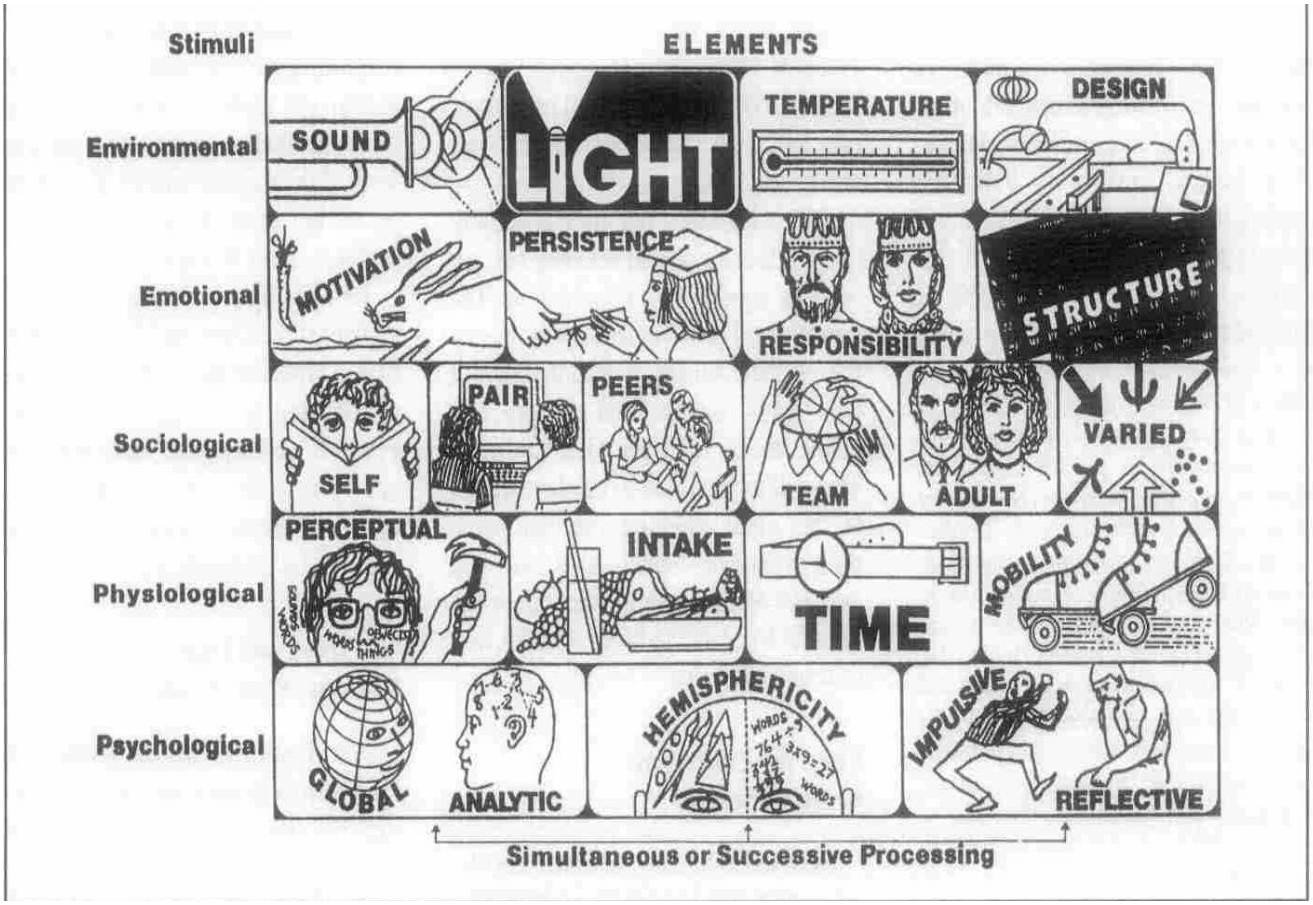
Collectively, according to Moodley (2009) these elements are subdivided into five groups/stimuli /strands that include environment; sound, light, temperature, and seating design, emotionality; motivation, task

persistence, responsibility and structure, sociological preferences; learning alone, in pairs, with peers, as part of a team, with either an authoritative or collegial teacher, or with social variety or in patterns, physiological preferences; perceptual strengths, such as auditory, verbal/kinesthetic, visual text or visual picture, tactual, and/or kinesthetic; and intake, time-of-day energy levels, and mobility requirements, and cognitive processing inclinations; analytic versus global and impulsive versus reflective characteristics. Individuals are either analytic or global processors or a combination of both called Integrated.

Visually thus the Dunn and Dunn (1978) Learning Style Model as seen in Figure 1 below, was the first instrument produced to assess an individual's learning style from grade 3 to 12 (Desmedt & Valcke, 2004; Moodley, 2009). It helps to summarise a learner's environmental, emotional, sociological and physical preferences for learning. It explicitly does not measure underlying psychological factors (Dunn, Dunn & Price, 1975, Desmedt & Valcke, 2004). It is based on biological and individual developmental characteristics (Kazu, 2009). According to Dunn et al. (2009) this model defines learning style as the way individuals begin to concentrate on, process, internalise, and retain new and difficult information. It incorporates twenty to twenty-one elements dependent on the administered age-appropriate assessments (Moodley, 2009).

*Figure 1: The Dunn and Dunn (1978) learning styles model showing the stimuli and elements that make up a learning style (*Dunn & Dunn, 1992, p.5; Burke, 2003*).*

According to Dunn and Dunn (1978, 1993), Dunn, Denig, Lovelace and Kiely (2001, citing Dunn, Bruno,



Sklar & Beaudry, 1990; Dunn, Cavanaugh, Eberle & Zenhausern, 1982), Tully, Dunn and Hlawaty (2006) and Moodley (2009) each of the five groups/stimuli/strands with its inherent elements work as follows:

1. Environmental: Learners respond differently to the amount of light, sound and temperature in their environment as they learn new and difficult academic content. Some prefer formal seating (hard chairs), others casual, informal seating (sofa).

2. Emotional: Some learners are consistently highly motivated to begin and remain focused on an academic task until it has been completed; these learners are called persistent. They often, but not always, provide their own structure for completing a task. Others rely on the directives of teachers or peers to initiate a task, remain focused, and provide structure. Some do as they are required; others do the opposite of what they are supposed to do (conformists versus non-conformists).

3. Sociological: Some learners learn best when studying alone; others when studying with peers or in pairs and still others when studying with an authority figure. Some function in varied ways, whereas others learn best in a single pattern.

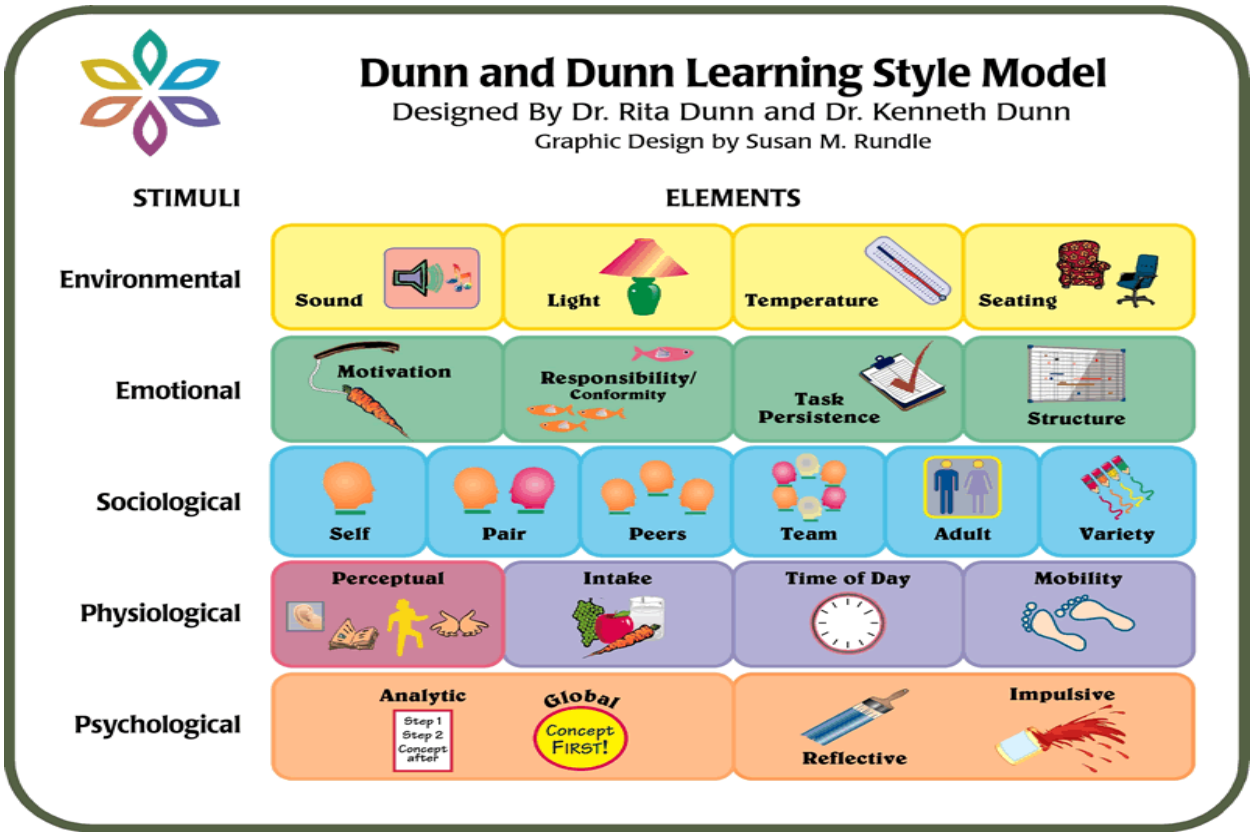
4. Physiological: This strand identifies Perceptual Strengths — whether individuals remember 75% of what they read, discuss, see, hear, touch, or experience within a 40-50 minute period, their Time-of-Day energy levels, and their preferences for Intake and/or Mobility while learning. Some learners learn best by hearing (auditory) complex material, others by reading or seeing it (visual), others when able to manipulate items with their hands (tactual, "doodling", taking notes), and still others learn most effectively when moving while they are concentrating (kinesthetically as when tapping their feet or walking). Time of day, snacking while concentrating, and the ability to literally move from place to place also affect how well a learner is able to learn new and difficult information (Dunn, Denig, Lovelace & Kiely, 2001; Moodley, 2009) .

5. Psychological: This strand examines Global versus Analytic processing styles and Impulsive versus Reflective traits that combine into hemispheric preferences. Learners may process challenging academic information analytically, globally, or as an integrated learner who can learn through a combination of styles. Learners may therefore master new and difficult content quite differently from each other. Analytics learn facts in a step-by-step sequence, gradually building to increased understandings by first examining the individual parts of a concept; the facts. Global processors learn best through an initial overview of the content or concept to develop an understanding of how the content relates to them before they can focus on the facts related to it. Integrated processors can learn almost anything if they are interested in the topic. Strongly analytic learners often tend to prefer concentrating in brightly illuminated, quiet, formal seating without breaks or snacks, whereas strongly global learners often tend to prefer concentrating in a softly lit, casual (informal) environment with music, periodic breaks and snacks.

Thus the Dunn and Dunn (1978) model focuses on identifying individual preferences for specific instructional environments, strategies and resources, and the extent to which each approach fosters or inhibits academic achievement(www.learningstyles.net; Moodley, 2009). Accordingly, experimental research with this model has been published at every grade level, in all the basic subjects, and with Special Education,

underachieving, average, highly achieving, and gifted populations in urban, sub-urban and rural geographical locations in the United States and abroad (www.learningstyles.net).

Figure 2: The Dunn and Dunn (1978) Learning Style Inventory (LSI) / Building Excellence (BE) Model (learningstylesnetwork.com) *used to profile older learners*



According to Tully, Dunn and Hlawaty (2006, citing Dunn, Dunn & Price, 2000), Lister (2004, citing Cuny, 1987; DeBello, 1990; Kirby, 1979; Tendy & Geiser, 1998-99) in Moodley (2009), the LSI is based on factor analysis and is a comprehensive approach to the diagnosis of each individual's style. Assessing preferences in the areas of immediate environment (Sound, Heat, Light, and Design); emotionality (Motivation, Responsibility, Persistence, and Structure); sociological needs (Self, Peer, or Adult Oriented or learning in Several Ways); and physiological needs (Perceptual Preferences, Time of Day, Intake, and Mobility). Lister (2004), states that the LSI consists of a 104 item questionnaire using a five-point Likert-type scale. It is a self-report questionnaire, developed through content and factor analyses that measures learners' perceptions of how they most prefer to learn (Tully, Dunn & Hlawaty, 2006). This five-point Likert-type scale can be completed in approximately 30 to 40 minutes providing a learner's individual profile.

Dunn and Dunn (1978, 1992) explain that the questions in the instrument are purposefully subjective and relative contributing precisely to an understanding of how an individual learns. They state that each learner's learning style is based on a complex set of reactions to varied stimuli, feelings and previously established patterns that are repeated when the person concentrates on new or difficult material. Further words as *think, learn, read, write, and concentrate* are used interchangeably throughout the instrument providing for comparisons of answers to questions to be made in order to contribute to the accuracy of the learner's overall profile. They contend that while psychological factors are not directly measured, information in the profile provides/reveals patterns through which learning occurs concluding that the profile summarises the environmental, emotional, sociological, physiological and global/analytic processing preferences a learner has for learning and not why they exist (Moodley, 2009).

A few sample items from the LSI include (Dunn & Dunn, 1992)

- I study best when it is quiet
- I study best at a table or a desk
- I like to study by myself
- When I can, I do my homework in the afternoon
- I concentrate best on difficult subjects seated on a couch or easy chair
- It's hard for me to sit in one place for a long time
- Music helps me concentrate when I have to learn difficult things
- I think best when I work on hard tasks with a friend
- The things I remember best are the things I hear
- I can ignore most sound when I study

Careful analysis of the individual printout of the profile identifies those elements that are important to the individual's learning style and aids in prescribing the type of environment, instructional resources, social groupings and motivating factors that maximise personal achievement (Dunn & Dunn, 1992; Moodley, 2009). Dunn and Dunn (1978) attest that the LSI allows learners to identify how

they prefer to learn indicating the degree to which their responses are consistent. Moodley (2009) contends that Dunn and Dunn (1978; 1992) submit that it

- provides a computerised Individual Profile of each learner's preferred learning style suggesting a basis for redesigning the classroom environment to compliment learners' need for sound, quiet, bright or soft light, warmth or coolness, formal or informal seating.
- describes with whom each learner is likely to achieve most efficiently – alone, in a pair, with two or more classmates, with others with similar interests/talents, with an authoritative or collegial teacher, and /or with all, none, or only one or two of these possibilities.
- explains for whom to provide options/ alternatives and for whom direction or structure is appropriate, sequencing the perceptual strengths through which individuals should begin studying and then reinforcing new and difficult information.
- informs how learners should approach is/her homework tasks.
- indicates the methods of learning as in Contract Activity Packages (CAP), Programmed Learning Sequences (PLS), Multisensory Instructional Packages (MIPS), tactual/kinesthetic manipulatives, or a combination of these through which learners are likely to achieve well.
- reveals which learners are nonconforming and how to work with those who are
- pinpoints the best time of day for each learner to be involved in their most difficult subjects, and permits grouping learners for instruction according to their learning style strengths
- itemises those learners for whom snacks while learning are integral to their learning process
- notes the types of learners for whom movement, while learning may accelerate the learning process, and
- suggests for whom analytic or global approaches to learning new and difficult material are likely to be important.

Thus within the above theoretical framework and the radical claim (Moodley, 2009) that

> '*individuals have such unique patterns for learning new and difficult information that it is hard to judge accurately how to teach anything academically challenging without first identifying how each learner learns'* (Dunn & Griggs, 2000, p.19)

curriculum implementation is addressed through the Dunn and Dunn (1978) learning style approach. According to Dunn and Dunn (1992) and Dunn and Griggs (2000), on analysis of individual learning profiles of learners, teachers determine the most complimentary instructional methods or resources for each learner. They examine the perceptual strengths and plan the sequence for learning and reinforcing difficult information for each learner. They provide environmental alternatives for comfortable, optimal learning to take place. Through specially prepared materials and learning styles strategies using physical, mechanical and multimedia resources, teachers 'estimate the processing approaches, methods, sequence of perceptual exposures' (Dunn & Griggs, 2000.) to learning style resources that would make learning individually comfortable. Mastering subject content thus becomes the responsibility of the learner, and the teacher, unlike traditional teaching, is not required or expected to teach directly to the entire class (Dunn & Griggs, 2000).

As a result, five different individualising instructional strategies/ methods of teaching for matching learners to their learning styles other than traditional auditory lecture/discussion type approaches have been designed as follows (Dunn & Dunn, 1992; Dunn & Griggs, 2000):

3.5.1. The Contract Activity Package Method (CAP)

This is an instructional strategy that allows motivated learners to learn at their own pace (Dunn & Dunn, 1992; Moodley, 2009). It is appropriate for average or above average, gifted and/or non-conforming learners. The CAP is most effective with independent and motivated learners because it provides self-pacing for individuals who want to achieve, improve, or be their best. It responds effectively to several learning style differences and is more effective than large-group lecture or question and answer discussion for the following reasons (Dunn & Dunn, 1992):

- It permits individual pacing so that learners may learn as quickly or as slowly as they are able to master the material. Learners are not embarrassed if unable to grasp the content more quickly as their peers, further preventing boredom among those waiting for slower- paced classmates to catch up. This approach reduces much of the frustration and anxiety by motivated learners who often are required to

progress at the pace of the larger group. Each learner works independently but may by choice team up with other classmates who may be at a similar pace. Self-pacing permits learning as quickly as they can but well enough to retain information.

- It caters for varied academic levels whereby individual learners can function on their current academic level but master concepts or facts through resources that clarify the content as they respond according to their style through different reading levels, activity alternatives and reporting alternatives that cause review of content with peer discussion and if necessary, correction and small-group techniques that provide further instruction through peer learning. The CAP resource alternatives include auditory, visual and tactual or kinesthetic resources at different levels permitting learners to learn through their strongest perceptual strength and reinforce what they have learnt through their secondary strengths.
- It is effective for non-conformists because it provides multiple options and allows creative individuals to demonstrate mastery as they best can. It can be used by those who prefer working alone as well as those who prefer working with a peer or team. It can be used flexibly to accommodate a variety of learning-styles characteristics like sound; individuals can use ear plugs to block off unwanted noises, alternately use earphones plugged into recorded music devices to help with concentration. Learner's light, temperature, seating, intake and sociological preferences can be accommodated as learners elect to work according to physical resources provided by workstation-like areas inside or outdoors. It could be used anytime to match individual preferences time of day and those who need to snack on raw vegetable or other nutritious foods if they feel the need to or to take short breaks in between as long as they returned to their objectives and continued working until completion is possible. Over time self-selection improves motivation, reduces non-conformity and permits working in ways which learners feel most comfortable.
- The CAP system provides a great deal of structure through itemisation of specific outcomes/objectives, activities and reporting alternatives, small group techniques and the related self-test assessment. By permitting choices the CAP provide a breathing room for non-conformists, who often resist direction and structure from others in authority. It provides options for varying processing styles although fairly bent towards analytic processors. However, through multiple illustrations, graphics, and activity alternatives perceptual and sociological preferences can help global users and independent learners to respond to it as well.
- It fosters independence. The recognition is made that some learners learn better through multimedia approaches, computer programmes, simulations, projects, or tactual/kinesthetic resources than they do from verbal delivery and that large – group lecture does not necessarily enable all to learn easily. By nature each

person is endowed with unique sensory strengths and limitations and therefore many learners are able to learn more and better by beginning with visual, tactual, or kinesthetic resources rather than through purely auditory approaches which is what a lecture or discussion is. Through the CAP learners become personally responsible for learning what is required. As they become accustomed to exercising freedom of choice and assuming responsibility they become increasingly independent of their teacher and learn to use resources to their advantage. They begin to recognise that they can learn easily and well by themselves and gradually develop sufficient confidence to move into new studies and designing of their own resources. They eventually take pride in their own ability to teach themselves.

The CAP consists of several components some of which are as follows (Dunn & Dunn, 1992):

- Simply stated objectives
- Multisensory resources that permit choices of resources that match individual's perceptual preferences
- Activity alternatives in which learners apply their newly mastered information by creating original resources to show that they have learned what was required or selected.
- Reporting alternatives so that the completed activity alternatives can be shared with others who are studying the same material
- At least three small-group techniques to permit persons who enjoy working or learning with colleagues to do so
- A performance or written test so that learners can show their working knowledge of the material they have mastered through among others a pretest, a self-test and a post-test.

Dunn and Dunn (1992) admit that the CAP is not effective for every learner but do give motivated, able learners the ability to move ahead at their own pace on the basis of their personal interests and unique learning styles.

3.5.2. THE MULTISENSORY INSTRUCTIONAL PACKAGE METHOD (MIP)

According to Dunn and Griggs (2000) and Moodley (2009) the MIP is a step by step approach that provides clear, sequenced directions that are repeated in a variety of ways until work is mastered. A MIP focuses on a single concept at a time using at least four senses to master the content. Each package has feedback and evaluation woven in between with the aim of individual, private learning taking place accommodating for

individual learning styles. Materials are self-corrective and can meet the needs of varying academic levels. They cater to varied pacing as learners can stop and get back to task as they require catering to the faster paced learner as well. It lends itself well to an integrated class where one child might be mastering a concept in one subject another could be working on another through games, puzzles and other such activities allowing the teacher to move among learners as facilitator and guide (Dunn & Dunn, 1992; Moodley, 2009).

Thus this instructional package approach is especially appropriate for learners who require a high degree of structure. They appeal to those who cannot sit still for long periods of time and those who cannot listen without interruption or loss of concentration (Dunn & Dunn, 1992). They are also motivating to the slower learner who requires repetition to master concepts through a varied approach. They suit those learners who prefer to work alone yet are also friendly to other environmental and sociological preferences as well. Learners may work at a location of choice. The MIP caters to all perceptual strengths for by definition it comprises visual, auditory, tactual and kinesthetic activities. They may be used at different times within a learning cycle. They are most suitable for encouraging small successes and building responsibility and motivation. However, the authors contend that very structured learners may not find the MIP appropriate unless the content is highly challenging. Conforming learners may find them interesting however they are most effective for non-conforming learners who enjoy the variety and choice of activities (Moodley, 2009).

3.5.3. THE PROGRAMMED LEARNING SEQUENCE METHOD (PLS)

The third method of implementation of the Dunn and Dunn (1978) learning style approach in individualising instruction is the Programmed Learning Sequence Method (PLS). Designed for specific learning styles, it is comprised of small, simple steps without the direct supervision of an adult. The PLS is meant to enhance selected learning style characteristics and is not meant to be prescribed for all learners. According to Dunn and Dunn (1992), programmes are designed around target objectives ranging from simple to complex sequenced steps that begin after a pretest and continues with short tests at the end of each frame. Individual learners are exposed to objectives that need mastering. Content is presented in small phases and short steps that are to be mastered gradually (Dunn & Dunn, 1992, p. 203). Through repetition, self-pacing and virtual independence, learners proceed through each objective gradually and responsibly completing related tests accordingly. Programmes are designed to include visual and tactual activities that meet or strengthen these learning preferences (Moodley, 2009).

The PLS suits those who prefer to work alone although the incorporation of the added opportunity of peer discussion and small group techniques around what is learnt provides for increased retention (Dunn & Dunn, 1992, p. 197-198). This method particularly suits those learners who are motivated, analytic, persistent and responsible who are able to manage their time and organisation well enough to complete the programme sufficiently on their own, calling for assistance when needed. The PLS is a well-structured sequenced approach to materials with each step depending on the mastery of the previous one. It suits learners who prefer to be told what to do than creative learners who may became irritable and bored by this method (Dunn & Dunn, 1992, p. 197 -198). It is also suited to tactual and visual learners who are able to read and reread materials. Those learners who do not display these characteristics may also be exposed to the PLS method to develop these strengths gradually and repeatedly over time. The method also lends itself to individual learner's environmental preferences of working in or outside the classroom, on a carpet or at a desk. This method allows for difficult information to be reinforced and mastered facilitating academic achievement within these selective learning style elements (Moodley, 2009).

Most PLS programmes follow a basic pattern of design. According to Dunn and Dunn (1992, p. 204) they are not difficult to design. Once the topic, concept or skill is organised into a logical, easy to follow sequence, a humorous subtitle to draw especially the global learners is given. The cover is designed and shaped to represent the topic in some way making it appealing to especially those who are tactual. The heading is stated as an introductory sentence that explains what is to be covered and achieved by the end of the programme. Prerequisite instructions are listed at the beginning. A global story, cartoon, humourous beginning related to the topic precedes the information and question frames to draw in the global learners. Each part of the sequence is called the frame and each frame builds on the previous one. Each frame ends with an item requiring a correct response. The programme is self-paced and faster learners are permitted 'branching' that is bypassing certain frames when answers are correct and sections are mastered. Learners who answer incorrectly are not permitted to do this. Instructions are written in simple short sentences. Each instruction is set out on a frame. Tactual activities and games are incorporated. The frames are bound together and presented as an attractive, eye-catching package with several illustrations and examples of what is to be mastered.

Characteristics/components of the PLS according to Dunn and Dunn (1992), Dunn and Griggs (2000) and Moodley (2009) are as follows:

- Only one item, skill or concept is presented at a time introduced through a simple written statement. Questions to demonstrate understanding are provided for each frame or section. Learners may not proceed to the next frame until previous one is mastered.

- Learners are required to be active than passive learners. The PLS requires accurate and timely learner responses for completion of the programme and continuation of the learning process.

- The programme includes immediate reinforcement since once the learner has recorded a response to questions posed he/she may turn to the section of answers to check for accuracy or inaccuracy providing an effective teaching strategy for immediate awareness of progress.

- The PLS is designed to progress to completion on when each step is mastered. Each phase has to be understood and mastered before the next step is followed. On successful answering of each step the learner is directed to proceed. When responses are inaccurate, learners are directed to restudy the frame or to turn to another frame that would provide further information for mastery thus consolidating their base of knowledge before being exposed to new or related ones.

- The programme is sequenced and graded from easy to more difficult. Initial frames are written in an uncomplicated, direct way progressing to more complex instructions according to accurate responses demonstrating increased understanding and mastery.

- A system of 'fading' is used where less hints and clues are provided toward more complex mastery of material.

- The PLS is self-paced and space is provided for direct feedback. Topics are clearly indicated and objectives are clearly stated making focus easy. The global humorous/dramatic story at the beginning captures interest and attention.

- Periodic, built-in games reinforce what is taught in print and on audio devices. Sufficient printed and illustrated explanations and examples help visual learners. Low auditory and auditory learners have audio material to access as part of the package.

- The option of small group and peer activities are provided and the opportunity to work at their suited environment is afforded.

Advantageously, studies conducted by Miller and Lefkowitz (1998) cited in Dunn and Griggs (2000) show statistically higher achievement and attitude test results from learners using the PLS in comparison with those exposed only to traditional teaching. Those who favour quiet and light and less authority fared well with this approach.

3.5.4. TACTUAL MANIPULATIVES

Dunn and Dunn (1992, p. 147) and Moodley (2009) assert that children learn through their senses determined by their individual perceptual strengths. Whilst verbal teaching appeals to the auditory learner, showing/demonstrating to that of the visual learner and real life/ doing approaches to the kinesthetic learner, touching methods appeal to the tactual sense of the tactile learner. This approach is essentially suited to those learners who prefer tactual learning who are not able to retain or remember three-quarters of what they hear. According to the authors use of tactual manipulatives help learners remember seventy-five percent of what they learn through the use of such tactual resources as Electroboards, Flip Chutes, Pic-a-holes, learning strips and task cards and could be used and produced by most age groups. Research conducted by several studies show that those who prefer to learn using these resources absorb and retain more information than at other times (Billing & Cobb, 1990; Clark-Thayer, 1987; Cook, 1991; Dunn, Bruno, Sklar, & Beaudry, 1990; Dunn, Ingham & Deckinger, 1995; cited in Dunn & Griggs, 2000).

Important learning skills as language concepts, word recognition, reading, spelling and writing may be internalised through the use of tactual experiences for the tactually inclined individual. Dunn and Dunn (1978) recommend the use of clay, sandpaper, fabrics of various kinds, sand, water, finger paints, and dry food ingredients like macaroni, paper and cardboard among various others be used to enhance learning for tactual learners. The use of task cards is particularly effective across the curriculum and can be developed over time by the learner. These may be self-corrective and reinforcing of material as well as introductory in content. Several games may be developed to include an element of fun, focus and motivation.

This approach meets most young children's natural inclinations toward using their hands in learning as auditory and visual abilities are not as well - developed in their early years and can persist into sixth and seventh grades. However, learners of all age groups are generally more enthusiastic about learning when afforded tactual approaches than only lecture-type lessons with workbooks and assignments. Tactual activities can be easily included within other implementation approaches as discussed above.

3.5.5. KINESTHETIC ACTIVITIES AND RESOURCES

In keeping with sensual individual preferences, those individuals who learn by doing prefer to learn through real-life experiences to effectively absorb and retain knowledge (Moodley, 2009). 'Reality-oriented activities' (Dunn & Dunn, 1992, p. 190) although fairly time consuming, requiring supervision and much creativity help to teach kinesthetic (whole-body) learners skills that would most times be difficult for them to process and understand. Concepts like measurement, space and shape and other abstract concepts begin to be internalised better when experienced through the use of kinesthetic resources and activities. The use of dart boards for multiplication and division questions language concepts like verbs and punctuations, pin ball machines, use of throw away recyclable material to create resources for other board and floor games and the use of a ball or skipping rope to experience learning are but a small example of meeting individual instructional needs of the kinesthetic learner. The use of acting out in skits and sketches allow for small group experiences catering for social preferences of kinesthetic learners who prefer small group and peer learning (Moodley, 2009).

Dunn and Dunn (1978) recommend several floor games that employ movement and direction that help whole-body learners the opportunity to move as they process information. Kinesthetic games eventually can be developed by the learners themselves (Moodley, 2009).

3.5.6. SMALL GROUP TECHNIQUE: CIRCLE OF KNOWLEDGE

According to Dunn and Dunn (1992, p. 120 -121), the circle of knowledge is a learning and teaching technique that involves small groups. It is used to motivate and reinforce skills in any subject area for learners. Allowing learners to review previously learnt work, focus their thinking on one concept at a time and grow group skills among others, the circle of knowledge is especially useful for controlled discussions, verbal /auditory learning and assessment. The activity works with small groups of four or five learners with a scribe/recorder appointed who is the only one that writes. The other members participate verbally in turn responding to a single question or problem posed often open ended with several possibilities creating room for creative, critical responses that draw on prior knowledge, deep thinking and memory recall. The teacher then brings the activity to a halt and calls for each group's responses to the question with duplications omitted. The technique is useful in clarifying, reinforcing and crystalising information for learners.

3.6. IMPLEMENTATION AND USE OF LEARNING STYLES THEORY

Cassidy (2004) argues that it is critically important to integrate learning style into educational programmes from an informed position (Moodley, 2009). A starting point in the implementation of a learning styles

approach to teaching is identifying learning preferences of individual learners. According to Serife (2008) and Moodley (2009), a number of instruments or inventories have been developed to measure approaches to learning and to identify learning styles. These include Entwistle and Ramsden's Approaches to Study Inventory (ASI, 1983), Lancaster's Approaches to Studying Questionnaire (LASQ, 1983), Biggs' Study Process Questionnaire (SPQ, 1987), Vermunt's Inventory of Learning Styles in Higher Education (ILSHE, 1994), Tait, Enwistle and McCune's Approaches to Study Skill Inventory for Learners (ASSIST, 1998), among various others. Pitts (2009) avers that though many similarities are found among them, each author assigns a different name to each style. He fittingly states that with so many different ways to identify learners, it is not strange that many teachers hesitate to try to identify the different styles in their classroom (Moodley, 2009).

Moodley (2009) states that in an attempt to classify learning style models Sarasin (1999, cited in Pitts, 2009) reviewed five sets of researchers and ways in which they identify learners. According to him, Gregorc and Butler identify learners as concrete, abstract, sequential, and random. Sims and Sims see learners as cognitive, perceptual, behavioural or affective. McCarthy classifies learners as analytic, imaginative or dynamic/common sensible. Harb, Durrant and Terry deem learners as reflective/abstract, concrete or active. Sarasin views learners as auditory, visual or tactile/kinesthetic. Concrete learners, according to Pitts (2009) are those who need to be involved in learning a concept in a physical way. They may be seen as similar to behavioural learners who need to move and be physically involved in learning to absorb a new concept. These learners require concrete objects or manipulatives to make learning real for them. Like dynamic/common sensible learners, they require an active approach. Practical by nature, they learn best by interacting with the information at hand. Concrete learners require visual aids to understand a concept globally. Active learners control their learning to make sense of information for themselves by relating it to their experiences or personal understanding so that they can process the information in a way that makes sense to them. Like tactile/kinesthetic learners, they learn by doing and use physical activity to understand new material (Moodley, 2009).

Abstract learners are precise and attentive to details (Moodley, 2009). They synthesise information to understand the whole. Similar to cognitive learners who need to understand the parts of a new concept before comprehending the whole, they require adequate thinking time and an ordered pattern for thinking. Like analytic learners, they process information in pieces. They work best with facts and individual pieces of

data that they can put together to form a whole. Comparable to sequential learners, they are structured and ordered and require the delineation and explanation of specific details and concrete steps very similar perceptual learners who look at a concept and analyse its pieces holistically often relying on visual aids to see the whole picture. Abstract learners need to ponder information and consider the relationships, connections, and influences among the different pieces. On the contrary, random learners cannot operate in a structured way in a learning situation but learn from the whole to the parts. Affective learners learn through feelings and emotions. They can be equated to imaginative and reflective learners who create visual images, such as a charts, graphs or diagrams, to learn. Auditory learners, on the other hand, need oral presentations of information. Visual learners need visual aids like drawings, charts, diagrams, outlines, or even mental images, to make sense of new information (Moodley, 2009).

3.7. CRITIQUE OF THE DUNN AND DUNN (1978) MODEL

Critically, according to Lister (2004) DeBello (1990), Kirby (1979), Tendy and Geiser (1998-1999) and Moodley (2009), the LSI has been scrutinised and examined repeatedly by researchers and has been deemed both reliable and valid. DeBello (1990) and Tendy and Geiser (Lister, 2004) affirm that the LSI has both high reliability as well as face and construct validity. Lister (2004) confirms that among nine different instruments that measure learning styles, the LSI was rated as having good or better validity and reliability than the others. They claim that based on the LSI scores of 817 randomly selected learners in grades 5 through 12, 95% of the reliabilities were tactual to or greater than .70 for the Likert scale of the English version and similarly high reliability coefficients were indicated for Hungarian, Malay, and Swedish translations. However, as an exception reliabilities calculated for the five subgroups on Bermuda sub sample only limited number of low coefficients were found on the subscale for Late Morning (.43) and Swedish sub sample on the elements of Temperature (0.05) and Design (-.14) also received low reliabilities (Lister, 2004; Moodley, 2009).

Most compelling are studies conducted by Dunn and Griggs (2000) on how learning styles differ among learners (Moodley, 2009). These studies reveal that learning style traits significantly differentiates according to achievement levels, gender, age, culture, and global versus analytic brain processing. Their research has shown that in the case of high versus low academic achievement levels, gifted and underachieving learners show notably different learning styles and do not perform well with the same methods. Critically, gifted learners presented with similar learning styles characteristics (Dunn & Griggs, 2000; Moodley, 2009)).

This is also congruent with gender differences. Dunn and Griggs (2000) and Moodley (2009) contend that males and females often learn differently; with males tending to be more kinesthetic, tactual and often visual needing more mobility in informal environments than females. They are more non-conforming and peer motivated. Alternately females tend to be more auditory, conforming, authority-oriented and better able to sit passively in conventional classrooms desks and chairs needing considerably quieter while learning. Females tend to be more self and adult motivated (Moodley, 2009).

Pointedly, differences in age may also be seen (Moodley, 2009). Dunn and Griggs (2000) concur that learning styles change as individuals grow older as learners undergo transition between the different school phases through to adulthood. They confidently claim that it is possible to anticipate approximate achievement and behavioral patterns by knowing age, gender and learning styles of learners. They offer that sociological preferences especially change with age and maturity with many learners becoming peer motivated by Grade 5 or 6 and remain so to about Grade 9 when they begin becoming more self-motivated. Importantly, they state that gifted children become more self-motivated much earlier around Grade 1 or 2 and rarely experience a peer-motivated stage. Conversely, underachievers tend to remain peer-motivated often past adolescence. Significant development similarities also present in emotional and perceptual preferences across age cohorts with younger children being more tactual and kinesthetic than auditory (Moodley, 2009).

Most significantly, according to Moodley (2009) drawing from Dunn and Griggs (2000) research on the LSI on how individuals absorb and process new and difficult information have indicated correlations between global and analytic and left-or right- preference processors. It reveals that a relationship exists among these cognitive dimensions and the other traits/strands of the LSI and that they often cluster together. They found that analytic, left-brain processors correlates with learning persistently in a quiet, well-lit, formal setting with little or no intake while learning with intermittent periods of concentration and relaxation, in soft lighting and with sound while seated informally and snacking correlates with high-global or right-processing styles (Cody, 1983; Dunn, Bruno et al, 1990; Dunn, Cavanaugh et al., 1982, cited in Dunn & Griggs, 2000).

More so, Dunn and Griggs' (2000) claim that many of their experimental studies on the effects of sequential versus simultaneous instructional approaches have found that those taught in their own preferred processing

style reported statistically higher achievement than when not (Moodley, 2009). Data in their more recent studies show that most average and well-achieving learners in seventh grade performed better in Mathematics with global than analytic teaching approaches (Dunn & Griggs, 2000). Citing Burke (1998), Dunn and Griggs (2000) assert that most middle school populations (Intermediate/Senior Phase) preferred a global to analytic learning style save extreme analytics. In addition, correlation studies among cultural groups in America according to Dunn and Griggs (2000) have revealed significant differences in learning style preferences. Analysis of studies conducted among Native, Hispanic, African, Asian and European Americans showed patterns of greater than average preferences for selected learning style elements within individual cultural groups than between groups (Dunn & Griggs, 2000).

Thus, as Dunn et al. (2008) in Moodley (2009) confirm differentiated instruction has become an inevitable part of the schooling system. Creating a model that understands curriculum implementation through the individualised pedagogy of learning styles, founded on deep learning, tested and tried empirical principles and sound cognitive values, a learning styles model may be the long-awaited cornerstone teachers need to base differentiation on. The claim that profiling learners against the 21 elements providing for a learning environment and meaningful opportunity against its 5 strands, the Dunn and Dunn (1978) learning style inventory may be the missing link to bridge the gap between how teachers teach and learners learn best for individual understanding and success makes for a worthy investigation (Moodley, 2009).

Yet given the stark recognition of debate around the definition of learning styles, research around theory and practice, according to Moodley (2009), revealing almost equal consensus in support for as there is against learning styles based approaches to teaching as a response to meeting individual learner needs, and the call in many of the reports for further rigorous work in this field to establish a firm and stable theory of matching learning and teaching, the urgent demand for a simple and user-friendly instrument of identifying learner styles and a cost, time and labour saving means of implementing learning styles are more immediately submitted. This then may account for Stahl's (1999) acute findings of why 'teachers after one year of implementation discontinued matching learners to their individual learning styles.'

Even so, learning styles theory in general and the Dunn and Dunn (1978) learning styles approach in particular given the necessary attention may become one of those long awaited solutions to understanding curriculum implementation for success in 21 century heterogeneous classrooms (Moodley, 2009). It may be

a critical link in understanding the 'one-size-fits-all' dilemma and detriment faced by myriads of learners and teachers. Understanding curriculum implementation through learning styles for individual pedagogy cannot afford to ignore the legitimacy and value of learning styles theory and approach.

3.8. IN SUM

In sum this chapter has through a selection of literature reviewed, established that classroom practice is a complex endevour. That against the catapulting advances in technology and science, the escalating knowledge surge, the demand for quality and excellence, and, the ever-growing complexities within 21st Century society, the increasing reality faced in classrooms is that classroom teaching is not simple (Moodley, 2009). Consequently, there is growing concern against the demands of educational reform, public and school expectations, higher standards, innovative teaching, deeper knowledge, and, flexibility in diverse situations (Calderhead & Shorrok, 1997, Furlong, et al., 2000) for appropriate curriculum implementation (Moodley, 2009). Understanding curriculum implementation provides an appreciation for contributions, complexities and contradictions around creative solutions that are often sort especially within supportive institutional environments. It also helps to understand novel ideas and innovative methods that may assist in successful classroom delivery and curriculum reform (Moodley, 2009).

This literature review therefore, recognised that there is an urgent need to create conditions for school reform that conveys values, world views and a vision of what it means to learn and be educated requiring teachers to be individually and collectively able to 'act as shapers, promoters, and well-informed critics' (Little, 2007, p.2) scrutinising assumptions against their beliefs and practices (Shulman, 2004; Little, 2007). This literature review acceded to Pappas (2009) and Shulman's (2004) claim that curriculum reform should be premised on what one wants to see in the classroom, encouraging teachers to create conditions in which their learners become creative and inventive, problem-solvers and innovators. Thus, calling for deepened disciplinary and interdisciplinary understanding among learners requiring complex social classroom structures and greater challenges for teachers to understand, organise, learn and adapt (Moodley, 2009). Inherent in this is the need for teachers to be continuous learners (Shulman, 2004).

More specifically, emanating out of South Africa, the setting of this study, where the adoption of an Outcomes Based Education approach to schooling since 1994 has been received with much skepticism, suspicion and ignorance, one of the pillars of the new outcomes based national curriculum, learner-centredness (Meier, 2009), calling for a pedagogy that is new, strange and challenging for many teachers, has been the

springboard for review within this chapter. Even more challenging, the reconciliation between learner-centred teaching and learner performance has revealed an ever growing concerning gap between how teachers teach and how learners learn best for individual and collective success for learners and the country at large. More so, the highly debated and recently amended, Norms and Standards for Educators in the country that has seen teachers in seven distinct roles including 'mediators of learning, interpreters and designers of learning programmes and materials, researchers and lifelong learners and assessors, and, learning area/phase specialists' (Government Gazette No 20844, 2000, p. 9), assumes teachers as 'qualified, competent, dedicated and caring' (Government Gazette No 20844, 2000, p. 9) leaving 'considerable room for creativity and innovation on the part of teachers in interpreting what and how to teach' (Government Gazette NO 20844, 2000, p.12).

However, as Jansen (1999, p.57) in Moodley (2009) postulates that in South Africa the emphasis of curriculum reform has been a 'symbolism of change and innovation' and is not concerned with that of learning objectives, content to be covered, teaching strategies, assessment procedures, and such. Jansen (1998) states curriculum 'implementational dilemmas' within the South African education system as regards 'finance and support', 'conditions of schools and classrooms' and 'capacity of educators' have not allowed for the National Curriculum Statements (NCS/CAPS, 2012) to be fully realised. Harley and Wedekind (2004) further assert that 'when teachers are uncertain there will be failure'. Bertram, Fotheringham, and Harley (2000) also strongly contend that teachers are 'crucial to the success of any innovation'. Inadequate and inappropriate training of teachers, misinterpretation and lack of understanding, the need for suitable resources and appropriate materials and substantive professional support especially at institutional level among others may be said to have led to the demise of the successful implementation and delivery of South Africa's curriculum policies.

Yet, amidst the aforementioned complexities in education in South Africa has emerged a learner-centred, creative and noteworthy response to understanding curriculum delivery through a learning styles approach (Moodley, 2009). A learning styles approach claims to bridge the gap between the what, why and how of curriculum implementation. Learning style theory is a cognitive response in understanding the gap between how teachers teach and learners learn best in diverse situations, and within technologically advancing 21st Century environments. It is based on the assumption that how individual children learn - their learning styles do influence how they perform, and that most children can learn given the awareness of their learning styles

(Dunn & Dunn, 1978). The Dunn and Dunn (1978) Learning Styles theory claims to open such learner-centred possibilities for curriculum implementation providing a conceptual and theoretical framework for transporting teaching practice into a 21st century dimension for all (Moodley, 2009).

The key research question of this empirical case study, *What are school-based teachers' experiences of a learning styles approach to teaching South Africa's Intermediate Phase* NCS/CAPS (2012) *policy* has provided the platform for critique and understanding of this literature review. Thus the main objective of this literature review was to recognise the influence teaching through a learning styles approach has had on how children learn and perform. Through a review of journal articles, books and reports based on research into learning style theories and practice conducted among American, British, Middle Eastern, Chinese and South African learners and teachers, the assumption that how children learn, their learning styles, do influence how they perform was critiqued.

This literature review thus recognised what the literature said about the definition of learning styles, its purpose and benefits for curriculum implementation, how it is implemented and used (learning style instruments), and, its influence on learner performance. There has been general consensus that meeting the cognitive, emotional and psychological needs of individual learners especially within heterogeneous environments of diverse cultures and abilities has increased since the latter part of the 20th century (Dunn & Dunn, 1978, Tomlinson, 2009; Moodley, 2009). This has in turn increased demands on schools and teachers. However, the overall trend noted was that there is almost equal consensus in support for as there is against learning styles based approaches to teaching as a response to meeting individual learner needs. Significantly also, research has shown that teachers after one year of implementation discontinued matching learners to their individual learning styles (Stahl, 1999). Through this literature review understanding of the rationale and reasons for this change was of noteworthy investigation.

Thus positioning itself in the field of Curriculum Studies, this literature review defined and explained Learning Style Theory. The problem of a clear definition of the topic was handled in the section on what the literature says about the meaning of learning styles. Gaps in research were highlighted through review of the purposes and benefits of a learning styles approach to teaching. Conflicts in theory, methodology, evidence and conclusions were pointed out within the influence of learning styles on learner responses. This literature review did not include a comprehensive review of learning or teaching theories, outcomes-based education

and assessment, or tracking of learners directly. It further did not include a review of Multiple Intelligences or Emotional Intelligences.

Furthermore, this chapter also included an in depth description, explanation and critique of the Dunn and Dunn (1978) learning styles approach to teaching in understanding curriculum implementation. The focus though applicable to all age groups was especially on school-going ages, pre-primary to high school. The main objective of this literature review was to recognise and understand the influence teaching through the Dunn and Dunn (1978) learning styles approach to teaching has had on how children learn and respond. Through a review of several journal articles and books based on research into learning styles theories and practice, the assumption that how children learn best - their learning styles, do influence how they learn and perform was critiqued. Essentially, also it looked at how teachers teach through this approach, helping to understand teachers' classroom experiences and the demands of curriculum implementation.

This chapter in the main reviewed learning styles theory through a critique of research conducted among American (Matthews, 1991; Dunn & Dunn, 2009), British (Rayner, 2007), Chinese (Graf, Kinshuk & Liu, 2009), Middle Eastern (Rosenfeld & Rosenfeld, 2008, Serife, 2008) and South African (Grosser & Waal, 2008) researchers. In particular it presented the Dunn and Dunn (1978) learning styles theory and model. Among the main researchers here Lister (2004), Tully, Dunn and Hlawaty (2006), DeBello (1990), Tendy and Geiser (1998, 1999) and Kirby (1979) are advocates for the Dunn and Dunn (1978) model. Among their critics cautioning the value and construct of the model are Tomlinson (2009), Pitts (2009), Hall (2005) and Curry (1990). This chapter further described how the Dunn and Dunn (1978) model is implemented and used (learning style inventory) looking at its influence on learner involvement and significance for curriculum implementation.

Agreeably, there seemed to be general consensus that meeting the cognitive, emotional and psychological needs of individual learners especially within heterogeneous environments of diverse cultures and abilities have increased since the latter part of the 20th century (Dunn & Dunn, 1978, Tomlinson, 2009; Moodley, 2009). This has in turn increased demands on schools and teachers. However, the overall trend was an almost equal consensus in support for as there was against learning styles-based approaches to teaching as a response to meeting individual learner needs. Yet of immediate interest was the call in most of the reports for further rigorous work in this field to establish a firm and stable theory of matching learning and teaching

styles, a simpler and user-friendly instrument of identifying learner styles, and, a cost, time and labour saving means of generating and implementing a learning styles approach to teaching (Moodley, 2009).

However, it is still envisaged that through this literature review and study recognition of learning styles theory and research may provide awareness into teachers' experiences of teaching through a learning styles approach with a further understanding of the relationship between learners, teachers and learning (Moodley, 2009). This may serve as a vital cognitive response in education to bridge the gap between teaching and learning. If recognised curriculum implementation woes may be better understood and appropriate efforts made to address them. And the call to a learner-centred pedagogy in South Africa may be better understood and handled, dispelling fear and inspiring hope (Moodley, 2009).

CHAPTER FOUR

RESEARCH DESIGN AND METHODOLOGY

4.1. INTRODUCTION

Conceptually, a research design is a description of the order; structure or plan the researcher adopts for a research study and may be subject to change (Mouton, 2001; McMillan & Schumacher, 2001; Henning, 2004). A research design describes how the research is conducted to obtain sound evidence that answers the study's research questions (Mouton, 2001; McMillan & Schumacher, 2001, Silverman, 2010). This study asks a succinctly discursive key research question: *What are school-based teachers' experiences of a learning styles approach to teaching South Africa's Intermediate Phase* NCS/CAPS (2012) *policy?* In seeking to meaningfully answer this descriptive, exploratory question, and to clearly determine teachers' practices and attitudes, this chapter presents how the research design and plan for this study unfolds.

Subsequent to the opening section on Researcher Positionality and Bias, the chapter begins with a presentation of and brief discussion on the key research question and sub-questions to be answered during this study. A visual table of the processes employed is then depicted. This is followed by an in depth discussion and motivation for the adopted paradigm, style and approach taken to research supplying the study's framework and design. The next section on methods used for collection of data begins with a description of the site of data gathering, a primary school in Pietermaritzburg. A detailed description of and introduction to the unit of analysis, school-based teachers, and selection of the sample follows thereafter.

The four methods used in data gathering, interviews; documents; photo and artifact data, are explained and argued for thereafter. Here each method is discussed individually through presentation of the rationale and value behind its choice; its merits and demerits; plan for collection of data; analysis technique; limitations; trustworthiness and ethics. In motivating for the above design and fit, it is envisaged that this small – scale qualitative case study may challenge further rigorous debate and research into classroom practices through learning styles. Quantitative, mixed mode studies that could measure learner achievement and schooling success through learning styles may serve to establish learning styles theory and practice for curriculum and classroom success.

4. 2. RESEARCHER POSITIONALITY AND BIAS

As a researcher in this study, my close proximity and insider opportunity in understanding subjective truths and perceptions that may or may not exist is available and possible for crucial interpretation and meaning. More so as an experienced Grades 1 to 12 teacher, a member of the school management, a curriculum facilitator/developer, interacting with the old and new South African curriculums since its conception through all of its revisions, and as curriculum disseminator/implementer, screener and author of Intermediate Phase textbooks employing learner-centred pedagogies, as well as a trained Dunn and Dunn (1978) learning styles teacher, I count myself an unequal partner. However, at the risk of bias, this case is deemed highly appropriate. The selected sample is considered of high caliber and standing, proficient and well-suited for this purpose. Furthermore, given the collegial/collaborative institutional support and prevailing historical ethos at this site, departmental hierarchies often do not count.

Nonetheless, every effort has been made to reduce bias and create a relaxed and objective atmosphere for the best possible data collection. The use of recording devices, transcripts and triangulation are among these attempts. Furthermore, convergent validity, comparing one data collection method with another valid measure is employed to reduce bias (Cohen & Manion, 1994). Here interview data are pitted against documentary, visual and artifact data collected. Sound ethical codes are followed including confidentiality and voluntary participation. More pertinently and intentionally, this case is especially relevant in revealing how classroom teaching is perceived and understood through the adoption of a learning styles approach. This case strategically is not intended to effect change at this site but to expose and understand thinking and practice for its empirical value.

4. 3. KEY RESEARCH QUESTION AND SUB-QUESTIONS

Emanating out of its purpose (See Chapter One) lays a study's quest to answer its research questions (Boudah, 2011; Cresswell, 2007). Good research questions direct and focus a study providing clear, operationalisable, timely and theoretically rich layers of elegance and depth (Maree, 2010). Often building on previous research, concise, self-explanatory research questions help to identify fields of interest establishing what may be known or unknown and forging new understandings and meanings on such. This study uses three categories of research questions, descriptive - describing phenomena; explanatory - pattern explanations of phenomena; and exploratory, investigating little understood phenomena (Maree, 2010).

This case study asks the following key research question:

What are school-based teachers' experiences of a learning styles approach to teaching South Africa's Intermediate Phase NCS/CAPS (2012) Policy? In addressing the major contributions, complexities and contradictions to be

understood within this key question, this study is a case study. This case explores and describes intermediate phase teachers' experiences and understanding of teaching through the Dunn and Dunn (1978) learning styles approach to teaching over a seven year period from 2006 to 2012 in a suburban primary school in Pietermaritzburg. Notably examining what these experiences are and how and why this school adopted and adapted the Dunn and Dunn (1978) approach in implementing the Intermediate Phase NCS/CAPS (2012) curriculum, this case focuses on identifying known and unknown fields of interest around classroom practice/delivery and learning styles. Therefore significantly forging new understandings and meanings on how the South African intermediate phase national curriculum statement policy may be effectually understood and implemented through a learning styles approach to teaching.

Furthermore, this case is intended to richly describe, deeply explain and broadly explore emerging patterns of the phenomenon of learning styles as experienced by professionally qualified practicing classroom teachers. Learners, parents, support staff, members of management and the school governing body linked to this case have purposively not been included at this stage. Central to this case is its particular search to understand classroom practice of Intermediate Phase teachers employing the Dunn and Dunn (1978) learning styles approach to meet curriculum needs. These are provided through teachers' experiences as implementers of a learner-centred, innovative South African curriculum. This study does not specifically include a critical diagnostic view of learner achievement/competence/performance gains or losses with or without a learning styles approach to teaching directly. However, this makes for a strong case in a future envisaged study.

Therefore, in understanding the major concerns around what school-based teachers' experiences of a learning styles approach to teaching are, the following 'issue sub-questions' (Cresswell, 2007, p. 109; Maree, 2010) are relevantly posed:

1. What is curriculum implementation?
2. What are learning styles?
3. Why a learning styles approach to teaching in this case?
4. How do school-based teachers implement the Dunn and Dunn (1978) learning styles approach to teaching the Intermediate Phase NCS/CAPS (2012) policy?
5. What are school-based teachers' experiences of the possible contributions, complexities and contradictions of the Dunn and Dunn (1978) learning styles approach to teaching in the Intermediate Phase?

To be viewed from a tiered perspective, the first two questions above provide a critical theoretic bedrock, context and trajectory for this study. These are addressed and covered in Chapter 2 and 3 (see Conceptual Framework and Literature Review). Questions 3, 4 and 5 are answered in Chapter 5 (see Findings and Discussion) emanating out of the data gathered from this sample. The table below depicts how critical questions 3, 4 and 5 are analysed against the four data sets used in this study.

4. 4. RESEARCH DESIGN/INTENDED DATA ANALYSIS

CRITICAL QUESTION	SAMPLE	TOOL USED TO ELICIT INFORMATION	RESEARCH INQUIRY/ANALYSIS
Question 3. Why a learning styles approach to teaching in this case?	Participants	Interviews Documents	Qualitative Content
Question 4. How do school-based teachers implement the Dunn and Dunn (1978) learning styles approach to teaching the Intermediate Phase NCS/CAPS (2012) policy?	Participants Photos Artifacts	Interviews Photo data Photo data Artifact data	Qualitative Visual Content Visual Content
Question 5. What are school-based teachers' experiences of the possible contributions, complexities contradictions of the Dunn and Dunn (1978) learning styles approach to teaching the Intermediate Phase NCS/CAPS (2012)?	Participants Documents Photos Artifacts	Interviews Document data Photo data Artifact data	Qualitative Content Content Visual Visual

Thus in seeking a better understanding of the nature of complexities, contradictions and contributions of the lived experiences to be explored through these questions in this case, this study is deliberately positioned within an Interpretivist paradigm. The next section will provide an explanation and argument for this choice.

4. 5. AN INTERPRETIVIST PARADIGM

Related to hermeneutics, interpretive social science involves a systematic process of looking at meaningful social action (Maree, 2010, p.102). Interpretive social science involves an empathetic, detailed study of peoples' everyday lived experiences in their specific, natural settings in order to elicit understandings and interpretations of how they create and maintain their social worlds (Maree, 2010, p.102; Neuman, 2011, p. 101). It is grounded on the assumptions that human life can only be observed and understood from within and cannot be served fully from external reality. Interpretivism focuses on peoples' subjective experiences which firmly assert that human social life is a distinctively human product, socially constructed placing people within their social contexts. Further, an interpretivist paradigm especially allows for a greater opportunity for understanding perceptions people have of their own activities. Of importance are people's construction of their social worlds through shared meanings and interaction/relationship with others (Maree, 2010).

The choice of working within an interpretive paradigm is particularly pertinent for this study since it seeks to understand the deep lived experiences of professionally qualified practising primary school teachers within the social context of a former Model C suburban primary school in Pietermaritzburg. In understanding teachers' subjective experiences of classroom practice in teaching through a learning styles approach, this study hones in on teachers' experiences as socially constructed within the context of this school. Shared meanings and interaction/relationship with others in this school as a construct, provides for an implicit opportunity for understanding the perceptions they have of their own classroom practice. Understanding teachers shared meanings, interactions/relationships within this community of practice, perceptions of their own activities/classroom practices and particularly experiences around teaching through a learning styles approach are of vital significance to the purpose of this study. This is empirically explored in the next chapter.

An interpretivist paradigm is further relevant since it helps to foreground the crucial meaning that individuals assign to their experiences in achieving understanding. Behaviour is regarded as constituted by social conventions and thus requires interpretation. Facts thus do not speak for themselves. Blurring distinctions made between the researcher and the event being studied, social context, conventions, norms and standards of the particular person or community under study are important elements in assessing and understanding their behaviour (Maree, 2010). Truth accordingly is subject to these elements.

More so, an interpretivist paradigm befits this study's exploratory, descriptive research question of asking what teachers' experiences of learning styles are. Interpretivist studies explore, describe, interpret and understand in depth and detail that which is under study (Cresswell, 1998; 2007; Leedy & Ormrod, 2005; Henning,

2004).This paradigm becomes more applicable in complimenting the nature of the research question of this study. Exploring its key question from an insider perspective within what seems to be an innovative, supportive social context, confronting and engaging realities of diversity and differentiation, justifies the choice of an interpretivist paradigm

Thus the aim of interpretivist research is to provide and analyse a perspective of a situation to gain insight, according to Maree (2010), into how specific groups of people make sense of what they encounter. In this study the encounter is between teachers and a learner-centred, learning styles approach to their classroom practice within the social context of this school. An interpretivist approach is purposeful in understanding and describing this school's singular attempt at understanding their classroom practice through the Dunn and Dunn (1978) learning styles approach to teaching.

Consequently, in arguing for an interpretivist paradigm for this study, the value behind Fullan's (1991) claim that curriculum implementation/classroom practice is a dynamic, complex social process and that for any measure of schooling success there has to be sufficient capacity and will for change requiring individual motivation, beliefs central to local contexts, and, stable internal institutional conditions, may be confirmed during this process (Moodley, 2009). Moreover, it may or may not confirm that for any understanding of successful classroom practice/curriculum implementation much 'depends greatly on how well we solve present and emerging problems and how well an innovative culture is supported' (Brain. tools, 2010).Thus understanding the experiences of teachers in this school in approaching their classroom practice through learning styles are best served in this study within an interpretivist paradigm. Though not intended to be generalised, this study has the potential for transferability to similar contexts for the benefit of understanding innovative, successful and educationally sound curriculum implementation. Aimed at understanding and addressing significant deep learning and teaching experiences, transferability to similar contexts may help to bridge the gap between how teachers teach and learners learn best for schooling success (Moodley, 2009).

Furthermore, this study intentionally follows a qualitative style of research. The following section discusses and motivates for the value of a qualitative framework.

4. 6. A QUALITATIVE STYLE

The assumptions about social life made in this study lend itself to a qualitative style of research. Qualitative research is that type of study which arrives at findings without necessarily using statistical procedures (Silverman, 2010, p.113). Qualitative research lies in its quest for in-depth inquiry and understanding

(Henning, 2004, p.3). Central to this study is the need to understand and interpret individual meaning attached to the phenomena under study rather than to quantify it (Cresswell, 2007; Neuman, 2011).The use of 'soft data', that is words; sentences; photos; symbols; dictate data gathering methods (Neuman, 2011, p. 165) and differs from 'hard data', the use of numbers. Since this study aims to understand and interpret teachers' experiences of learning styles, it merits a qualitative research design to enable interaction between researcher and participants. Data are gathered from participants in their natural setting and environment (Cresswell, 2007), a suburban primary school in Pietermaritzburg where the Dunn and Dunn (1978) learning style approach to teaching was used to implement the intermediate phase NCS/CAPS (2012).

Furthermore, the value of qualitative research is its ability to provide complex textual, thick description (Family Health International, 2010, p.1; Leedy & Ormrod, 2005, p. 95; Henning, 2004, p. 6) of how people experience a given research issue that is exploratory in nature. In this study classroom practice and teacher experiences of learning styles are explored and described. Relevant within this approach, is the aim to understand the human side of the issues under study which may reveal contradictory behaviours, beliefs, opinions, emotions and relationships of individuals (Family Health International, 2010, p.1; Leedy &Ormrod, 2005, p. 95) to the issue being researched. The personal views and experiences of the participants with regard to understanding classroom practice in the intermediate phase curriculum through the Dunn and Dunn (1978) learning styles approach to teaching is sought, understood and described through a qualitative style (Moodley, 2009).

In addition, since qualitative research is effective in identifying intangible factors such as social norms, socio-economic status, gender roles and diversity within the research environment (Family Health International, 2010, p.1), it may also reveal complex situational realities that, as Lankshear and Knobel (2004, p. 68) profess, is about 'how people experience, understand, interpret and participate in their social and cultural worlds'. Employing a qualitative style to explore how curriculum implementation through a learning styles approach is used, understood and experienced within innovative and diverse situations may open such possibilities of revealing its complexities, contradictions and contributions. These experiences as understood within heterogonous 21st century, dynamic and learner-centred classrooms of the new South African are of especial interest to this study and are best served now through a qualitative style of research.

Ontologically, thus, key to qualitative studies is how people make meaning of and define their everyday life situation. This common sense, constructionist model of understanding of the processes and practices in addressing curriculum policy through a learning style approach occurring in its natural setting by those within

this study is sought. Key to this understanding is that their 'real world' in all its 'complexity' (Leedy & Ormand, 2005, p.96) and the realisation that 'facts are socially constructed in particular contexts' (Silverman, 2010, p. 108) are notably appropriate. Therefore, understanding the research issues from the participants' views, drawing on their deep and lived reality is essential to and inherent within this study (Leedy & Ormand, 2005, p. 94; McMillan & Schumacher, 2001, p. 15).

Significantly, the assumption that qualitative research understands the notion of multiple realities socially constructed through individual and collective perceptions and views around the same situation is further vital to understanding of this study (McMillan & Schumacher, 2001, p. 35; Silverman, 2010, p. 48). Multiple meanings and realities of the same phenomenon allows for the necessary credibility and pursuance of deeper meanings of the issues that may emerge similarly or differently by the participants involved in this study (Stake, 2000).

Epistemologically, as a qualitative researcher, collaboration, time spent with participants, having an 'insider' perspective minimising distance and becoming immersed in the situation while assuming an interactive social role through interacting with participants are permitted (Cresswell, 1998, p. 76; Lankshear & Knobel, 2004, p. 74; Leedy & Ormand, 2005, p. 96; McMillan & Schumacher, 2001, p. 396). Thus as a member of this staff and as qualitative researcher, remaining close to the subjects being researched is of extreme advantage.

It is envisaged that through the exploration of this study the extent of the lived realities of institutional innovation and support in understanding classroom practice through learning styles may be relevantly revealed. Thus this study is an attempt to understand intensely the processes, experiences and dynamics around teachers' experiences of a learning styles approach to teaching at this school. Any limits posed ought not to discourage, but ignite and challenge the significance of further relevant understandings of curriculum implementation in learner-centred diverse environments within innovative institutional cultures in confronting change and reform. In so arguing, this qualitative study attempts to address in part the lack of in-depth qualitative research in the field of alternate, creative yet authentic sound methods of learning and teaching to the 21st century learner, provoking interest and dialogue and adding to current understanding.

The next section explains the strategic and critical option for a case study as the enabling approach to this research.

4.7. A CASE STUDY APPROACH

The term case study has multiple meanings that can be used to describe a unit of analysis or a research method (Maree, 2010; Yin, 2003). More particularly, case studies are an in-depth, holistic examination of a person, group, an episode, a process, community, society or even a unit of social life (Guthrie, 2010, p.66). In the case of this research, the object of study is both persons and processes. Here, intermediate phase teachers' experiences in a suburban primary school of teaching through a learning styles approach are treated as the case.

Case studies provide opportunities for intensive analysis of several specific details overlooked by other methods (Guthrie, 2010, p.66). Case studies are empirical inquiries that often become indistinguishable of the contemporary phenomenon under study and its real-life context (Yin, 2003, p.13; Maree, 2010, p. 5). Kumar (2005, p.113) and Johnson and Christensen (2012, p. 395) simply and practically confirm that in its complexity case study research provides a detailed account and study of a social phenomenon through a thorough analysis of an individual case. Here the novel phenomenon of understanding the experiences of teachers using a learning styles approach is inherent of this school's innovative, problem-solving context and needs to be investigated for its singular understanding and meaning not particularly for generalisability but certainly transferability.

Importantly, case study research involves the study of an issue explored within a bounded system, setting or context (Cresswell, 2007; Henning, 2010, p.32 -33; Maree, 2010, p. 5). This case study is bounded by the following five parameters:

1. Curriculum implementation requirements of the intermediate phase NCS/CAPS (2012) policy of South Africa.
2. Context found within a diverse and integrated suburban former Model C primary school in Pietermaritzburg, South Africa.
3. A time frame between 2006 and 2012.
4. The personal and professional experiences and expertise of professionally qualified experienced practicing intermediate phase school-based female teachers.
5. Three professionally qualified experienced practicing intermediate phase school-based female teachers who were among those initially fully trained in 2006 to implement the Dunn and Dunn (1978) learning styles approach to teaching the NCS/CAPS (2012) curriculum in the intermediate phase.

To this end, the historical relevance out of and within which the lived experiences and dynamics of which this case under study emanates is dichotomously singular yet similar to sites like these whose concerted attempts at understanding and managing change and reform makes for a noteworthy case for investigation. In so doing this study aims to explore, describe and explain teachers' experiences of implementing the NCS/CAPS (2012) curriculum through the Dunn and Dunn (1978) learning styles approach, a brain-based, cognitive, individual pedagogy embedded in 21 elements in meeting the needs of diversity and differentiation within the context of learner-centredness. Insightfully, in confronting and addressing reform and change, this case is not a situation that is artificially generated specifically for the purposes of research but is something that already exists. This case is an already 'naturally occurring phenomena' (Denscombe, 2007, p.37) that existed prior to the research project and is hoped to continue well after.

Uniquely also, this case study is a 'spotlight' on this one instance of singularly investigating this school's experience of teaching through the Dunn and Dunn (1978) learning styles approach to teaching. In doing so it is necessary to crucially understand many other experiences in seeing how the various parts are linked (Denscombe, 2007, p.35). Thus the case of this one school's teachers' experiences in understanding the Dunn and Dunn (1978) learning styles approach will 'help to unravel the complexities within the given situation' (Guthrie, 2010). The case will be dealt with as a whole rather than as isolated factors and in this way it will reveal how parts affect one another (Guthrie, 2010). Significantly, details of the relationships and social processes involved within this case, than merely outcomes or end results, are emphasised and brought to attention (Guthrie, 2010; Denscombe, 2007). End products, outcomes and results, though of interest, are secondary to the processes which lead to them. Thus issues around processes of what, how and why teachers have opted for a learning styles approach to teaching are crucial. This case study takes this school's situation as given and tries to find out what it particularly means for its participants (Guthrie, 2010, p.66).

Appropriately moreover, most case study research is associated with qualitative research (Neuman, 2011, p.42; Guthrie, 2010, p.66). Case studies are appropriate since it is 'a type of qualitative research in which in-depth data are gathered for a defined time... here over a seven year period for the purpose of learning more about an unknown or poorly understood situation' (Leedy & Ormand, 2005, p.108). Grosser and de Waal (2008), Dunn and Dunn (1978) (1992) and Tully, et al. (2006) among several other learning styles researchers claim learning styles is a less known approach in the work of teachers and need far more attention.

The use of case studies in understanding more abstract topics such as implementation processes is also supported by Yin (2004). Of note Yin (2004, p.48) claims that case studies have 'become a common way of

thinking – not only about the study of implementation but also about practical ways of reducing implementation problems.' Theoretically thus, concepts guide case study design and data collection (Yin, 2003). Theoretical concepts help place the case study into appropriate research literature. Lessons from the case study are then more likely to advance knowledge and understanding of the topic at hand (Yin, 2003) thus creating or reshaping theory (Neuman, 2011).

Choosing the sample with this in mind is thus strategic and motivated by the rationale for purposive sampling (Cresswell, 2007, p. 76). Qualitative research using case studies does not derive its data from random sampling (Silverman, 2010, p. 139). Defining the unit of analysis, the case, and in identifying criteria for selection and screening of potential participants to be studied is extremely important for the development of a rigorous case (Yin, 2003). Thus election to investigate the experiences of professionally qualified primary school teachers who were trained to implement the NCS/CAPS (2012) through the Dunn and Dunn (1978) Learning Styles approach is relevant. This case is not viewed for statistical comparison but is selected to investigate the extent and diversity of the phenomenon (Leedy & Ormand, 2005, p. 108). Focusing on a single case because of its unique, exceptional qualities promotes understanding informing practice for similar situations (Neuman, 2011).

Significantly further, in arguing here for a case study approach befitting this qualitative research focusing on an in-depth understanding of one phenomenon, the number of sites or participants included takes on secondary importance (McMillan & Schumacher, 2001, p. 398; Neuman, 2011, p. 42). As the case is examined, complex details of social processes cause and effect relationships may become evident. This allows for rich, comprehensive explanations. These explanations are needed to capture the complexity of social life necessary to describe complex processes occurring over a period of time and space (Neuman, 2011, p. 42). Thus these experiences are useful in understanding how implementation of a programme changes over time (McMillan & Schumacher, 2001, p. 36). This understanding may explore and understand Stahl's (1999) significant claim that after one year teachers stopped matching learners to their learning styles.

Therefore, for the purposes of this study, the use of a case study approach is appropriately suited. In allowing for investigation, probe and intensive analysis of in-depth, multifarious issues, a case study approach provides the relevant opportunity for explanations of complexities and subtleties within its real life situation (Cohen, Manion & Morrison, 2000, p.185; Denscombe, 2007). Exploration and description of such complex issues of tradition, diversity, language, culture, behaviour, parental issues, socio-economic and gender subtleties

among others may or may not emerge during this case study. These would need in-depth understanding, explanation and description best allowed for through this medium.

In addition, the choice of a case study fits the purpose of understanding teachers' experiences of learning styles. This, allowing for findings to be less generalizable makes for plausible transferability. The assumption however does exist that the case being studied may be typical of cases of its kind so that through intensive analysis generalisations may be made that will be applicable to other cases of the same type raising the possibility of generating a theory (Guthrie, 2010 p. 66). This study expediently aims to present findings that may be transferable prodding interest and debate toward a more comprehensive generalisable theory in a future study. Hence, the use of in depth data collection involving multiple sources of information is essential for triangulation purposes (Maree, 2010; Cresswell, 2007). Here four data sets, interviews; documentary reviews; visual and artifact data are employed to establish value for possible transferability.

Thus, the value of a case study approach is relevantly seen in providing clarity of thinking allowing for abstract ideas and concepts to be linked in specific ways with concrete specifics of the actual lived experiences and accepted standards of evidence gathered for the case (Neuman, 2011, p.42). They especially provide a valuable, unique, intensive way of getting insight and detail whilst offering a greater opportunity to 'delve into things to discover deeper issues' (Denscombe, 2007, p. 36). It is thus envisaged that through this case study these deep issues may receive attention, meaning and understanding that often remain superficial and presumptuous providing clarities yet provoking debate.

The following section presents and argues for the choice of data collection methods employed to gather the necessary evidence for this case study.

4.8. METHOD OF DATA COLLECTION

Simplistically, whilst methodology may be regarded as the epistemological home of an inquiry informing its philosophy, reasoning and argument behind its value and processes (Henning 2004, p.36; Mouton, 2001, p.56), method generally relates to the end product (Mouton, 2001, p.56; Alasuutari, Bickman & Brannen, 2008). Though the connection between methodology and method is complex, debatable and considered as concentric/iterative (Alasuutari, Bickman & Brannen, 2008, p.83), the choice of method for data collection carries with it significant assumptions.

The following section describes and argues suitability and appropriateness of the data collection sets employed in this case study in processing its end product. The section begins with a description of the unit of analysis - the site of data collection and its context. It is followed by the rationale and description of the purposive sample used. The purpose, meaning and fit attached to the choice for each of the four methods of data collection employed, interviews; documents; visual data and artifacts follow. Each are individually defined, merits/demerits, selection criteria, analysis techniques, trustworthiness and ethical considerations dealt with.

4. 8. 1. UNIT OF ANALYSIS: THE CONTEXT/SITE

4.8.1.1 Demographic description

The bounded system of a suburban former Model C primary school in Pietermaritzburg and its attempts at understanding curriculum reform through a learning styles approach to teaching provide the locale and context for this intensive case study research (Silverman, 2010, p.139; McMillan & Schumacher, 2001). Former Model C schools originated in the early 1990s under the then minister of education Piet Clasé. A choice of three models was offered to white or House of Assembly schools. This shaped the character and nature of these schools during the former South African dispensation. 'Model A' made schools fully private. 'Model B' saw them remain state schools, and 'Model C' turned schools into semi-private institutions. 'Model C' schools received a state subsidy of about 50%, the balance being raised through fees and donations. Learners of colour were permitted to comprise 50% of the student body (Cronje, 2010).

The former Model C School in this study is an English medium, co-educational, primary school of 99 years. It has a school population of about 840 learners from Grade 000 to Grade 7 ranging from 3 to 13 year olds. Learners are generally geographically drawn from around and about the city. This includes its immediate sub-urban locale, the surrounding townships and immediately outlying environs of semi and sub-rural farming communities. Learners hail mainly from upper middle to low income families with a few indigent learners drawn from the Salvation Army. A diverse population of Kwa-Zulu Natal's main ethnic, cultural, language and racial groupings including several African and other nationalities are representative of the learners. The majority are of Zulu and Christian backgrounds. Teacher to learner ratios range between 1: 26 in the junior phases to 1: 34 in the intermediate and senior phases. There are about 80 professional and assistant teaching, sport, secretarial and grounds members of staff. Of these, half the professional teaching staff is

financed by the state. As part of the less than 20% of fee-paying schools in the country, this school is in the highest quintile though there are a fast growing number of parents partially or fully exempt from paying school fees. A small annual grant is received into the school funds from the state.

According to school data, the school governing body, a supportive, intellectual and empowered juristic component of the school, lends full fiscal assistance for what is believed to be best for the school and its learners. The parent community of the school finances most of the school's functioning and all of the remaining staff. Furthermore, mainly supportive and encouraging of the school and its activities, the general view of the parent community is one of demand. Parents are alert to and fairly involved in what counts best for their children's education. However, according to verbal data a growing number of learners have no or neglectful, absent, apathetic parents. School records reveal that a number of learners live within single, divorced or deceased parent homes. Many live with older siblings having parents living or working abroad. Over the recent years the school has invested its fiscal resources in employing a full-time school counselor/psychologist, occupational therapist and remedial teacher to help deal with the many personal, familial, behavioural and educational challenges faced by learners.

4.8.1.2. SCHOOL STRUCTURE, CULTURE AND WORK ETHIC

Historically, part of the school still occupies original buildings which have been declared monument status. Many of the classrooms are in prefabricated buildings and those not, are generally smaller than the average. There are about 30 classrooms with specialist rooms for music, art and computer studies. The school has a well-equipped library and a school hall. There is a fenced playing field also used for sport (Hockey, Soccer, Rugby, Netball and Athletics), two swimming pools, tennis and basketball courts and a cricket pitch. There are two playpens for the juniors. Three quad areas between classrooms provide outdoor spaces for gathering, sport and individual / small group learning. The school has a monitored security system. An aftercare facility is available at a cost for those parents requiring it.

Importantly, the school's mission and vision statements, historic practices, teacher expertise/experience, access to a wide range of resources and a culture of collegiality and creativity, commitment and willingness among others play a founding role in much of what counts for this school's culture and work ethos. Academically, the school follows the current South African national curriculum policies that have been adapted to the context of the school. The NCS/CAPS (2012), FfL and the National Assessment Protocol continue to inform curriculum planning and assessment. Selectively, learner support materials are sourced from a wide

range of publishers and over and above set textbooks, parents fund the purchases of additional workbooks and textbooks needed in Mathematics and the Languages. Prescribed departmental workbooks are used in recent years. A comprehensive list of stationery for the year is a prerequisite of daily requirements provided for by the parents.

Furthermore, the school offers learners the opportunity to participate in several external academic programmes. Participation in the International Conquesta Olympiads, Schools' Science Research Projects, Inter-schools' Maths Challenges, Spelling Bee, among several other out of school academic events allow for vertical and lateral academic deep learning experiences. The school is a leading international school in English first language and Mathematics higher grade through the results attained through participation in the international Olympiad. Statistically, Former Model C schools have and continue to achieve pass rates of 96% and above in external assessments. The sound learning environment provided and efficient management of resources are credited for much of this success (Cronje, 2010).

Significantly, the school has an active environmental programme and is a leading school in recycling and waste management education. Outings and school camps are an integral part of the holistic learning approach intrinsic to the school's ethos. Team-building, personal and social development linked to curricular activities sees each grade experience a day or over-night excursion throughout the year. The school has a comprehensive afterschool extra-mural programme of about 23 programmes for learners to choose from according to the sport season. Several learners individually and in teams are selected to represent the school, district, regional and national teams annually. Every member of staff is involved in one of the many outdoor, indoor sport, game, cultural and aesthetic activities as coach at least twice a week and some on most Saturdays.

Critically, the school's discipline policy is firmly upheld against the School Code of Conduct and departmental policy guidelines. The school places much emphasis on the overall tone, work ethic, culture of learning and ethos in the interest of learner development, safety and productivity. In inculcating, affirming and enforcing an active, conducive learning environment, negative behaviour is curbed through several levels of consequences including detentions, tribunals and expulsions. School and classroom rules are imperative to providing parameters for learner conduct and behaviour.

Nonetheless, given its many successes, school organisation and classroom practices have in the main been informed by traditional practices of this school. One such practice is the tracking of learners into the Express

or A classes, those with academic achievement levels of 80% and over, and Mixed Ability classes, those below. This practice seeks to allow faster-paced self-motivated more responsible learners the opportunity to work together toward high achievement often competitive levels. Mixed ability classes, though provided with the same curriculum, are afforded the opportunity to work at their pace often remaining in their track throughout their years at the school.

4.8.1.3. CONFRONTING CHANGE

Crucially and relevantly, however, this school though steeped in its deep rooted colonial history and tradition has had to starkly succumb to recent bureaucratic pressure and compliance in the face of transformation. It is somewhat reluctant release of its past has been spurred through its confronting ongoing demands of local and global educational reform and change around demographic, socio-politic, curricular and technologic advancement, progress and emancipation. In confronting and dealing with challenges of change, such opportunities for professional and administrative development as encountering of the Dunn and Dunn (1978) learning styles approach, as part of professional development, is not a foreign undertaking at this school. Given the prevalent institutional and financial support, teachers at this site are constantly exposed to current and creative solutions to everyday issues faced.

Thus the school's management team, placing much value on individual and collective teacher development for the benefit of the school and its learners as an entrenched part of the school culture and expectation, thus introduced the staff to the Dunn and Dunn (1978) learning styles approach to teaching in July 2005 for the 2006 implementation. As a means towards meaningfully addressing diversity and disparity, the school opted to incrementally employ a learning styles approach to classroom delivery beginning at the intermediate phase level. It is within this paradoxically traditional / innovative school culture that this case is located.

Thus in grappling with curriculum implementation issues around the NCS/CAPS (2012) policy regarding how best to meet the needs of the school, the learners and the curriculum, concerns around school organisation and activity, administrative requirements, parental and community demands and departmental compliance expectations among others are often relevantly related. However, this study focuses in the main 'on the aim of gaining a better understanding of the individual case… not to understand a broad social issue, but merely to describe the case being studied' (Yin, 2003). The above thus sets the context for this study of the experiences of professionally qualified practicing intermediate phase school-based teachers, who were fully trained in the

use of the Dunn and Dunn (1978) learning styles approach to implementing the intermediate phase curriculum.

Hence, the choice of researching this suburban former Model C School in Pietermaritzburg's experiences of learning styles is firstly based on this school's unique use of the Dunn and Dunn (1978) learning styles approach in implementing the intermediate phase NCS/CAPS (2012) curriculum. Secondly, convenience and proximity for the researcher provides for relevant accessibility and immersion. Using this school provides an appropriate vehicle for identifying the study's sample as these teachers are currently still employed and practicing the Dunn and Dunn (1978) learning styles approach to teaching at this school. Data are therefore generated from interactions with purposively selected participants from this school, reviews of relevant school documents, historic and archival visual data and artifacts of praxis.

Befitting and advantageous to this study thus is the employ of a purposive sampling design. In explaining the sample design, techniques and criteria used in the choice of sample size for this case study (Mouton, 2009), Maree (2010) and Gibson and Brown's (2009) definitions in broad terms of the process used to select a portion of the population for study, that of sampling, serve. They state that it is about the 'points of data collection' to be included within a research. These may be a person, a document, an institution or a setting. This study uses a purposive sampling design in selecting of the sample for this case. As such the selection of this school for its unique attempt at implementing classroom practice through leaning styles obtains.

4. 8. 2. SAMPLING

Key in purposive sampling is the decision of the researcher in selecting who would best provide information to achieve the aims of the study (Kumar, 2005; Henning, 2010). It is especially valuable for special situations that require expert judgment in selecting cases with a specific intent in mind (Neuman, 2011). In rarely representing the entire population, the use of purposive sampling is appropriate in the selection of unique cases that are especially informative in identifying cases for in-depth investigation in order to gain a deeper understanding (Neuman, 2011).

Thus, significantly, going to those people who are likely to have the required information and are willing to share it becomes appropriate especially when a historical reality, description or development of a phenomenon about which little is known is explored (Neuman, 2011). Selecting of this site and its 'hand-picked' sample of participants because of its defining characteristics that make them holders of the data

needed for the study are explicit for the purpose of obtaining the richest possible source of information in answering the research question at hand (Neuman, 2011; Denscombe, 2007, p.17). Notably, the term purposive sampling is also applied to those situations where the researcher already possesses some knowledge about the topic, specific people or events and deliberately selects them because they are seen as instances that are likely to produce the most valuable data reflecting qualities relevant to the investigation (Denscombe, 2007; Henning, 2010).

Critically, also, the purpose of the study dictates sample size in qualitative research (Kumar, 2005; Maree, 2010, p. 178). Commonly involving smaller sample sizes, qualitative studies have as its main focus the exploration or description of the situation, issue, process or phenomenon (Kumar, 2005; Maree, 2010). The question of sample size is thus less important. Necessary also is the realisation and required flexibility that sampling can change during a study (Cresswell, 2007).

Hence in addressing the purposes and strategies accordingly of this descriptive qualitative case study, and in considering its unit of analysis (Boudah, 2011; Cresswell, 2007), five carefully selected teachers for fitting the 'criteria of desirable participants' (Henning, 2010) are selected believed likely to yield the richest data from within this site. These professionally qualified primary school teachers serving the researcher's judgment are best suited to insightfully inform an understanding of the research problem and central phenomenon of teaching through a leaning styles approach (Cresswell, 2007).The selection of teaching staff rather than members of management, learners, parents, members of the governing body or other role players involved for primary data collection, is especially since teachers are at the forefront and responsible for the actual implementation and delivery of the curriculum in the classroom. Understanding how and why curriculum implementation in school plays itself out through a learning styles approach, in my judgment is best primarily served through the voice and work of classroom teachers who have practically applied this approach to meeting their classroom needs.

Thus the argued rationale behind this sample selection is pertinent for the following reasons and criteria:

1. <u>Qualification, training and teaching experience</u>

These participants are professionally qualified, trained primary school female teachers who have several years of classroom teaching experience. They are currently and over several years been teaching in the

Intermediate Phase within the primary school system. They teach in integrated, diverse classroom environments within the New South African classroom. They also teach within a former Model C, suburban primary school environment and have had many years of experience in this one school.

2. Curriculum Experience

These participants have had experience in teaching several different curriculums over their teaching experience and have had to confront several changes and adaptations accordingly. They have been exposed to both teacher-centred and learner-centred pedagogies. They are classroom-based teachers teaching all learning areas/subjects to one 'form/register' class per year. They are trained in-service by the Department of Education to teach the NCS/CAPS (2012) curriculum and they currently implement the CAPS (2012) in the Intermediate Phase.

3. Institutional Expectations

These participants have keen institutional and systemic knowledge and understanding of operational and daily expectations of a school which includes among others departmental and school demands, financial and community undertakings, parent and support service interactions, administering and fostering school discipline and dealing with learners with barriers in and to learning. Mandatorily, they are required to participate in grade level learning communities for weekly planning and preparation of the curriculum, are expected to teach/coach co and extra-curricular programmes after school hours and over weekends.

4. Institutional Support

The participants have the support, opportunity and freedom to explore and experiment with flexible new ways of approaching their work. They are exposed to professional development programmes that require them to be active agents and participants thereof and have been trained in the Dunn and Dunn (1978) Learning Styles approach to teaching.

However, knowing that it may not be very defensible but possible more as strategy (Denscombe, 2007; Boudah, 2011), within purposive sampling, convenience sampling has also been employed (Cresswell, 1998, p.119; McMillan and Schumacher, 2001, p. 178). Selected for saving time, money and effort, convenience purposive sampling may not be representative of a population and findings may not be generalised to a

population (Maree, 2010; Henning, 2010). Yet, there is an understanding that transferability to readers in extended settings is possible. Thus though cognisance is given to this fact and recognition of its limitations made around credibility and representivity (Cresswell, 1998, p.119; McMillan and Schumacher, 2001, p. 178), the availability of participants, time, effort, cost saving, ease of administration and high assurance of participation are some of the pondered advantages to this choice. Therefore, limitations for generalisability from such a sample on the basis of a single research study, because of such inclusion criteria in selecting individuals who are best suited to address the purposes of qualitative research studies is hereby justified (Johnson & Christensen, 2012, p. 231). The decisions about who to study are affected by logistical constraints such as accessibility of the participants and the cost of locating people (Johnson & Christensen, 2012, p. 231). Thus importantly the choice of whom to select as part of a sample must meet the purpose of the research study and answer the research questions while meeting cost and other constraints. This has been considered in this case study.

4.8.2.1. ETHICAL CONSIDERATIONS

In this case five initially trained teachers were offered a choice of whether or not to be engaged in this study. Having received verbal clarification and explanation of the purpose of study, terms of participation including being voluntary participants, the freedom to withdraw from the study at any time without prejudice as well as rights to review material, written letters of permission were signed by the head of the school and three of the five participants**.** Opportunity was provided for full comprehension of the nature of the research including any risks that may arise. Details of what aspects of material were to be shared with the public and what is to be kept confidential was discussed. Keeping material 'confidential' implies that no one else sees it save the interviewer. Data are only to be reported in cumulative terms. Participants were assured of confidentiality and anonymity and the use of pseudonyms when disseminating the research. Permission regarding recording of interviews and reviewing documents and artifacts were asked for. Caution was taken regarding participants' time. Interviews were conducted according to individual schedules set by participants**.** Written permission was received from three of the five participants. Owing to work load constraints two of the five participants withdrew from the study.

4.8.2.2. PROFILE OF PARTICIPANTS

The following is a brief description of the personal and professional profiles of the participants in this study. Pseudonyms have been used for anonymity and confidentiality.

Participant A is a 50 year old married female teacher of 29 years of primary school teaching experience. She is a mother of a 13 year old. Her interests among others are travelling, hiking and reading. She is professionally qualified with a teaching degree from Edgewood College. She has taught all of her years in the intermediate phase, 4th, 5th and 6th grades at her current school. She has taught the A or Express class in the main. She is the chief mathematics subject coordinator and examiner/moderator at the school. She is a cross-country, tennis and swimming coach. She believes that teaching can be very rewarding and fulfilling because of the many choices of how and when lessons are presented. More rewarding to her is when learners want to learn. A lack of motivation from learners is her struggle and challenge. She states that parental support is essential for maximum learner potential. She approaches her work from a firmly teacher led, traditional approach, but attests that teaching should also be a learner-centred activity. She believes that learner involvement is necessary for meaningful learning to take place. She firmly contends that when she enjoys her work then her learners do also and vice visa. She advises that the classroom should be a safe environment for all learners.

Participant B is a 59 year old married female teacher, a mother of two grown up children and is also a farmer. She has a passion for the environment and enjoys the outdoors. She has a Bachelor's degree in Social Science from University of Kwa-Zulu Natal – Durban and a Higher Education Diploma from University of South Africa. She has 27 years of teaching experience. She has spent 20 years at her current school teaching pre-primary to 3rd grade. She has taught the Grade 4 Express class the last 9 years. She is of the belief that everyone has different strengths, that learning is a process and has to be interactive, participatory and fun. She holds the view that discipline must be approached with flexibility. She strongly affirms that her approach to her work is to create an environment where learners feel safe to risk and their individual ideas are always valued. They must have an opinion. She enjoys the idea that she can teach in an environment that allows her the freedom to embrace and impart her philosophy.

Participant C is a 38 year old female teacher and mother of 3. She has a bachelor's degree in social legal studies, a higher diploma in education, an accelerated certificate in mathematics, a honours degree in inclusive education and currently reading for her master's in education. She has been a book-keeper. She is a teacher of 8 years all of which has been as a grade 5 teacher in her present school. She has taught a 'mixed ability' class for 6 years and has been teaching the 'express' class for 2 years. She is unapologetic about her teaching philosophy which is strongly teacher-centred. She states that she is a very analytic, left–brain processer and teaches through a formal mainly verbal/visual style for accountability purposes.

Participant C is emphatic that hers is not so much about creativity and innovation but measureable success. She teaches to the book and works to compliance of school and department expectations. Her concerns lie in dropping standards and quality of results. She confesses that her focus is not so much on enjoyment of learning and freedom of exploration and process but teaching to demands of the curriculum and achievement. She states that her stance is that she has to be a fountain of knowledge to her learners and thus has to be thoroughly prepared to face them each day.

Thus data for this study are gathered from the above three participants. Their teaching experiences in adopting the Dunn and Dunn (1978) approach to teaching the intermediate phase curriculum are extracted through interviews, documents, visual and artifact data. The following section provides a detailed insight into how this is done.

4. 9. DATA GATHERING

This section presents, argues and motivates for the four data gathering methods used in this case study. The purpose, meaning and fit attached to the choice for each of the four methods of data collection employed, interviews; documents; photo data and artifacts follow. Each are individually defined, merits/demerits, selection criteria, analysis techniques, trustworthiness and ethical considerations dealt with. Empirical data are gathered in the main from interviews. Here the definition of, value, advantages and disadvantages for and processes employed in interviews are presented and critiqued. The seven stages as suggested by Kvale (1994) are used to understand how interviews may be conducted. Cohen and Manion (1994) and Cohen, et al. (2000) seven stage process of interview analysis is further presented. The appropriateness of interviews in qualitative interpretivist case studies as a trustworthy instrument to gather deep insight and participant understanding are discussed and debated.

This section also presents the other data gathering sets used in this study of documentary, visual and artifact data. Documentary reviews include policy, school and teaching documents. Used as secondary data, these lend support to the primary source of data gathered. Photo and artifact data are further supportive methods to enhance and enrich deep understanding of the lived worlds of the participants in this case.

4. 9. 1. INTERVIEWS

Interviews, a 'glimpse' involving listening and enquiry, includes a degree of formality of discourse (Oxford English Dictionary; Roget's Thesaurus; Edenborough, 2002).Interviews more pertinently involve an inter

change of views described as a 'social interpersonal encounter' (Anderson & Burns, 1989; Cohen, et.al., 2000; Kvale, 1996). Researchers structure this inter change around specific information and questions to be answered by participants with each person expected to respond (Bertram, 2004; Anderson & Burns, 1989). Interviews are not merely a data collection exercise (Cohen et al., 2000). The emphasis of interviews is on the social 'situatedness' that enable participants to discuss their lived world (Cohen, et.al. 2000). Accordingly, in this study the 'lived world' of purposively selected classroom teachers will be 'glimpsed'.

As this case study's primary method of data collection the social interpersonal encounter between participants and researcher during interviews is purposefully and appropriately sought after. Decisively, the fitness of purpose for the use of interviews is many and varied and inclusive of sampling opinions designed for improving knowledge and a better understanding of reality. This must emanate from the relevance around the research topic (Cohen, et al., 2000; Wengraf, 2001; Hannan, 2007).Glesne (1999) argues that topics chosen should allow for sharing of self, depth probes, request for explanations, clarification, descriptions and evaluations. Hence, in this case study the topic of understanding teachers' experiences of learning styles is personally pertinent and meaningful to the everyday lives of these classroom teachers in particular as active agents and executers of the curriculum and for schools like these in general in confronting and dealing with change and reform within diverse environments. The relevance of this topic for the purposes discussed thus far is far-reaching for this case and those like it. Thus the purpose and nature of interviews go beyond spontaneous exchange of views becoming a careful questioning and listening approach ultimately not aiming to change participant's attitudes and behaviour but to reveal them (Kvale, 1996; Keats, 2000).

Further justification for the use of interviews is found in understanding their merits and demerits in governing how they are planned and employed at appropriate times for appropriate reasons. Cohen, et al. (2000) in cautioning fitness for purpose when deciding the type of interview appropriate for use, suggests that the more one wishes to get comparable data across people or sites the more standardised one's interviews should be. Non-standardised, personalised information about how individuals view the world, lends itself more to qualitative, open ended, unstructured/semi-structured interviewing. This study adheres to the latter as a personalised, individual view and understanding of teaching with learning styles is being sort.

Interviews differ in their openness of purpose, their degree of structure, whether they seek description and interpretation or whether they are cognitive or emotion focused(Kvale, 1996). Instrumentally thus, interviews used in social research are categorised into four broad types (McNeill & Chapman, 2005). These range from

structured to unstructured or informal interviews. Semi-structured interviews are aimed at collecting factual and attitudinal data. In this study semi-structured interviews are opted for as an appropriate mechanism for gathering facts, opinions and views of the participants allowing for a balance between scheduled more formal questions as well as more flexible, informal conversation with open ended questions for depth and probe.

Furthermore, in praxis, planning and conducting interviews are a 'complex act' (Glesne, 1999). Researchers ask questions in context and purposes known to them. Participants who have the information answer accordingly. Being a more 'natural form of interacting' with people, interviews fit well with the interpretive approach to research providing an opportunity to know people intimately in understanding how they think (TerreBlanche, et al., 2006). It involves highly skilled performances. This interpretative case study lends itself well to the appropriateness of interviews.

Significantly interviews are the most common method of data collection for qualitative analysis but need careful preparation in establishing a relationship that allows for individual comfort enough to share feelings (Memon & Bull, 1999). Consequently qualitative researchers listen responsibly to what people tell about their lived world, hear views and opinions, learn about them and then attempt to understand, unfold and uncover their meaning prior to scientific explanations (Kvale, 1996). As one of the more popular forms associated with qualitative inquiry, interviews seek illumination, understanding and extrapolation to similar situations making sense of feelings, experiences, social situations or phenomena as they occur in their natural settings(Hoepfl, 1997; TerreBlanche, et al., 2006). This study has been underpinned thus by this premise.

Sequentially Kvale (1996) suggests the following seven stages to using interviews that are followed in this case study:

- thematising - formulation and description of the purpose and topic (see 3.1. and 3.2.)
- designing - the plan accounting to knowledge required (see below)
- conducting the interview- with the use of an interview guide /interview schedule.
- transcribing - preparing material… transcriptions)
- deciding on the method for analysis (see below)

- verification - ascertaining generalisability/transferability, reliability, validity and (see 3. 6 and 4)
- reporting of findings (see 4)

Decisively, interview questions are not to be confused with the research question (Glesne, 1999). Interview questions require creativity and insight rather than a direct translation of the research topic. Questions are drawn from the cultural reality of participants' life, experience, behaviour, opinions, feelings and backgrounds and are essential to how the participants answer. Based on the topic, key and sub-questions, interview questions used in this study cover personal, professional and practical experiences of participants sampled in this case study.

Thoughtfully, attention is paid to where interviews are held, seating arrangement, manner of approach and dress, adequate privacy, sound and suitable recording equipment and time (Hannan, 2007; TerreBlanche, et al., 2006). Interviewers listen more, talk less, follow up what is said, ask for clarity, explore, avoid leading questions, not interrupt and keep participants focused on concrete detail (TerreBlanche, et al., 2006). Furthermore, a good interviewer is patient, anticipatory, alert to rapport, sets aside assumptions and is neither emotionally removed nor solely controlling (Glesne, 1999).

Notably, the advantages of interviews may be seen in its inherent human contact. Descriptive data is gathered through an in-depth approach from small numbers of people. Face to face interviews enable the establishing of rapport, allowing for observation and listening permitting more complex questioning. Further merits include the possibility for probing, opportunity for extensive response and doing away of writing skills (Cohen, et al., 2000). However, a number of disadvantages also prevail (Anderson & Burns, 1989). Preparation of interviews are time consuming, reliance on honesty and truthfulness of participants, false, inaccurate or inadequate answers, the need to make a good impression, all of which could threaten the process. Semi-structured interviews need special expertise and training for good execution. Inefficient answers unrelated to purpose, irrelevant material, time consuming, costly analysis of a limited representation are further weaknesses.

Additionally, credibility of the evidence does limit interviews and analysis systems are open to error placing reliability of the process in question (Cohen, et al., 2000). A further critique is that qualitative interviews because of their inherent human interaction are often dismissed as not being scientific a method lacking in objectivity (Kvale, 1996). However, subject matter and purpose are the essential determinants for when

interviews are appropriate and are neither objective nor subjective rather 'intersubjective' in nature (Kvale, 1996).

Hence in planning and setting up procedures for conducting of the interviews for this study, a blueprint/interview schedule is prepared (Anderson & Burns, 1989). These are provided to the participants in preparation for their responses as a useful means to ensure good use of limited time making for a systematic and comprehensive, focused interaction within modifiable and relevant flexibility (Hoepfl, 1997). This is suitable for semi-structured interviews.

In line with the aforesaid discussions, three semi-structured interviews around thirty minutes each per participant are conducted to gather, clarify and further probe data. Interviews are conducted over a three month period, September to November. These are generally a month apart of each other allowing, accounting and confirming for individual choice of dates and times according to workload, idiosyncratic days/weeks, and internal consistency of what is said. All interviews are recorded on two devices with such practical issues as physical factors of lighting, space and position taken into account. Follow-up interviews are conducted with all of the participants. The first interview consists of two stages. Stage one is to introduce and establish the purpose /aim of the case study. It focuses on the educational training, history and experience of the participant. This is important to establish authenticity, credibility, appropriateness, qualifications, expertise and experience of the participant ascertaining and confirming why they are best suited to be part of this case. It also helps to set the context and connect the participants' experience to events that answer questions around their understanding of learning styles and curriculum practice.

The second stage focuses on setting the context of the participants' experience and connection to the events which answer questions around their understanding and experience of learning styles with a focus on their classroom implementation of the NCS/CAPS (2012). This stage is principally valid to enable reconstruction of experiences to answer the key and sub-questions of this study. In so doing the adoption of the Dunn and Dunn (1978) Learning Styles approach to teaching used to implement the Intermediate Phase Curriculum is probed. It further focuses heavily on the LSI / BE framework (See Chapter 2 Sections 3.6.3 and 3.6.4), profiling of learners, planning, preparing and presenting of the material and activities. It essentially captures a deep description of their practice and experiences of the Dunn and Dunn (1978) learning style approach to teaching the Intermediate Phase curriculum.

Further to the first, a second interview is conducted to probe issues raised from the first interview and to consolidate the extent to which the Dunn and Dunn (1978) learning styles approach to teaching are experienced in classroom practice. Here in-depth details of experience around what, why and how the Dunn and Dunn (1978) Learning Styles approach to teaching is used to implement the Intermediate Phase Curriculum. This is to enable reconstruction, consolidation and exploration of the experiences of teachers of learning styles and their understanding of it. Furthermore, it is used to foster reflection on the meaning that their experiences hold for them. Participants' reflection/experiences, connections between curriculum implementation and of the Dunn and Dunn (1978) learning styles approach to teaching, its contributions, complexities and contradictions as individually experienced by them are dealt with in the main. This allows participants the opportunity to examine their experiences in detail within the context of this case and in which these experiences occur. This also allows for participants' perspectives to be taken seriously in seeing how their everyday, socially organised activities work in concert with each other.

Subsequent to the collection of interview data is its analysis, a close, systematic study of the written notes or audio recording transcriptions. Working with qualitative interview data analysis generally comprises integration; breaking data into manageable units, organising and synthesizing; searching for patterns, analysing; the interpreting of raw data discovering importance and deciding what is to be reported (Bertram, 2004; Hoepfl, 1997). Open coding, a stage used to conceptualise categories in which phenomena are grouped with an emerging framework toward axial coding, the process of identifying links are employed (Hoepl, 1997).

More specifically, analysis, involves building valid arguments for choosing themes which formulates into statements developed toward a storyline allowing for reading comprehensibility and motivation (Aronson, 1994). An iterative process, in the interpretivist mode, interview data analysis and interpretation is often done while collecting the data (Anderson & Burns, 1989). Three phases are employed. Discovery, searching for themes and developing concepts, coding, a system for sorting data into categories, and, discounting, assessing theoretical basis against biases (Aronson, 1994) make up this process. Cohen, et al. (2000) describes this as 'reflexive, reactive and decontextualised interpretation of the 'social encounter'. At this stage the temptation to atomise and fragment data are avoided. Of importance is the fact that qualitative data analysis is an inductive process that looks for patterns. Analysis is not an isolated stage but permeates the entire inquiry (Bertram, 2004, Kvale, 1996, Cohen, et al., 2000).

Furthermore, searching for patterns begins at the outset of the data gathering process (Cohen & Manion, 1994). The major open coding process is achieved through interrelated stages involving organising information, identifying patterns, developing ideas and drawing conclusions. These analytical concepts guide the data gathering and analysis emerging during the process (Cohen & Manion, 1994, Cohen, et al., 2000). Interview data provide a rich description of participant's experiences. The thick descriptions contain some direct quotations which serve to clearly depict experiences and meanings attached to them.

In employing the wisdom discussed thus far, the following seven-stage process suggested by Cohen and Manion (1994) and Cohen, et al., (2000) are considered for the analysis of the interview data gathered for this case study:

Stage 1 Transcriptions; use of a computer programme to transcribe audio recordings into textual data.

Stage 2 Bracketing, Reduction and Listening; use of an open coding process as described above

Stage 3 Delineating units/sets of meaning; following of a process of separating sets of meaningful data

Stage 4 Eliminating redundancies and Clustering units of relevant meaning; employing a removal of repetitions and redundancies through careful reading

Stage 5 Determining themes and summarizing; undertaking an axial coding process as described above

Stage 6 Modifying themes and summarizing; are purposefully and interpretively done based on revealed and relevant data

Stage 7 Contextualisation of themes and Summarising; the most significant and meaningful part of this case; its findings and recommendations

Critically, however, though the questions of reliability and trustworthiness in qualitative research involving interviews are 'almost unworkable' yet researchers strive for it (Cohen & Manion, 1994, Cohen, et al. (2000). Trustworthiness is aimed for throughout the process ensuring issues of truth, knowledge, well-grounded, justifiable, strong and convincing evidence consistently carried throughout the interviewing, transcribing, analysing and reporting stages (Kvale, 1996). Reliability, ensuring the same results are obtained after repeated applications provided proper procedures are used - the extent of the dependability of the measuring instrument yielding the same result, is sort through triangulation. This study has sought the fit between recording and what actually occurs accurately in the natural setting (McNeill, 1990, TerreBlanche,

et.al. 2006) through interviews, documents and visual data methods. Moreover, trustworthiness, the extent to which the evidence not the instrument is credible and authentic in supporting the argument, speaks to the degree to which the research conclusions are sound (Anderson & Burns, 1989; McNeill, 1990; TerreBlanche, et al., 2006).

Thus, in rightfully executing the above, creation of that degree of formality appropriate for this social interpersonal encounter helps get a 'glimpse' into the 'lived worlds' and 'everyday conversation' of the participants in this case study. It further provides an avenue in how the participants in this case have experienced their classroom practice through the Dunn and Dunn (1978) learning styles approach to teaching.

The following section focuses on documentary reviews as used in this case. The interrogation of documents may be used in conjunction with other forms of data collection to compare how people have explained issues under study (Denscombe, 2007). Thus further to conducting interviews and for the sake of trustworthiness and triangulation, documents as secondary official data are reviewed in this study. Document data can be sourced from a wide range of written texts. These include newspapers, educational journals and magazines, curriculum guides, photographs, written reports, minutes of school meetings, student records and student work, yearbooks, published articles, speeches, personal files and video recordings (Johnson & Christensen, 2012). More pertinently, document data may include lesson plans, district policies and school mission statements and policies as further examples of value (Boudah, 2011). All of these have been sourced to strengthen this study.

4. 9. 2. DOCUMENT REVIEWS

Premised on the notion that they provide a more trustworthy indication of original meaning, a collection of documents are a valuable source of information and if appropriately related to the central research question is of extreme value(Henning, 2004, p.99; Gibson & Brown, 2009). Any document in any format, printed, handwritten or electronic relating to the research question is purposeful (Henning, 2004, p.99; Gibson & Brown, 2009). Especially since these documents are part of the participants' 'natural' situation and are core to their regular classroom practice records, they are expected to reveal much on happenings and experiences and serve in assisting the researcher with reconstruction of events. Decided and selected by the researcher, documents related to what takes place in a setting importantly broaden the views expressed in interviews, guiding and enhancing information about why responses may or may not match actions (Boudah, 2011). More

so, researchers can gain detailed insights into people's lives and the workings of an organisation through the use of documentary data (Gibson & Brown, 2009).

Documents are categorised into routine, regular and special documents, produced in the normal functioning of an institution, as a response to external factors and record of how an organisation responds to or copes with particular change respectively (Gibson & Brown, 2009). In this study three types of documents are consulted in order to establish authenticity and credibility to verbal data and to provide supplementary information in understanding and addressing the topic. In particular the following three types of documents are examined for the purposes of establishing validity and trustworthiness of the data, policy documents, school documents and teaching documents. Interview data are in the main triangulated with document, visual and artifact data of participants' experiences of why the Dunn and Dunn (1978) learning styles approach to implementing the NCS/CAPS (2012) was undertaken in this school, how curriculum practice was experienced through the approach and what possible contributions, complexities and contradictions of a learning styles approach to classroom practice may be understood. Analysis of documentary evidence provides insight into written records of decisions and processes undertaken in setting up structures at the school for a learning styles approach to teaching. Furthermore, planning, preparation and presentation of the approach is encapsulated in teaching documents of participants that serve to add to their views and experiences. Curriculum policy documents provide a framework of reference from which expected teaching principles and content emanate.

4.9.2.1. POLICY DOCUMENTS

The use of routine official documents is premised on the notion that analysis enables defining and understanding the official position regarding curriculum requirements for the Intermediate Phase. Here curriculum policy documents as in NCS/CAPS (2012) Intermediate Phase are sourced and framed against classroom practice of teachers. This analysis enables establishing how policy defines and shapes the process of curriculum implementation and classroom delivery through a learning styles approach.

4.9.2.2. SCHOOL DOCUMENTS

School documents comprise school newsletters and magazines, media reports and articles from newspapers, minutes of meetings and other related literature (McMillan &Schumacher, 2001; Henning, 2004). The use of regular school documents help to further answer the research questions (McMillan &Schumacher, 2001; Henning, 2004). Here they are used to explore and understand teachers' experiences around what, how and

why the Dunn and Dunn (1978) learning style approach to teaching was used to implement and deliver the Intermediate Phase curriculum at this school.

4.9.2.3. TEACHING DOCUMENTS

Analysis of routine planning and preparation records found in teacher files, preparation, planning and other record books that capture how the approach to curriculum implementation and classroom delivery is planned and experienced are deemed teaching documents. Teacher records - classroom planning, preparation and assessment records, pupils work found in books, relevant to the research questions are significantly analysed as secondary data in this study.

Thus in analysing the data, general questions as to time of production, how long it took to be produced, how that timing relates to other key events, the author, purpose written for, audience, ownership and alterations (Gibson & Brown, 2009) are strategic and relevant to understanding and exploring teachers' experiences of learning styles. As a guide, none of the documents used are taken as arbitrary (Henning, 2004). Careful examination are undertaken to determine construction, lay out, standard and routine formulations used in specific forms (Henning, 2004). Having established personal and institutional intentions for their production, confirming their perspective and storage, the source and purpose for their construction, as well as their use and interpretation are part of the analysis process. Questioning omissions from the data, by whom and why, the social circumstances leading to their production as it relates to this research purpose and key question are imperatively conducted as a secondary method in data gathering.

The use of official documents here are premised on the notion that analysis enables defining and understanding the official position regarding curriculum implementation and institutional support within this site as regards delivery of the NCS/CAPS (2012) through a learning styles approach. Analysis enables establishing how policy defines and shapes processes and innovation and is grounded on the notion that they provide a truer indication of original meanings (Denzin & Lincoln, 2003). As these documents are part of the teachers' 'natural' situation, the core of their regular classroom practice, the use of these records helps to reconstruct events.

Selectively, therefore, the choice of primary sources of documents for this study is guided from interview data in the main. Drawing from Gibson & Brown (2009) the following questions are used as criteria to extract relevant and authentic data:

- Are the records or documents complete, genuine, authentic?
- Are documents dated and can they be placed on a time scale?
- Why were they collected or generated?
- Are authors believable / credible?
- How relevant is it to research question?
- Are they primary/secondary or tertiary sources?
- What effects will they have on the credibility of the study?
- Identifying and dealing with missing information in the text?
- Have data been updated?
- How were the original texts collected and filed, by whom and for what purpose?

In this study information is extracted according to the above from the aforementioned documents discussed on the basis of relevance, insight and triangulation with interview data according to the open coded themes identified in this case.

However, of necessity, as a caution, documentary data is not to be accepted at face value. The credibility of their sources is established for validity and authenticity (Denscombe, 2007). The following questions extracted from Denscombe (2007) are used to confirm validity, authenticity and credibility of documentary evidence in this study:

- Is it genuine/ the real thing or a fake?
- Does it satisfy what it purports to be?
- Is it accurate, free from bias and error?
- For what purpose was it written?
- Who produced it, its status, how long after the event and in what context and climate was it documented?
- Does it represent a typical instance of the event it portrays?
- Is it complete, edited, and treated in context?
- Are words clear and unambiguous? Are there hidden meanings? Are there things left unsaid within hidden inferences between the lines?

Advantageously, documents are generally easy and inexpensive to access with vast amount of information available as a method of getting data (Denscombe, 2007). They provide a permanent source of data in a form that is open to scrutiny by others (Denscombe, 2007). However, because they are a source generated for other purposes and not for the aims of the research and thus 'can owe more to the interpretations of those who produce them than to an objective picture of reality' (Denscombe, 2007), evaluation of authority and procedures in respect of their origin is crucial. This is not always easy. Nonetheless, key to this and recognised in this study is building of trust through ensuring ethical soundness of the study and affirming that the sources are used sensitively and with respect (Gibson & Brown, 2009). Thus in this study both personal and institutional intentions for document production, ownership and storage are fully established and ensured.

4. 9. 3. VISUAL DATA

One of the richest methods available for qualitative data collection is the use of visual data. Visual data images are a powerful method to access and gain insight into people's lives and environments (de Lange, Mitchell & Stuart, 2007, p. 153; Johnson & Christensen, 2012).In this case study visual data are reviewed depicting the Dunn and Dunn (1978) learning styles approach in practice. These are sourced from found and new school's records. Visual data are used as secondary data for corroboration and triangulation. Allowing for participants' perspectives to be taken seriously, seeing how their everyday, socially organised activities work in concert with each other (Alasuutari, et al.,2008, p.502),visual data analysis aims to probe and delve the lived experiences of teachers as captured on camera. Here a deeper and richer understanding of the Dunn and Dunn (1978) learning styles model in practice is expected to provide a deeper more insightful lens into this case.

Conceptually, visual data comprise a very broad category (Mitchell, 2011; Silverman, 2010). They scan a range of photographs, artwork, pictures in books, cartoons, drawings, diagrams, films, videos, graffiti, maps, web graphics, signs and symbols, carvings, naturally occurring observational data, artifacts and objects, street signs and advertisements among others (Johnson & Christensen, 2012; Mitchell, 2011; Silverman, 2010). In this case photo data in the main are used as secondary supporting data to interview recordings. The use of photos in this way is confirmed by Johnson and Christensen (2012). Limiting 'nuisance data' caused during interviews and identified categories, the use of photos provide a stimulus of 'togetherness' (Silverman, 2010, p. 246). Photo data are further useful in augmenting interview recordings, providing opportunities to 'revisit' scenes in maximising efficiency and the use of primary data (Lankshear & Knobel, 2004, p. 234).

However, disadvantageously, the availability of existing information restricts the kind of questions that can be asked (de Lange, Mitchell & Stuart, 2007) and nonreactive variables are often seen as weak in validity since they do not measure the construct of interest. `Furthermore, although generally a low-cost research technique, the researcher lacks control over and knowledge of, the data collection process raising potential error (de Lange, Mitchell & Stuart, 2007). A further disadvantage is that camera angles directly affect what can and cannot be seen undermining fallibility of the data (Lankshear & Knobel, 2004). Thus vigilance and caution are exercised and considered throughout this process.

Imperatively therefore, the manner in which photo data are analysed and interpreted involves a reflective process of reviewing the research purpose (de Lange, Mitchell & Stuart, 2007, p.153). Photo data analysis in this study takes the form of content analysis. First used in 1910 by Max Weber of the German Sociological Society, qualitative/interpretive content analysis is used for its broader social cultural meaning (Neuman, 2011). Generally, a nonreactive process, content analysis is a method that can be used with any 'text', writing, sounds, pictures, as a way of quantifying its context. Words, meanings, messages or symbols are communicated without any awareness of the researcher (Neuman, 2011). Photo data probed into help to discover content in a manner different from ordinary ways (Neuman, 2011) yet follow a logical and relatively straightforward process (Denscombe, 2007). Importantly, analysis is based on what is directly visible to the researcher. Mitchell (2011, p. 11) advises that 'situating one's self in the research texts – taking it personally – is critical to engaging in the interpretive process' when analysing photo data.

Significantly, photo data do not speak for themselves (Lankshear & Knobel, 2004). They are mediated by theory during analysis and interpretation (Lankshear & Knobel, 2004). Theory informs when an image contains information of value. It furnishes criteria by which worthwhile data and statements can be separated from those that contain nothing of value and that do not add to knowledge (Lankshear & Knobel, 2004). In this case the experiences of teachers as depicted within photo data are framed around the Dunn and Dunn (1978) LSI and its 21 elements and 5 strands. This study accordingly makes use of written up theoretical memos of interpretations and thoughts on photo data.

Thus, practically, in analysing photo data, content of images used in this study is broken down into smaller units and relevant categories developed for analysis (Denscombe, 2007). A clear idea of the kinds of categories, issues and ideas that the study is concerned with and how these appear in the text are presented. Coding the unit in line with these categories, relevant words and sentences follow. Like documents, the value

of the factual information contained and how they represent the symbolism and hidden meanings communicated through them are probed. Placing oneself personally within the research texts is critical to engaging in the interpretive process during photo data analysis (Mitchell, 2011, p. 11; Denzin, 2003).

Representatively, photos are a study of a sample rather than individual instances (Johnson & Christensen, 2012). It is limited to content that represents particular variables under study that are clearly and consistently defined and classified. In this case study a sample of relevant photos are selected that depict classroom teaching and learning through the learner-centred model of the Dunn and Dunn (1978) learning styles approach to teaching. It speaks to teachers' experiences of what, how and why the Dunn and Dunn (1978) learning styles approach to teaching have contributed to their work, complexities and contradictions of the approach as understood, described and experienced by these participants.

Thus, in seeking to better understand teachers' experience of the Dunn and Dunn (1978) learning styles approach used to implement the intermediate phase curriculum, an appropriate sample of images are chosen through explicit criteria. De Lange, Mitchell and Stuart, eds. (2007, p. 77) offer the following questions that provide explicit criteria to guide choice of photo data sample in this study:

- Why is the photo to be included as pertinent to the research question?
- How does it help set the scene, explain the historical context, highlight the social context, add to the portrayal of the culture?
- How does it help to consolidate the different threads of the accounts or prove a point?
- How does it contribute to the main purpose of the case?
- How can it be misinterpreted?
- How does it add to the reader gaining a deeper understanding?
- How does it support the text, evoke emotion?
- Is it offensive?
- Who or what does it give voice to, clarify or verify?

Crucially, content analysis does not determine truthfulness of an assertion, evaluation or interpretation of significance of the content but reveals and supplements it (Neuman, 2011). Content analysis is able to expose messages that may generally be difficult to see with casual observation (Neuman, 2011). Often the creator of the text may be unaware of all its themes, biases, or characteristics. Trustworthiness is thus ensured through

findings that can be trusted (de Lange, Mitchell & Stuart, 2007). In this study consistent awareness and maintenance of the principles of credibility - checking for truth, transferability, and dependability, consistency of findings, confirmability, neutrality and freedom of bias are mindfully borne (de Lange, Mitchell & Stuart, 2007).

Additionally, the following questions submitted by Lankshear and Knobel (2004) help to judge 'representativeness', authenticity and trustworthiness of the images.

- Who took them?
- Under what circumstances or conditions?
- Were subjects coerced into posing for the photograph?
- Were they aware they were being photographed?
- Has permission been obtained from people depicted in the visual record for their image to be used for research if any?
- The reason the visual was created for reporting purposes, historical/archival purposes, personal interests?
- What kind of relationship existed between the photographer and what or who was photographed?

Ethically, visual data is often subjected to more rigorous scrutiny than most other data because of its accessibility (Mitchell, 2011, p.11). However, found images, as significantly accessed in this case study and produced by people for reasons not directly connected with the researcher's investigation, are less technically complicated since they already exist (Denscombe, 2007). Ethically they are less concerning since getting them does not involve informed consent in cases where the image includes people (Denscombe, 2007). This study makes use of found and new images as they are and become part of the archival and historical record of the school's activities, a regular feature of this site. However, for authenticity, care is taken that the images have not been tampered with, changed or edited from the original (Denscombe, 2007). Though ethical concerns are not foremost in nonreactive research as in this case because people studied are not directly involved, the primary ethical concern is privacy and confidentiality in using information that someone else has gathered (Neuman, 2011). Accordingly, for this study, copyright and ownership issues are established, permission in writing granted, voluntary participation offered, anonymity and confidentiality assured, blurring off of faces and

no direct inference to participants guaranteed (de Lange, Mitchell & Stuart, 2007; Lankshear & Knobel, 2004).

4. 9. 4. ARTIFACTS

Artifacts/objects, regarded as tangible entities revealing social processes, meanings, and values (McMillan & Schumacher, 2001, p.453) are a useful means of data gathering. In practice, artifacts can be documented visually in the form of photographs thereby remaining the property of participants (De Lange, Mitchell & Stuart, 2007, p.207). Treated thus as would visual data, artifacts in this study comprise in the main of learning styles theme packs, MIPS, CAPS (2012) and PLSs, tactual/kinesthetic materials/games and teacher/learner resources generated/created by the participants in this study and their learners.

Typically, it is within the parameters of qualitative researchers to investigate teachers' value of student's work as objects/artifacts (McMillan & Schumacher, 2001, p.453). Thus learning styles resources as generated by learners are also deemed artifacts for the purpose of this study. These are used in curriculum delivery through the Dunn and Dunn (1978) learning styles approach to teaching. Furthermore artifacts as a data collection instrument are used in this study for triangulation and in-depth understanding of teachers' experiences of a learning styles approach to their teaching. Selection and sampling are based on purposiveness providing a stronger focus on the issues under discussion (Henning 2010, p.99).

Selection and analysis of artifacts in this study follow the five strategies provided by De Lange, Mitchell & Stuart, eds. (2007), Location; Identification; Analysis; Criticism and Interpretation for meaning. Furthermore, since presentation takes the form of photographic evidence, processes described above are also employed.

4.10. TRUSTWORTHINESS

Though the question of reliability and validity in qualitative research is 'almost unworkable' it is striven for and addressed throughout the entire process (Cohen et.al, 2000). Issues of truth, knowledge, well-grounded, justifiable, strong and convincing evidence are consistently carried throughout all stages (Kvale, 1996). Validity in qualitative research is understood in terms of credibility, applicability, dependability, transferability and confirmability (Cohen, Manion, & Morrison, 2000). As the purpose of this empirical study is to understand teacher's experiences of teaching through a learning styles approach, these issues are addressed at two levels, firstly during the proposal development stage, secondly, during the data gathering and analysis stages. The extent to which the evidence not the instrument is credible in supporting arguments and the degree of

soundness of the research conclusions are sort and maintained for the purposes of internal validity (Anderson & Burns, 1989; TerreBlanche, et.al., 2006). Face validity is increased through systematic procedures, use of blueprints, reviews and revisions employed (Anderson & Burns, 1989). The use of an interview schedule, a judicial compromise to reduce nuisance variables, a systematic process of reviews and revisions are consciously aimed for. Reliability is sort through triangulation (McNeill, 1990; TerreBlanche, et.al. 2006). Limitations are admitted by not so much a need to seek generalisability but transferability.

Bias, 'a systematic persistent tendency to make errors in the same direction' (Cohen &Manion, 1994) is one of the causes around questions of trustworthiness. The use of 'convergent validity' that is, comparing the interview with other valid data gathering techniques, that is through triangulation are used in this study to minimise and reduce bias. Furthermore, face validity; the evidence likely to yield a trustworthy description of the phenomena under study increases when systematic procedures, use of blueprints, reviews and revisions are employed (Anderson & Burns, 1989). Accepting that 'nuisance variables' are a part of the real world (TerreBlanche, et al., 2006), where increased reliability is ensured reduced validity often occurs (Cohen, et.al, 2000). A solution lying in a 'judicial compromise' is suggested by Cohen, et.al. (2000).This study takes cognisance of this throughout its iterative process employed in the data gathering and analyses processes. Hence, given its limitations, every attempt to produce as valid and reliable an outcome is ensured.

4.11. ETHICAL CONSIDERATIONS

Additionally, participants in qualitative inquiry are often mistaken for being exempt from ethical issues. They are entitled to 'some protection and respect' as any other (Kvale, 1996; Cohen, et al., 2000; Wengraf, 2001; TerreBlanche, et al., 2006). Thus, needing to first employ what is meaningfully referred to as a 'moral enterprise' (Kvale, 1996) requiring of ethical codes to pervade throughout the process, participants are informed of any legal ramifications, joint copyright ownership, issues of informed consent, confidentiality and anonymity along with consequences prior to the task. Issues of respect, dignity and protection of human rights are borne in mind. Ethical codes pervade throughout the process of this empirical research. Participants are offered a choice of whether or not to be engaged in the study, clarity of purpose of study and terms of participation. In this study, voluntary participation and freedom to withdraw at any time without prejudice as well as rights to review material are clearly explained. Comprehension of the nature of the research including any risks involved ,details of aspects shared with the public and those kept confidential are discussed with participants (Cohen, Manion, & Morrison, 2000).

Moreover, data obtained are reported in cumulative terms, names omitted and written permission granted. Permission is obtained and granted for recording of interviews and reviewing documents, visual images and artifacts. Caution regarding participants' time for interviewing is taken. As full-time teachers and individuals, unnecessary wastage of time are avoided, interviews are conducted according to participants' schedules**.** The necessary authority is sort from the relevant research office of the university, the Department of Education, the headmaster and participant teachers.

4.12. IN SUM

If theoretically, learning styles (a cognitive, brain-based approach in understanding the gap between how teachers teach and learners learn best in diverse situations)assumes that how individual children learn, their learning styles do influence how they perform, and that most children can learn given the awareness of their individual learning styles, then exploring the succinctly discursive question raised in this empirical study is vital (Dunn & Dunn, 1978; 1978): *What are school-based teachers' experiences of a learning styles approach to teaching South Africa's Intermediate Phase NCS/CAPS (2012) Policy.* In seeking to meaningfully answer this descriptive, exploratory question, and to clearly determine teachers' practices and attitudes, this chapter presented how the research design and plan for this study will unfold. Conceptually, a research design is a description of the order; structure or plan the researcher adopts for a research study and may be subject to change (Mouton, 2001; McMillan & Schumacher, 2001;Henning, 2004). A research design describes how the research is conducted to obtain sound evidence that answers the study's research questions (Mouton, 2001; McMillan & Schumacher, 2001, Silverman, 2010).

This chapter set out to argue, motivate and describe the design and plan for this research. The chapter presented the study's structure/plan of how sound empirical evidence are to be obtained understanding that it is subject to change (Henning, 2004; Mouton, 2001; McMillan & Schumacher, 2001, Silverman, 2010). Thus subsequent to the opening declaration of Researcher Positionality and Bias in this study, the chapter began with a presentation of and brief discussion on the key research question and sub-questions to be answered during this study. A visual depiction of processes employed was provided. This was followed by an in depth discussion and motivation for the adopted paradigm, style and approach to research taken supplying the study's framework and design.

The next section on methods used for collection of data began with a description of the site of data gathering, a primary school in Pietermaritzburg. A detailed description of and introduction to the unit of analysis, school-

based teachers, and selection of the sample followed thereafter. The four methods used in data gathering, interviews; documents; photo and artifact data, were explained and argued for. Here each method was discussed individually through presentation of its rationale and value; its merits and demerits; plan for collection of data; analysis technique; limitations; trustworthiness and ethics.

In extrapolating empirical evidence for whether matching learners to their learning styles do influence successful school curriculum implementation or not, this study argued and motivated for the above design and fit accordingly. It is envisaged that through this small – scale case study, aimed at exploring, understanding and describing one school's attempt at implementing the South African Intermediate Phase National Curriculum Statement Policy through the Dunn and Dunn (1978) learning styles approach to teaching, a more extensive later study with further rigorous debate and research into classroom practices through learning styles will ensue.

CHAPTER FIVE

PRESENTATION AND ANALYSIS OF RESEARCH DATA

5.1. INTRODUCTION

This chapter presents the analysis and findings of data gathered for this study. It offers the researcher's selection, analysis and understanding of data gathered against the critical research questions raised in this case. Whilst findings from interview data provide a weighty part of the analysis process, findings from documentary, visual and artifact data gathered support and substantiate identified themes. The research title, *A learning styles approach to curriculum implementation: a case study* – "Dunn and *Done?"* explicitly seeks to understand teachers' experiences of implementing the Intermediate Phase NCS/CAPS (2012) Policy through the Dunn and Dunn (1978) learning styles approach to teaching as employed at a primary school in Pietermaritzburg. Implicitly, however, it deeply seeks to explore the possible contributions, complexities and contradictions inherent within this school's experience of the Dunn and Dunn (1978) learning styles approach to teaching the NCS/CAPS (2012). Furthermore, the key question of this study,

What are school-based teachers' experiences of a learning styles approach to teaching South Africa's Intermediate Phase NCS/CAPS (2012) Policy?, Underpins data interpretation and understanding.

This chapter is presented in three sections. Themes from the analysis of data of the following three issue sub questions of this study afford a focus for each of the sections consecutively.

Sub - Questions

1. *Why a learning styles approach to teaching in this case?*
2. *How do school-based teachers implement the Dunn and Dunn (1978) learning styles approach to teaching the Intermediate Phase NCS/CAPS (2012) policy?*
3. *What are school-based teachers' experiences of the possible contributions, complexities and contradictions of the Dunn and Dunn (1978) learning styles approach to teaching in the Intermediate Phase?*

The first section, *Why a learning styles approach in this case?* seeks to extrapolate from interview data in the main and supporting documentary data found in school records, newspaper articles, the annual school magazines and management reports, relevant information that provide an insight into why the Dunn and Dunn (1978) learning styles approach to teaching was adopted to implement the NCS/CAPS (2012) in this case. The following fundamental reasons identified from the data provide a framework for the section:

- Achievement *and/or* schooling success
- Behaviour and discipline: *A state of being*
- A learner-centred pedagogy: *Individual strengths, best opportunities and motivation*
- Curriculum contemplation: *Demographic (*in*) differences - diversity demystified and other differentiated deep meditations*

The second section, *How do school-based teachers implement the Dunn and Dunn (1978) learning styles approach to teaching the intermediate phase NCS/CAPS (2012) policy?* seeks to take an in-depth look at how school-based teachers implement the Dunn and Dunn (1978) learning styles approach to teaching the Intermediate Phase NCS/CAPS (2012) policy in this case. It aims to understand and describe how the Dunn

and Dunn (1978) learning styles approach was introduced, implemented and subsequently adapted in this case. This section purposes to draw from interview, photo and artifact data a deep understanding of how teachers in this sample planned, prepared and presented the NCS/CAPS (2012) through a learning styles approach to teaching. This section is presented under the following sub-headings:

- Planning, preparation and presentation: '*Compliant creativity* and/or *creative compliance?'*
- The Dunn and Dunn (1978) learning styles approach to teaching the NCS/CAPS (2012):

  'Lift off, Soaring, Landing'

The third section aims to answer this study's critical sub-question of what teachers' experiences were of implementing the intermediate phase NCS/CAPS (2012) through the Dunn and Dunn (1978) learning styles approach and its possible contributions, complexities and contradictions as experienced by this sample. Data are drawn from interviews and school and teacher documents. It begins by understanding what the experiences of teachers were around educational change and curriculum reform as it related to this school from 2006. It presents the views of this study's sample as to how changes in South African society and curriculum policy compelled and advanced the need to seek innovative solutions within a supportive, collaborative creative culture at this school. The encounter with the Dunn and Dunn (1978) learning styles approach to teaching was one such solution. It candidly regards the possible contributions, complexities and contradictions of the Dunn and Dunn (1978) learning styles approach to teaching as experienced by these participants in implementing the NCS/CAPS (2012).

Lastly, this chapter concludes with an attempt to understand what caused the abandonment/adaptation of the Dunn and Dunn (1978) approach to teaching the intermediate phase NCS/CAPS (2012) at this school. In so doing further understanding Stahl's (1999) claim that after a year of implementing a learning styles approach to teaching, teachers 'stopped' using a learning styles approach.

5.2. WHY A LEARNING STYLES APPROACH TO TEACHING IN THIS CASE?

Extrapolating from interview data in the main and supporting documentary data found in school records, newspaper articles, the annual school magazines and management reports, insights into why the Dunn and Dunn (1978) learning styles approach to teaching was adopted to implement the NCS/CAPS (2012) in this case reveals the following fundamental reasons: To

- address the issue of at risk learners and to improve achievement and schooling success
- encourage learner involvement and enjoyment for schooling success
- address behaviour and discipline
- initiate and implement a learner-centred, individual pedagogy focusing on individual learning strengths, providing best opportunities for learning and increasing teacher and learner motivation
- engage with and contemplate curriculum reform in addressing changing demographics and understanding diversity
- advance creativity, deep learning, metacognition, and
- tap into current research into how children learn, Brain Profiling and the Global/ Analytic – process/ product approach to teaching and learning.

The above core reasons identified from the data provide a framework for discussion under the following sub-headings in this section as follows:

- Achievement *and/or* schooling success
- Behaviour and discipline: *A state of being*
- A learner-centred pedagogy: *Individual strengths, best opportunities and motivation*
- Curriculum contemplation: *Demographic (*in*) differences - diversity demystified and other differentiated deep meditations.*

5.2.1. ACHIEVEMENT *AND/OR* SCHOOLING SUCCESS

As an academically driven school with high expectations for learner achievement and schooling success, the need to improve achievement levels for all became a burgeoning concern for the school's management team. Against the National Assessment requirements, the school's Vision and Mission Policy, the Annual School Schedule of results, The Annual National Assessments and Headmaster's reports, a mounting need

to deal with the gap between high achievers and those under-performing was critically identified by the school's management. Thus, a foremost reason for the adoption of the Dunn and Dunn (1978) learning styles approach to teaching was the need to address the problem of at risk learners and under-achievement.

Using a tracking system whereby high achievers were placed in an 'express class' or 'A class' and the remaining learners within 'mixed ability' groupings across the grade, Participant A in describing this revealed that the school's management team identified a growing disparity in learner end of year results according to their track. With the goal of improving learner results and marks and narrowing this gap, the school's management sought and embarked on an innovative learner-centred programme, the Dunn and Dunn (1978) learning styles approach to teaching to assist individual learners cope and achieve better results across the grade. All three participants expressed this as a primary reason for why the school adopted a learning styles approach to teaching.

Participant A enunciated,

> *"One of the major problems that I think it is meant to address is that of learners not achieving. Upper management was concerned about the number of learners that seemed to not manage at school, who fell through the cracks, who didn't cope."*

Participant A further qualified that though there would always be learners who would not cope in whatever school they were at there were always those who did well. However, the rate of those doing poorly was widening the gap between those who did well. The concern over at risk learners and failure prompted the school's management team to seriously seek a learner-centred solution to meeting individual learner' needs. Participant C in support of the above stated,

> *"Management approached the teachers, encouraging them. They said that there was definitely a need for learners to learn in other ways to improve their marks. So to meet the learners with possible learning problems, our priority became to meet needs of learners and to help improve their end results."*

All three of the participants expressed a sense of anxious anticipation and expectant excitement in embarking on what they eventually believed would be a successful means to understanding and meeting this gap.

The effects of this decision on learner results were captured in school records. The school's annual magazine of 2006 (p. 40 - 41) reported the following by learners across the intermediate phase,

> *"I think that learning styles have been excellent this year because it has helped us concentrate and get better scores for our tests."*
>
> *"Learning styles have helped me because when we have to learn for a test, I have found that the task cards have helped me achieve good results."*
>
> *"Learning styles have improved my spelling through using mind maps. I don't feel pressured during spelling tests. It is so intelligent for people to think of such an idea to help children learn. This has made such an impact in my life."*

Though led by an outside authority, imposed by the head of the school as a whole school-wide policy and approach to teaching to be phased in, and supported by a smaller majority of the management team and members of staff, all three participants were among those who fully supported the approach, training and implementation processes with the benefit of learners at heart. Teachers were excited and welcoming of the new – found enthusiasm and positive attitudes toward learning among their learners. Though measurable gains and losses in results were never formally or quantifiably compared, the general feeling among two of the three participants was that a learning styles approach to teaching did not reveal marked differences in test scores. However, all of the participants agreed that they experienced a higher level of enthusiasm, lowered stress levels and a keenness to learn among their learners. On a deeper level the need to meet national and international assessment demands, compete for higher achievement levels and successfully implement the national curriculum policy, seemed to be at the heart of this school's adopting the internationally researched comprehensive Dunn and Dunn (1978) learning styles approach to teaching.

However, an even deeper purpose for adopting the Dunn and Dunn (1978) learning styles approach to teaching was expressed by Participant B. She contended that it was for schooling success and not only for mark achievement. Her candid and strong belief towards learner involvement and enjoyment during the learning process for schooling success emerged when she stated,

> *"I take on methods from people like Dunn and Dunn (1978) that I believe makes sense to me that work in practice. Because you see, if I see a learner enjoying what they're learning, and actually getting involved in it, then for me that is success."*

She added that she believed this to be "*the right way to give that lesson."* Affirming that teaching methods like the Dunn and Dunn (1978) learning styles approach to teaching go further than a set number of marks or stars in a book, and makes for far deeper learning and schooling success. Participant B declared,

> *"I get restricted sometimes by a certain number of marks in a book. I kind of rush through those and then find that the actual learning process in the class, the teaching process is what learners enjoy better. They*

> *really enjoy better. And I think I'm actually finally getting through to them, and that a mark is a number on a piece of paper."*

Seeing failure as part of schooling success Participant B stated that she tells her learners that if they made a mistake the one day, a mark meant nothing. It is just a number on a piece of paper and should not have to change their lives, bring them down or make them upset about it. She stated that if they did not work well that day, then they should the next. Particularly referring to the value of such assessment strategies as the Dunn and Dunn (1978)'s *Circle of Knowledge,* a group learning strategy (see Chapter 3 Section 3.6.11) used in reinforcement, revision and testing of single concepts in a non-threatening, collaborative and verbal way, Participant B stated

> "*The Circle of Knowledge I find very useful. Learners enjoy it. It is there for reinforcing. It is fantastic because it is not scary as the test. But I am sure that they learn more".*

All of the participants fully agreed that teaching through a learning styles approach has certainly impacted learner morale, work ethic and motivation.

Thus the need to remain a leading academic primary school in the province, compete globally and to increase performativity as revealed through these data sets became a driving force in motivating for change. Narrowing the gap between at risk learners and high achievers prompted the adoption towards a learner-centred pedagogy that the Dunn and Dunn (1978) learning styles approach to teaching seemingly afforded for academic achievement and schooling success in this case.

5.2.2. BEHAVIOUR AND DISCIPLINE: *A STATE OF BEING*

A second persuasive reason that emerged from the data was the need to attend to learner behaviour and discipline. The school's code of conduct guided by the South African School's Act, 84 (1996), captured the school's policy on what constituted acceptable and unacceptable behaviour. Toward this end, a disciplinary policy for addressing unacceptable behaviour through a detention programme was in place. The school identified that much instruction and teaching time was being spent on addressing matters of discipline and a steady increase in detentions was being recorded according to school records. Thus, a critical reason for adopting a learning styles approach to teaching in this case was to address learner discipline.

Radically, linking a learner's state of being, that is, understanding their psychological-emotional makeup and personality, during learning through their learning styles, to improved behaviour and discipline, Participant A asserted,

> *"Also I think it's meant to address the discipline. The idea behind it is if learners are learning in a way in which they feel comfortable and happy, they will be better behaved."*

Participant C further confirmed this when she stated,

> *"However, discipline, maintaining order, behaviour issues were key so that learners know that they can work independently."*

A newspaper article featuring the school's learning styles approach to teaching quoted Participant C as saying,

> *"But teaching to different styles means less distraction in the classroom. Pupils do their lessons more constructively. Those who have grasped the concept fetch a game, which keeps them occupied and also enforces the lesson constructively. Because they're occupied, they are less of a distraction to the others."*

More specifically, honing in on the Sociological Strand of the Dunn and Dunn (1978) approach that identifies, recognises and understands different acceptable behaviours in learner makeup, Participant B maintained that the reason for the use of the Dunn and Dunn (1978) approach to teaching in addressing behaviour was so that teachers would come to understand that not all learners were alike. Participant B pointed out that crucially she highlighted the different kinds of acceptable behaviours as it happened in her class. She stated,

> *"You recognise it and say something about it. Not necessarily just to that child but to the whole class. So that they also start seeing different behaviours as acceptable, as long as they are not bad behaviours obviously, but there's not just one way of doing something."*

This point is succinctly captured in the 2006 school magazine (p. 2), where in his report to parents the school head records that the school adopted a learning styles approach in order to

> *"…educate children in ways that they learn best. We have seen a change of attitude in many of our pupils as we strive to help them to become independent learners."*

However, a report to parents according to school records of 2007 (p. 12) revealed the extreme need for firm boundaries and classroom rules for the effective implementation of a learning styles approach to teaching. It stated,

> *"A learning styles classroom does require firm but fair boundaries and a code of respect has to be in place for effective application. Growing children towards taking responsibility through flexibility and choice has been both daring and daunting for teachers…"*

Though this view may be perceived as a contradiction, within the flexibility and freedom of a learner-centred environment, the Dunn and Dunn (1978) learning styles classroom is held within a respectful and responsible awareness of the learning styles needs of other learners. Teachers are at the centre of creating

this relaxed, productive and well supervised environment for the best possible input of information and learning. The system advocates for learners to sign a written pledge to uphold the respect of the learning styles classroom.

Thus the understanding of teachers that knowing the individual personalities and makeup of their learners and their state of being during the learning and teaching process could positively influence behaviour and discipline among learners became a strong motivation to adopting the approach. This within firm but flexible boundaries as advocated by Dunn and Dunn (1978) was contractually adopted by each learner as they saw learning through their styles as a privilege afforded to every learner.

Thus in understanding and embracing the Dunn and Dunn (1978) learning styles approach to teaching, all of the participants believed that a creative means of dealing with behaviour and discipline became available to them in understanding individual personality types through learning styles.

5.2.3. A LEARNER–CENTRED PEDAGOGY: INDIVIDUAL STRENGTHS, BEST OPPORTUNITIES AND MOTIVATION

A further profound motivation expressed for adopting the Dunn and Dunn (1978) approach was seen in the value of a psycho-biological approach to understanding teaching to individual personalities and strengths. Further founded on and embracing of personality types, and the recognition of individual uniqueness and strengths, both Participants A and B believed that unlike traditional approaches to teaching that did not always include all learners, the Dunn and Dunn (1978) learning styles approach tapped into individual learners' strengths and particular needs. The realisation that teaching solely through traditional methods did not always include all learners was a major step toward adopting a learner-centred pedagogy. Adopting the Dunn and Dunn (1978) learning styles approach to teaching was an alternative creative approach to teaching since it recognised that each learner possessed individual learning strengths that needed to be catered for. Both Participant A and B expressed this accordingly. Participant A conveyed,

> *"It seems as if the traditional ways of teaching don't always work. Management were looking for a way to include all children and to teach all children according to their strengths where learners could use their learning strengths."*

Participant B expounded that it was necessary to meet particular needs of learners that allowed them to feel safe and acceptable in how they learnt best. Participant B stated,

> *"To cater for learner strengths that met their particular needs. And just making them feel safe in that, that's fine. You're meant to be like that. That's how you were made and that's fine*."

Still further, Participant A proffered,

> *"We need to teach to their learning strengths. And so the thinking behind it was that as teachers we would learn to recognise and learn how to implement those different learning strengths so making learners aware of their own strengths".*

Markedly, Participant A stated,

> *"Because learning styles is individual, it caters for each child's individual needs. Different learners are able to learn better in different ways."*

Participant B further advanced,

> *"Basically you just look at each learner as an individual and don't try and put them all into the same category."*

A first for these participants was recognising the value of seeing each learner as a person among a classroom of learners and being able to teach to individual personalities and learning styles which underpinned the Dunn and Dunn (1978) learning styles approach.

Still further, as part of a learner-centred option for adopting a learning styles approach to teaching, a significant finding was deeply seen in this sample's passion for teaching as an art. Provision of a variety of teaching strategies, valued for its offering individual learners the best possible opportunities for learning, was also revealing of why the Dunn and Dunn (1978) learning styles approach was appropriately selected. This was best described by Participant B, who said thinking back on her own school experience,

> *"If I think back, I don't remember anything other than the odd teacher that did things differently with me. Those are the ones that stand out for me. And so for these learners to find out what their learning styles are, to show them that their way is okay, as long as it is effective for them and to cater for it, really, as best we can in the classroom with a lot of emphasis on them getting to know themselves and what works for them and for them to explore all the ways, of learning actually, so that they are able to make an informed decision and to start recognising them…that is what the Dunn and Dunn (1978) approach does."*

In further explaining why the Dunn and Dunn (1978) approach personally suited her teaching style, Participant B held,

> *"It's just the style that I enjoy teaching. The more variety the better basically. That takes my interest and I know that it keeps the learners' interest. I know that sitting round a desk writing in a book every day would kill me. Some would happily do that, and some really don't like it."*

Poignantly, Participant A, in understanding why the Dunn and Dunn (1978) was appropriately adopted as an approach to teaching as an art, summed up by stating,

> *"The thinking behind adopting the Dunn and Dunn (1978) learning styles approach to teaching was that most teachers tended to teach in the way that they learnt themselves. And so learners were mainly being taught for a whole year in one specific way, though they learnt in different ways. So the thinking behind it was that because everybody learns in different ways, we needed to teach in different ways."*

Participant encapsulated her thoughts on this by stating,

> *"I think just to give learners the best opportunity they could have for learning not just teach them in one method which isn't very broad, which is very narrow. So to open up a broader opportunity for the learners to learn best, the Dunn and Dunn (1978) approach was most appropriate."*

Thus emanating out of their passion for teaching as an art, this sample of teachers saw the Dunn and Dunn (1978) learning styles approach open up possibilities for teaching and learning beyond what they were previously used to.

A further arresting impetus for adopting the Dunn and Dunn (1978) learning styles approach as part of understanding learner-centredness in this case was the need to impact on and increase motivation for learning. Teachers found it increasingly difficult to keep learner interest and focus on subject matter for long periods in the classroom. They saw the Dunn and Dunn (1978) approach as a solution that could work in engaging learner motivation. Providing for a learner-paced approach had the potential for comfort and confidence building. This was expressed by all three of the participants. They found this extremely important as to why the Dunn and Dunn (1978) learning styles approach was employed. Participant C revealed that it became necessary as a school to show teachers various ways to teach and ways to encourage children to learn on their own. The Dunn and Dunn (1978) approach provided an authentic learner-centred means of teaching and learning.

Participant A in support of why the Dunn and Dunn (1978) approach increased learner motivation stated that by allowing learning at their own pace and level, learners were able to remain motivated and productive for longer. Participant B more fully articulated this by describing learner increase in interest and understanding as real learning. Participant B indicated that learners,

> *"Stay focused, they're interested; they seem to have an understanding at the end of what they've done, that they can actually remember it without learning it. You know that sort of thing for me is real learning."*

Significantly, referring to her own increased motivation to teaching Participant B declared,

> *"It's something you want to do. It's almost like the learners - you want to do it this way and it's lovely to hear that other people* (Dunn & Dunn, 1978) *have actually researched it. I try things and as soon as it works I use it or allow it to be used by the learners. It keeps them and me motivated."*

Thus in attempting to meet the demands of a learner-centred, outcomes-based pedagogy as required by the national curriculum, the adoption of the Dunn and Dunn (1978) learning styles approach to teaching in this case provided a platform for teachers to tap into their passion for teaching as an art. It also afforded their learners the best possible opportunities for learning according to individual strengths not experienced before in this case. Increasing motivation for learning and teaching, confidence and comfort building were further seen as positive spin offs emanating out of this decision.

5.2.4. CURRICULUM CONTEMPLATION: *DEMOGRAPHIC (IN) DIFFERENCES-DIVERSITY DEMYSTIFIED AND OTHER DIFFERENTIATED DEEP MEDITATIONS*

Describing the school as a multiracial, multicultural, international, co-educational school, Participant C was the only teacher who delved in depth as to why a learning styles approach was adopted in dealing with demographic diversity. Describing herself as a post-apartheid teacher she disclosed that though learners in this case were not particularly aware of demographic differences, they had adapted to the school culture and environment. She frankly stated,

> *"The children of this generation are to an extent unaware of the fact that there are different race groups. They identify the differences but it is not as intense as it used to be. They've adapted, they learn about and are informed of each other's cultures through the curriculum and at school."*

In answering to why a learning styles approach to curriculum in meeting diversity, Participant C cautiously expressed that she believed that the NSC was especially bent toward educating the South African rural learner.

> *"I think that the curriculum is very much based on educating black children from rural areas. So if you go through the curriculum and through examples and books supplied by the department, they are very much based upon a rural environment - problems or bringing in stories that are based on black children. If you read it and you go through the curriculum policy, it is around and based on improving education for black people."*

She prudently advanced,

> *"So as a school we've adapted the curriculum. I'm assuming each school adapts according to their environment, which we do."*

Referring to curriculum content and skills, Participant C fundamentally claimed that all learners were taught alike. *"We teach all children alike, there's no difference at our school."*

Significantly in responding to why the Dunn and Dunn (1978) learning styles approach was adopted within this context to implement the curriculum and whether demographic differences mattered in implementing the curriculum through a learning styles approach, all three participants were agreed upon why the Dunn and Dunn (1978) learning styles approach was best suited in meeting diversity needs. Participant C made a critically deep-seated and far-reaching pronouncement when she stated that the Dunn and Dunn (1978) approach addressed one's learning style and did not view demographics or race as a barrier. It addressed what best suited a learner in terms of learning. Explaining further, Participant C described how the Dunn and Dunn (1978) model approached diversity by asking what was a learners learning style,

> *"Are you global? If yes, then you will work in this category, because you're global you will learn this way. Do you need to work in a group? If so, you will work with a group. The group does not have to be separate. It's a combination of different races. So it's never an issue. We are focusing on learning."*

In alluding to a radically different approach to diversity, Participant C conveyed that from her experience the focus was not about cultural backgrounds defining who you were or defining your learning. It was more about genetic make-up, a learner's intellect that was seen as diverse. Further motivating from her experience, Participant C ardently proclaimed,

> *"Because in the school environment which we're in, and with the different racial groups present, we have a diversity of race groups here, South Koreans to blacks, coloureds, Indians, Whites, we have learners from up Africa, Zimbabweans, Kenyans, Congolese, Ethopians, you name it. So how would we actually categorise our learners? We don't even really look at race or gender. We're looking at your learning style. So diversity in your learning styles is specifically what we aim at. And it's not demographic, gender…"*

Participant C emphatically concluded by asserting,

> *"We don't have to worry about comparisons, my culture, my background. We don't have to worry about these things, we actually here for a focus on academic learning. We are focusing on your learning styles. So that's a huge issue, especially in South Africa. I'm not sure in other countries."*

Substantiating her stance, Participant C affirmed that if a learning styles approach was implemented within a school that had a single race group, it would also not be an issue. She attributed this to the fact that most learners were acculturated within the schools dynamics having begun at an early age within that school.

In summing up her response on the Dunn and Dunn (1978) learning styles approach and demographic diversity, Participant C insightfully remarked,

> *"I don't think that demographics, race, is the diversity. It comes from your learning style. As I say, your level of intellect. We are going to the extent of also your genetic make-up, your learning make up. It's a whole new category on its own. So those are the diversities and not only our demographic and racial issues".*

Supportive of the above trajectory, Participant B most affirming of why the Dunn and Dunn (1978) approach was well-suited to meeting needs of diversity asserted,

> *"Learning styles, yes, very definitely, very definitely! More so than any other way. I guess just getting better understanding that people are different and learn differently and that's okay. It is about an awareness of your style. It was a bit of an "ah ha!" for me."*

And in relating her awareness to curriculum implementation and celebrating differences, Participant B stated,

> *"There is a syllabus or a curriculum that you have. You've got to have some sort of standard but accepting that we're not all the same for a start, providing for that difference, celebrating the difference, is sort of encouraging the difference."*

Of mention Participant A guardedly avoiding a direct response in this regard focused on how the school community had changed over the years. She stated, "*The type of child you teach has changed... the parents have changed."*

Thus as a profound finding, data from this sample revealed a radically new and different approach to dealing with diversity and social integration. Embracing ones individual intellectual make up, accepting and celebrating differences through learning styles demystified a narrow notion of demographic diversity.

Arising out of the above notion of individual make up, a further defining purpose behind the adoption of a learning styles approach identified from data within this case was the need for a differentiated approach to teaching individual learners. Providing a personally differentiated programme according to individual learner profiles aimed at meeting both the inherent NCS/CAPS (2012) goals, of a learner - paced and learner - based curriculum, and growing confidence and personal ownership of learning, the school identified as essential goals of teaching and learning an emphasis on individual pedagogy. The Dunn and Dunn (1978) learning styles approach was found to be an appropriate means to meet such goals. School records of 2006 reveal and support this. The Annual School Magazine of 2006 (p. 40 – 41) captured views and opinions of teachers and learners in this regard,

> *"Learning styles is there to help us to learn better and to get to know what works well for us. It helps you improve your way of learning in schoolwork and homework."*
>
> *"Thanks to learning styles, I have seen many children gain confidence and take ownership of their learning."*
>
> *"Learning styles has been really fun. I can concentrate more, work alone and in groups when I want to. I can remember more as I am a kinesthetic learner and enjoy acting. Quiet helps me concentrate. I am a global learner."*
>
> *"Learning styles have made schoolwork become fun and exciting. Learning through mind maps makes things easier to work. I remember playing a tactile game on nouns which helped me process it."*

Hence, in meeting curriculum and classroom delivery demands and also as an expectation of teachers for appraisal purposes, the Dunn and Dunn (1978) learning styles approach to teaching individual learners through differentiation was a meaningful and practical option. Participant B exuberantly explained,

> "*This is what works for you. If it works for you to learn something this way, whatever it is, it's fine. It is okay to be different, individual. There isn't one way. There are definitely many ways of learning. Definitely... and that's... for me not a revelation. It's an "Aha!"*

However, Participant B qualified regarding quality and completion of work, that if individual choice according to learner profiles worked for learners then they could learn in that way. But learners had to make sure that the flexibility and freedom available to them did not prevent them from getting through the programme of work. Speaking to why the Dunn and Dunn (1978) approach served differentiation and individual pedagogy best, Participant B stated strongly,

> *"I think… that for me is essential, in that they... they need to know that if it's been working for them…its fine… as long as the work is getting done properly".*

In further understanding uniqueness and individuality of learners and why the need for a differentiated approach to teaching, Participant B passionately articulated,

> *"As they start to accept their own individuality, because I think that's often the thing that... they get input from people that are... not aware that we are not all the same... and want to make them all the same, and so they start feeling... that there's something the matter with them... Whereas if... if you point out to them, "But no, you did it like that and that is fine. Look you still know that and you still know that and.... it didn't harm anybody... and so on." So that they can be comfortable basically with whom they are and when possible, use those styles for their learning".*

In confirming that an individual pedagogy was especially important, as the Dunns' prescribe, for learning new and difficult material, Participants A and B respectively advised that through the Dunn and Dunn (1978) approach learners were exposed to several ways of learning and through choice were able to grasp new and

difficult concepts and skills in a way that allowed them to understand, remember and recall information for much longer. Participant B stated,

> *"I don't think it harms them to do it in another style... but know that when you have the choice and when it's new and difficult... remember there's your way and it's the way that works best for you and that it is okay".*

Likewise, Participant A, in confirming that the Dunn and Dunn (1978) learning styles approach served the purposes of a differentiated pedagogy in meeting individual learner needs through their individual learning styles, cautioned that each year demanded adjustments and changes according to the different learners in class and their learning styles. Drawing from her experience Participant A stated regarding learner individual responsibility and ownership of the learning process,

> *"Obviously you have to make different changes and adjustments for each class because each class is different. Some classes are wonderful and great in taking personal responsibility for their own learning and there are certain classes that are not. And then you have to be a little more traditional because they don't take that responsibility."*

However, as an intrinsic goal, teaching learners to become independent learners as an imperative to the adoption of the approach was also seen captured in a newspaper article (Melville, 2006, p. 13) on the school becoming a learning styles school which stated,

> *"…teaching pupils to become independent learners is an important aspect of the programme. While being taught according to their styles at school, they are also taught how to teach themselves…thus taking responsibility over their learning."*

Thus, through insightful expertise and contemplative experience, these participants were able to provide a meaningful, relevant individual programme for each of their learners according to their profiles. Navigating flexibly between teacher and learner-centred activities in delivering the NCS/CAPS (2012), participants in this sample found the Dunn and Dunn (1978) approach afforded a structured and organised method of understanding and teaching to individual learners through structured variety, modality and creativity.

Additionally, arising out of and tapping into this expertise and experience, a further signal motivation for adopting the Dunn and Dunn (1978) learning styles approach in this case was learner and teacher creativity, a necessary requirement of the NCS/CAPS (2012). In advocating a learning styles approach to advancing creativity, uniqueness and risk-taking in learners, Participant B singly and comparatively upheld that a learning styles approach to teaching allowed her to see her own uniqueness and those of her learners. However, advancing innovative and creative ways of implementing the NCS/CAPS (2012), involved taking

risks as regards departmental compliance demands. With much experiential, participatory, hands-on activity engaged in, the amount of written work as expected had to often decrease. Though concerning, Participant B best explained the value of creativity within the Dunn and Dunn (1978) approach for her and her learners, vociferously describing this accordingly,

> *"You see your uniqueness and the "Okay-ness" thereof. When you can try and risk other ways of teaching, you got to actually. You can't in your books if it's got to look the same every day. It stifles creativity in my opinion. It stifles unique ways of learning. Because you want all the books to look the same and if they're not like that, they're not right. And so the learners learn that there's only one way to do something, that's the teacher's way."*

The need for a creative innovative authentic pedagogy to meet the NCS/CAPS (2012) outcomes-based curriculum expectations was further documented in a newspaper article (Melville, 2006) on the school's singular implementation of a learning styles approach to teaching the NCS/CAPS (2012) curriculum as follows,

> *"The new OBE curriculum gives greater freedom and teaching to learning styles compliments it. This fits hand in glove with OBE because it is about treating children as individuals and giving them real learning experiences. You need people who are flexible and have vision – and a certain degree of creativity."*

Meeting creativity needs of learners was notably captured by the following quote from a learner taken from the school records of 2006 after the first year of implementation,

> *"Learning styles has helped me a lot. It's also been fun. It allows me to be free. It is also very easy to work with because I am kinesthetic I learn using my body. When we learn E.S.P. words (Essential Spelling Programme), we act out the meanings. When I hear music during assessments it helps me concentrate."*
>
> *"It's about learning. It doesn't really matter whether you get a mark for it or not, it's about actually growing and learning about yourself and about the world and others and how to cope better and how to think better and how to think laterally. It's not just exercises based in books with the right number of lines in between... it's not what it's really about".*

The above impassioned description of what real teaching and learning was about for Participant B was another controversial yet poignant reason for the adoption of a learning styles approach to teaching. Though not expressed by the other two participants who did place much on written work and achieving results, the need to expose and explore deep learning experiences for all learners was a vital shift that was found lacking. The implementation of the Dunn and Dunn (1978) approach aimed to fulfill this purpose. This was further emotively captured by the head of school in a newspaper article (Melville, 2006) that stated that there was

> *"…a lack in the school vision and a feeling of dissatisfaction that all pupils' needs were not being met… So many children go through the school system and not succeed at it. But when you meet them later, they have become successful business people. Previously every child had to undergo an IQ test but these only measure numeracy and literacy, and those who did not do well were regarded as having no potential."*

As a critical means to deepen and broaden the learning experiences for all learners with far-reaching impact, the invitation to becoming a learning styles school answered the gap identified in this school's vision. In support Participant B extolled,

> *"You know that sort of thing to me is real learning. Not just the syllabus but way broader than the syllabus. The syllabus is very limited in my opinion."*

Participant B in further justifying her stance explained,

> *"Think about these 'whole bods' (kinesthetic learners) that are sitting in a desk writing day after day, neatly in between two little lines, and that's all that's counting. That's what's important whether they get everything right and everything straight and that each letter is perfectly formed and well spelt. That to me is only one tiny part of... of the learning and... it must be extremely frustrating, and I can't imagine, when you are feeling extremely frustrated that you are learning too much... Other than that you don't like it...They often seem to think that that's what school is all about, writing in books and getting marks*!''

Thus, the quest for deep learning experiences with life-long learning potential for all learners was seemingly answered within the Dunn and Dunn (1978) learning styles approach to teaching in this case. It offered a rich authentic learning experience for lateral and vertical development. For these participants new and creative ways of teaching and learning released unlimited possibilities for implementing and experiencing the curriculum.

And still a further persuasive imperative in matching learners to their learning styles using the Dunn and Dunn (1978) approach was to meet a metacognitive need. Teaching learners how to learn was valued for releasing potential, growing independence, life-long learning and for building self-confidence. Believing that if learners knew how they learnt best, they would apply their individual learning strategies at home, the Dunn and Dunn (1978) approach was the most researched, comprehensive and educationally sound approach of choice in this case. This was well captured in a newspaper article (Melville, 2006) featuring the school that read,

> "…*teaching pupils to become independent learners is an important aspect of the programme. While being taught according to their styles at school, they are also taught how to teach themselves so that they are*

> *able to take their homework or study materials and make resources and use strategies that suit their own styles, thus taking responsibility for their own learning. This increased confidence and self-knowledge can be carried into all environments and beyond school, develop(ing) a greater sense of self-worth because they have experienced success with learning by being given the right to learn in the way that is best for them."*

This objective was further personally supported by Participant C who enunciated,

> "*I do on many occasions teach my children how to learn. They may not know it at present but for example, they will make task cards which are a tactile learning style, when they study. They will go home and they will learn on task cards. They will make and learn through playing a game whether it is a card game over lessons that have been taught. They change it into a game."*

Participant C in particular in understanding why a Dunn and Dunn (1978) approach to teaching was adopted further illuminated that matching learners to their learning styles benefitted them. It was important in their grasp of especially new information. Participant C pointedly claimed that through the Dunn and Dunn (1978) learning styles approach to teaching her learners learned how to learn. She claimed, *"They would have been taught how to learn, how to receive new information in their best way".*

Thus the Dunn and Dunn (1978) learning styles approach to teaching seemed to have unlocked to teachers the value of ways to teach their learners how to learn. They saw that the concept of metacognition could be introduced and taught to learners despite age or grade level.

An even further innovative, cutting-edge and novel reason behind adopting the Dunn and Dunn (1978) learning styles approach in this case was the recognition of brain research in regards to individual information processing styles. Responding to brain-profiling of learners in terms of how they perceived, processed, retained and recalled information according to the Dunn and Dunn (1978) learning styles theory - right/left, global/analytic/integrated brain processing, all teachers in this sample agreed that this aspect had been for them most enlightening and pivotal. It was a fundamental recognition that as teachers the understanding of how their learners processed information received, learner's psychological make-up, mattered to the success of their learning. Participant C explained how the different hemispheres of the brain played a huge role in learning.

> *"Psychologically children perceive in different ways whether it is visually, auditorily or kinesthetically in following instructions. Whether the child wants to actually know something before they actually start, from the beginning to the end, which is your global or work step by step, your analytics, children vary psychologically."*

All three of the participants had much to say about this. They found the Dunn and Dunn (1978) brain-profiling approach to learning allowed them to really get to know their learners. The Dunn and Dunn (1978) learning styles approach to teaching offered teachers for the first time an awareness into how their learners learnt. Whether their learners were global or analytic processors, whether they preferred a product or process approach had a singular most relevant, influential and altering effect on their teaching and as to why the Dunn and Dunn (1978) learning styles approach was adopted. Participant B enthusiastically shared her experience in why the Dunn and Dunn (1978) approach was valued in this regard for curriculum implementation,

> *"Oh, when you see the value of it for a start, why you're learning in ways which is important for global processors, that you don't just see it as bits and pieces at a time, that you... you... you see what... the importance of it is. For the analytics, showing learners where they are going, I found invaluable."*

In understanding her own processing style, Participant B highlighted how the school system generally catered to the analytic processor whilst it was found that a majority of learners were actually global processors who were generally not catered for. The Dunn and Dunn (1978) approach comprehensively was an approach that included all learners. Participant B exuberantly stated,

> *"The psychological, with the Global/Analytic was just so "Aha!" I realised just how global I was and how global a lot of children are. I need to know where I have to go. I have to have the big picture. And then I look at what my learners have to know and I will find different ways to take them through".*

In distinguishing why the need for a process approach to learning as advocated by the Dunn and Dunn (1978) learning styles approach to teaching, Participant A and B deeply explained that the link to learners' lives and the potential to take them beyond was coherent with the NCS/CAPS (2012) principles and a process approach to curriculum delivery inherent therein. Participant A claimed that retention of information was best seen through a process approach to learning, poignantly reasoning that because of the process involved learners understand their work better at the end. While Participant B fervently expressed that it made sense to her rather than teaching in a vacuum,

> *"It just makes such sense, that they're not learning odd bits in a vacuum. Linking it to their lives is important, hoping to make them want to know better getting them far beyond just the end product rather than the process of learning. The process, for me, is way more important. I think very much more learning happens if you focus on the process rather than only the product."*

Thus for these participants, the ground-breaking, state-of-the-art brain-based approach to deeply understanding and teaching their learners through the Dunn and Dunn (1978) learning styles approach to

teaching was received and valued for its far-reaching impact and effects on learning. Rationalising the reasons behind and knowing how to cater for global and analytic processing styles within classroom practice, provided these participants an awareness previously unbeknown to them into the importance of a product and process approach to their craft. The Dunn and Dunn (1978) learning styles approach to delivering the curriculum afforded a context for cognition and recall that was cutting edge, novel and most well received by all three of the participants.

5.3. HOW DO SCHOOL-BASED TEACHERS IMPLEMENT THE DUNN AND DUNN (1978) LEARNING STYLES APPROACH TO TEACHING THE INTERMEDIATE PHASE NCS/CAPS (2012) POLICY?

This second section takes an in-depth look at how school-based teachers implemented the Dunn and Dunn (1978) learning styles approach to teaching the Intermediate Phase NCS/CAPS (2012) policy in this case. It aims to understand and describe how the Dunn and Dunn (1978) learning styles approach was introduced, implemented and subsequently adapted in this case. This section draws from interview, photo and artifact data a deep understanding of how teachers in this sample planned, prepared and presented the NCS/CAPS (2012) through a learning styles approach to teaching. This section is presented under the following sub-headings:

Planning, preparation and presentation: '*Compliant creativity* and/or *creative compliance?'*

The Dunn and Dunn (1978) learning styles approach to teaching the NCS/CAPS (2012): *'Lift off, Soaring, Landing'*

5.3.1. PLANNING, PREPARATION AND PRESENTATION: '*COMPLIANT CREATIVITY* AND/OR *CREATIVE COMPLIANCE?*

This sub-section attempts to deeply understand and describe the experiences of the participants in this study in implementing a learner-paced, process-driven, creative and exploratory approach to learning as embedded within the NCS/CAPS (2012) whilst having to meet school and departmental compliance demands. It explains how the three participants individually confronted and dealt with meeting these expectations within the context of this school. This section describes the expectations of the school and education department and processes employed in meeting them in curriculum implementation through the Dunn and Dunn (1978) learning styles approach to teaching.

As a former Model C state school, therefore, planning the intermediate phase school curriculum was informed by the NCS/CAPS (2012). Participant C confirmed that,

> *"As a departmental school we are guided by the department of education on our curriculum, what to teach and how to teach it."*

As classroom-based teachers, this sample was expected to teach all learning outcomes and assessment standards across ten learning areas (three languages - English, Afrikaans, isiZulu, Mathematics, Natural Science, Social Sciences, Technology, Arts and Culture, Economic Management Sciences and Life Orientation) with some specialisation offered. To this end a partially integrated, theme-based approach was employed across the curriculum to meet curriculum expectations and learner needs. In describing a theme-based, integrated approach to implementing the NCS/CAPS (2012), all of the three participants explained that the four teachers of each grade met on a weekly basis to plan the curriculum into termly and weekly learning programmes and work schedules. All the teachers in this sample confirmed that as an expectation of the school, teachers met together each week and planned teaching, learning and assessment activities for their grades sharing the workload collaboratively among themselves.

Thus in further describing how the NCS/CAPS (2012) was approached and planned for as a collaborative curriculum and school expectation, Participant B and C described that as a grade they planned a detailed weekly planner with a 'tick off' list for each learning area that each teacher in the grade was responsible for. Participant A confirmed,

> *"On a weekly basis we meet and discuss what we would be teaching within that week in alliance and agreement with the curriculum. So we would make sure that as teachers we were on the same par and that we were all teaching consistently across the grade."*

Participant A explained that as a grade teachers decided on what was going to be covered for the year and then for each term. Though teachers did not all have to cover what was planned for each week because of learner pace and needs, weekly meetings allowed teachers to know whether they were more or less on the same par. This was so that by the end of the term teachers were able to know what was covered and what needed to still be taught.

The curriculum was approached as themes mainly drawn from Social Science and Natural Science contexts. Work schedules were drawn from these themes further broken down into lesson plans according to curriculum requirements. Both the process and product of learning goals were borne in mind. However, the theme was not forced across all learning areas especially in subjects like Mathematics.

Drawing from her experience, Participant A explained,

> *"The theme does not cover every subject. Sometimes it would just be a theme in Geography, sometimes it would be English and Geography."*

In describing the process of meeting curriculum outcomes, Participant A further expounded that the different learning outcomes covered in the different areas and subjects were planned for and ticked off on planning sheets in order to confirm that the curriculum was met. Citing an example from her planning records, Participant A submitted,

> *"…for example, covering a subject like Social Science under Brazil and Canada, I took that subject and went through all the learning outcomes and actually covered them all in the geography section, just on Canada and Brazil."*

Thus as documentary evidence revealed learning programmes were planned as a grade at the beginning of each year for each term/semester. Weekly and daily planning emanated out of these learning programmes into learning styles activity-based whole class, small group and individual tasks teacher and/or learner led thus meeting school and curriculum expectations.

In further understanding how prepared teachers had to be and how they went about their personal preparation for their classes, all of the participants in this sample agreed on the need to being well prepared prior to facing their learners. However, the teachers emerged distinctly different in their individual approaches to how they went about their preparation. For Participant A, it was drawing on years of experience, learning new approaches, applying what worked for her class at a given time and class behavior and attention. Participant A explained,

> "W*hen you start teaching you use a textbook, you go by the textbook and whatever other books you can find... but as you go on in your teaching career you rely more on experience. Obviously you still use the books, but... I would say I rely... now... I rely more on experience than the books."*

In qualifying her reasoning behind her experience, Participant A further explained,

> *"What has worked well in the past... past experience plays a big role. Because I have been teaching for many years I have a lot of resources to draw on, so a lot of the preparation has been done years ago. It just gets adapted from year to year, as I teach in the different areas."*

However, Participant A had over the years been open to new information and approaches. She stated,

> *"I would change an approach to try something different, try something new. Sometimes just finding new information or getting new ideas from other people."*

Describing her alertness to the different needs of her learners and her own preparedness, Participant A revealed,

> *"Some classes are just more suited to a certain approach than other classes. Their attention, whether they are capable of working on their own and getting on with the project without too much help from somebody else or from me, or whether not and whether they need more guidance, their attention span, their behaviour would obviously go into that as well… I have to be pretty prepared... I have to make sure that I know what I am doing. So I have to work hard."*

In contrast, Participant C exhibited a vastly dichotomous view from when she began as a new teacher to the time of the interview. Describing her experience of the collegial support as part of this school's culture, Participant C disclosed,

> *"2005 was my initial start of my teaching career, even though I had qualified years prior to that. When I started off I had to, as a teacher realise that though I may have had theory, practice was completely different .So often I had to learn from my peers which were the other class teachers who had experience. I had to learn, adapt and adjust how and what was the best way to teach."*

However, Participant C candidly admitted in describing her approach to teaching, that after some years of experience she taught as she was taught. Participant C stated,

> "*Personally speaking I do teach in accordance to the way I had been taught – unfortunately – which is very traditional."*

Significantly, however, Participant C revealed the many opportunities availed to her by the school regarding her development and exposure to various teaching approaches. She willingly expressed that the school exposed teachers to many forms of teaching which opened her eyes to many possible styles available for her teaching preparation which had been greatly beneficial to her. Given this, however, Participant C was quite bold about her approach to her preparation. For her it began with understanding the prior knowledge of her learners. She regarded herself as a traditional teacher who was an analytic processor who preferred approaching her work from a teacher-centred perspective in the main. Participant C unflinchingly stated,

> *"I am a traditional teacher. I am an analytical person so I am unfortunately very much teacher-centred."*

Explaining how she went about her preparation, Participant C stated,

> *"Prior knowledge is vital. I actually assess through the introduction of some form, whether it be conversational, recapping, their prior knowledge so that I can pick up from there and continue with the lesson. They do vary."*

Evocatively and uniquely, drawing from her social work and pre-primary school experiences and qualifications, Participant B, on the other hand, placed much emphasis on her learners' backgrounds, family lives and personal needs. In describing the approach she took towards her preparation, Participant B stated,

> *"I've benefitted by first doing social work - it's also people orientated and it gives one a greater understanding of difficulties that people have and frustrations and...so people's backgrounds are very important to me because I think it plays a big role. So I spend initially quite a bit of time getting to know my learner's backgrounds and how their family lives work and so on, as I think it impacts on them."*

Having the learners' background history as a starting point, Participant B further conveyed that she approached her preparation of the learning material in more of a 'pre-primary' way providing for learning experiences through which her learners would learn. She offered her learners an opportunity to learn in various ways and through play. She firmly believed that her learners learnt more from what she needed them to learn through an experiential discovery approach. She found that the Dunn and Dunn (1978) learning styles approach to teaching complemented her own teaching approach.

In contrast to Participants A and C, Participant B explicitly did not have a "one-size-fits-all" approach to her preparation. She proclaimed this as follows,

> "*For me, I'm a global person so I need to know where I have to go. And then I look at what the learners have to know and I find different ways. It's not one set of planning that I got there forever, that I just follow year after year…It's not a "one-size fits-all" approach. Yes, each year's different and it's always...I don't know, I just learn more every year of the pitfalls and what to say and what not to say, how to make things clear, how to get the best out of my learners."*

Thus given the collegial support, the collaborative, innovative school culture, teachers at this school were given the freedom of creativity and flexibility of choice for their individual classroom preparation and teaching styles.

Furthermore, some of the terms used by the participants in describing how presentation of lessons was approached included "*holistic", "discovery and creativity", "supportive facilitator", "an experience"*, *"freedom and fun"* , "*play"* among others. In describing how she saw the interaction between learner, teacher and the learning material, Participant A explained that in the last few years, where the school exposed teachers to the Dunn and Dunn (1978) learning styles approach to teaching, that it had actually changed her teaching and greatly impacted her. She found the Dunn and Dunn (1978) approach of much benefit to her learners. Of note, Participant A shared in response to the interaction between learner and learning material,

> *"Because of this I can focus on the many strengths of different learners. They are all working at their own pace, and all doing different things... so... everybody is catered for in different ways."*

This was in keeping with the learners' individual profiles that revealed how they learnt best. Preparation of lessons was accordingly done to cater to individual strengths of learners. In further describing the presentation of her lessons, Participant A affirmed that she was *"…more learner-centred than teacher-centred...and supportive. A facilitator..."*

In providing for a variety of learning opportunities through games and play, Participant B conveyed that she approached the implementation of the curriculum and classroom interaction through discovery, creativity and team work. Her learners were allowed to work alone, in pairs or groups of five, as they wished according to their learning style. Participant B stated,

> "*I provide an experience and then they learn through that. They see the value of it and take it on-board as their own; that's how I do it because it is valuable."*

In explicating how learning occurred through a participatory approach, Participant B further illustrated that through the use of games her learners had fun learning often what learners would find boring material.

> *"Often I get them to make a game out of some usually boring learning material that they have to cover. They take that information and they make it into a game that then will teach them and others what they need to know. In that way they're working with this information, and they're processing it, they're thinking about it, they are thinking of a way to use it... and in doing all that they get to know it. And they have enormous fun."*

Using a discovery approach, in her understanding of how learners discover how they learn best, Participant B explained that offering her learners a variety of different ways to learn using the Dunn and Dunn (1978) methods, her learners made connections to what suited them best. She stated in presenting learning material through tactual, kinesthetic and visual ways,

> *"When they find that they learnt something quite easily with one of the ways, then I make the connection for them that therefore that's possibly one of the ways that they could use for themselves."*

However, in contrast to the afore-going, Participant C who approached her presentation of lessons as a traditional teacher fearlessly stated,

> *"Being traditional I am definitely one of those teachers that would stand in front and walk around in the classroom and allow learners to volunteer to answer and correct. If I pick up that there is a lack of understanding then I would definitely revert back to their prior knowledge … I definitely am in charge of my class. I'm the teacher and they are learning basically from the knowledge I impart."*

Yet Participant C was also a strong exponent of using the Dunn and Dunn (1978) perceptual strengths identified in her learners. Having adopted the approach as part of the school's expectation, she also presented her learners the opportunities to learn through their learning styles. To this end, Participant C like the other two participants prepared task cards, flip-chutes, learning styles games and other tactile/kinesthetic activities to provide a broader deeper experience for her learners.

Thus the three participants candidly disclosed that within the compliance confines and demands of the department of education, the NCS/CAPS (2012) and the school they collegially and individually navigated their creativity in planning, preparing and presenting the NCS/CAPS (2012). Through the freedom and flexibility afforded them through a supportive innovative institutional environment and the many professional development opportunities provided them, these participants were able to employ a variety of ways to meet individual learner's needs. According to the data, the Dunn and Dunn (1978) learning styles approach to teaching seemed to offer the most comprehensive, current, creative and constructive means of exploring and implementing their individual teaching styles within a learner-centred curriculum and pedagogy, one that rose beyond their expectations.

5.3.2. THE DUNN AND DUNN (1978) LEARNING STYLES APPROACH TO TEACHING: 'LIFT OFF', 'SOARING', 'LANDING'

According to all of the participants, having been workshopped as a staff by an expert facilitator trained in New York by Professors Kenneth and Rita Dunn, intermediate phase teachers were asked to volunteer while some were selected to be intensively trained in the Dunn and Dunn (1978) learning styles approach to teaching at this school. The training was approached very practically with a lot of hands – on learning. This occurred over several weeks throughout 2006 with incremental implementation of elements learnt put into practice in between training. Participant A recalled that the training was over a number of weeks during which time teachers were taught the "why" and "how" to implement the Dunn and Dunn (1978) learning styles approach to teaching. She stated, *"We were shown and we did quite a lot of practical hands-on learning."*

The photo data from school records below illustrate intermediate phase teachers at the training workshops. Teachers were taught how to create tactile and kinesthetic learning styles resources to implement the NCS/CAPS (2012).Here Intermediate phase teachers are being given intensive hands – on training in making and using learning styles resources to teach the curriculum.

Figure3. Using the NCS/CAPS (2012) policy documents, grade level learning outcomes and assessment standards, teachers design learning styles resources using various materials. At training teachers are exposed to hands-on practical work in preparing them to implement teaching the NCS/CAPS (2012) through the Dunn and Dunn (1978) learning styles approach.

Figure 4. A teacher making a flipschute used in tactual learning

Figure 5.*Using a vinyl checkered mat, teachers design kinesthetic resources to be used across all learning but especially for use in Mathematics*

Thus teachers were trained on how to implement the curriculum according to the Dunn and Dunn (1978) Learning Styles Inventory (LSI) with the learner as emphasis. Participant C convinced herself that she would place her

learners first. She coyly admitted that she had to adapt and change her personal view to adjust her classroom delivery accordingly to what suited the learner best. She ventured that with the whole motive of improving learner performance, she embraced teaching in a different way to see if there was going to be any change.

Teachers were taught how to introduce their lessons in the two processing styles, global and analytical. Learners were introduced additively to the 21 elements of the LSI prior to being individually profiled to ascertain their individual learning styles through a story, *Mission from Nostyle: Wonder meets the Space Children (Braio, 2005).* In describing how learners were introduced to the programme, Participant A explained that teachers began by experimenting with little lessons, games, changes to their lessons to see how learners responded. Participant A further explained that from the introductory story, learners were able to associate with one of the two different characters. This was to identify and separate the global and analytical processors. Participant C stated that she went about exposing her learners to the various elements prior to individually profiling her learners through a process of elimination. She explained,

> *"Before I even introduced them to the new environment, I had to introduce them to what was learning styles. They had to experience light even if it wasn't their preference. Experiencing that and realising that that may not have been their best preference, then allowed them to move to, maybe, a dark area which was best suited for them. So I had to actually expose them to every single element and they had to experience it and eliminate it if it didn't suit their learning style. And that's how they eventually were exposed to that."*

Participants A and C confirmed, however, that though this introduction was necessary, it was most imperative to have learners identify their learning strengths more accurately according to their individual profiles. Thus Participants A and C explained after being trained to introduce learners to their individual learning styles through the story and several hands-on activities, learner profiling was conducted through an online computerised questionnaire with the help of an expert trainer. Participant A confirmed,

> "*The learners were actually "profiled" on a computer. And they were given a print out of their learning preferences so that they could see what their particular learning strength was in each of the twenty one elements."*

Figure 6.A learner taking the online LSI questionnaire with the help of an expert outsider

Thus, through the analysis of the individual profiles of learners in their classes, all of the participants were able to understand and implement the curriculum through the Dunn and Dunn (1978) learning styles approach to teaching. Participant B and C expressed that it was certainly a learner-centred approach which took into account different forms of learning. This included several categories. Tactual learners preferred using their hands to remember and learn, kinesthetic learners, were those whose preference was to use their

bodies to experience information and learning, analytics required step by step instructions, generally preferring to sit in front of a hard desk and chair, global learners preferred knowing the full picture of what they needed to process and why up front.

The following artifact data of learner and teacher resources below were a record of displays of the 21 elements of the Learning Styles Inventory introduced to learners through activities before and after their individual profiling. Learners were able to identify and constantly refer to their strength in choosing the type of activities planned for them according to their style preferences.

Figure7. Learners categorised according to their learning style profiles. Lists are displayed for teacher and learner access.

Furthermore, in describing in depth how they went about regarding the different strands for the different learners in their classrooms, all of the participants provided in depth detail into how they implemented each strand of the LSI for individual learners. Participant C began by stating that after the initial training sessions the first adjustments toward implementation in her class was within the environmental strand. She explained that to provide a comfortable relaxing learning environment in accordance to the approach, she provided analytics a desk and a chair and had couches, bean bags and Pilate's balls for those requiring softer, more informal seating. Learners were permitted to sit in groups or pairs or alone according to their individual preference. Classroom space was adjusted through partitions to provide quiet zones, darker areas, and for those who needed to be alone. A carpeted, open area for those who wished to work more informally was created. Those who required bright light faced open windows that streamed in natural light or worked outdoors. Participant A informed,

> *"If a learner thought he or she learnt best while relaxed on a bean bag, we allowed them to do that while we introduced the lesson. We believed that they would receive the information and maintain focus and thus retain that information better."*

> *"So we had a classroom where some were sitting on a bean bag, some were sitting on chairs some were bouncing on a ball."*

Those learners who needed to work in bright light or have the flexibility of working outdoors were afforded the opportunity to do so according to their social preferences. Learners with a preference for silence whilst they worked were given ear muffs whilst where there was a majority with a preference for sound, teachers provided soft background instrumental music. This was done during test times as well.

Temperature preferences of individual learners were catered for according to school resources. Fans and heaters were used according to the time of year, however, learners were allowed to bring in little blanket throw-overs if they desired. They could also remove their shoes indoors.

Sociological preferences were fully catered for as teachers permitted learners to work alone, in pairs, in small groups or with adult supervision through discussion and hands-on activities. This afforded learners the opportunity for self-management, development in social dynamics and creativity. Participants shared that in implementing the various content and skills, they included learners' input into how it could be learnt through individual social preferences, teamwork and self. Participant C explained,

> *"There are a lot of learners that need peer assistance, peer learning or to be in groups or pairs. They learn best because peer learning is one of the best ways of learning, so that was very important. Adult guidance was important, so that the teacher had to play the role of the guide, not to instruct but to kind of probe them into their own thought. And then, all in all there had to be team work."*

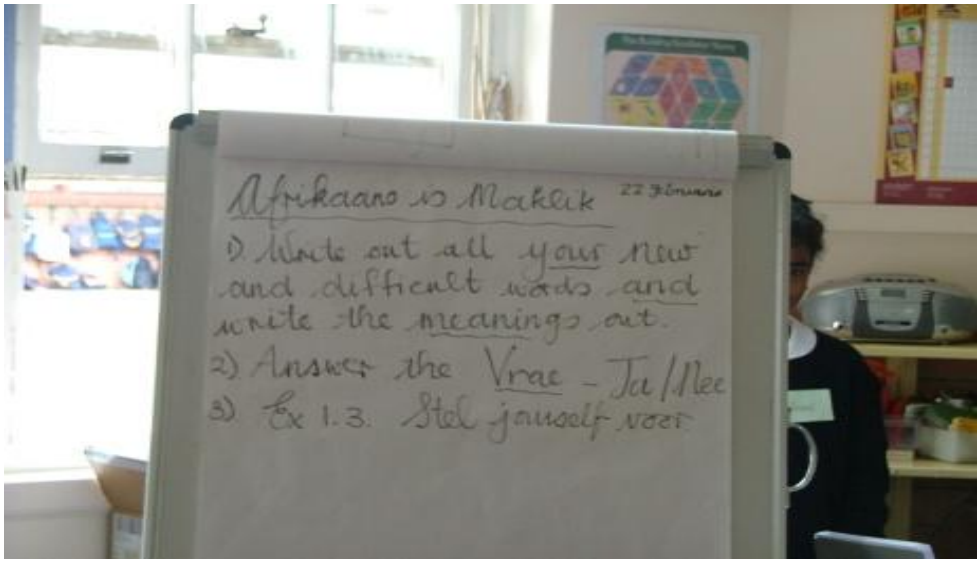
Regarding the Physiological strand, learners were permitted to have intake of healthy snacks of nuts and raisins, carrot sticks and wine gums if their profiles indicated a need to snack while working as long as their work and work space did not become soiled by the use of this privilege. Learners were further permitted to move when needed for a quick stretch, walk-about or run to apply the mobility preference if they were especially kinesthetic learners who could not be seated for very long periods of time. According to Participant C the whole idea of learning styles was to allow learners to learn in their best suitable way to receive new information. However, all three of the participants reiterated that of significant importance these preferences were offered under conditions within the classroom of respect and discipline. Each learner had to sign a contract upholding the classroom rules.

Under the Emotional strand, the preference for task persistence/multi-tasking was radically provided for according to learner needs through an integrated approach to timetabling for the day. Learners were permitted the option of choice of what they wanted to work on at a given time in the day. Participants explained that once a lesson was introduced according to global/analytic ways in the various learning areas/lessons in the week, learners were permitted to decide on how they wanted to respond in written or activity form to the work. Whilst some worked on Mathematics exercises and games, others worked on English, Afrikaans, Social Sciences or another area according to the week's plan with the proviso that due dates were adhered to.

These timeframes were negotiated with the learners. This approach afforded learners who needed flexibility and who could not persist on one task at a time opportunity for variety and creativity. A flipchart (Figure 8) with instructions of tasks to be completed for the week was used to assist learners in covering the necessary work to be done. Learners were able to flip back and forth according to their pace during the course of the

programme. This provided analytical learners a step by step approach of what needed to be achieved. Global learners were offered the overall expectation of what and how they needed to proceed eliminating frustration and fear.

Figure 8 A flipchart with instructions of tasks to be completed.



Significantly, drawing from their years of teaching experience and especially from their knowledge and experience of using the Dunn and Dunn (1978) approach, Participants A, B and C disclosed that the Psychological strand made the most sense for them and was most invaluable. It provided them for the first time the "how" of meeting individual learners' information processing styles. The training received in implementation of the curriculum through the Dunn and Dunn (1978) approach to teaching, taught them how to plan, prepare and present the NCS/CAPS (2012) to meet global and analytic processing styles of their learners. Participant B believed that though there were obvious learners with analytic processing styles within the school system and had generally been well catered for through step by step, logical teaching approaches of the school system, she appreciated the knowledge and skills learnt on how to teach to the global processors. She critically stated of global processors,

> *"Of knowing where you are going and finding your own way there and looking much broader, the recognition of that has been so important. For the global person the big picture is just so vital to their enthusiasm about something."*

Participant C, in describing how she viewed psychological processing styles said that though in the past all learners were taught to receive new information in a very analytical way, they now had the freedom to

receive information globally. She stated that through teachers learning about learning styles learners were able to realise this and be helped. She further stated that this help was to both teacher and learner.

> *"It helped the teacher, as much as the learner because now the teacher could introduce a lesson from the beginning with the whole picture. Giving them the full picture of what was expected of them, the global view and giving step by step instructions for some learners who did function in this way brought about a meaningful change to my lessons."*

As part of the psychological strand, learner perceptual strengths were also of significant value and influenced how the curriculum was implemented. The four perceptual styles of visual text/picture, auditory, kinesthetic or tactual were provided for when lessons were especially being introduced. Learners were exposed to a variety of strategies to choose from according to their strongest preference. However, activities involving secondary strengths were also available to learners in order to consolidate or reinforce information learnt. Learners were taught how to make their own resources according to their individual preferences to use at home for study and revision purposes.

Illustrated below are further photo data from school records of how learners were exposed to and catered for their different learning styles strengths according to their individual profiles. It further illustrates learning styles resources created by learners and teachers for the learning, teaching and assessment of the NCS/CAPS (2012) through the Dunn and Dunn (1978) learning styles approach to teaching.

Figure 9.Flipschutes made by learners for tactual learning used in all learning areas

Figure 10.A tactual learner working independently during a Life Orientation

lesson using cards

Figure 11.Flipschutes and task cards made by tactual learners used in pair work during Mathematics

Figure 12. English tactual group activity using task card

Figure13. An independent visual learner learning through mind maps in Social Science

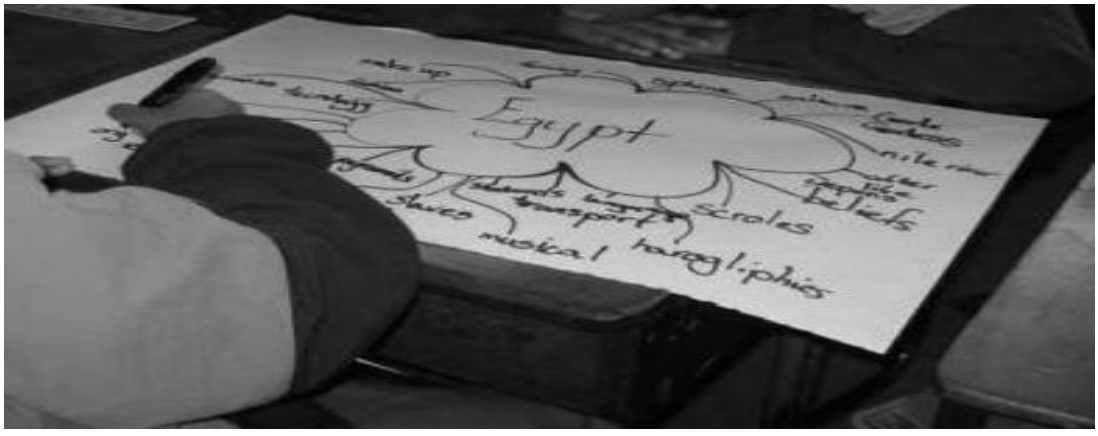
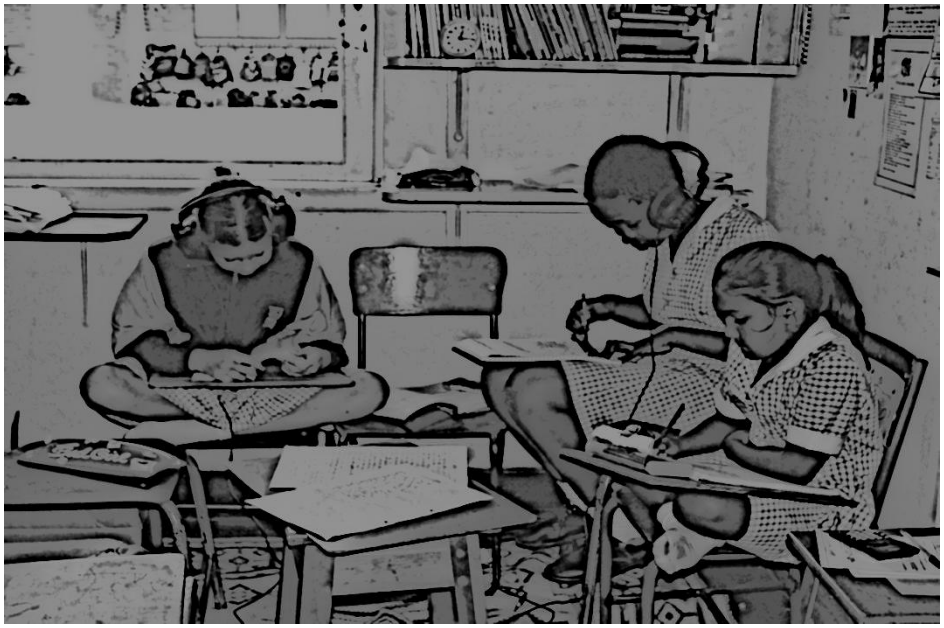


Figure14. Kinesthetic (wholebod) pair work activity in Mathematics using a vinyl numbered checkered mat

Figure15. Learners requiring quiet wearing earphones to muffle out sounds. Informal seating is afforded those requiring it. Lap-desks are used to press on. Learners welcome to take off shoes for comfort.

Figure16.Teach-back Activity during Social Science: Auditory learners requiring oral discussions around a



group task on Mapwork and Direction

Figure17.Tactual learners' hands-on learning during Technology congruent with NCS/CAPS (2012) principles.

Figure18. Dividers are used to create dimly lit areas for those learners requiring dim lighting. Blankets are brought in for those learners needing warmth.

Figure 19. Soft instrumental usually classical music plays in the background for those learners requiring sound while working.

Figure 20. A carpet is provided for informal seating. Plastic recycled tubs are used to store resources.

Figure 21.Visual drawings and use of colour in doing written Mathematics exercises

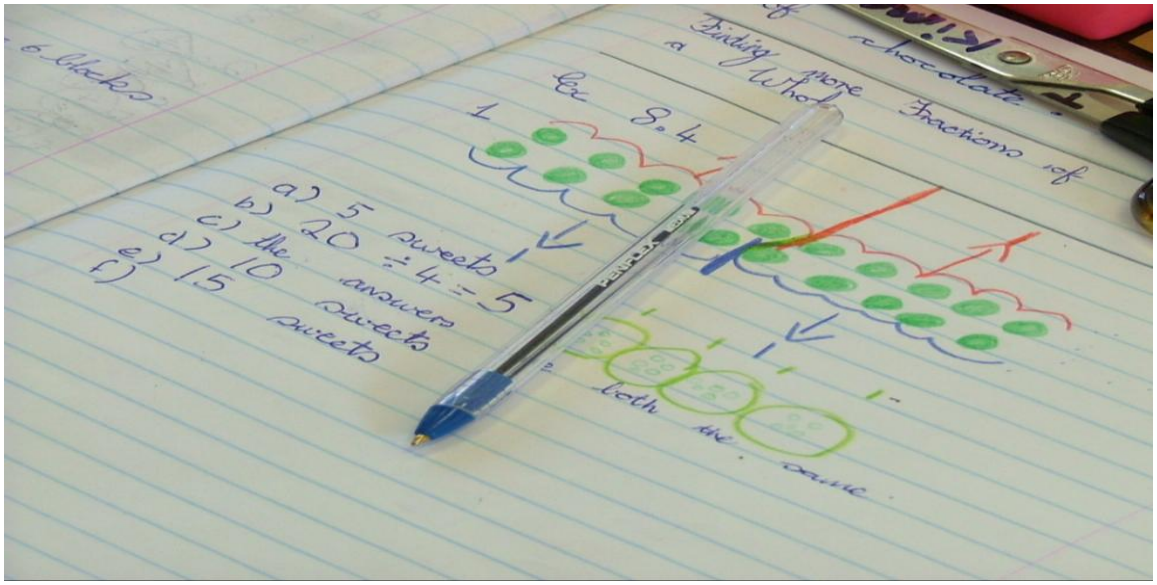


Figure 22. Kinesthetic learners requiring mobility sit on Pilate's Balls while working

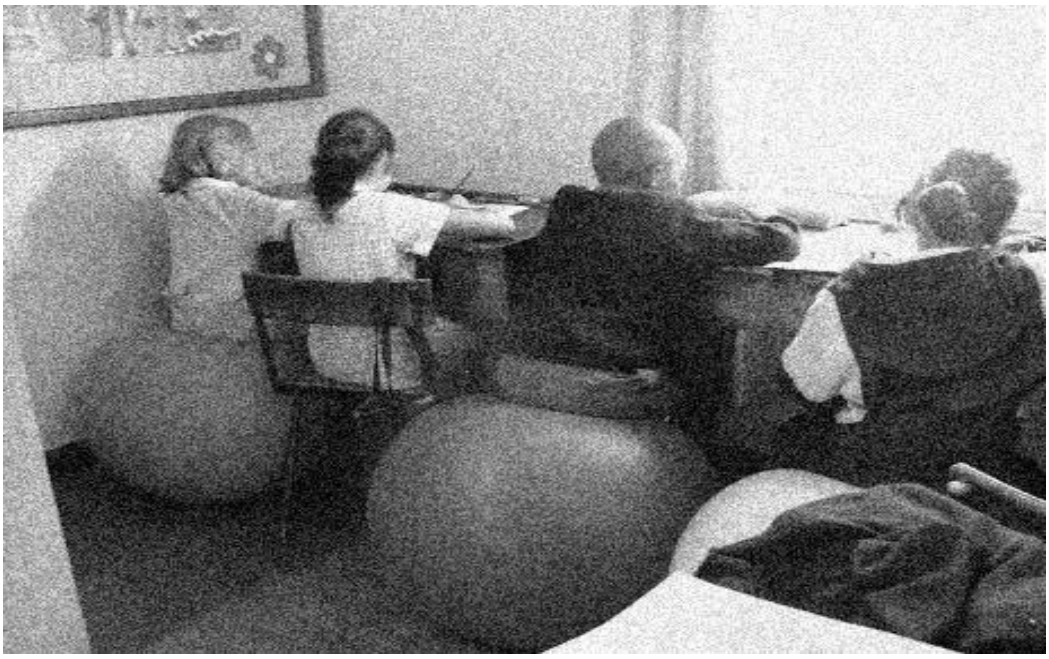


Figure 23. Bean bags used for informal seating

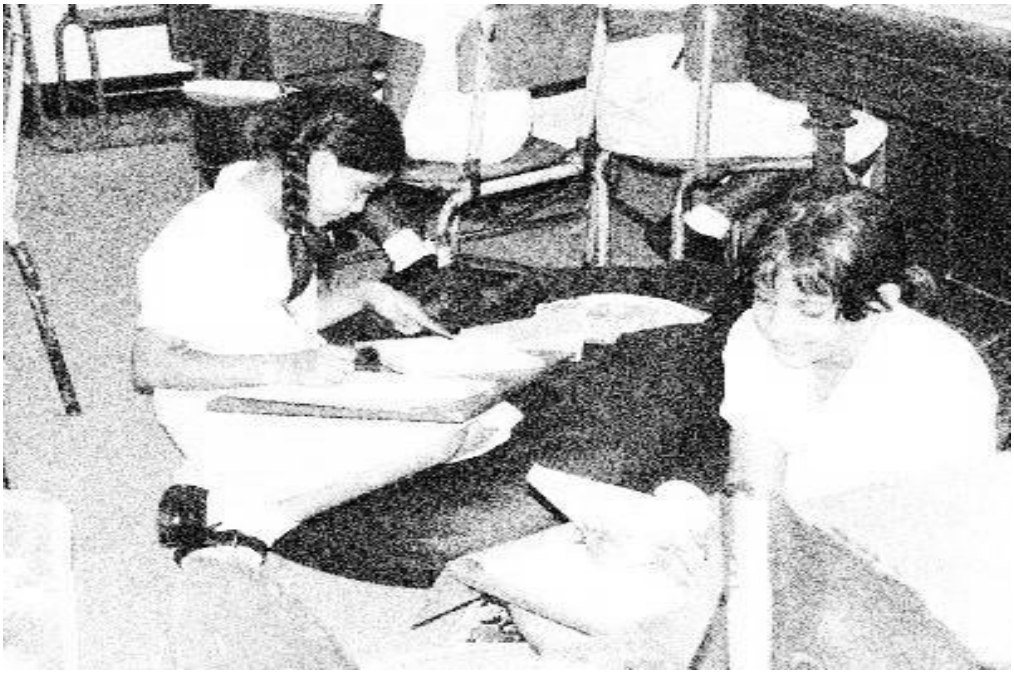


Figure 24.Learners permitted to sit informally lying down or on a lean – to while working according to their learning style preference

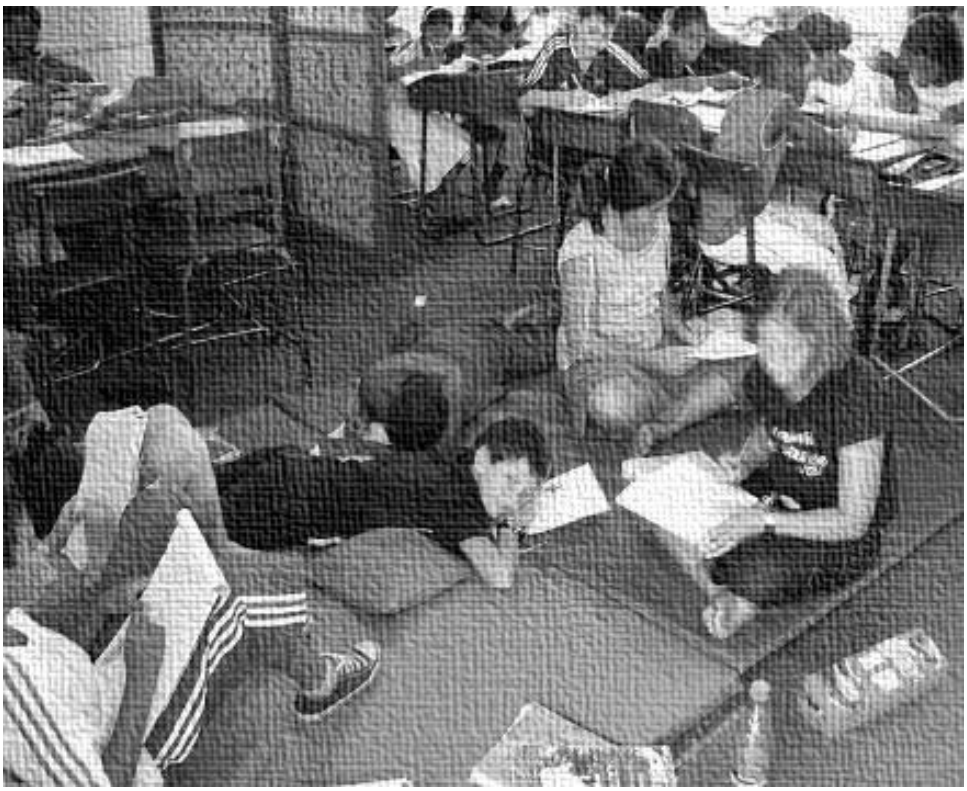


Figure25.Those learners preferring to work outdoors are provided with lap-desks

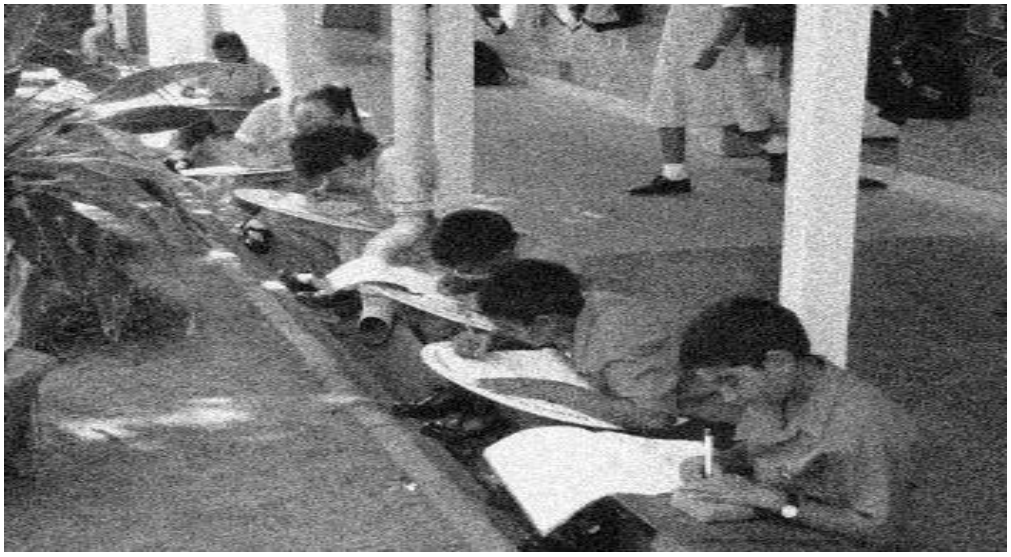


Figure26.Through exploration and practical application a process approach to learning is provided.

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Figure27.Working independently outdoors - Learners remain task focused

Figure28. Auditory self learning with the aid of tape recorders and earphones

Figure29.Partitions used to create quiet dimly lit area for those who also need to be in group

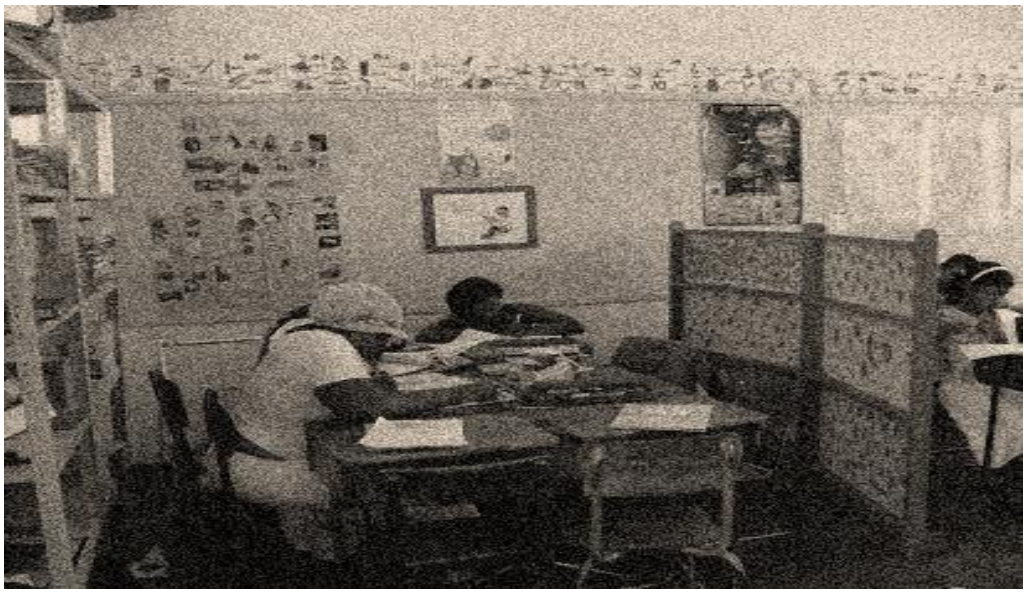


Figure30. Informal quiet areas for those who prefer to work independently on their own

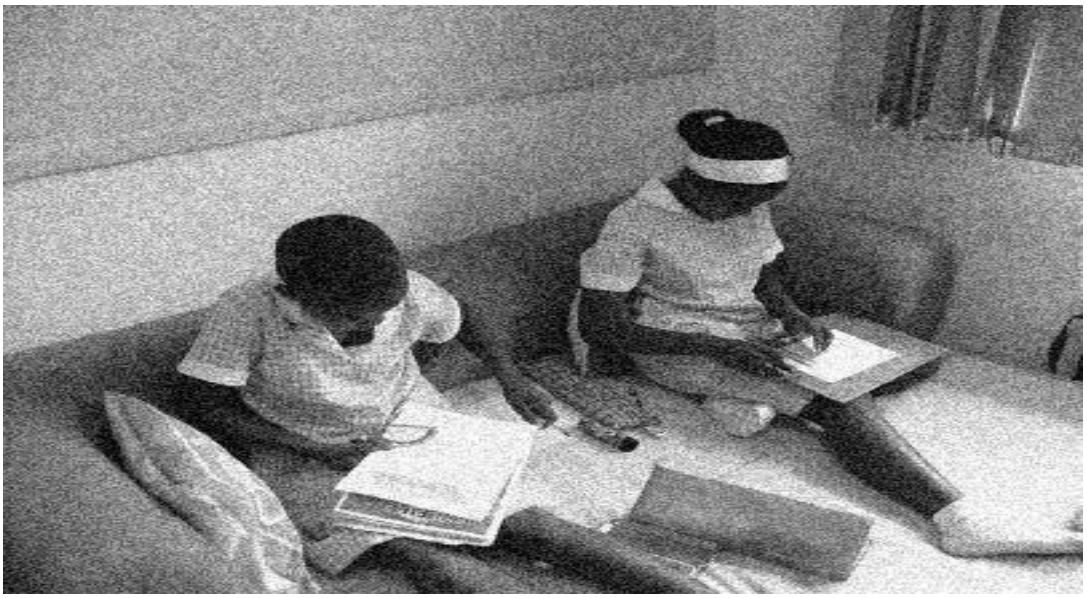


Figure 31. Flexibility in time management. Learners afforded the opportunity to choose when to work on different tasks in the day. While some work on Mathematics exercises some are able to read, take a walk or work on another task.

Figure32.Auditory learners - boys and girls with similar preferences in a group discussion

Figure33.Resources used for auditory learning

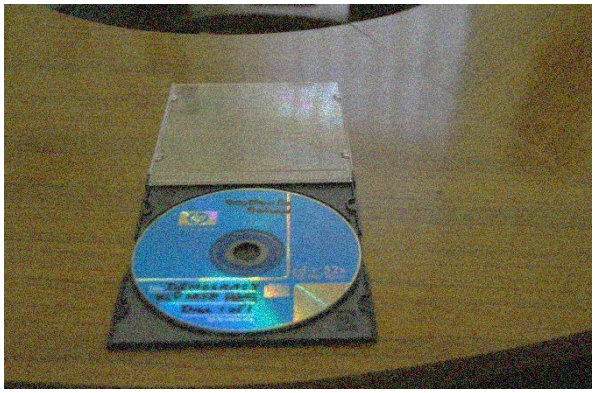


Figure34.Kinesthetic learners using drama during a Geography lesson

Figure35.Numerical task cards used in a visual tactile learning to illustrate decomposition of numbers

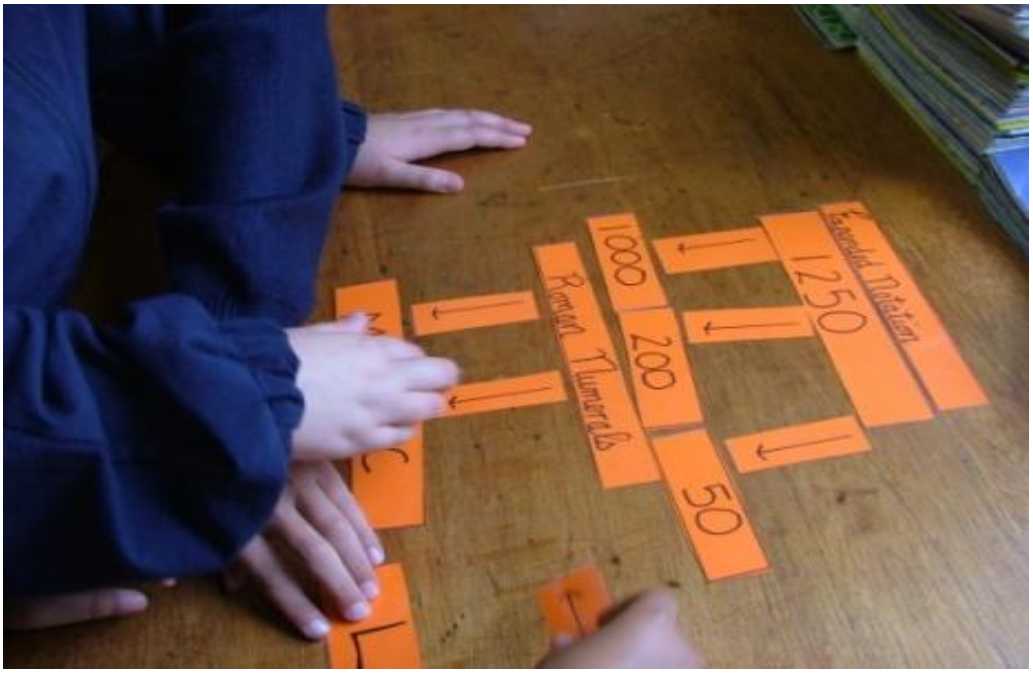
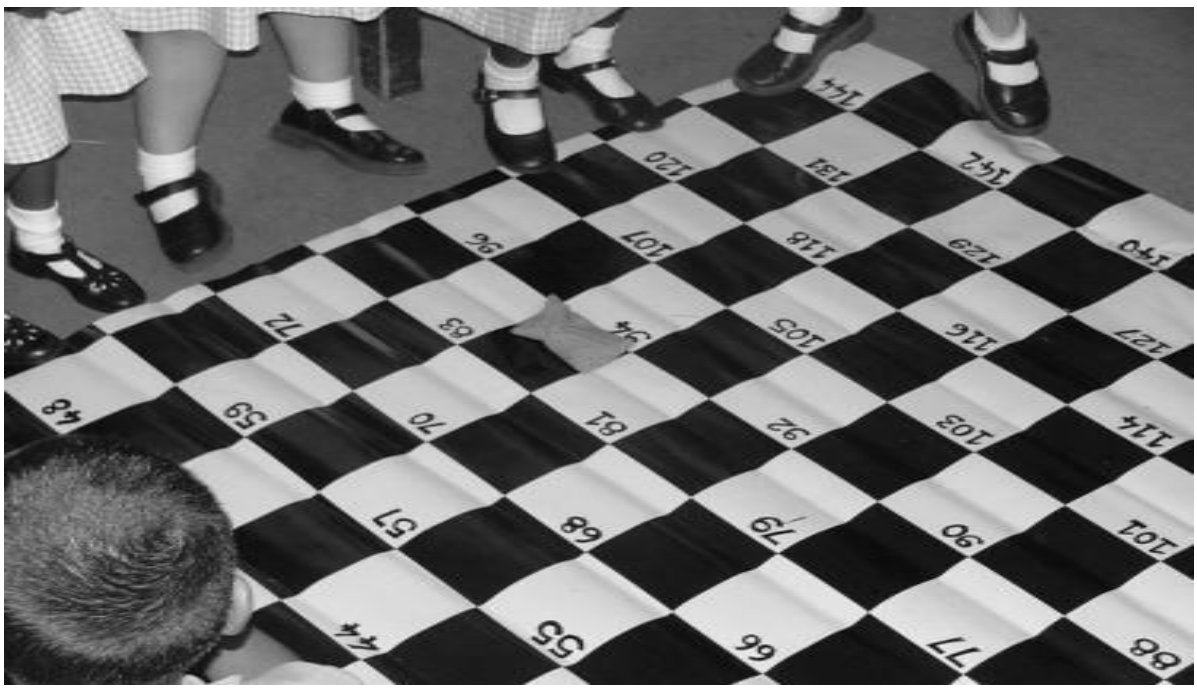


Figure36. Visual learners present their work on charts

Figure37. Problem –solving activities in Natural Science: Tactile learners producing shopping bags

Figure38. Pair learning using flipshutes in Social Science. Learners play a game using task cards to learn factual information

Figure39. Kinesthetic learners playing a game on a checkered mat as a group activity to learn Afrikaans vocabulary



Thus a significant spin-off from implementing the curriculum through the Dunn and Dunn (1978) learning styles approach to teaching for all three participants and their learners during this five year period, as sampled above, has been the discovery of teaching as an art. The participants shared that they enjoyed the freedom to be creative and innovative, developing games and tasks unleashing also the creative abilities of their learners to learn through their strongest perceptual strengths. Through experience, participants were able to create different strategies for delivery of the curriculum. Participant B keenly disclosed,

> "A*s I learn more, as I experience more, as I see more, of the way the different perceptual styles work, tactile, visual, auditory and kinesthetic, and how the learners really enjoy the process, I... think of different ways to provide them with rich opportunities."*

However, Participant C insightfully stated,

> *"It involves knowing all your learners in your class. Because, you come to a stage where you know how your learners learn. Learning Styles has played a huge role in this. Not only do you identify their styles but they do as well. They identify their own needs and their best way of receiving information."*

The most substantial application of the Dunn and Dunn (1978) learning styles approach to implementing the curriculum was through the design, creation and preparation of the multisensory instructional package (MIP), contract activity package (CAP) and the programmed learning sequence (PLS). The MIPS, CAPS (2012) and PLSs brought together all of the 21 elements that comprised the LSI (Dunn & Dunn, 1992). These learning styles resources ultimately and comprehensively presented the curriculum in ways that learners could develop and respond individually to the learning material according to their individual preference. Of the three participants, Participant A was the only one who had designed her curriculum according to these resources. Shortage of time and lack of thorough experience and expertise at this initial stage of implementation were some of the reasons given for Participant B and C not attempting to create these packages. Participant A had invested much of her school holidays and weekend personal time to develop these.

Participant A confidently described how she went about using the packages on planning, preparing and organizing her lessons with these resources. She explained that as learners completed the different tasks in any of the packages chosen, they would come up to her as facilitator mediator, support and assessor. She described in respect to those doing CAPS (2012),

> "*For example if they are doing a CAP, as they complete different sections, they will come to me and say "We've completed... we planned a debate may we have the debate in the classroom?"... And then we have a classroom debate. Those learners doing CAPS (2012) then have their efforts assessed."*

Drawing from her experience she astutely stated that those learners who chose the CAPS (2012) required more help and assistance because of its research-based approach.

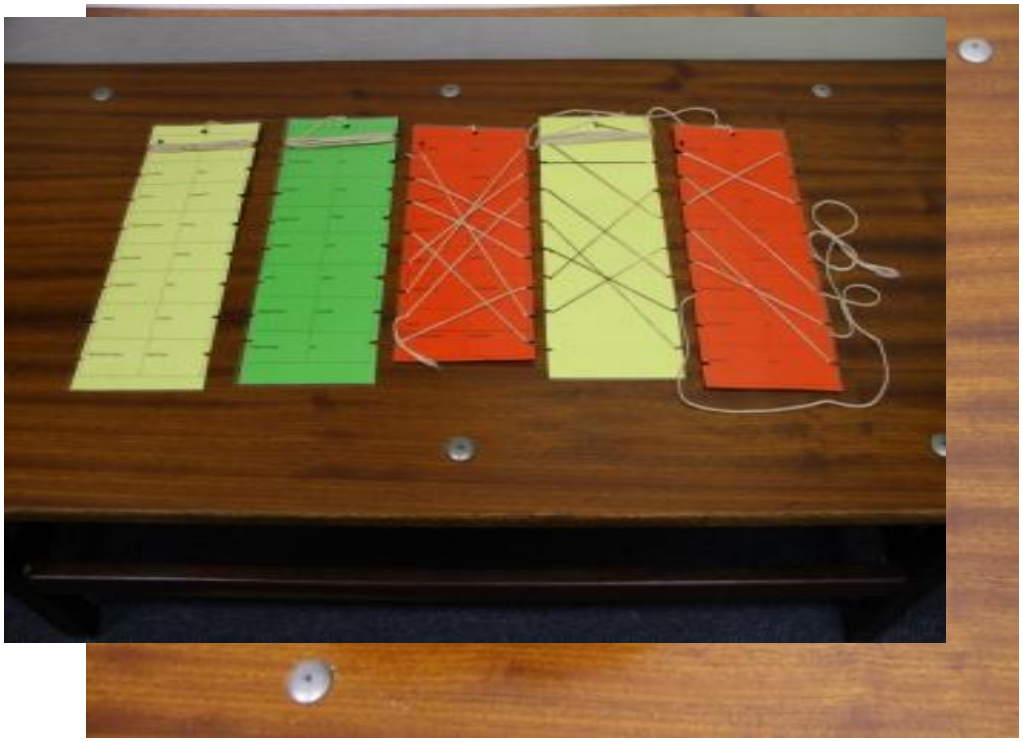
In terms of the PLS, Participant A explained that generally those who did the PLS did not require that much help because it was essentially for learners who were analytic, structured and independent workers. They were able to complete their sequenced programmes fairly well on their own taking the self - corrective unit test at the end. Regarding those who chose to do the MIP, Participant A stated that the MIPs were generally well received by a majority of learners, for it appealed to the tactual/kinesthetic learner who enjoyed variety, flexibility and creativity.

Though all three programmes covered the same content and skills, and was left to individual learner choice in respect of their individual learning preferences, they vastly differed in their approach. Participant A expressed how she presented the NCS/CAPS (2012) by creating packages using MIPs, CAPS (2012) and PLSs as a means to meeting the learning styles of her learners. She proffered,

> *"…for example, covering a subject like Social Science under Brazil and Canada, I took that subject and went through all the learning outcomes and actually covered all the learning outcomes in the geography section, just on Canada and Brazil making it into a package."*

Figure 40. The following artifact data of the MIPs, CAPS (2012) and PLS materials Participant A generated and employed are depicted.


Rama
Rama




DEMOCRACY
Have Your Say!


PAPERLINE

5.3.3. WHAT ARE SCHOOL-BASED TEACHERS' EXPERIENCES OF THE POSSIBLE CONTRIBUTIONS, COMPLEXITIES AND CONTRADICTIONS OF THE DUNN AND DUNN (1978) LEARNING STYLES APPROACH TO TEACHING IN THE INTERMEDIATE PHASE?

This last section aims to answer this study's critical sub-question of what teachers' experiences were of implementing the intermediate phase NCS/CAPS (2012) through the Dunn and Dunn (1978) learning styles approach, its possible contributions, complexities and contradictions. Data are drawn from interviews, visual data and school and teacher documents in the main. It begins by understanding what the experiences of teachers were around educational change and curriculum reform as it related to this school from around 2006. It presents the views of this study's sample as to how changes in South African society and curriculum policy compelled and advanced the need to seek innovative solutions within a supportive, collaborative and creative school culture. The encounter with the Dunn and Dunn (1978) learning styles approach to teaching was one such solution. It candidly regards the possible contributions, complexities and contradictions of the Dunn and Dunn (1978) learning styles approach to teaching in implementing the NCS/CAPS (2012) as experienced by this sample. It keenly attempts to understand what caused participants to abandon and/or adapt the Dunn and Dunn (1978) approach to teaching in this case.

5.3.3.1. FACING THE 'NEW NORMAL'

Firstly, in understanding what teachers' experiences were around the implementation of the NCS/CAPS (2012) through the Dunn and Dunn (1978) learning styles approach to teaching, a most telling common observation made by all three of the participants was the changing dynamics of families and family life within the communities that this school served. Demographic changes of parents and learners over the recent years at this school in regard to race, creed, culture, socio-economics among others, had challenged teachers to relook at their practice seeking new ways and methods to meeting the varied needs of learners. Demographic dynamics has had a marked impact on curriculum and classroom delivery for these teachers. As one of the participants stated,

> *"I think we are getting a different type of child into our school now. They don't achieve as well and are not as hard working or motivated as before. There is a general lack of parental support."*

A dichotomous, 'new normal' social reality may be said to characterise this school's learner and parent population. Its seemed that whilst there existed for some learners a complete breakdown and extreme dysfunction in family life where some learners have had to fend completely for themselves as Participant B

boldly stated, there were also those learners, according to Participant A who *"…have too much support... parents really wanting to do everything for them..."*

However, generally all three participants believed that the majority of parents at the school were supportive and willing to partner with the school in providing the best possible education for their children. To this end most parents were favourable toward supporting financially and morally the adoption of the Dunn and Dunn (1978) learning styles approach to teaching seeing it as a positively transformative and educational tool. Visual and documentary records exist of several meetings with parents and of the school governing body being apprised of the approach and allowing for clarifying questions. A sense of freedom and gratitude toward parental support and assistance was generally felt among these participants. Also of relevance, all three participants experienced confidence – building and increased motivation among learners who were supported by their parents at home in using their particular learning styles strengths in homework, study and assignments/projects tasks given. This is summed up by Participant B's statement, *"The confidence seen in that this is the way to go is invaluable".*

However, there was evidence also of a lack of support from some parents in understanding and allowing for learners to learn according to their individual learning styles, a complexity that was mentioned by Participant A and B. Participant A and B explained that some parents did not agree with their children listening to music, eating, lying on their beds whilst working on homework tasks. Some parents did not believe that their children could learn in this way. This complexity resulted in some families removing their children out of the school for more traditional approaches.

Coherent with the effects of the 'new normal' family dynamic on classroom practice, reform and transformation in curriculum policy since the mid-1990s had a tremendous impact on planning, preparation and methodology for effective implementation of the curriculum employed by these participants. Educational change and curriculum reform as it related to this school from around 2006 had brought about much pressure and demand on this school to effect meaningful change for the benefit of all learners. Participant A, in response to what her experiences were on curriculum expectations expressed,

> "*Education has changed a lot over the years and the curriculum has changed...Over my twenty five to twenty eight years the curriculum has changed a number of times. Changes in the curriculum haven't been a problem... but it does make preparation different, because obviously you have to re-prepare every time there is a new curriculum change..."*

In understanding and meeting curriculum policy change and reform, in the main, past experience, finding new information and ideas, learning from others and exploring innovative methods were a clear common response among all three participants in describing what they did to keep abreast and ahead. Additionally, for two of the participants the type of class they taught each year effectively determined what their experiences were for planning and classroom delivery. Aspects of attention, discipline, independence and maturity, the amount of adult supervision needed, self-motivation among others, directed how learner-centred/teacher-centred/differentiated classroom tasks were planned for. For the third participant, assessment and compliance requirements of the school and education department essentially determined what governed her classroom planning and delivery. As Participant C candidly admitted,

> *"Unfortunately I have had to revert to my old way of teaching which is teacher-centered... because there are so many requirements to meet – the new curriculum and assessments; formal assessments for the department*."

However, among its foremost contributions shared by all three of the participants, using the Dunn and Dunn (1978) approach provided an invaluable insight into knowing the learners in their care more than any other time in their teaching careers.

5.3.3.2. AWAKENING AWARENESS

Participant B introspectively stated that '*knowing the learners'* was for her a singular contribution. Elaborating further, she stated,*"Yes...making us aware and making the learners aware of the different styles, and that it's okay."*

On further probe for a deeper understanding as to what was *"Okay",* Participant B explained,

> *"Well... that it's okay for you to... need to have pictures, it is okay for you to... learn lying on your bed, it is okay for you to need to make a game before you can learn... You know...That what works for you is acceptable. Whereas... I think that when we were at school, there was one way and if you didn't fit into it you felt that there was something wrong with you."*

Participant A personally claimed that the mere awareness of different learners learning in different ways was an important contribution. Participant A intently stated,*"…just that awareness alone, without even implementing each little aspect, I think is of great benefit."*

She astutely maintained, "…*because instead of teaching a class as a class, you're now teaching a class as individuals, which is a great benefit."*

Participant C further agreed that using the Dunn and Dunn (1978) learning styles approach allowed her to come to a stage in her career where she was able to really know her learners and how they individually learn like never before. Participant C stated,

> "*Learning styles play a huge factor because not only do you identify their (learners) learning needs but the learners do as well. And they identify their own needs and their best way of receiving information."*

Succinctly concluding to what extent the Dunn and Dunn (1978) approach contributed to teacher potential, Participant A held,

> *"I think in the last few years where we have been exposed to the learning styles it has actually changed our teaching quite a lot because we can now focus on the needs of different children".*

All of the participants valued the contribution of knowing whether their learners were global or analytic processors of information. They believed that this changed and enhanced their way of teaching individual lessons since they now planned and prepared their lesson introductions to take this into account. Participant C explained that this was extremely important. She stated that many learners

> *"…were taught to receive new information in a very analytical way... now they have been given the freedom to receive information globally…"*

In describing deeply what this meant for her in her experience, Participant C found it changed her lessons dramatically. She explained,

> *"… they (learners) may not actually be used to or... or... it's something new for them... So, in a way, the teacher learning about learning styles has helped the teacher, as much as the child, because now the teacher can introduce a lesson from the beginning to what is expected (needed)… So giving them (learners) the full picture for the global view or giving them step by step instructions (for the analytics)… There is a change in my lessons already..."*

Furthermore, several vital contributions for increasing learner potential emerged through the data. Among these benefits for learner success and development were the variety of ways to learn afforded by the Dunn and Dunn (1978) approach. The value of discovery learning, the use of play, the application of higher order thinking skills, self-learning, questioning, creativity and participatory interaction among several others, stemming from their knowledge of a brain-based approach to learning, was referred to by all of the participants. Grounding this awareness more fully to actual brain processes of individual learners for individual learning, Participant C expressed the certain impact of the Dunn and Dunn (1978) approach in positively influencing her learners' potential. Participant C explained,

> *"Knowing how the different hemispheres of your brain work has played a huge factor revealing how different children vary from each other…Being aware of it helps to understand why sometimes children may not grasp as easily as others, some children may not understand, so you've got to actually make sure and ensure that children understand according to their needs."*

Participant B explained that she offered her learners an opportunity to learn in various ways and through play they learn what she needed them to learn. Participant B added, "*I get excited with them when they discover things and it's extremely useful."*

For Participant A what mattered most was the increase in work ethic that emerged. Participant A explained that her learners were ready to take on challenges. Learners liked the fact that they were given the freedom to do their work differently. She further revealed that in developing a strong work ethic, none of her learners abused their freedom. Participant B also, in discussing the increased work ethic shown by her learners and their potential for deep learning openly conveyed,

> *"It's been absolutely amazing for me to see them applying prior work that we have learnt. I've never seen it before. Normally it's as if you have taught nothing before."*

Of explicit bearing, the benefits of several elements of the Dunn and Dunn (1978) Learning Styles Inventory were of significant mention. Participant B addressed the advantages of Mobility for those learners needing it. Participant B explained that one of her boys in class used to sit on a chair and found it most uncomfortable. Since allowing him to use a Pilate's ball, she found him more focused, busy, with a better work ethic and doing well. Participant A stated that Mobility allowed for greater choice and flexibility for learners. Participant C in explaining the contribution of Mobility said,

> *"I think that this is definitely a motivation to... to want to learn, because it is not sitting on a chair behind a desk with the teacher in front of you and listening, but rather discussing and expressing your views and learning in your best way. In a comfortable position they are more willing."*

Regarding the experiences of teachers in meeting the element of Responsibility, Participant C expressed that this was for her the most important contribution. She stated that though teachers encourage and guide learners to be responsible and take ownership of their learning, this had to come from the learners. She believed that knowing and using the learning styles that best suited learners directly aided in teaching and developing Responsibility.

Among other elements the Social strand was most talked of. The provision of peer, small group, independent and adult – led activities designed according to individual learners answered to a far more constructive and meaningful manner of teaching for all three participants. In affecting learner potential, participants found a

new felt purpose for group tasks and individual tasks in meeting curriculum and classroom delivery needs. According to learners' profiles, those learners that required working in groups were afforded the opportunity whilst those whose preference was to work independently by themselves were given equal opportunity to do so. Social groupings according to individual learning styles contributed to the best possible learning and achievement for learners. Participants found that more learners required working in groups than on their own.

5.3.3.3. CURRICULUM COMPLEXITIES AND OTHER COMPROMISES

A notable revelation from the data was that only one of the three participants conceded that the NCS/CAPS (2012) outcomes and assessment standards could be successfully met through the Dunn and Dunn (1978) learning styles approach to teaching. Participant A firmly believed that the NCS/CAPS (2012) curriculum could successfully be implemented through the Dunn and Dunn (1978) approach and was a benefit to learners and teachers in meeting curriculum goals. In responding to whether or not her experience of the Dunn and Dunn (1978) learning styles approach to teaching contributed to meeting the needs of the NCS/CAPS (2012), Participant A stated,

> "*Yes, I think it definitely has because just all the different approaches fit in very well with so many of the different Learning Outcomes in the curriculum. And they are both very variable, and yes I do... I do feel that it has been a great help… and in making it more interesting and fun."*

Participant A was also the only one who found that the Dunn and Dunn (1978) approach lent itself well to meeting assessment requirements of the curriculum. She stated,*"I think that the curriculum is quite kind in the types of assessment that it allows, which fits in very well with the Learning Styles."*

However, the reasons forwarded by Participants B and C in expressing their reservations in this regard were because of the time and flexibility required in using an exploratory discovery learner-centred approach again the strident demands of compliance of tests and curriculum coverage of the NCS/CAPS (2012) and the school. It was felt that the problem was not with the Dunn and Dunn (1978) learning styles approach but with the pace required to cover the curriculum.

Among several issues that also arose from the data that were deemed highly complex for all three of the participants in wholly fulfilling the Dunn and Dunn (1978) learning styles approach to teaching, the issue of constraints in the physical environment was regarded as an immediate obvious complexity. The physical

sizes of classrooms and the need for space for the various work stations had to be overcome. Participant C stated,

> *"We don't have huge classrooms so we have to actually... adapt our classrooms... adapt the environment according to the size of our classrooms."*

With over thirty learners in a class, teachers redesigned their classroom spaces by rearranging desks against the walls and in groups allowing for space for learners to sit in their best comfortable position. Participant C explained that when a lesson was introduced learners had the choice to sit in their most comfortable position to receive what the teacher said. Once learners were ready to actually do their own exercises they could go back to a place around the room according to their preference. If they were analytical or needed a hard chair and desk, bright or dim lighting, they moved to that position, if they needed to sit on a Pilate's ball at a desk, or lie or sit on a carpet on the floor, they were afforded the options to do so. The use of out-door spaces was sought for those learners requiring it. Participant A introduced a couch into her room. However, such complexities around a greater need for supervision and control, neatness of work, posture and discipline became contentious.

A severe complexity regarding costs and financing of implementation of the approach was mentioned by the entire sample. The data revealed that to provide the appropriate resources and training to fully and successfully implement the Dunn and Dunn (1978) system required high costs. Setting up the environment for differentiated lighting, temperature, sound, among other elements, required creative and costly input by the school, learners and teachers. Whilst curtains and carpets had to be purchased, not all classrooms could boast access to air-conditioning, heaters, fans and the like. Learners were allowed to bring a little blanket, soft cushion, and be bare-footed according to their preferences.

A signal complexity that was deeply described by all three of the participants centred on the actual NCS/CAPS (2012) curriculum. Three main issues emerged of great concern and frustration. These were the anxieties of curriculum load, lesson preparation and time. It was felt that the NCS/CAPS (2012) curriculum demanded too many requirements in respect of assessment standards and continuous assessments. Participants adhered that these could not all be fully covered in a year if completely approached through the Dunn and Dunn (1978) approach of teaching. Though valued for its learner-centredness, the participants believed that to fully implement the NCS/CAPS (2012) through this learner-centred means required far more time and flexibility. Participant A, in stating that though she had not found the actual change to the Dunn and

Dunn (1978) approach difficult, her difficulty was in how time consuming preparation of lessons were since it needed a lot of thought. Participant A stated in regards to classroom implementation of the approach,

> *"One thing that I did find is that very often the learning styles take up more time to learn. While a certain concept would perhaps with traditional methods maybe take one hour with learning styles it could take three hours. It does take up more time."*

Participant C, in further explaining the complexity in using the Dunn and Dunn (1978) approach and its implications for classroom delivery, disclosed that response time of learners to a concept or topic took far longer now with various points of view allowed for, the many activities planned for each stage of the lesson and across the different learning styles elements. Though she found this worthwhile to learners since much deeper learning took place, more was demanded of her abilities regarding being well prepared and flexible. Participant C in sharing her experiences of the implications of her lesson planning to classroom delivery perceptively stated,

> *"However with the learning styles, the responses from learners would be different because they would be taken from different points of view which was not a bad thing, because you'd actually get lots of different learning taking place, but there's definitely more work. It was more open to change, when it came to planning lessons because you assume what's going to happen when you are planning a lesson, but what happens in learning styles may be completely different to what you assume in your lesson planning".*

The stark complexity for curriculum coverage was well captured by Participant C when she stated,

> *"But then the problem is how to fit in the whole curriculum, because you've spent so much time teaching one particular concept. So sometimes you do have to not do a certain area... learning area justice, because of the time constraint."*

In fully understanding the complexity faced between meeting the full requirements of the curriculum and providing for deep learning experiences for learners, Participant B provided, *"This is because of the process involved but I do think perhaps at the end of it, they understand it better."*

The following four fundamental contradictions emerged from the data. These were contradictions around profiling of learners, implementation of the learning styles inventory, implementation of the NCS/CAPS (2012) through the Dunn and Dunn (1978) learning styles approach, and, the matching of learners to their individual learning styles preferences.

5.3.3.4. CONTRADICTIONS CONFIRMED

Firstly, it is of significant interest to this case that two of the three participants had much praise for the profiling of learners according to the Dunn and Dunn (1978) learning styles inventory. Participants A and C valued the profiles of their learners towards providing for an individual pedagogy. Participant C stated that profiling provided,

> *"…a better idea of the learners as well as the teachers on their learning styles, providing an opportunity for teachers to categorise their learners in accordance with their learning styles and then to teach from there.*

Participant C saw it as something that was "*exciting and new"* that *"raise (d) my (her) prior teaching knowledge".* Participant A indicated that the mere self - awareness as a teacher of different learners possessing different learning strengths, that they learn differently from each other even before implementation of the programme was of "*great benefit*" to her. Participant A stated,*"Yes I do feel that it (*profiles*) has been a great help…and in making it (*her lessons*) more interesting and fun."*

However, Participant B viewed profiling in a completely different light. Participant B claimed that through providing the various learning styles activities for her class, learners gravitated naturally towards their preferences after experimenting and experiencing all of them. She believed allowing them the freedom and flexibility to do that was more valuable than having them profiled. Essentially, Participant B stated that she felt it better allowing her learners to discover their strengths since they were much too young to fully know their strengths at that stage. Whilst all three participants prepared their learners by exposing them to several learning styles activities prior to taking the online test, Participant B averred that it did not matter whether learners were profiled or not to learn through the Dunn and Dunn (1978) learning styles approach. Participant B explained that learners would,

> *"…try all... they want to do all the things that are fun. So... like drama. They all think that they are all 'wholebods' (kinesthetic), but they're actually not. But they always... those learners go outside and it looks like a lot more fun... But eventually, if... allowed to do that enough... they start to see that it's not such fun for them anymore and they will ask "Can I go back into the class, can I work quietly?" So, I think as long as they... they are exposed to all these varieties of activities and being allowed to... get to know themselves, recognise what is actually happening within themselves... and then... being allowed to implement whichever is most comfortable for them... I don't even know if you need the profiling..."*

In contradiction to the two other participants and the workings of the Dunn and Dunn (1978) approach, Participant B, from her experience light-heartedly claimed that profiling was "*more interesting than useful."* A further dichotomy emerged from the analysis of Participant B's responses in respect of her approach. In stating that she provided her learners with a variety of activities giving them the opportunity to develop their

strengths over time, she also admitted that she could not always cater for all the elements all of the time. Participant B justified,

> *"I can't do it with twenty one elements in all of my lessons. Even each concept/topic is not presented in all of the styles with all these varieties but learners are... over time exposed to all these things. They see what's comfortable for themselves and then at times when it is appropriate... because there are times when... when just with the pressure of work you just actually have to 'order it one way'. There just isn't time to get through what you have to put across. So... but... as often as possible...I let them do it in the way that's most comfortable to them".*

Secondly, in relation to the above a further contradiction arose around the implementation of the 21 elements of the Dunn and Dunn (1978) learning styles inventory. Drawing from their experiences, all of the participants found that after a few years provision of such elements as Light, Time, Music and Intake were not as important and a little too difficult to do at school. Contrary to the authenticity of the approach, they felt that it provided a level of enjoyment but was not really necessary for the learning process. However, the Sociological, Psychological and Emotional strands were found to be far more valuable and necessary with a lot of *"Aha!" in it."* Especially in praise of the awareness of the Global/Analytic processing of information during learning, Participant B said that this was also an "*Aha moment*" for her in seeing that schooling generally catered to the analytics in valuing sequential thought. Now for those whom the big picture upfront was vital could be catered for. This recognition was extremely useful for all of the participants.

Although not finding the transition to adopting a learning styles approach to their teaching difficult, all of the participants found that it was not completely possible to cater for all the elements for all learners all of the time. Participant A noted,

> *"Teaching a lot of learners, all of them with different learning styles, you cannot actually accommodate every single learner. You can do... you can go so far..."*

Participant B expressed her views accordingly,

> *"I find it extremely difficult to cater for all four (*perceptual strengths*) every time. That's what I find. Just I guess the preparation and the... and the control of the learners at the same time. I think to cater for each learner's needs in that detail is virtually impossible."*

Furthermore, part of the difficulty felt in implementing all of the 21 elements lay in producing learning styles resources. "*But I think it was... it was... it was just too hard. We didn't have enough equipment, which takes a long time to make".*

Participant B was the only participant who felt that the actual learning styles resources posed a contradiction and sometimes failed or did not serve her. She blamed this on ignorance and a lack of knowledge and experience in creating appropriate resources and materials.

> *"But I did make some of it that was stupid, I think. Without your experience you put a lot of time and effort into something and then it... it's not really worth it. And it doesn't work as well as you thought it would and so on…in the fervour of... enthusiasm... an enthusiasm in the beginning just to get material out there but that faded because you can't keep it up."*

An acute contradiction also emerged around the understanding and interpretation of the five strands of the LSI among participants. Participants had varying understandings and descriptions of the terminology used and its applications. Some of this may have been attributed to the length of time between training and the interviews. However, some critical misnomers bear mentioning such as the elements of Responsibility, Authority and the differences between the Psychological and Physiological strands. Participants glossed over these, queried what they were or provided their own understandings of these contrary to the Dunns' definitions.

Thirdly, several contradictions immerged from the data in respect of understanding and interpretation around implementation of the NCS/CAPS (2012) through the Dunn and Dunn (1978) learning styles approach. In responding to whether using the Dunn and Dunn (1978) learning styles approach met the needs of the NCS/CAPS (2012) and filled the gap between teacher, learner and learning, Participant A initially unsure of the question was fully agreed that it did. She stated,*"I can't think of any particular contradiction. It is more... things that are difficult to implement than contradictory".*

In providing further insight, she stated that in the last few years being exposed to the learning styles approach had changed her teaching. She explained,

> *"…we can now focus on needs and strengths of the different learners. At the moment, for example, we are teaching Democracy... and we've got... all those different areas where we've got* the multisensory instructional package (MIP), contract activity package (CAP) *and the learners that are just working on their own... and they are all working at their own pace, and all doing different things... so... as far as the section we are doing now, everybody is catered for in a different way…"*

Participant B also did not initially feel that there were any contradictions between the NSC and the Dunn and Dunn (1978) model or even within the model itself. However, she felt that she was not expert enough to make that judgement. She stated,*"I don't think there are any contradictions. There might be if I were to study it carefully and know more about it."*

However, Participant B in providing a deeper input into her understanding, explained that she felt the NCS/CAPS (2012) was more suited to analytic processors of information, requiring a compliance approach to meeting its many demands and did not quite allow for a process of learning approach and was product – driven. She believed this hampered her classroom delivery and teaching. Participant B asserted,

> *"You see I think... as I read the curriculum, it's very much more analytic, it's... it's "tick off" this 'box', "tick off" that 'box', step by step get through these skills. Whereas the... the global way that I like to look at my work, is just "Tell me where we're going and we'll get there." And I'm quite sure we'll' tick off those boxes' and more, but, if I'm focusing on the 'boxes' and not on where we're going... I feel very hampered... I... I... I just don't feel able to teach like that."*

Participant B stated that she wished that there was less required and more time to get through it because for her it would be far more satisfying to teach without the pressure of assessment demands. From her experience of implementing the NCS/CAPS (2012) through the Dunn and Dunn (1978) approach, she said,*"…it can take a couple of days... to finish something properly and from my experience learners definitely gain and... and try much harder."*

In contrast, however, Participant C explicitly found that contradictions did exist between the NCS/CAPS (2012) and the Dunn and Dunn (1978) model. She explained according to her experience that she faced a dilemma regarding meeting the full requirements of the curriculum through the Dunn and Dunn (1978) approach. She felt that though valuable for teaching learners how to learn, the Dunn and Dunn (1978) approach did not allow for much teacher-centred coverage of the curriculum. She felt that the approach prepared learners for what she saw as *"…the end product and focus of one's academic learning when one got to tertiary level…"* but that learners would not have learnt enough for formal assessment requirements of the curriculum. She candidly asked,*"What would learners have learnt when they had to document their learning according to what was being taught"*

Both Participant B and C felt that they were running two systems. Participant B in frustration said,

> *" But... but we have to also keep up with our books, keep up with our exams, keep up with our marking ... the Conquesta Olympiads and Annual National Assessments and... Oh! It's just…You can't... You constantly got to be preparing your learners for these things... and...You know what I am saying? To run those two systems together, that's just... asking too much, we just couldn't do it..."*

Participant B passionately continued expressing her frustration in revealing what the NSC demanded of her and how it was meant to be approached. She added, "*And I know that I felt a huge frustration when my*

books would be called to be looked at when I was trying to do... (laughs) a different method. And then it looked like I hadn't done much in my books."

She concluded by stating that she did not think that both the systems could actual complement each other.

> *"I think it has to be one or... I don't... I don't think you could... I don't think you can... you can follow this. It frustrates me because that's preparing for something rather than just learning... Where I think through the Dunn and Dunn (1978) one could just learn*…"

Likewise Participant C stated that she saw learning styles being*"…beneficial to children but not conducive in a... in a... school that has requirements to meet the curriculum and assessments, formal assessments…."*

Lastly, all three participants believed that matching learners to their learning styles was important, benefitted and assisted learners. They saw the value of learners grasping especially new information more easily and with enthusiasm. Participant A was especially agreed on matching her learners to their learning styles and felt she would always approach her interaction with her learners, learning and teaching material with the individual strengths and preferences of how her learners received information.

However, in juxtaposition to her views, Participant C believed that the Dunn and Dunn (1978) learning styles approach did not match with the demands of the NCS/CAPS (2012). She attributed this to the pace required to complete the curriculum each year. A much faster pace was demanded of a loaded curriculum than a learning styles approach to teaching allowed for. All three of the participants agreed that a learner-centred process approach to the curriculum was time consuming and required far more effort from the teacher. Furthermore, as Participant C discussed, against the goals of the country, to prepare learners to compete against national and international standards, it was necessary to fulfill the requirements of the year's work from a teaching/teacher perspective. More so, the issue of coverage of content was raised. Participant C felt that a discovery, exploratory approach did not do justice to the content of the curriculum. She explained,

> *"Learning styles do not match the curriculum - it does not correspond with the curriculum, which is a huge factor, because... the curriculum tends to move at a faster speed than learning styles allows. Learning styles unfortunately is a slow process. Learning styles is definitely beneficial to a learner... it's just expectations... what is expected of the learner. The content is the problem. When I say that the content is the problem, it's what is expected from a learner in a Grade and does a learner meet it. But with learning styles as an everyday learning approach, a learner won't meet the content because they are learning at a slower pace, because... because... they have to learn in their best suited way."*

In addition, Participant B stated that teachers had to be knowledgeable in implementing the Dunn and Dunn (1978) system properly in order to meet the requirements of the curriculum. She said,*"You need to really know what you're doing. You need to put a lot of time and effort into it... You can't do it quickly..."*

Given the above it is of little surprise that data have revealed that participants in this case study have discontinued fully and authentically teaching through the Dunn and Dunn (1978) learning styles approach. The following section presents the reasons and understanding behind this.

5.4. DUNN AND *DONE*? - DYNAMIC DEVIATIONS

Of importance in this study data have revealed several pertinent reasons as to why teachers discontinued teaching the NCS/CAPS (2012) through the Dunn and Dunn (1978) learning styles approach as vigorously and enthusiastically as when they first began. The following areas of concern were raised by the participants. Teacher attitude, 'buy in', workload, expertise and staff attrition were among the foremost reasons for why teachers discontinued matching individual learners to their individual learning styles in teaching the NCS/CAPS (2012) curriculum. Participant A disclosed, "*I think a lot of it comes from the attitude of many teachers. Not all teachers buy into learning styles."*

On delving deeper into teacher's attitude towards learning styles and reasons for not fully embracing the approach, Participant A explained, *"I think the reason for why many who don't buy into it (learning styles) is because of the amount of work that it involves. It is a lot of work. That could be the reason."*

Furthermore, Participant A expressed that many teachers who were trained had left the school because of the demands on workload. This had affected progress. Participant A described how this affected learner progress. She explicated,

> *"So if the class goes to a teacher who isn't interested in learning styles or in implementing it, it's going to break the whole process. To have progress from year to year, for it to work really in a school, you have to have the whole staff buying into the idea of learning styles. It's got to be something we're all working for."*

A further serious concern raised was around costs of training and implementation. Participant A also expressed that training of teachers in the approach was extremely costly which further impacted on the school when teachers who were trained then left the school. Participant A conveyed,

> *"And I think that another thing is the expense of training teachers, I believe it's very expensive and... to train up a teacher and spend so much money on training a teacher and then they leave the next year, costs the school a lot of money."*

Participant B, in expressing her understanding as to why teachers discontinued teaching through the Dunn and Dunn (1978) learning styles approach focused on teacher expertise and knowledge especially around generation of appropriate and necessary resources. Participant B stated, *"I think it was the lack of expertise to make appropriate resources.* "Participant B was candid about the expertise that was required in producing curriculum specific, creative learning resources according to the Dunn and Dunn (1978) learning styles approach for each learner's individual needs. On deeper reflection she declared that if teachers had access to a source where good and sufficient resources were readily available, that that would help teachers in their different lessons for the different ways of learning.

Another area of concern that was brought up was around the practical issues of class sizes and classroom space and the effects on classroom management. Participant B explained that because of the number of learners per class and the fairly small classrooms to work in, teachers felt the constraints of space. Though learners were permitted to use outdoor spaces if needed, teachers felt a loss of classroom control which further impacted on learner discipline. Participant B stated, *"I... I felt... unable to keep my fingers on everything. It felt too crowded with the partitions… I didn't feel totally in control."*

Classroom management issues around discipline were seen as increasingly difficult.

> "*I think especially because of space, where I could still see everybody. I just found with the learners if... if you're not... pretty close to them they lose focus... Not all, but... but a large proportion of the class will lose focus and start being silly..."*

A further significant and critical reason discussed was the increasing strain and tension felt around curriculum load and beaurocratic compliance. All three of the participants expressed in varying degrees their frustrations around the ever changing curriculum and its subsequent demand on them. Expectations from within the school and the education department was seen as stifling and restrictive in fully engaging and enjoying an innovative, creative approach to teaching as the Dunn and Dunn (1978) approach was deemed. As an academic school that placed much emphasis on learner and school results, participants found a disjunction between meeting the loaded NCS/CAPS (2012) programme, the various school, provincial, national and international assessments required and the seemingly flexible, experimental approach of the Dunn and Dunn (1978) learning styles approach. Participant C admitted,

> *"I have stopped implementing the Dunn and Dunn (1978) approach partly because I have demands from the curriculum and school. To meet the requirements of the curriculum, unfortunately I have had to revert to my old way of teaching which is teacher-centred...unfortunately because there are so many requirements to meet the curriculum, in a school that has to meet the requirements of curriculum and formal assessments."*

Closely linked to the above and deeply felt by all of the participants, the area of most concern was around time management. In keeping pace with the demands of each term that included in and out of class activities like school outings, sport, fund-raising and productions amongst several other duties, participants felt that using an exploratory, discovery, learner-centred approach as the Dunn and Dunn (1978) learning styles approach offered, was too slow a pace. Sections took much longer to complete given the variety of activities and varying learning styles and pace of learners. Participant C acknowledged, *"I must say that I have resorted to some of the old style of teacher training... methods... because of time constraints."*

However, in acutely understanding teachers' experiences of implementing the NCS/CAPS (2012) curriculum through the Dunn and Dunn (1978) learning styles approach and its seeming failure at this site, Participant B poignantly encapsulated and openly confessed,

> *"Yes, but maybe we were not catering properly enough... I don't know... I really don't know if the system failed us or we failed the system. I think we failed the system and our situation failed the system..."*

Yet, against all of the aforementioned critical reasons for discontinuing matching learners to their individual learning styles, all of the participants revealed that their teaching was still very much influenced by the Dunn and Dunn (1978) learning styles approach as Participant A declared, *"It does affect just your everyday teaching, in preparing lessons…"*

Significantly, participants communicated that they had adapted the approach to suit their teaching style and 'married' traditional methods with the Dunn and Dunn (1978) learning styles approach. Participant A said, *"No, I don't use learning styles all day. It's just for certain lessons and certain areas... A lot of my teaching is also traditional teaching; I do both. Marry them together."*

Especially significant, drawing from their experiences of what worked well in the past, participants were inclined to use a learning styles approach in certain learning areas that they believed lent themselves more to a learner – centred, learning styles approach. This was especially felt in the content subjects of History, Geography and Natural Science and the Languages. Participant A explained,

> *"Well we've developed certain themes in quite a few areas; quite a lot in Afrikaans and then in our content subjects, where we have theme packs now, where we pull out a theme pack and it has got different games and different activities. Each of the packs is different. There are a whole lot of different games that we play. We use the same type of game for different learning areas. We just adapt it slightly."*

Thus certain sections were taught through learning styles theme packs created across the curriculum. Participants A and B especially used a number of games and small group techniques in subjects like English, Afrikaans and Mathematics.

Furthermore participants shared that they used the global/analytical processing styles whenever introducing a new section or topic. Also of importance participants used learning styles strategies like the circle of knowledge, electroboards and flipschutes with materials developed already for reinforcement and revision purposes. They also employed tactual and visual methods for study purposes. Participant C explained,

> *"Where I do implement the Dunn and Dunn (1978) learning styles is with task cards for studying, as a study method. My learners make task cards and I've taught them how to study because that's also another area where learners are sometimes not taught how to study but are expected to study. So I've taught them how to study using the Dunn and Dunn (1978) tactile method. And most of my learners are doing it."*

More so, Participant B explained that though she was not teaching to individual learning styles all her learners were exposed to the various strategies. She stated,

> *"What I am doing is letting them become exposed to all the different ways, whichever works for them if they then need to go and process it at home again, they can do it in a different way. They know of all the ways. They've experienced all the ways, but they don't experience all the ways with every piece of information."*

In general all the participants felt that exposing their learners to the different strategies whilst giving their learners the freedom of individual choice of selection of tasks had allowed them as teachers to modify the approach to suit their teaching styles, time and space constraints and meet the demands of the curriculum. Though this was contrary to the essence of the Dunn and Dunn (1978) learning styles approach that emphasised and encouraged an individual differentiated pedagogy based on learner profiles, participants believed these dynamic deviations and modifications to the system were the best way to employ the Dunn and Dunn (1978) learning styles approach to their teaching given their realities.

5.5. IN SUM

This chapter has presented the analysis of data gathered for this study. It offered the researcher's selection, analysis and understanding of data gathered against the critical research questions raised in this case. Whilst findings from interview data provided a weighty part of the analysis process, findings from documentary, visual and artifact data gathered were used to support and substantiate identified themes. The research title, *A learning styles approach to curriculum implementation: a case study* – Dunn and *Done?* explicitly sought to understand teachers' experiences of implementing the Intermediate Phase NCS/CAPS (2012) Policy through the Dunn and Dunn (1978) learning styles approach to teaching as employed at this primary school in Pietermaritzburg.

This chapter, however, implicitly and deeply aimed to explore the possible contributions, complexities and contradictions inherent within this school's experience of the Dunn and Dunn (1978) learning styles approach to teaching the NCS/CAPS (2012). Seeking to focus on teachers for the sake of extrapolating their understanding of their lived world rather than learners per se, the key question of this study, *What are school-based teachers' experiences of a learning styles approach to teaching South Africa's Intermediate Phase NCS/CAPS (2012) Policy?*, underpinned data interpretation and understanding. Though the danger exists that this chapter may produce a polemic which is more in favour of presenting the Dunn and Dunn (1978) learning styles approach in a favourable light and the risk that some neglect in plain analysis of its success and applicability in the South African context exists, the researcher concedes that as gathered from present data, this chapter does not attempt a quantitative analysis of data but an intrapersonal glimpse into teachers' experiences of making sense and meaning of their professional environs and praxis.

This chapter was presented in three sections. Themes from the analysis of data of the following three issue sub-questions of this study afforded a focus for each of the sections consecutively.

Sub – Questions

Why a learning styles approach to teaching in this case?

How do school-based teachers implement the Dunn and Dunn (1978) learning styles approach to teaching the Intermediate Phase NCS/CAPS (2012) policy?

What are school-based teachers' experiences of the possible contributions, complexities and contradictions of the Dunn and Dunn (1978) learning styles approach to teaching in the Intermediate Phase?

The first section analysed interview data in the main and supporting documentary data found in school records, newspaper articles, the annual school magazines and management reports, relevant information that provided an insight into why the Dunn and Dunn (1978) learning styles approach to teaching was adopted to implement the NCS/CAPS (2012) in this case. The following fundamental reasons were identified from the data providing a framework for the section:

Achievement *and/or* schooling success

Behaviour and discipline: *A state of being*

A learner-centred pedagogy: *Individual strengths, best opportunities and motivation*

Curriculum contemplation: *Demographic (*in*) differences - diversity demystified and other differentiated deep meditations*

The second section took an in-depth look at how school-based teachers implemented the Dunn and Dunn (1978) learning styles approach to teaching the Intermediate Phase NCS/CAPS (2012) policy in this case. It aimed at understanding and describing how the Dunn and Dunn (1978) learning styles approach was introduced and implemented in this case. This section drew from interview, photo and artefact data a deep understanding of how teachers in this sample planned, prepared and presented the NCS/CAPS (2012) through a learning styles approach to teaching. This section was presented under the following sub-headings:

Planning, preparation and presentation: '*Compliant creativity* and/or *creative compliance'*

The Dunn and Dunn (1978) learning styles approach to teaching the NCS/CAPS (2012): *'Lift off, Soaring, Landing'*

Lastly, the third section answered this study's critical sub-question of what teachers' experiences were of implementing the Intermediate Phase NCS/CAPS (2012)/CAPS (2012) through the Dunn and Dunn (1978) learning styles approach and its possible contributions, complexities and contradictions as experienced by this sample. Data were drawn from interviews and school and teacher documents in the main. It began by understanding what the experiences of teachers were around educational change and curriculum reform as it related to this school from around 2006. It presented the views of this study's sample as to how changes in South African society and curriculum policy compelled and advanced the need to seek innovative solutions

within a supportive, collaborative creative culture at this school. The encounter with the Dunn and Dunn (1978) learning styles approach to teaching was one such solution. It candidly regarded the possible contributions, complexities and contradictions of the Dunn and Dunn (1978) learning styles approach to teaching as experienced by these participants in implementing the NCS/CAPS (2012) policy. It further attempted to understand what caused the abandonment and adaptation of the Dunn and Dunn (1978) approach to teaching in this case.

CHAPTER SIX

SUMMARY OF KEY FINDINGS, SIGNIFICANT INSIGHTS AND CONCLUSION.

INTRODUCTION

Critical times demand daring teachers, creative responses and innovative approaches. Could a learning styles approach to teaching meet a dire need for quality education for all in South Africa? Could matching learners to their individual learning styles influence successful curriculum implementation and classroom delivery in schools? Does successful classroom delivery in South Africa depend on understanding teachers' experiences as curriculum implementers? What are teachers' experiences of a learning styles approach to curriculum implementation?

The dichotomy between learner success and labour market demands to deal with mass poverty, unemployment and skills shortages gravely facing South Africa leave little for higher, deeper, creative ways of learning for academic and global significance. The latest OECD, UNESCO and TIMMS reports present a bleak picture for South Africans. An even bleaker, disturbing reality emerges through such critiques as Professors Jonathan Jansen (University of the Free State), Charles Simkins and Nicholas Spaull (Centre for Development and Enterprise, University of Stellenbosch) among several others. Jansen commenting on South Africa's 2012 matric pass rate as an *'absolute disgrace'* and South Africa's education system *'falling into a sinkhole of mediocrity from which we are unlikely to emerge…a crisis on our hands'* (Weekend Argus, July, 13, 2013, p. 1) and Simkins and Spaull advocating as a recommendation from their recent research report that the problem needs to be *'fixed on the primary level*' (The Witness, October, 21, 2013, p. 4) jar attention. At the heart of this lie school-based teachers and the NCS/CAPS (2012).

This final chapter draws to conclusion an overall summary of this study and its aims at understanding the why, how and what of teachers' experiences of a learning styles approach to implementing the NCS/CAPS (2012) curriculum. It begins by presenting a summary of key findings from data and its implications for this study. It looks at how findings from data analysis may illuminate understanding of teachers' experiences of the NCS/CAPS (2012) curriculum implementation for innovative, progressive, creative, deep ways of teaching through a learning styles approach. It then presents some significant insights towards understanding teachers' identities as curriculum implementers through their experiences and possible workable model of classroom delivery using the Dunn and Dunn (1978) approach to learning styles to teaching that might resonate with sites as in this case with potential for transferability. It forwards a compelling advance for further research and debate in this field. It finally concludes with a brief summary of the overall study.

6.2. SUMMARY OF KEY FINDINGS

This section on the significant key findings of this study presents a summary of the key ideations revealed in this case as follows. Firstly, a list of why a learning styles approach to teaching was adopted in this case is presented. Secondly, a brief summation of insights into how implementation of the Intermediate Phase NCS/CAPS (2012) curriculum was adapted in order to teach through a learning styles approach is provided. Lastly, the section concludes with a succinct discussion of what school-based teachers' experiences of the possible contributions, complexities and contradictions of the Dunn and Dunn (1978) learning styles approach to teaching in the Intermediate Phase were according to the experiences expressed in this case. These are viewed against similar or differing data from literature sourced from international studies around learner-centredness. More particularly a learning styles approach to teaching.

6.2.1. Why a learning styles approach to teaching in this case?

In their study on *Developing effective teacher beliefs about learners: the role of sensitising teachers to individual learning differences*, Rosenfeld and Rosenfeld (2007) in addressing the problem of 'weak student' (p.245) shifts the attention from seeing the problem from the learners' perspective to that of the teacher. Engaging teachers' interventionist beliefs and roles for improving learner participation, interest and work ethic given creative, appropriate tools to gain confidence, motivation and self-expression, teachers through active reflection, collaboration and support (p.246) learnt about themselves as learners in a constructivist, mediated context with colleagues, using learning styles theory as the foundation for diverse learning for

learner success. Identifying problems allowed them to understand issues at hand in order to become more effective teachers.

In a similar vein, by deeply assessing and carefully evaluating against their vision and mission statements (School records) the rising demands teachers faced in a 21st century classroom characterised by heterogeneous backgrounds and experiences especially within an emerging middle class society in this part of South Africa, the following list of problems and concerns identified in this case provides a clear insight into why this school adopted the Dunn and Dunn (1978) learning styles approach to teaching the Intermediate Phase NSC/CAPS (2012) curriculum of South Africa. According to the data sets gathered, among the key reasons why the school adopted this approach were to:

i. address the issue of at risk or 'weak' learners that seemed to fall through the cracks within the system,
ii. improve achievement and schooling success for all learners,
iii. encourage full learner participation, involvement and enjoyment at school by all learners,
iv. address and improve learner behaviour and school discipline,
v. initiate and implement a learner-centred, individual pedagogy focusing on individual learning strengths also embodied within the National curriculum policy and understanding,
vi. provide best opportunities for learning through a balanced process and product approach,
vii. increase teacher and learner motivation on a daily basis,
viii. engage with and contemplate curriculum reform in addressing changing demographics in understanding and addressing diversity within a democratic new South Africa towards full citizenship,
ix. advance creativity, deep learning and value of metacognition for life-long learning success, and to
x. tap into current research into how children learn, brain profiling and the global/analytic process/ product approach to teaching and learning utilising the advances of a technological 21st century global society.

In identifying the above reasons and motivations forwarded by the school's management team and governing body, the headmaster engaged the expertise of an external agent to begin a process of profiling teachers who were workshopped on the Dunn and Dunn (1978) learning styles approach to teaching. The

Intermediate Phase teachers were intensively trained to implement the NCS/CAPS (2012) curriculum policy accordingly.

The following is a brief summation of their experiences and insights extracted from the data gathered of how they went about this.

6.2.2. How did school-based teachers implement the Dunn and Dunn (1978) learning styles approach to teaching the Intermediate Phase NCS/CAPS (2012) policy?

The following is a summation drawn from teachers' experiences of how they approached the adoption of a new approach to teaching in a learner-centred environment at this site. In still having to meet school and departmental compliance, teachers had to become creative, artful and resourceful. This was seen through records of thorough and timely termly, weekly and daily planning, creative and resourceful preparation of resource packs around individual profiles of learners in their care, and, the individualised presentation of activities and lessons around the NCS/CAPS (2012) curriculum requirements. The intensive termly two day hands-on training prepared teachers to create resources and lesson plans for implementation of the NSC/CAPS (2012) curriculum. Training included deep reflection and feedback of successes and concerns that teachers openly shared at weekly feedback meetings and at the whole day courses completed.

Furthermore, the online learner profiling against the LSI prepared learners to receive their tailor-made learning packages and tools for individualised input of new and difficult information. Based on the premise that because curriculum is learned differently by individuals, it should be taught differently to individuals, (Dunn, Denig, Lovelace & Kiely, 2010) teachers found that in order to implement the learner-centred NSC/CAPS (2012) curriculum successfully, the Dunn and Dunn (1978) learning styles approach afforded an approach that filled the gap they experienced in needing to know how to plan, prepare and implement the curriculum. Here they learnt how a whole class could be taught individually and in groups according to how each learnt best to meet the curriculum laterally and vertically. Teachers felt that the Dunn and Dunn (1978) approach provided the 'how to', that which their previous training lacked. Whilst the NCS/CAPS (2012) curriculum focused on output and the meeting of outcomes, the Dunn and Dunn (1978) learning styles approach provided a meaningful pedagogy for input of material that was comprehensive, holistic and cognitively sound. This was extremely valued by all participants.

Finally of essence data showed that successful implementation depended a great deal on how teachers worked together. Sharing ideas, concerns and workload within a supportive, collaborative institutional

environment provided at all levels of the school, made for a more manageable effort that was seen and felt by management, teachers, learners and the parent body in general. Implementation progress was strongly marked by how positively active in attitude and effort all those involved remained.

These teachers' experiences speak to a moving away from '*a one-size-fits all*' approach to curriculum implementation. This is harmonious with Thomson and Mascazine's (2010) work, where the Dunn and Dunn (1978) model was used to meet individual learning styles in reform effects in Mathematics and Science education through constructivist and individual strategies of delivering the curriculum among US learners. Using mobility, kinesthetic strategies, large floor space, demonstrations and varying and flexible assessment strategies in all four perceptual strengths and different social groupings, teachers were able to present Mathematics and Science curriculum elements to compliment how learners learnt best for success.

The benefits of these efforts and attitudes are discussed in the following section that looks at what school-based teachers' experiences in this case were of the possible contributions, complexities and contradictions of the Dunn and Dunn (1978) learning style approach to teaching in the Intermediate Phase.

6.2.3. What were school-based teachers' experiences of the possible contributions, complexities and contradictions of the Dunn and Dunn (1978) learning styles approach to teaching in the Intermediate Phase?

The following section takes a three prong view of what teaching through the Dunn and Dunn (1978) learning styles approach in understanding curriculum implementation in the Intermediate Phase has offered for this study. Firstly, it looks at the significant contributions made of adopting this approach to teaching the NSC/CAPS (2012) policy. Secondly, it presents some important implementation and experiential complexities faced by this sample, and lastly, it presents the more weighty and striking contradictions identified in respect of this sample's understanding, professional practice and implementation experiences, confirming past research and prodding for further necessary research in this field of curriculum implementation in learner-centredness through learning styles.

6.2.3.1. Contributions

Firstly, data reveal amongst the more significant contributions of implementing a differentiated, creative, learning styles pedagogy within classes of 32 to 34 learners based on individual learner profiles the following key insights.

i. Increased teacher awareness and insight

As in Graf, Kinshuk and Liu's (2009) study in identifying students' learning styles in learning management systems, teachers in this case also found that for the first time they were equipped with a greater ability to deeply understand and know their individual learners' make up. They were better equipped to provide a relevant learning environment to teach the whole class as individuals according to how each learner learnt best, that is, took in, processed, produced and applied their knowledge 9 Dunn & Dunn, 1978). Teaching to different modalities and providing relevant, meaningful and creative activities that met each learner's profile according to the 21 elements allowed for variety, focus, flexibility and enjoyment during the teaching and learning process. By matching their teaching style with learning styles, teachers were better able to teach to learner strengths than to weaknesses.

The matching hypothesis provides a theoretical basis for greater teacher awareness of their teaching (Graf, Kinshuk & Liu, 2009, p. 3). Studies by Kinshuk, Liu and Graf (2009) show that learners find it harder to perform well when teaching and learning styles are mismatched. If trained and developed accordingly, teachers are able to teach their learners how to match their learning styles to content taught through differentiated strategies. Vaughn and Baker (2008) through their study using the Grasha model within a medical environment believe that pairing of teaching styles with learning styles in a healthy environment may enhance learning. This awareness and insight was greatly valued and seen as a major contribution to teaching through a learning styles approach in this case.

Furthermore, implementation of the Dunn and Dunn (1978) learning styles approach to teaching was found to deeply improve and increase teacher motivation and morale. A significant increase in enthusiasm, excitement, value and purpose for their profession and work was felt by all participants. A renewed interest and keenness was seen through exploring their creativity toward curriculum planning, lesson preparation and presentation. Participants felt that they were fully immersed in generating new ideas and creative strategies for curriculum delivery that out did anything they experienced previously. Teaching was experienced as an art as teachers explored and understood their roles as facilitator, mentor and guide finding the balance between when to take the lead and when to relinquish control to their learners in the learning process for academic success. This may be seen endorsed in research by Cuthbert (2005, p. 247) who states that understanding factors that affect learners' approaches, their conceptions of the learning process and

pedagogic strategies have helped teachers improve their practice and has had the greatest impact on teachers.

ii. Teacher identity and potential

The experience of planning, preparation and presentation of the curriculum through the Dunn and Dunn (1978) learning styles approach saw teachers understand themselves as curriculum designers, developers and implementers far more than before. Though not completely aware of these roles prior, they found themselves being able to rise to the challenges and demands of systemic compliance and requirements through their increased ability to adapt curriculum policy, practice and delivery. Their identity and potential as curriculum implementers was felt more now as they experienced an ownership of the curriculum rather than merely delivering what was expected of them. Teachers came to believe for the first time that it was not so much that their learners were failing because of the curriculum but because of a disjunctive in their delivery of the curriculum. They came to identify that the '*curriculum did not have to be changed; it merely had to be taught correctly'* (Dunn, 1990, p. 16). How they adapted their teaching styles to suit the curriculum according to individual learners' needs revealed a potential and identity not experienced before.

iii. Diversity demystified

Of significance to this study, this case revealed a profound understanding among the participants of what diversity meant for them. Through the application of the Dunn and Dunn (1978) model of teaching, an expanded inclusive definition / understanding of diversity that now came to include learning styles differences was radically forwarded. Participants experienced an enhanced sensitivity to diversity that better equipped them to address demographic and learning disparities through a holistic approach to dealing with learners with Attention Deficiency and/or Hyperactivity among other cognitive and learning barriers. Teaching to diversity not only included gender, race, culture, socio-economic differences among others (Dunn, Beaudry & Klavas, 1989, p.80; Matthews, 1991) but now more particularly came to include differences in learning styles. A differentiated approach to classroom practice gave a new meaning and purpose to teaching within a heterogeneous, integrated classroom environment. This has helped to level the playing field in the classroom providing especially special needs learners a better chance of success inside and outside the classroom (Sze, 2009, p. 360) and has provided a practical, cognitive framework for dealing with diversity.

iv. Learner potential

The adoption of the Dunn and Dunn (1978) learning styles approach to teaching in this case was especially valued for the increased enthusiasm and excitement toward the learning process experienced among the learners. Data confirmed an increase in learner attitude and commitment to learning. This positive effect and increased effort saw an increase in work ethic characterised by better concentration and personal responsibility. The deep learning experiences delivered through the use of games, play, the element of fun, discovery and self - learning, application of higher order thinking skills, questioning, creativity, taught and explored through an interactive, participatory and exploratory learning approach tapped into learner potential. The alternative ways of demonstrating knowledge allowed learners flexibility, variety, creativity and working to their strengths that saw, though unmeasured a positive influence for learner potential and academic success. Increased learner satisfaction through matching teaching strategies to learning styles may be supported by several other studies that claim a similar experience (Graf, Kinshuk & Liu, 2009; Henry, 2008; Rayner, 2007, p. 24; Sternberg, 1996).

v. Metacognition

An important contribution made by teaching through the Dunn and Dunn (1978) learning styles approach was exposing learners, through brain profiling an understanding of how they learnt best, their individual ways of learning and studying. The ability to know their learning styles needs, advocate for and use them, saw learners working on a metacognitive level of understanding themselves and their learning needs. Learners were able to decide from teacher prepared learning styles activities, strategies that worked best for them according to the different subjects, assignments and tasks. Being able to know how to learn made for a deeper understanding and input of the learning material. These experiences noted from interview data captured in the school magazines of learner responses to their learning styles are similar to data found in research done by Dunn and Dunn (1978) (Dunn & Dunn, 1978, 1990, 1992, 1993, 1999) and several other studies coming out of St. John's University in New York where data reveal the metacognitive value of using learning styles as an approach to curriculum implementation.

vi. Brain – based teaching and learning

Among the most appreciated of contributions made in teaching through the Dunn and Dunn (1978) learning styles approach in this case was teaching to hemispheric differences. Data revealed that knowing and teaching to learners' global and analytic processing styles, as in Tully, Dunn and Hlawaty's (2006) study and kinesthetic learning styles as in Lister (2004) had a similar stance of positive influence on learner behaviour, input and output of information, an increased and improved work ethic, concentration and confidence to take on learning challenges, an increased ability to recall prior knowledge and a greater willingness and motivation to learn alone or with others.

A brain-based approach to understanding curriculum implementation through profiling of how individual learners processed initial information, and knowing how the four quadrants of brain lateralisation theory and learning styles theory could be used with an experiential, constructivist and cognitive approach was seen as a profound contribution to implementing an outcomes based learner centred curriculum within a learning styles brain-based framework of the Dunn and Dunn (1978) Model.

Though this field is fairly new with modern brain research in hemispherocity studies spanning just over 30 years (Brandt, 2002, p. 46), the work done by Roger Sperry around MRI technology has allowed for a greater understanding of learning styles differences and its value for education. It has provided a biological dimension in understanding the educational actions of teachers (Brandt, 2002, p. 48) as teachers now have the opportunity to know how their learners learn and be able to plan for them. This certainly provides a compelling advocate for attention and further research and critique in this field.

6.2.3.2. Complexities

Secondly, four main areas of concern were identified from the data sets as complexities that surrounded teachers' experiences of implementing the NCS/CAPS (2012) policy through a learning styles approach. These were, firstly, cost of training, resources and equipment, secondly, time, thirdly, creativity, and lastly, school and teacher buy-in. These areas are congruent with studies across the world (Romanelli, Bird & Ryan, 2009; Dunn, 1990) and confirmed in some ways in this case.

i. Costly training, resources and equipment

Data revealed that implementation of the NSC/CAPS (2012) curriculum according to the Dunn and Dunn (1978) learning styles approach required costly training, equipment and resources. Training teachers on how

to implement the curriculum through this approach for full benefit required a large school budget, parental support and financial input. Given a supportive fiscal environment, successful implementation could be jeopardised. The training, equipment and resources required to provide a meaningful impact had to be sustained and budgeted for. This presented a complexity in general. However, there was a feeling that if materials generated were well produced and looked after it could save on long term costs. This is also strongly suggested by Rita Dunn (1990). The issue of attrition of staff and teachers moving into and out of the school presented a further complexity of drainage of expertise and the need to train new teachers each year posing a further burden of cost to the school.

Furthermore, the issue of physical space in setting up the relevant learning stations, access to technology for profiling of teachers and learners and for materials generation posed a certain amount of complexity in regards to cost and equipment for successful implementation of the programme. Fortunately, for this school, besides the issue of space, the school was at an advantage in having the necessary infrastructure and resources to provide for this. However, much complexity was experienced around physical use of confined space and resourcing the learning environment for soft seating, sound and light differences, tactual and kinesthetic material, among other costly endevours to individuals and the school. This as in Stewart's (1990), and Romanelli, Bird and Ryan's (2009) studies, confirm that the complexities around training, equipment and resources pose serious complexities in the implementation of a learning styles approach to teaching.

ii. Time

The question of time became a complex matter as successful implementation of the programme required good time management, personal flexibility for training, generation and development of materials, and learning styles resource packs for the Contract Activity Packages (CAP), Programmed Learning Sequences (PLS), Multisensory Instructional Packages (MIPS) and tactual / kinesthetic manipulatives. These had to be done during non-contact times in order to prepare and present activities accordingly. This took much effort and personal time of teachers and posed a tremendous strain on how well implementation of the programme went. The complexity of scheduling time was felt by all participants as a crucial element for successful implementation. This aspect has been documented as a critical issue by several critiques of the Dunn and Dunn (1978) model. However, when asked whether learning styles instruction was a lot of work for teachers, Rita Dunn (1990, p.18) stated, '*perhaps initially, because it is different from what they* (teachers) *have been trained to do.*' However, she stated that once teachers have the know-how, '*teaching becomes enjoyable and easy*…' This has not been fully the case for all participants in this study.

iii. Creativity

The complexity surrounding the concept and application of creative teaching strategies were expressed. The planning and preparation of curriculum required much creativity and innovative thinking from teachers. The need to generate creative strategies for the delivery of curriculum across all learning styles and for the different subject matter took much out of teachers. The need to have variety and interest continually kept alive for each learner became a complex matter of seeking new and novel ways of presenting classroom materials. This problem has been highlighted by many critiques of the approach including Stewart (1990) and Stahl (1999). However, Romanelli and Ryan (2009, p.3), in underscoring the complexity of accommodating multiple dimensions of learning styles through varied instructional activities caution not to be over ambitious, arbitrary, or frivolous in designing materials and activities without careful connection to and delivery of content. They contend that an

> '*…understanding and appreciation of a given individual's teaching requires self-reflection and introspection and should be a component of a well maintained teaching portfolio.'*

Furthermore this approach resulted in an unsettling of traditional, conservative modes of thinking. Embracing an alternative pedagogy saw teachers having to shatter their traditional beliefs and ideas. This posed a complexity into what was considered valuable as regards teaching methodology of the past. The need to relinquish control that a learner-centred pedagogy demanded was not easily assumed. However, according to Romanelli, Bird and Ryan (2008, p. 3) best practice involves a teaching paradigm that addresses and accommodates multiple dimensions of learning styles towards building self-efficacy.

iv. School and teacher buy-in

Last, experienced as a serious complexity, the need for school and teacher buy-in to and belief in the approach was viewed as a necessity in successful long term implementation. The need for a sustained, shared and collective effort, collaborative and collegial support was essential for the school to see long term gains. The lack of total buy-in by all in this case proved as a complexity that without saw a divide that affected long term sustenance of teaching through the Dunn and Dunn (1978) learning styles approach. Many at this school believed they were already teaching a learner-centred pedagogy with active learner participation and group activities as espoused by the curriculum. The Dunn and Dunn (1978) model seemed rather a complex approach for them.

The following section is a culmination of key insights into some of the foremost striking contradictions identified in this case in respect of this sample's understanding of terms, professional practice and implementation experiences of teaching the NSC/CAPS (2012) curriculum through the Dunn and Dunn (1978) learning styles approach.

6.2.3.3. Contradictions

This section begins by looking at the contradiction implied in systemic and departmental policy requirements aimed at easing curriculum load, pacing and compliance but seeing much the opposite. It continues making an input into contradictions regarding the implementation of the LSI used for profiling learners according to the Dunn and Dunn (1978) model. It further presents contradictory application of the approach as practiced and experienced by the participants. More so, this section provides contradictions experienced around creativity in teaching, the use of the 21 elements, and contradictions in respect of dealing with diversity. It concludes with confirmation around past research on teachers' experiences in the implementation of a learning styles approach to teaching.

i. Curriculum overload, pace and systemic / departmental compliance

This study revealed a great disparity around the issue of curriculum coverage and time needed to pace the curriculum in order to complete the requirements for each grade per year. In juxtaposition with the inherent principles of an exploratory, learner-paced, outcomes based approach, the NCS/CAPS (2012) learner-centred curriculum tended to demand a teacher-centred approach in order to meet beaurocratic compliance. Departmental and systemic assessment requirements (continuous school-based assessments, examinations, the Annual National Examinations, the Conquesta Olympiads, among others) were seen to stifle how learning and teaching was approached. Teachers found that a more traditional approach was needed to meet the pace and load of the Intermediate Phase curriculum with its wide range of requirements which were assessed internally, provincially, nationally and internationally. This was felt to be in direct contradiction to a creative, exploratory, discovery and experiential approach inferred by the Dunn and Dunn (1978) model and inherent within the principles of the National curriculum. Set timeframes especially captured in the CAPS (2012) policy were needed to complete sections and activities and begin new ones in order for annual curriculum coverage. The participants felt that complete curriculum coverage which generally already was found to be unachievable for all learners was done at the expense of the learning experience, a serious contradiction in policy and principle.

ii. Creativity in teaching

A major contradiction to this approach based on feedback given in data was that teaching through a creative alternative learner-centred approach appeared to cause instability and a lack of boundaries among learners and fairly negatively received by some teachers with whom a more traditional approach was favoured. The issue of classroom management and discipline in regards to managing individual learners and groups when doing several different activities simultaneously caused much unease. The study could not determine whether disruption in some classes where a firm set of rules were not in place was due to teaching through a learning styles approach or not. It seemed that where learners were more mature and self-controlled with fairly good home support, the programme worked more successfully. Classes where teachers seemed to have less of a rapport or experience with their learners tended to struggle in this respect. A flexible creative environment tended to work better within the express classes than mixed ability classes. This was a serious contradiction. A learner-centred, learning styles creative pedagogy adopted here to meet the needs of all learners especially those who lagged behind in academic success, and needful of creative strategies to improve results and concentration, which the Dunn and Dunn (1978) theory claimed to meet, seemed to have had a contrary effect for the weak learner.

iii. Brain Profiling

A serious contradiction has emerged from this study around the mixed views expressed on the brain profiling process that grounds the Dunn and Dunn (1978) learning styles approach. This is very much in keeping with other studies done in this field. A significant observation made was that profiling of learners may not be required if learners have freedom of choice to explore and choose different activities prepared for them. Classroom experience revealed that learners naturally gravitated toward activities that suited their learning preferences from the variety of opportunities provided for them. Classroom practice designed around the LSI was able to cater to most learning needs. It was felt more important for teachers to provide learning styles opportunities and activities for significant input of information. These views based on participants' experience posed a severe contradiction to teaching to the Dunn and Dunn (1978) theory that required learners to be profiled before being individual taught (Dunn & Dunn, 1978).

However, besides cautioning the care needed in selecting and applying learning styles instruments, Stewart's (1990, p.2) and especially studies in 2004 by Coffield, et al. (Wikipedia, 2010), confirm the contradictions inherent in learning styles theory regarding the profiling of learners. This is especially around

the lack of independent research on the Dunn and Dunn (1978) learning styles instrument to validate claims that matching teaching to individual learning styles are of significant benefit to learners. Whilst criticism from research around correlational studies in brain profiling and teaching highlight reliability and relationality flaws between learning styles strengths and academic performance among learners (Slack & Norwich, 2007), Carnine (1990, p. 70-71) points that it is not so much the rationale for the approach that is questionable but the actual effect of the approach on learners. A strong call is made to use new research on the brain as a rationale for further research in this field (Carnine, 1990; Rayner, 2007).

iv. The 21 Elements

The 21 elements of the LSI and framework of the Dunn and Dunn (1978) theory claimed to encompass a holistic, comprehensive understanding of a learner. Teaching to all 21 elements was meant to meet how learners took in, processed, retained and produced information and acted upon it (Dunn & Dunn, 1978). However, a contradiction emerged where classroom practice tended to focus on the perceptual makeup of learners more extensively than on the other elements. Data revealed that the Psychological strand, especially around the cognitive perceptual elements of how learners could experientially take in information, that is through global/analytic, tactual, kinesthetic, visual and auditory perceptual strengths, were found to be more valuable than any of the other elements. The Psychological strand seemed to be more favourably received by the participants because of its perceptual elements. The VARK model as discussed earlier in this study (Chapter 3) drawn from previous exponents as Jung and Myers Briggs on learning modality theories formed a part of the Dunn and Dunn (1978) model. Adapting teaching to omitting some of the elements posed a contradiction to the authenticity and trustworthiness of the full advantages of teaching through the Dunn and Dunn (1978) learning styles approach. Yet teachers' experiences showed that they valued this strand the most.

Furthermore, interview data showed that there was much confusion and forgetfulness of the actual terms used in the model as well as the curriculum. Contradictory understanding of definitions and their applications emerged across the sample which posed a contradiction for the application and delivery of some of the elements threatening trustworthiness but establishing personal understanding and ownership of the concepts.

v. Use of Approach

A significant contradiction distinguished in this study based on the experiences of the participants was that there seemed to be a view that an activity-based approach to teaching tended to favour content subjects and theme-based learning. Contradictory to the Dunn and Dunn (1978) submission that preparation and presentation of a learning styles approach to teaching could be done across the curriculum, participants found it much easier to prepare for global learners in general through a theme. Content subjects seemed to work better for this. The PLS appeared to be more suited to Mathematics and Language Grammar concepts requiring a sequential approach. The PLS also favoured analytic processing styles. Global processing styles further suggested a better match with kinesthetic/tactual learning styles. Participants, over the six year period felt that the environmental elements were not as essential. The Physiological strand was completely undervalued and phased out in general. Intake and time of day did not seem to be important or practical according to the participants who believed that there were no significant gains experienced for the learning process. These were in contradiction to what the Dunn and Dunn (1978) model advocated yet congruent with critiques of the approach (Romanelli, Bird & Ryan, 2008; Curry, 1990; Stahl, 1999).

vi. Demographic (*in*) differences

A radical contradiction to the views of the Dunn and Dunn (1978) theory and teaching to individuals made through this study was the claim made by all of the participants that differences in gender, age, race, socio-economic status and culture among others were deemed to be less relevant to the learning process than individual learning styles differences. A differentiated approach to teaching according to learning styles differences catered to individual makeup which incorporated environmental and psycho-biological differences inherent in learners. Providing a conducive, creative environment according to individual learning strengths and knowing personality and nature of learner, was believed to influence and enhance cognitive and behavioural development. Constructivist ideas of proximal nature of learners to their environment, group dynamics and co-operative learning were not so much felt to be in contradiction to teaching to the individual. Both the NSC/CAPS (2012) policy and the Dunn and Dunn (1978) learning styles approach to teaching were deemed to be inclusive of this. Although several authors have proposed a correlation between culture and learning styles (Romanelli, Bird & Ryan, 2009, p. 3), this sample did not seem to focus on socio-political, cultural, gender and other differences rather on learning styles differences. Yet again a contradiction in that by ignoring such fundamentals the initial purpose of understanding and teaching to diversity in a new South African society may be seen as defeating the purpose.

vii. Stahl (1999) - Dunn and *Done*?

A most significant finding of this case and an important contradiction to establish, one that confirms Stahl's (1999) study, was that after the first year of intensive, enthusiastic use teachers stopped or adapted their implementation of the Dunn and Dunn (1978) learning styles approach to teaching the curriculum. Having experienced tremendous enthusiasm and benefit from changing their paradigm of classroom practice to the Dunn and Dunn (1978) model, teachers after the first year began adapting the approach to suit their needs. Though profiling of learners have stopped, two of the three participants have continued to be influenced by a learning styles approach to teaching. They have adapted their teaching styles to accommodate both traditional and learner-centred modes of delivery for the benefit of learners thus not completely *done* with the Dunn and Dunn (1978) approach. This reality has been noted in several studies whereby teachers after intensive training on learning styles methodology were able to access a wide variety of strategies to draw from to tailor make their classroom practice accordingly (Stahl, 1999, Stewart, 1990; Rayner, 2007).

The above section has provided a summary of the significant key insights that have emerged from the empirical analysis of data of this case study on teachers' experiences of the Dunn and Dunn (1978) learning styles approach to teaching the NCS/CAP Intermediate Phase curriculum policy against global studies conducted in this field. It is envisaged that the ideations viewed herein will not so much be generalised but transferable to situations and settings similar to this site. In so doing this may provide some sound alternatives for understanding successful curriculum implementation for learner-centred pedagogies while allowing for candid critique thereof. Being the only case in point locally and nationally, placing this case within its global counterparts as a component of creative individual pedagogy, this case thus makes the following submission as its recommendation as significant insights.

The following section presents three areas for further insight towards a possible model for understanding teachers' experiences in implementing a learner-centred pedagogy as embodied in the NCS/CAPS (2012) through the Dunn and Dunn (1978) learning styles approach to teaching. It is envisaged that more than as an implementation model, recommendations therein may stimulate further debate and research in this field for the benefit of understanding teachers' experiences in South Africa. In so doing understanding curriculum delivery through learning styles.

6.3. SIGNIFICANT INSIGHTS

Three areas of significance emerge from this study. These are placed under the following overarching concepts: Teachers' awareness and identity, teachers as curriculum creators, and teachers for learning access.

6.3.1. Teachers' awareness and identity

Emanating out of the premise that a key to improving South Africa's failing education system lies in understanding teachers' experiences at the primary level (Simkins & Spaull, 2013), understanding the role of the teacher and her/his classroom experiences are vital and not to be underestimated. Enthusiastic, well-trained teachers are at the heart of successful curriculum implementation and learner performance. This study draws to awareness and proposes that teachers may be seen from one the following three perspectives/identities as embodied in the three participants of this study:

i. *The Complacent Complier* - The traditionalist who serves to meet beaurocratic demands teaching to tests. The complacent complier is still steeped in past traditions of teacher-centred /controlled classroom practice. He/she is unwilling to relinquish power to the learner and sees himself/herself as 'the fountain of knowledge' from whom learners draw knowledge to meet curriculum requirements for systemic success.

ii. *The Defiant Designer* - The experientialist who defiantly dedicates himself/herself to exploring and experimenting according to what he/she deems is needed for teaching at the time. The defiant designer is less teacher-centred and is happy to relinquish control to learners to experience and discover learning experientially in the present. He/she is happy to allow the process of learning to unravel and dictate planning and presentation in an ad hoc fashion loosely guided by the curriculum. She is unafraid of noncompliance with systemic demands since he/she trusts the process of learning and the end result is secondary at that present time.

iii. *The Pioneering Protagonist* - The innovator who is able to marry/merge traditional teacher-centred methods with innovate and creative learner-centred approaches that see teachers as reconceptualists (Pinar, 2013) bringing and giving life to the curriculum as designers and developers of the curriculum in his/her own right. The pioneering protagonist is future oriented establishing himself/herself as co - creators of curriculum. They are artists of their craft and life-long learners using their experiences to mediate deep intellectual and cognitive choices within their local contexts as reformists and pioneers. Their teaching is an art. They are able to make professional decisions in using content and subjects in ways that lend themselves to both

teacher-centred and learner-centred choices. They are dictated by their learners' learning styles. Their professional judgement based on expertise and experience allow them to decide how best to meet the gap between how learners learn and how they should deliver their curriculum for schooling success. The pioneering protagonist is aware of the 21st century learner and is technological driven. The pioneering protagonist uses his/her professional insight of content of subject material and tailors activities, the learning environment and resources to provide a varied and creative programme according to individual learners' needs. He/she draws from best practice of a variety of methods and approaches and is flexible, goal-oriented and aware of professional and pedagogic requirements at the time. Awareness of a learning styles pedagogy for individual learner impact makes for a deeper experience and understanding of his/her classroom practice.

6.3.2. **Teachers as curriculum creators**

Curriculum reform is a global and national imperative that demands attention. The NCS/CAPS (2012) learner-centred curriculum requires differentiation and an individual pedagogy to be truly learner-paced and learner-based. This study proposes the following regarding school-based curriculum implementation:

i. A postulated theory for a learner-centred pedagogy drawn from Rousseau to Dunn and Dunn (1978) as engaged in this study. It daringly proposes a relationship between individual cognitive style developmental theories of Piaget with the active awareness of Vygotsky's constructivist theory proposing a theory that curriculum implementation through learning styles theory may see them meet.

ii. That innovative times demand innovative strategies as in the implementation of curriculum through a learning styles approach. Given the contextual realities in terms of cost, time, teacher workload, among others that have plagued successful school curriculum implementation in South Africa, system support in terms of finance, training and time are direly required to get teachers from uncreative *complacent compliers* of the curriculum toward creative *pioneering protagonists* of the curriculum aware of themselves as *curriculum creators*.

iii. That the Dunn and Dunn (1978) learning styles approach if adapted for contextual needs dichotomously widens the concept of a learner-centred curriculum whilst individually and narrowly focusing on meeting the needs of diversity in heterogeneous classrooms demystifying

the concept of diversity and providing a sounder teaching approach for meaningful differentiation.

6.3.3. Teachers for learner access

Teaching through a learning styles approach, more specifically the Dunn and Dunn (1978) learning styles approach to teaching, makes a strong case for understanding and meeting the needs of a learner-centred pedagogy in South Africa for learner access to learning for success. As one response to meeting the gap between how teachers teach and learners learn best for schooling success, a learning styles pedagogy is about learner access to learning in their best possible way. This is especially so for diverse and differentiated environments. Given the criticism around validity and reliability studies surrounding the approach and the lack of sufficient research in the field, the value for learning enjoyment, learner motivation and a positive attitude to work are fundamentally and foundationally encouraged in this study. A learning styles approach counters a *one-size-fits-all* approach to curriculum implementation presenting an alternative to learners that has the potential to see schooling success and access for most learners, an approach worthy of attention that teachers have to offer.

Thus it is with the above motivation that this study draws to its conclusion.

6.4. CONCLUSION

Given the existing skepticism, suspicion and pedagogic ignorance around which learner-centredness and its outcomes-based preconception as one of its pillars in the NCS/CAPS (2012) of South Africa prevail, reconciliation between how teachers teach and learners learn best for success has to be understood / made. Critically, teaching professionals face the challenge of being able to more effectively and efficiently adapt instruction to each of their learner's unique learning styles fitting strategies and resources to specific learning when formulating teaching – learning situations (Stewart, 1990). This demands daring teachers that are willing to change to a flexible and differentiated classroom setting.

Understanding teachers' experiences of curriculum implementation through learning styles and the gap between how teachers teach and learners learn best for success is a daunting yet compelling challenge. It is thus of empirical interest that a learning styles approach to curriculum implementation be understood. As a cognitive, psycho-biological, brain-based response to meeting the needs of today's classroom, learning styles theory based on the assumption that how individual children learn, their learning styles do influence

how they perform, and that most learners can learn given the awareness of their learning styles (Dunn & Dunn, 1978) has been the object of this case study.

This case study on one school's experience has aimed to understand school-based teachers' experiences of the Dunn and Dunn (1978) learning styles approach to curriculum implementation. In employing an interpretivist, qualitative, case study approach using interviews, document reviews, photo data and artifacts, this case study has attempted to provide a cameo glimpse through the analysis and findings of the contributions, complexities and contradictions of a learning styles approach to teaching in understanding curriculum implementation of the NSC/CAPS (2012) policy of South Africa.

This study has asked and attempted to answer the following key research question and issue sub-questions: **What are school-based teachers' experiences of a learning styles approach to teaching South Africa's Intermediate Phase NCS/CAPS (2012) Policy?**

1. **What is curriculum implementation?**
2. **What are learning styles?**
3. **Why a learning styles approach to teaching in this case?**
4. **How do school-based teachers implement the Dunn and Dunn (1978) learning styles approach to teaching the Intermediate Phase NCS/CAPS (2012) policy?**
5. **What are school-based teachers' experiences of the contribution, complexity and contradiction of the Dunn and Dunn (1978) learning styles approach to teaching in the Intermediate Phase?**

In so doing and taking a lead from Henning (2010, p.25) who suggests that a theoretical/conceptual framework positions the research into the discipline or subject of the work, enabling the researcher to theorise and make assumptions about the interconnectedness of the way things are related in the world, this study's conceptual framework found in Chapter 2, was used as a lens through which the researcher viewed this case. It has provided an orientation/stance in framing the study. The concept of learner-centredness, a principle of the South Africa NCS/CAPS (2012) Policy, as traced in this study from Rousseau to Vygotsky, has been the bedrock upon which this case has been made. Building upon it are the theories around

cognitive styles, brain lateralisation and learning styles. Building a thread from these toward the Dunn and Dunn (1978) learning styles theory embodied in their LSI has helped understand curriculum implementation of the NSC/CAPS (2012) through the Dunn and Dunn (1978) learning styles approach toward meeting a learner-centred pedagogy in South Africa. This thread, as suggested by the researcher, has been purposefully provided as one means to understand successful curriculum implementation in South Africa.

This study, moreover, pitted data against literature and writings of the different authors sourced for its Literature review. It aimed to compare and contrast views of the main proponents of key theories and concepts employed to the experiences and practices of the sample used for this study. This study further aimed to confirm or refute what the different authors and especially Dunn and Dunn (1978) have stated on learning styles theory noting possible similarities and/or differences experienced as found in Chapter three. However, in making its case, this study candidly submitted to Curry's (1990, p.50) critique of the inadequacies reflected in the semantic confusion which permeates this field. She contests the reliability and validity of research done in the field, claiming bias, lack of triangulation and blaming hasty pursuits to print and market ideas that have weakened and over-extended the construct of learning styles theory.

Yet in some ways this study serves to counter that submission in its attempt to postulate a model of learner-centredness within a learning styles framework for understanding curriculum implementation through the empirical research undertaken at this site as found in Chapter Five. Consequently, in using an interpretivist, qualitative, case study approach, the value behind Fullan's (1991) claim that curriculum implementation/classroom practice is a dynamic, complex social process and that for any measure of schooling success there has to be sufficient capacity and will for change requiring individual motivation, beliefs central to local contexts, and, stable internal institutional conditions, this case study serves to add to previous research done in this field even by a small token in understanding dynamic and complex local contexts and beliefs around curriculum implementation and learning styles.

To this end confirming that for any measure of understanding of successful classroom practice/curriculum implementation much 'depends greatly on how well we solve present and emerging problems and how well an innovative culture is supported' (Brain. tools, 2010), the historical relevance out of and within which the lived experiences of which this case under study has emanated has been dichotomously singular yet similar to sites like these whose concerted attempts at understanding and managing change and reform has made for a worthy case for investigation. In doing so this study aimed to explore, describe and explain teachers' experiences of implementing the NCS/CAPS (2012) curriculum through the Dunn and Dunn (1978) learning

styles approach, a brain-based, cognitive, individual pedagogy embedded in 21 elements in meeting the needs of diversity and differentiation within the context of learner-centredness.

Thus steered by a fourfold purpose of firstly, as a teacher with a significant role in preparing learners for a rapidly changing world, secondly, as a teacher consultant and curriculum facilitator with interactions among several South African teachers revealing that though curriculum implementation has been left to individual interpretation and choice, many teachers have very limited pedagogical content knowledge and a narrow repertoire of implementation approaches to appropriately deliver the curriculum in diverse situations, thirdly, as a member of the school's management and experience showing that there is growing pressure on schools from parents and bureaucrats for higher learner achievement standards that may account in part for a rise in academic frustrations among learners often leading to poor discipline, a lack of motivation and depression, and, fourthly and significantly, international trends showing several quantitative studies conducted in the field of learner-centredness and learning styles revealing fairly little known about this phenomenon and still further very few qualitative studies conducted in this field (Grosser & de Waal, 2008) with very little attention given to differences in learning among learners and the need for teachers to adapt their teaching to accommodate learning styles, this study was passionately embarked on.

In exploring in depth the experiences of teachers at this school, who have approached their classroom practice and the new South African curriculum policy through a learning styles approach to teaching, this study aimed to understand, describe and present findings around the implementation experiences of the Dunn and Dunn (1978) learning styles approach in the Intermediate Phase, its contributions, complexities and contradictions. This study has aimed to address in part the need to understand innovative approaches that may increase the repertoire of teaching strategies needed for successful innovative curriculum implementation (Curriculum News, 2010).

Trustworthily, in confronting and addressing reform and change, this case was not a situation that was artificially generated specifically for the purposes of research but was something that already existed, an already 'naturally occurring phenomena' (Denscombe, 2007, p.37) that existed prior to the research project and is hoped to continue well after. However, not intended to be generalised, this study has the potential for transferability to similar contexts for the benefit of understanding teachers' experiences as curriculum implementers of innovative, successful and educationally sound curriculum implementation. Aimed at understanding and addressing significant deep learning and teaching experiences, transferability to similar

contexts may help to bridge the gap between how teachers teach and learners learn best for schooling and academic success.

Learning styles theory therefore may have the potential to resonate with those concerned and involved with the holistic development and deep learning of individual learners, an approach compelling academic attention and intellectual interest and has been worthy of investigation. Admittedly aberrations encountered can only over time and further rigour begin to acquire the desired value sought by all invested in a 21st century authentic deep learning for all. Thus this study has made for a willing obligation to investigate, interact and influence further the value of a creative, learner-centred model of curriculum implementation as learning styles with the kinds of results that may impact and uphold what still counts for sound classroom praxis.

Thus this case study further pertinently raises such questions as could:

i. matching learners to their individual learning styles be a crucial link in understanding teaching and learning for diversity and differentiation
ii. a learning styles approach to teaching meet the urgent needs of school reform in South Africa
iii. teaching through a learning styles approach see curriculum reform achieve its goals of individualised pedagogy and success for all,
iv. the Dunn and Dunn (1978) learning styles model be one possible, creative solution in addressing the concerning rising gap between how teachers teach and learners learn best.
v. the Dunn and Dunn (1978) learning styles model be one of a crucial cognitive solution awaited by teachers to turn the tide of mass failure and disillusionment so characteristic of 21st century diverse South African classrooms,

Significantly, in the search for new and creative pedagogies to meet the diverse, complex and individual needs of the 21st century learner for academic, schooling and life-long learning success understanding teachers' experiences and praxis against such possibilities are imperative. Furthermore, such questions as whether traditional teacher – centred teaching, seen in contest with learner-centred innovative ways of teaching to the 21st century learner, be completely ignored as outmoded and obsolete in diverse teaching environments and can South Africa's education system afford to ignore how learners need to be taught for

life in the 21st century to reach their full potential, are the kinds of questions that emanate from and speak to creative classroom praxis like that of this case.

Thus in provoking such dialogue, debate and a call for further research, this case study recognised that any limitations posed ought not to discourage, but ignite and challenge the significance of further relevant understandings of curriculum implementation in learner-centred diverse environments within innovative institutional cultures in confronting change and reform. In so arguing, this qualitative study has attempted to understand in part the lack of in-depth qualitative research in the field of alternate, creative and authentic methods of learning and teaching to the 21st century learner especially in South Africa, provoking interest and dialogue and adding to current understanding in the light of what counts for traditional best practice and pioneering innovation in implementing and communicating them within a 21st century South.

Therefore, note worthily, school-based curriculum implementation has been recognized as a dynamic and complex process. For any measure of success there has to be sufficient capacity and will for change by teachers (Fullan, 1999) requiring individual teacher motivation, beliefs central to local school contexts, and stable internal institutional conditions at schools (Fullan, 1999). Yet for any measure of understanding of successful school – based curriculum implementation much depends on how well current and emerging problems are creatively solved and innovative school cultures supported (Brain. tools, 2010).The Dunn and Dunn (1978) learning styles theory has been one such creative solution explored, understood and described in this study. The Dunn and Dunn (1978) learning styles approach claims to be a comprehensive, holistic, sound, creative and successful approach to implementing curriculum in meeting the gap between how school-based teachers teach and learners learn best for academic, schooling and life-long learning success (Dunn & Dunn, 1978, 1990, 1992, 1993, 1999). Underpinned by brain lateralisation theory of Herrman (1995) and Sperry (1964) and learning styles theory framed around the radical claim that

> '*individuals have such unique patterns for learning new and difficult information that it is hard to judge accurately how to teach anything academically challenging without first identifying how each learner learns'* (Dunn & Griggs, 2000, p.19).

This empirical study has aimed to understand and describe in depth the experiences of school-based teachers who approached their classroom practice through the Dunn and Dunn (1978) learning styles approach to teaching.

Thus in understanding these most pertinent issues, this case study has aimed to bring to light that matching learners to the best ways that they can learn, their learning styles, may have a profound influence on how

classroom practice and policy may be successfully understood in schools like this one in meeting national and international expectations. In so doing it is hoped that this study has provided a cameo for a larger study at a later stage, thus stirring interest, dialogue and debate into the field of learning styles research, a visible gap (Grosser & de Waal, 2008).

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UNIVERSITY OF KWAZULU-NATAL

ETHICAL CLEARANCE APPLICATION FORM MARCH 2011

SECTION 1: PERSONAL DETAILS

1.1. **Full Name & Surname of Applicant** : Desiree' Eva Moodley

1.2. Title (Ms/Mr/Mrs/Dr/Professor etc) : Mrs

1.3. Applicants gender : Female

1.4. Applicants Race (African/Coloured : South African - Indian

Indian/White/Other

1.5. **Student Number** (where applicable) : 208522556

Staff Number (where applicable) :

1.6. School : School of Educational Studies

1.7. Faculty : Education

1.8. Campus : Pietermaritzburg

1.9. Existing Qualifications : B Music and Education & B Education Honours –Curriculum Studies

1.10. Proposed Qualifications for Project : M Education – Curriculum Studies
(In the case of research of degree purposes)

2. Contact Details

Tel.No. :
Cell. No. : 072 909 3571
e-mail : desm611@hotmail.com
Postal address (in the case of students and external applicants) : 8 Iowa Street Durbanville, Cape Town, 7530

3. SUPERVISOR/PROJECT LEADER DETAILS

NAME	TELEPHONE NO.	EMAIL	DEPARTMENT/ INSTITUTION	QUALIFICATIONS
3.1 Dr Martin Combrinck	**0837873688**	**combrinckmartin@gmail.com 21058636@nwu.ac.za**	**UKZN NWU**	**PHD**
3.2 Dr Claire Verbeek	**021 6502604 0729698478**	**Clare.verbeek@uct.ac.za Clare.verbeek@gmail.com**	**UKZN UCT**	**PHD**
3.3 Prof Reshma Sookrajh	**0784517764 031 2607259**	**Sookrajhre@ukzn.ac.za**	**UKZN**	**PHD**

SECTION 2: PROJECT DESCRIPTION

2.1 Project title

Understanding curriculum implementation through learning styles: A case study - "Dunn and *Done*!"

2.2 Location of the study (where will the study be conducted)

A former Model C sub-urban primary school in Pietermaritzburg

2.3. Objectives of and need for the study

(Set out the major objectives and the theoretical approach of the research, indicating briefly, why you believe the study is needed.)

My major objective is to explore, understand, describe and present findings around the implementation of South Africa's National Curriculum Statement (NCS) through the Dunn and Dunn Learning Style Approach adopted in a former Model C sub-urban primary school in Pietermaritzburg in the intermediate phase.

The theoretical approach of the research will be underpinned by the following concepts and theories that will link/confluence to provide the framework for understanding and analysis of data.

1. Curriculum Implementation and Learner-Centredness within the NCS and its relationship to Constructivism
2. Learning Styles Theory and its related Cognitive Style Theory and Brain Lateralisation Theory
3. The Dunn and Dunn Learning Styles Inventory (LSI)

LINKING/CONFLUENCING THEORIES …

- ☐ Rousseau's *Education Naturelle*
- ☐ Vygotsky's *Social* and Piaget's *Trivial/Cognitive Constructivist Theory*
- ☐ Dewey's *Experiential Education Theory*
- ☐ Jung's *Cognitive Style Theory*
- ☐ *Brain Lateralisation Theory* of Sperry and Hermann

Main Framework: The Dunn and Dunn's *Learning Style Theory*: LEARNING STYLE INVENTORY (LSI)

The need for this study is fourfold - to understand curriculum implementation:

1. As a teacher preparing learners for a constantly changing 21st Century heterogeneous world
2. As an implementer of the National Curriculum Policy requiring a learner-centred approach to teaching
3. As a member of my school's management team addressing changing dynamics and diversity through the adoption of a learning style approach 4. For the sake of research: International research reveals very little is known about this phenomenon and very few qualitative studies have been conducted. In local studies, Grosser and De Vaal (2003) assert that very little attention has been given to differences in learning among learners. Furthermore, Stahl's (1999, p.5) study of teachers trained to teach through a learning styles approach found that 'after one year, they had all stopped trying to match children by learning styles'. In undertaking this in-depth study of one school's experience of implementing the new South African Curriculum Policy through the Dunn and Dunn learning styles approach in the intermediate phase, contributions of an individual pedagogy using learning styles in addressing such issues as respect, rights and dignity, problem-solving and creativity, among others; complexities around language, culture, race, age and gender; and contradictions around performance, standards and assessment and whether learning styles are to be credited for gains or losses may arise allowing these to be understood and described during my research. These may address in part the need for innovative implementation approaches, to increase the repertoire of teaching strategies to address curriculum implementation and the establishment of innovative institutional cultures of support in the wake of Inclusivity and Diversity. I believe learning styles theory may have the potential to resonate with teachers involved with the holistic development and deep learning of individual learners; an approach worth investigating. In addressing these pertinent issues, this study may bring to light that matching learners to the best ways that they can learn; their learning styles, may have a profound influence on how the NCS curriculum implementation may be successfully addressed in schools like this one. It is hoped that this study may also provide a cameo to a larger study at a later stage with the potential of stirring interest in the field of learning styles research.

2.4. Questions to be answered in the research

(Set out the critical questions which you intend to answer by undertaking this research)

KEY QUESTION:

Does a learning style approach to teaching address curriculum implementation of South Africa's NCS Policy?

SUB QUESTIONS:

1. What is Curriculum Implementation?
2. What are learning styles?
3. How was the Dunn and Dunn Learning Style approach used to implement the NCS?
4. Did the Dunn and Dunn Learning Styles Approach address the implementation of the Intermediate Phase Curriculum?

2.5. Research approach/methods

(This section should explain how you will go about answering the critical questions which you have identified under
2.4 above. Set out the approach within which you will work, and indicate in step-by-step point form the methods you
will use in this research in order to answer the critical questions).

1. **Paradigm: Interpretivist -** I am attempting to gain a better understanding of the nature of complexities that is to be explored through my topic and its critical questions.
2. **Style: Qualitative** – This study is a quest for in-depth inquiry and understanding of experiences of participants through interaction in their natural setting.
3. **Approach: Case Study** – The case is a sub-urban primary school's experience of the implementation of the NCS through a learning styles approach to teaching for purposes of learning more about an unknown or poorly understood situation.
4. **Method of Data Collection**: **Unit of Analysis/Context** – curriculum implementation of professionally qualified practicing teachers in this school **Sampling: Purposive** – target of those who are likely to yield the richest data - in this case 5 professionally qualified primary school teachers who were trained in the implementation of the Dunn and Dunn learning styles approach to teaching. **Data Gathering**: through Interviews, Document Reviews, Visual Data, Artefacts.
5. **Data Analysis**: Interviews - 7 stages (Cohen and Manion, 1994); Documents - careful analysis of construction and omission; visual data – used as reflection and prompts for deeper discussion and understanding; Artifacts- dialogue in-depth delving.

2.6. Proposed work plan

Set out your intended plan of work for the research, indicating important target dates necessary to meet your proposed deadline.

STEPS	DATES
1. Presentation of proposal	March 2011
2. Ethical Clearance	Beginning of April 2011
3. Chapter 1- Introduction	End of April 2011
4. Chapter 2-Literature Review	End of May 2011
5. Chapter 3-Methodology	End of June 2011
6. Collection of Data	End of August 2011
7. Chapter 4-Analysis	End of September 2011
8. Chapter 5	End of October 2011

SECTION 3: ETHICAL ISSUES

The UKZN Research Ethics Policy applies to all members of staff, graduate and undergraduate students who are involved in research on or off the campuses of University of Kwa-Zulu Natal. In addition, any person not affiliated with UKZN who wishes to conduct research with UKZN students and / or staff is bound by the same ethics framework. Each member of the University community is responsible for implementing this Policy in

relation to scholarly work with which she or he is associated and to avoid any activity which might be considered to be in violation of this Policy.

All students and members of staff must familiarize themselves with AND sign an understanding to comply with the University's Code of Conduct for Research.

QUESTION 3.1.

Does your study cover research involving:	**YES**	**NO**
Children		√
Persons who are intellectually or mentally impaired		√
Persons who have experienced traumatic or stressful life circumstances		√
Persons who are HIV positive		√
Persons highly dependent on medical care		√
Persons in dependent or unequal relationships		√
Persons in captivity		√
Persons living in particularly vulnerable life circumstances		√

If "Yes", indicate what measures you will take to protect the autonomy of respondents and (where indicated) to prevent social stigmatisation and/or secondary victimisation of respondents. If you are unsure about any of these concepts, please consult your supervisor/project leader.

QUESTION 3.2

Will data collection involve any of the following:	**YES**	**NO**
Access to confidential information without prior consent of participants		√
Participants being required to commit an act which might diminish self-respect or cause them to experience shame, embarrassment, or regret		√
Participants being exposed to questions which may be experienced as stressful or upsetting, or to procedures which may have unpleasant or harmful side effects		√
The use of stimuli, tasks or procedures which may be experienced as stressful, noxious, or unpleasant		√
Any form of deception		√

If "Yes", explain and justify. Explain, too, what steps you will take to minimise the potential stress/

Question 3.3

Will any of the following instruments be used for purposes of data collection:	**YES**	**NO**
Questionnaire		√

Survey schedule		√
Interview schedule	√	
Psychometric test		√
Other/equivalent assessment instrument	√	

Attach copy of research instrument. If data collection involves interviews and / or focus groups, please provide a list of the topics to be covered/kinds of questions to be asked.

Question 3.4

Will the autonomy of participants be protected through the use of an informed consent form, which specifies (in language that respondents will understand):	**YES**	**NO**
The nature and purpose of the research	√	
The identity and institutional association of the researcher and supervisor/project leader and their contact details	√	
The fact that participation is voluntary That responses will be treated in a confidential manner	√	
Any limits on confidentiality which may apply	√	
That anonymity will be ensured where appropriate (e.g. coded/disguised names of participants/respondents/institutions	√	
The fact that participants are free to withdraw from the research at any time without any negative or undesirable consequences to themselves	√	
The nature and limits of any benefits participants may receive as a result of their participation in the research	√	
Is a copy of the informed consent form attached?	√	

If not, this needs to be explained and justified, also the measures to be adopted to ensure that the respondents fully understand the nature of the research and the consent that they are giving.

Question 3.5

Specify what effort's been made or will be made to obtain informed permission for the research from appropriate authorities and gate-keepers (including caretakers or legal guardians in the case of minor

children)?
• Meetings with relevant section at UKZN (Ethical Clearance) has been conducted as regards fact finding and information gathering as to required process to be followed • Relevant guidelines and forms have been forwarded for filling • Letter to be written to Department of Education seeking permission to conduct research • Letter to be written to Headmaster of school requesting permission • Individual letters to participants will be given outlining purpose, details and ethical undertakings for conducting research asking individual permission

QUESTION 3.6

STORAGE AND DISPOSAL OF RESEARCH DATA: **Please note that the research data should be kept for a period of at least five years in a secure location by arrangement with your supervisor.**
How will the research data be disposed of? Please provide specific information, e.g. shredding of documents incineration of videos, cassettes, etc. • Data will be stored in a locked cupboard at the University for a period of five years • Paper-based material will be shredded thereafter • Tapes will be incinerated

QUESTION 3.7

In the subsequent dissemination of your research findings-in the form of the finished thesis, oral presentations, publication etc. - how will anonymity/confidentiality be protected? • No original names will be used- pseudonyms will be allocated for each participant and the school • Faces will be blurred off if found in any visual data • Contracts will be signed between researcher and researched to honour confidentiality • Finished thesis will be made available to the participants

QUESTION 3.8

Is this research supported by funding that is likely to inform or impact in any way on the design, outcome and dissemination of the research?	**Y**	

QUESTION 3.9

Has any organisation/company participating in the research or funding the project, imposed	**Y**	

any conditions to the research?		

SECTION 4: FORMALISATION OF THE APPLICATION

APPLICANT

I have familiarised myself with the University's Code of Conduct for Research and undertake to comply with it. The information supplied above is correct to the best of my knowledge.

NB: PLEASE ENSURE THAT THE ATTACHED CHECK SHEET IS COMPLETED

March 2011

.....

.....

SIGNATURE OF APPLICANT **DATE**

SUPERVISOR/HEAD OF SCHOOL

NB: PLEASE ENSURE THAT THE APPLICANT HAS COMPLETED THE ATTACHED CKECK SHEET AND THAT THE FORM IS FORWARDED TO YOUR FACULTY RESERACH COMMITTEE FOR FURTHER ATTENTION

DATE: .....

SIGNATURE OF SUPERVISOR/PROJECT LEADER:

_____

RECOMMENDATION OF FACULTY RESEARCH COMMITTEE/HIGHER DEGREES COMMITTEE

The application is (please tick):

	Approved*
	Recommended and referred to the Human and Social Sciences Ethics Committee for further consideration
	Not approved, referred back for revision and resubmission

* Senate has delegated powers to Faculty Committee to:
- Approve Undergraduate and Honours projects
- Approve Masters projects (if the required capacity exists within the faculty)

NAME OF CHAIRPERSON: _____**SIGNATURE:**

_____

DATE .....

RECOMMENDATION OF UNIVERSITY RESERACH ETHICS COMMITTEE (HUMAN AND SOCIAL SCIENCES)

NAME OF CHAIRPERSON: _____ **SIGNATURE** _____

DATE.....

UNIVERSITY OF KWAZULU-NATAL
RESERACH OFFICE

HUMAN AND SOCIAL SCIENCES ETHICAL CLEARANCE APPLICATION FORM

CHECK LIST FOR APPLICATION

	PLEASE TICK
1. Form has been fully completed and all questions have been answered	√
2. Questionnaire attached (where applicable)	√
3. Informed consent document attached (where applicable)	√
4. Approval from relevant authorities obtained (and attached) where research involves the utilization of space, data and / facilities at other institutions/ organisations	√
5. Signature of Supervisor / project leader	√
6. Application forwarded to Faculty Research Committee for recommendation and transmission	√

to the Research Office	

Application for Permission to Conduct Research in KwaZulu Natal Department of Education Institutions

1. Applicants Details

Name of Applicant(s): Desiree' Eva Moodley
Tel No: 072 909 3571
Fax: 033 342 6814
Email: desm611@hotmail.com
Address: P.O. Box 4097 Willowton 3201

2. **Proposed Research Title:**

Understanding curriculum implementation through learning styles: A case study - "Dunn and *Done!"*

	YES	NO
3. Have you applied for permission to conduct this research or any other research within KZNDoE institutions?		√

If "yes", please state reference Number:

	YES	NO
4. Is the proposed research part of a tertiary qualification?	√	

If "yes"

Name of tertiary institution: University of KwaZulu Natal Pietermaritzburg
Faculty and or School: Faculty of Education School of Educational Studies

5. Research Background:

The Current Education Curriculum Policy in South Africa is constructed around an Outcomes-Based approach to learning which has been received with much scepticism, suspicion and ignorance. Calling for a learner-centred, creative and innovative pedagogy, it has been closely linked to the demise of this curriculum and the poor quality prevalent in education today. Research claims that with good teachers; defined as motivated teachers with the mastery of content knowledge and experience this situation may be reversed. Yet, motivation, mastery and experience devoid of supportive, innovative cultures within our institutions may equally render our teachers, schools and education ineffective and unsuccessful. Understanding of successful curriculum implementation 'depends greatly on how well we solve present and emerging problems and how well an innovative culture is supported by our institutions' (Brain. tools, 2010). Addressing curriculum implementation, therefore, begs an exploration into the extent to which local contexts of our institutions are supported, and creative, problem-solving and innovative internal cultures and conditions are established. This, against a rapidly changing, technologically advancing 21st century world characterised by complex heterogeneous environments, makes for a challenging study. A learning styles approach to teaching claims to address this. According to the literature, learning styles is a cognitive, brain-based response founded on deep knowledge and understanding. Inclusive of implementation complexities and theoretical contradictions, such protagonists as Kolb, Felder-Silverman, Grasha-Reichman and Dunn and Dunn among others, claim learning styles may contribute to, influence and address how teachers teach best for success in curriculum implementation (Dunn, 2009; Kazu, 2009; Kiguwa, 2003; Maribe Branch, 1995; Serife, 2008). The focus of my study thus is to explore and understand to what extent the implementation of South Africa's National Curriculum Statement was addressed through the Dunn and Dunn Learning Style Approach in the Intermediate Phase of a suburban primary school in Pietermaritzburg. In this way an attempt is being made to understand how matching learning and teaching to how children learn may be able to address successful implementation of the curriculum within supportive innovative institutional cultures. In so doing aim to contribute in part to understanding and addressing a visible gap in innovative yet cost-effective and efficient teaching strategies/pedagogies needed for the successful implementation of South Africa's learner-centred curriculum policy.

6. What is the main research question(s):

My key research question: Does a learning style approach to teaching address curriculum implementation of South Africa's National Curriculum Statement (NCS) Policy?

7. Methodology including sampling procedures and the people to be included in the sample:

Paradigm: Interpretivist - am attempting to gain a better understanding of nature of complexities that may be explored through my topic.
Style: Qualitative – it is a quest for in-depth inquiry and understanding of experiences of participants through interaction in natural setting.
Approach: CASE STUDY – the case: a suburban primary school-for purposes of learning more about an unknown or poorly understood situation.

Method of Data Collection: Unit of Analysis/Context – curriculum implementation of professionally qualified practicing teachers in this school.

Sampling: Purposive –target of those who are likely to yield the richest data – 5 professionally qualified primary school teachers who were fully trained in the use of the Dunn and Dunn learning Styles approach to teaching in the intermediate phase.

Data Gathering: Use of interviews, Document Reviews, Visual Data, Artefacts.

Data Analysis: Interviews - 7 stages (Cohen and Manion, 1994) and guided analysis through the use of software; **Documents** - careful analysis of construction and omission; visual data – used for reflection and deeper discussion and understanding; Artifacts – for in-depth dialogue and deeper delving.

8. What contribution will the proposed study make to the education, health, safety, welfare of the learners and to the education system as a whole?

This study has the potential to reveal, understand and address the gap that exists between learning and teaching and successful curriculum implementation within a learner-centred focus in today's heterogeneous and technological world of diversity and personal development. Informed by several learner-centred theories that place children as the focal point of education with the view to continuous and life-long learning, learning style theory is about input that caters to individual and inclusive needs of learners for schooling success. A brain-based approach to teaching; perhaps a novel concept, compels all involved in education to take notice of one cognitive response to education's woes. It is hoped that through the analysis of this school's experience, contributions of an individual pedagogy using learning styles may reveal and address such issues as respect, rights and dignity, problem-solving and creativity, among others. I believe that the complexities around language, culture, race, age and gender may also arise. Contradictions surrounding performance, standards and assessment and whether learning styles are to be credited for gains or losses may also arise allowing these to be described during my research. These may address in part the need for innovative implementation approaches and increase the repertoire of teaching strategies needed to address curriculum implementation through the creation and support of innovative school cultures. Learning styles theory may have the potential to resonate with teachers involved with the holistic development and deep learning of individual learners, an approach worth investigating. This study aims to investigate, interact and influence further the value of a creative, learner-centred model of curriculum implementation with the kinds of results that could impact and uphold what still counts for sound education and learning in the midst of the dire concerns around curriculum implementation and a lack of creative yet effective and efficient ways of addressing this problem. Thus, in addressing these most pertinent issues, this study may bring to light that matching learners to the best ways that they can learn; their learning styles, may have a profound influence on how the NCS curriculum implementation may be successfully addressed. In so doing it is hoped that this study may provide a cameo to a larger study at a later stage. It is my hope that this study may also have the potential of stirring interest in the field of learning styles research.

9. **KZN Department of Education Districts from which sample will be drawn (please tick) –** *Please attach the list of all schools*

1	*Amajuba*	*Umlazi*	*Sisonke*
2	*Othukela*	*Pinetown*	*Ugu*
3	*Zululand*	*Ilembe*	*Umgungundlovu* √

4	*Obonjeni*	*Empangeni*	*Umzinyathi*

10. **Research data collection instruments: (Note: a list and only a brief description is required here – the actual instruments must be attached**): Interviews, document reviews, visual (photo/video) data, artefacts.

Two semi-structured interviews around 45 minutes per participant. If necessary a third interview will be conducted for clarity/further probe into data. Interviews done over 1 – 2 weeks of each other to account for idiosyncratic days and to confirm internal consistency of what might be said. All interviews - recorded. If necessary, follow-up interviews will be conducted with some of the participants. First interview - two stages; first focusing on educational history of participant information to set context of participant's experience and connection to events which answer the questions around understanding of what curriculum implementation and learning styles are. The second stage to focus on details of experience to enable reconstruction of experiences around how and why Dunn and Dunn Learning Styles approach to teaching was used to implement the Intermediate Phase Curriculum at school. Second interview used to probe issues raised from first interview and to consolidate extent to which approach addressed the curriculum implementation and their understanding of it. Used to foster reflection on the meaning their experiences hold for them. Participants' reflection/experiences connections between curriculum implementation and learning styles and its contributions, complexities and contradictions as experienced by them, will allow them to examine their experiences in detail within the context of the school in which these experiences have occurred. Here video and photo data, allowing for participants' perspectives to be taken seriously and seeing how their everyday, socially organized activities work in concert with each other. Such practical issues as physical factors of lighting, space, position, etc. and the necessity to remain as unobtrusive as possible being noted (only photo and video data previously recorded as part of the school's records will be reviewed) will be used as prompts for in-depth delving and probing. Care will be taken regarding their use within the study in respect of anonymity and confidentiality. Faces will be blurred off and no direct inference to participants will be made. Artefacts; tangible entities that reveal social processes, meanings and values, here learning styles materials and resources generated by the participants and used in the delivery of the curriculum will be analysed. May investigate teachers' value of student's work as objects/artefacts; learning styles resources as generated by learners will also be deemed artefacts for the purpose of this study. Selection of documents will be consulted as follows: Policy documents -The South African National Curriculum Policy Statements for the Intermediate Phase: The use of official documents will be premised on the notion that analysis would enable defining and understanding the official position regarding curriculum requirements for the Intermediate Phase. This analysis would therefore enable establishing how policy defines and shapes the process of curriculum implementation and delivery. School Documents - School newsletters and magazines, media reports and articles from newspapers, school website, minutes of meetings and other related literature here to explore and understand why the Dunn and Dunn Learning Style Approach was used to implement and deliver in the Intermediate Phase curriculum. Teaching Documents - Planning and preparation records to be found in teacher files, preparation, planning and other record books that capture how the approach to curriculum implementation and classroom delivery is planned and experienced relevant to my research questions will herein be analysed.

11. **Procedure for obtaining consent of Participants and where appropriate parents or guardians:**

University guidelines will be followed

12. **Procedure to maintain confidentiality (if applicable):**

Participants will be offered choice of whether or not to be engaged in the study, purpose of study and terms of participation including being voluntary participants will be clarified at the outset. Voluntary participation and freedom to withdraw from the study at any time without prejudice as well as rights to review material will be clearly explained. Opportunity will be provided for fully comprehending the nature of the research including any risks that may arise. Details of what aspects of material will be shared with the public and what will be kept confidential will be discussed. Keeping material 'confidential' implies that no one else sees it save the interviewer. Data will only be reported in cumulative terms. Participants will be assured of confidentiality and anonymity and the use of pseudonyms when disseminating the research, with their written permission. Permission will be asked when recording interviews and reviewing documents and artefacts. Caution will be taken regarding participants' time. Interviews will be conducted as scheduled.

13. **Questions or issues with the potential to be intrusive, upsetting or incriminating to participants (if applicable) :** not applicable

14. **Additional support available to participate in the event of disturbance resulting from intrusive questions or issues (if applicable):** It is hoped that the Department of Education and the University authorities will lend their full support to this project and assist in any way necessary in the event of disturbances so as to see completion of this study for the benefit of learners, teachers, school cultures and education at large. The importance and need to address success in curriculum implementation of South Africa's National Curriculum Policy is at the heart of this project and concerns all.

15. Research Timelines:

STEPS	DATES
1. Presentation of proposal	March 2011
2. Ethical Clearance	Beginning of April 2011
3. Chapter 1 - Introduction	End of April 2011
4. Chapter 2 - Literature Review	End of May 2011
5. Chapter 3 - Methodology	End of June 2011
6. Collection of Data	End of August 2011
7. Chapter 4 - Analysis	End of September 2011
8. Chapter 5 – Findings and Conclusion	End of October 2011

16. Declaration

I, Desiree' Eva Moodley, declare that the above information is true and correct

March 2011

_____ _____

Signature of Applicant **Date**

17. Agreement to provide and to grant the KwaZulu Natal Department of Education the right to publish a summary of the report.

I/We agree to provide the KwaZulu Natal Department of Education with a copy of any report or dissertation written on the basis of information gained through the research activities described in this application.

I/We grant the KwaZulu Natal Department of Education the right to publish an edited summary of this report or dissertation using the print or electronic media.

March 2011

_____ _____

Signature of Applicant **Date**

M Ed Proposal
Desiree' Eva Moodley
208522556
Report on changes made: March 2011

1. Revision of Question 4 has been made- Question will read: Did the Dunn and Dunn learning styles approach to teaching address curriculum implementation of the NCS?

2. The use of guided analysis will be explored as part of the data analysis process through the specialised use of software. This will help to inform interpretation of data alongside the theoretical and conceptual framework of this study.

3. More in-depth information on ethical issues may be found in the attached Ethical Clearance forms.

4. More in-depth information around visual data usage has been captured.

University of Kwa-Zulu Natal
Pietermaritzburg
Faculty of Education
School of Curriculum Studies

Date_____March 2011

To whom it may serve

Informed Consent Letter: Request to Interview you regarding implementation of a learning styles approach to teaching.

As part of a research study aimed at understanding how teaching through the Dunn and Dunn Learning Style Approach at Scottsville School was done, I would greatly appreciate your expert and experienced input and participation. The main aim of this project is simply to gain understanding on whether matching children to their individual learning styles has benefits or not to the successful implementation of the intermediate phase curriculum. You were purposively selected as a fully qualified professional primary school educator having been trained in the Dunn and Dunn Learning Style approach to teaching undertaken at school.

Please be assured that your voluntary participation is protected through several university and institutional ethical codes. Your responses will be treated as fully confidential and your name and the name of the school are guaranteed anonymity. You are free to withdraw from the process at any time without any negative or undesirable consequence to yourself. Your participation carries no extrinsic gain except to contribute to the intrinsic value of impacting education at large and the school in particular.

Consideration to your personal time is certainly given. To this end, I request two interviews around 45 minutes each and if necessary a third to be conducted over one to two weeks at your convenience. Do note that interviews will be recorded and if needed follow up interviews will be conducted. Permission is also asked for the review of any documents, artefacts, teaching and learning instruments, visual and photo data that may enhance our time together. Interviews will be conducted as negotiated and scheduled.

Note opportunity will be provided for any further information around the nature of the project. Details of what aspects of material will be shared and what will be kept confidential will be discussed. Data will only be reported in cumulative terms. You are granted access to the final presentation of the work.

Kindly note the following persons responsible for the study that you are welcome to contact at any time:

Desiree' Eva Moodley	**desm611@hotmail.com**	**072 909 3571**
Dr Martin Combrinck	**Combrinckm@ukzn.ac.za**	**0837873688**
Mr Bobby Nefdt	**headmaster@scottsvilleps.co.za**	**033 342 5881**

Kindly complete the following declaration section:

I, (full name/s) hereby confirm that I understand the contents of the above and the nature of the research project and I consent to participating. I understand that I am at liberty to withdraw from the project at any time should I so desire.

Signature **Date**

University of Kwa-Zulu Natal
Pietermaritzburg
Faculty of Education
School of Curriculum Studies

Date March 2011

To whom it may serve

Informed Consent Letter: Request to Interview you regarding implementation of a learning styles approach to teaching.

As part of a research study aimed at understanding how teaching through the Dunn and Dunn Learning Style Approach at Scottsville School was done, I would greatly appreciate your expert and experienced input and participation. The main aim of this project is simply to gain understanding on whether matching children to their individual learning styles has benefits or not to the successful implementation of the intermediate phase curriculum. You were purposively selected as a fully qualified professional primary school educator having been trained in the Dunn and Dunn Learning Style approach to teaching undertaken at school.

Please be assured that your participation is protected through several university and institutional ethical codes. Your responses will be treated as fully confidential and your name and the name of the school are guaranteed anonymity. Participation is fully appreciated and carries no extrinsic gain except to contribute to the intrinsic value of impacting education at large and the school in particular.

Consideration to personal time will be given. To this end, two interviews around 45 minutes each and if necessary a third to be conducted over one to two weeks at your convenience is requested. Do note that interviews will be recorded and if needed follow up interviews will be conducted. Permission is also asked for the review of any documents, artefacts, teaching and learning instruments, visual and photo data that may enhance our time together. Interviews will be conducted as negotiated and scheduled.

Note opportunity will be provided for any further information around the nature of the project. Details of what aspects of material will be shared and what will be kept confidential will be discussed. Data will only be reported in cumulative terms. You are granted access to the final presentation of the work.

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Kindly complete the following declaration section:

I, (full name/s) hereby confirm that I understand the contents of the above and the nature of the research project and I consent to participating. I understand that I am at liberty to withdraw from the project at any time should I so desire.

Signature **Date**

University of Kwa-Zulu Natal
Pietermaritzburg
Faculty of Education
School of Curriculum Studies

Date March 2011

To whom it may serve

Consent: Request to conduct research at school on implementation of a learning styles approach to teaching.

As part of a research study aimed at understanding how teaching through the Dunn and Dunn Learning Style Approach was done, I would greatly appreciate your permission to conduct research at school. The main aim of this project is simply to gain understanding on whether matching children to their individual learning styles has benefits or not to the successful implementation of the intermediate phase curriculum. The expert and experienced input and participation of a sample of professionally qualified teachers who were trained in the Dunn and Dunn approach to teaching will be gratefully appreciated.

Please be assured that voluntary participation is protected through several university and institutional ethical codes. Responses will be treated as fully confidential and Scottsville School and names of participants are guaranteed anonymity. Freedom to withdraw from the process at any time without any negative or undesirable consequence is also guaranteed. Participation carries no extrinsic gain except to make a positive contribution to the intrinsic value of impacting positively on education at large and school in particular.

Consideration to personal time is given. To this end, a request for two interviews around 45 minutes each and if necessary a third to be conducted over one to two weeks at participants' convenience is made. Interviews will be conducted at negotiated and scheduled times. Permission is also asked for the review of any documents, artefacts, teaching and learning instruments, visual and photo data that may enhance the study. Details of what aspects of material will be shared and what will be kept confidential will be discussed among participants. Data will only be reported in cumulative terms. Access to the final presentation of the work is granted.

Kindly note the details of the following persons involved

Desiree' Eva Moodley desm611@hotmail.com 072 909 3571

Dr Martin Combrinck Combrinckm@ukzn.ac.za 0837873688

Mr Bobby Nefdt headmaster@scottsvilleps.co.za 033 342 5881

Yours sincerely,

Kindly complete the following declaration section:

I, (full name/s) hereby confirm that I understand the contents of the above and the nature of the research project and I give my full consent to research being conducted around this topic at my school.

Signature Date

Interview Schedule: Semi – Structured Approach

First Interview: Introduction and Establishment of Purpose/Aim of Project

Stage 1

1. Educational history and experience of Participant to establish authenticity, qualifications, expertise and experience:
    - Personal Details: Name, qualifications, teaching history
    - What educational background / training have you completed in preparation for your work?
    - When did you begin working at this school?
    - What grade do you teach?
    - How would you describe your experience as a classroom grade teacher at this school?

2. Information to set the context of the participant's experience and a connection to events which answer the questions around their understanding of curriculum implementation:
    - What informs your planning and preparations for your teaching?
    - Describe how you go about doing this?
    - How would you describe the learners in your care?
    - Describe your experience of presenting teaching and learning material to your learners in meeting curriculum and learner needs.

Stage 2:

3. Information to set the context of the participant's experience and a connection to events which answer the questions around their understanding of learning styles leading into talking about experiences of using the Dunn and Dunn approach.

    "***Bouncing to enlightenment***

    A revolutionary programme has been launched at an ex Model C school in Pietermaritzburg"

    Laura Melville The Witness, Wednesday, May 10, 2006.

    - Explain the thinking behind the above and how this came about at school.
    - Describe your understanding of a learning style approach to teaching.

Second Interview: In-depth details of experience around how and why the Dunn and Dunn Learning Styles approach to teaching was used to implement the Intermediate Phase Curriculum to enable reconstruction and consolidation of the extent to which the approach addressed curriculum implementation and understanding of it.

4. How is the Dunn and Dunn Learning Styles approach to teaching put into practice?
5. In your experience explain what you consider the contributions, complexities and contradictions of implementing the Intermediate Phase Curriculum through a Dunn and Dunn Learning style approach to be.

Third Interview: For further information and understanding utilising visual and photo data.

Questions will be designed around above responses

Document Review Schedule

Primary Sources of Documents: Curriculum Policy Documents, Newsletters, Minutes of Meeting, Planning and Learner Books, etc. Selection of document will be guided from interview data

Criteria for selection :

- Are the records or documents complete, genuine, authentic?
- Are documents dated and can they be placed on a time scale?
- Why were they collected or generated?
- Are authors believable / credible?
- How relevant is it to research question?
- Are they primary/secondary or tertiary sources?
- What effects will they have on the credibility of the study?
- Identifying and dealing with missing information in the text?
- Have data been updated?
- How were the original texts collected and filed, by whom and for what purpose?

Visual data review schedule

Primary sources extracted from archival and school records in the form of photo and artefact data will be reviewed under the following guiding questions:

- Why is the photo to be included as pertinent to the research question?
- How does it help set the scene, explain the historical context, highlight the social context, add to the portrayal of the culture?
- How does it help to consolidate the different threads of the accounts or prove a point?
- How does it contribute to the main purpose of the case?
- How can it be misinterpreted?
- How does it add to the reader gaining a deeper understanding?
- How does it support the text, evoke emotion?
- Is it offensive?
- Who or what does it give voice to, clarify or verify?
- Who took them?
- Under what circumstances or conditions?
- Were subjects coerced into posing for the photograph?
- Were they aware they were being photographed?

- Has permission been obtained from people depicted in the visual record for their image to be used for research if any?
- The reason the visual was created for reporting purposes, historical/archival purposes, personal interests?
- What kind of relationship existed between the photographer and what or who was photographed?