

Intrapersonal Intelligence, Executive Function and Stage Three Students

Submitted by Maura Sellars B.Ed (Hons) Grad Dip Ed (R.E.)
M.Ed (Research)

A thesis submitted in total fulfillment of the requirements of the degree
of
Doctor of Philosophy

School of Education
Faculty of Education

Australian Catholic University
Research Services
Locked Bag 4115
Fitzroy, Victoria 3065
Australia

21st February 2010

Statement of Sources

This thesis contains no material published elsewhere or extracted in whole or in part from a thesis by which I have qualified for or have been awarded another degree or diploma.

No other person's work has been used without due acknowledgement in the main text of this thesis.

This thesis has not been submitted for the award of any degree or diploma in any other tertiary institution.

All research procedures reported in the thesis received the approval of the relevant Ethics/Safety Committees.

Signed



Maura Sellars

Date

Thesis 87,874 words.

Acknowledgements

I would like to acknowledge a number of people whose support has been very important in the completion of this work. Firstly, I would like to thank Dr Toni Noble and Associate Professor Shukri Sanber for their knowledge, wisdom, patience and professional support. They have also been my friends and mentors and I have learned a great deal from them. They have been a powerful influence on my writing and my thinking. I am also very grateful for the support of my daughter Erin and of my friends, most especially Kylie (who helped in many ways), Gina, George, Lynne, Barry, Sr. Mary de Porres (RSJ), Ann and Helen. I thank also a number of colleagues who have offered timely advice, thoughtful suggestions and support in regards to the completion of this thesis. A special thanks to my brother Paul, who gave me a different perspective on the completion of this work. I am also very grateful to the staff and students who participated in this research project. They welcomed me into their teaching and learning environment and offered many insights into their daily challenges and celebrations. Like my own students in classrooms, these children taught me a great deal about patience, perseverance and the values of persistence. Thank you to all the children who have taught me what I know about learners and learning.

Intrapersonal Intelligence, Executive Function and Stage Three Students

Maura Sellars

Abstract

This study investigated the capacities of ten to twelve year old students to develop the cognitive capacity of intrapersonal intelligence as defined by Howard Gardner. A group of forty, ten to twelve year old students across three Stage Three New South Wales classrooms were introduced to an Intervention Program specifically designed to foster their self knowledge as learners and their capacities to use this knowledge to develop the knowledge, skills and understandings collectively known as 'executive function'. The Intervention Program incorporated the theoretical foundations of the Multiple Intelligences perspective of executive function as defined by Moran and Gardner.

The students were engaged in self selected learning tasks in the key learning area of English with the intention of helping them to identify their own relative strengths and relative limitations in this curriculum area. The program included a variety of activities and procedures including those that required students to determine their own learning goals, engage in reflective journaling both during the tasks and at the conclusion of the tasks and identify, plan and implement their own learning strategies in order to achieve their learning goals in English. The three participating teachers undertook to provide information related to the students' work habits, on task behaviors, self monitoring strategies, the students' capacities to improve their cognitive strategies when working on their self selected tasks and the students' abilities to use these skills, knowledge and understandings to improve their learning outcomes in English.

The results obtained evidenced a considerable improvement in the students' intrapersonal intelligence, most especially in the knowledge, skills and understandings identified as 'executive function'. The students became increasingly competent in the skills of planning, implementing and self monitoring; identified by Moran and Gardner as the 'will' the 'skill' and the 'skill'; in relation to their self selected learning goals in English and began to take increased responsibility for their own learning in English. In this way, they began to exhibit the distinct characteristics of the 'apprentice stage' of 'executive function' as described by Moran and Gardner.

As the result of the findings of this study, there are clear implications that if students are provided with opportunities to develop their intrapersonal intelligence as learners, this improved awareness of 'self' as learners can be translated into improved skills in the understandings, knowledge and skills that comprise 'executive function' from a Multiple Intelligences perspective and result in improved learning outcomes. This study indicates that if teachers are able to provide students with the opportunities to know themselves better as learners, have some choice in determining the tasks that best suit their learning preferences and determine their own learning strategies, then the impact on students' capacities to 'learn how to learn' effectively is positive. The findings of the study also indicate that programs designed to support student learning through improved intrapersonal intelligence also supports teachers' attempts to implement differentiated programs of work effectively in their classrooms and to meet the learning needs of all their students in the context of a rapidly changing twenty first century world and its ever increasing demands on the teaching profession. As a result, programs such as the one designed and implemented in this study may become a valuable part of school practice and curricula.

Table of Contents

Chapter One Developing the Context of the Study	12
Overview	12
Introduction	12
The Australian Context	18
Implications for Educators	23
Cognitive Science Perspective of Learning	26
Views of the Nature of Intelligence	27
Conclusion	30
Chapter Two A Discussion of Intrapersonal Intelligence	32
Gardner’s Multiple Intelligences Theory	32
Intrapersonal intelligence: Historical and Current Perspectives	34
Research and Intrapersonal Intelligence	38
Interpretations of Intrapersonal Intelligence	41
Conclusion	43
Chapter Three The Relationships between Intrapersonal Intelligence and Related Constructs ...	45
Intrapersonal Intelligence: Knowledge of Self	45
Intrapersonal Intelligence and Emotional Intelligence	46
Intrapersonal Intelligence and Metacognition	50
Intrapersonal Intelligence and Self Efficacy	52
Other Theories of Self	55
Conclusion	59
Chapter Four Executive Function in Education	61
Introduction	61
Views of Executive Function	63
Developmental Perspectives of Executive Function	66
Engagement and The Concept of Flow	72
Motivation and Positive Psychology	74
Positive Emotions	78
Volition	80
Self Regulation and Goal Setting	82
Goal Setting	88
Conclusion	91
Chapter Five The Intervention Program	93
Introduction	93
Research Question One	94
Research Question Two	94
The <i>Intervention Program</i> : Developmental Foundations	94
System, School and Teacher and Student Factors	96
The Intervention program	100
Conclusion	105
Chapter Six Methodology	108
Introduction	108
Research Focus	108
Research Question One	109
Research Question Two	109

Research Design.....	109
The School Context.....	113
Class Profiles	117
Research Timeline	118
The Preliminary Phase (Jan-April, 2008)	118
Phase 1 (Term 2, Weeks 6-10).....	119
Phase 2 (Term 3, Weeks 1-5).....	122
Phase 3 (Term 3, Weeks 6-10).....	124
Phase 4 (Term 4, Weeks 1-5).....	124
Research Tools.....	126
The Intrapersonal Intelligence Questionnaire.....	126
Establishing Validity.....	127
Multiple Intelligences Checklist for Upper Primary Students	130
Establishing Validity.....	130
The Student Reflection Responses.....	132
Experience Sampling Records (adapted from Shernoff, Csikszentmihalyi, Schneider, & Shernoff, 2003)	133
The Learning Goal Plan	134
Student Observation Checklist.....	134
Researcher Field Diary	137
The Teacher Interview	137
The Student Evaluation Sheet.....	138
Criteria for Validity of Qualitative Research.....	139
Reliability.....	143
Conclusion	145
Chapter Seven Analysis of the Findings Part One.....	147
Introduction.....	147
Students' Skills in Executive Function	149
Evidence from the Teachers.....	159
Students' Skills in Knowledge of Self as Learners.....	161
Conclusion	169
Chapter Eight Analysis of the Findings Part Two	172
Introduction.....	172
Ability to Remain Positive while Expanding Personal Energy	174
Evidence from the Teachers.....	179
Interpolation of the Three Parameters of Executive Function	184
Conclusion	187
Chapter Nine Discussion of the Findings	188
Introduction.....	188
Class Discussions.....	193
Class A	193
Class B	199
Class C	207
Other Considerations	211
Value of the Study	213
Limitations of the Study.....	218

Conclusion	221
Chapter Ten Recommendations for Future Studies	225
Introduction.....	225
Recommendations.....	225
Supporting the Teachers	225
Supporting the students.....	227
Revising the methodology	227
Summative comments.....	228
Conclusion	229
Bibliography	231
Appendices.....	248
Positives, Minuses and Interesting Things (For Teachers to complete)	249
Positives, Minuses and Interesting Things (Sample comments)	249
The <i>Intervention Programs</i>	251
Phase One Journey Theme.....	251
Phase Four.....	256
Sample Task Card Phase One (as seen by teacher and students)	258
Sample Task Card Phase Two (With context clue removed) (as seen by teacher and students)	258
Sample Task Card Phase Three (With additional instruction) (as seen by teacher and students)	259
Sample Task Card Phase Four	260
Sample Task Card Phase Three (With additional instruction and instruction on presentation) (as seen by teacher and students).....	260
Sample Task Card Phase Four (With additional instruction and instruction on presentation) (as seen by teacher and students).....	261
The Intrapersonal Intelligence Questionnaire (Commencement).....	262
Comment from Expert Panel Member A	264
Comment from Expert Panel Member B	265
Comment from Expert Panel Member C	268
The Intrapersonal Intelligence Questionnaire (Conclusion).....	270
The Multiple Intelligences Checklist for Upper Primary Students.....	272
The Experience Sampling Record	275
The Reflection Responses.....	276
The Goal Plan	277
The Researcher Field Journal (Excerpts).....	278
The Student Observation Checklist	280
Phase One Observations	280
Phase Two Observation	281
Phase Three Observation	282
Phase Four Observation	283
The Teacher Guidelines for the Student Observation Checklist.....	284
The Teacher Interview Questionnaire.....	286
Teachers' Evaluations of Student Benefits.....	286
Class A Findings.....	287
Class B Findings	294

Class C Findings	300
T Tests of MICUPS responses.....	306
<u>Customized Reflection Record</u>	306
Customized Goal Plan.....	308
Customized Matrix of Learning Tasks Term 4.....	309
Peer Assessment Form	310
Ethics.....	311

Table of Figures

Fig. 1 Dialectical Action Research Spiral (Mills, 2000).....	112
Fig. 2 Gardner's Intrapersonal Intelligence Domain	150
Fig. 3 Student Competencies in Skills relating to the Executive Function of Intrapersonal Intelligence (n=40).....	153
Fig. 4 Student Competencies in Skills Relating to Intrapersonal Intelligence; Class B (n=11). 157	
Fig. 5 Student Competencies in Skills relating to Intrapersonal Intelligence:..... Class A; n=19.....	158
Fig. 6 details the Multiple Intelligences perspective of the ' <i>apprentice stage</i> ' of executive function.	173

List of Tables

Table 1 Teachers' Assessment Codes.....	102
Table 2 Research Plan.....	125
Table 3 Numerical values Attributed to Positive Answers on the Likert Scale.....	127
Table 4 Summary of Frequency of Students' (n=40) Responses to the Reflection Records.....	151
Table 5 Number of Students Demonstrating Skills from the Student Observation Checklist at Various Levels in November	154
Table 6 Summary of the Frequency of the Responses Selected by the Students (n=40) on the Experience Sampling Records	154
Table 7 Paired t Test: Summative Results of Student Competencies in Skills relating to Intrapersonal Intelligence: Class B	156
Table 8 Paired t Test: Summative Results of Student Competencies in Skills relating to Intrapersonal Intelligence: Class A.....	159
Table 9 Teachers' Evaluations of Student Benefits (n=40).....	160
Table 10 Details of Sample Students' Task Justifications that Reflect Understandings of Self: Class A and Class B.....	165
Table 11 Summary of the Students Responses to the Reflection Records: Class B.....	168
Table 12 Students' Evaluative Responses to the Intervention program: Class A.....	176
Table 13 Results of Paired t Test of Students' Progress in Selected Literacy Indicators (n=40).....	180
Table 14 Assessment of Student Achievement in Selected K-6 English Indicators: Class A.....	181
Table 15 Students' Scores in the Linguistic Intelligence Domain of the MICUPS (n=40).....	186

Chapter One Developing the Context of the Study

Overview

This report sets the context for this research project by referring to current educational policies and research that delineate the learning capabilities that are important for students to succeed in the twenty first century. The importance of the teacher's role in developing these capabilities is highlighted but how teachers embed the teaching of these capabilities into their pedagogy is problematic. The study investigates the development of Gardner's (1993a, 1999; Moran & Gardner 2007) intrapersonal intelligence domain as a means to support student learning in the identified learning capabilities. This cognitive domain is explored in the context of other relevant educational theories that focus on other concepts of 'self' and on the constructs that comprise executive function.

As a result of this theoretical analysis, it appears that strong intrapersonal intelligence may enable students aged ten to twelve years to set, monitor and successfully completed their learning goals. Consequently, a differentiated program of work in English was developed and implemented in three stage three classrooms to investigate the research questions. The results of this intervention are analyzed and the implications of what this may mean for classroom practice are discussed. Finally, recommendations are made in relation to development and implementation of future studies into the potential of developing students' strong intrapersonal intelligence in classroom settings with the purpose of promoting the skills and cognitive capacities that are identified as important for student success at school in the twenty first century

Introduction

The rate of change in today's society has led to the realization that the model of teaching and learning that evolved to meet the needs of industrial society requires considerable transformation if it is to support the educational needs of students today (Dickinson, 2002 ; Marshall, 1999). The means by which education can be transformed to equip students with the skills they will need to survive in the future is the focus of much of debate and dispute in educational circles. What is clear is that educators, students and society in general will need to redefine what it is to be a

student, what constitutes effective teaching and learning and what types of knowledge, skills and strategies are considered important for successful learning.

Burchsted (2003) urges managers and policy makers for schools and systems to ‘study the future’ in an effort to equip school students with the skills, strategies and perspectives that will enhance their abilities to succeed in the face of challenges and changes in the twenty first century. She proposes five ‘elements’ that characterize this ongoing process of ‘studying the future’. This process requires students to develop considerable competencies in skills such as identifying, monitoring, exploring and describing various aspects of society, in addition to planning and implementing goals. Henderson (2002) also creates a positive image of the future. She takes a retrospective view from 2050 and presents a picture of a world that has risen to meet the multiple challenges inherited from the previous century, concluding with notice that ‘a paradigm shift to map these changes was required and the curricula of all schools and universities have changed accordingly’ (Henderson, 2002 p12). What exactly constitutes this ‘paradigm shift’ and how it may be implemented are questions that are left unanswered.

Dickenson, (2002) offers more guidance in these areas, tracing the key principles that are impacting positively on teaching, learning and assessment. These include an understanding that all students are capable of learning and are indeed capable of learning more effectively than may have originally been understood (Dickenson, 2000). Beare (2003) identifies seven ‘radical differences’ that will characterize schools of the future. One of these may be particularly pertinent to this study; the re-conceptualization of the curriculum. Beare (2003) envisages a new curriculum that necessitates working collaboratively in the search for new information and learning, multi-level thinking and increasingly complex questions and answers. This future curriculum would integrate disciplines and areas of knowledge formerly studied in isolation from each other. It would not necessarily be age related, as curriculum has been in the past and students would be able to respond to this new concept of teaching and learning in terms of their own individual interests, needs and competencies.

Lepani (1995 p 1-2) examines future educational trends and concludes that minor reforms to the existing educational system are not going to be substantial enough to guarantee success for all

learners. She gathers together current educational theory relating to educating for the future and proposes eight principles on which to develop a 'mind ware industry', that is, upon which to enhance the learning capacity of the human mind in order to cope with the increasing demands of the society of the future. She places great importance on the capacity of educational systems to provide experiences and learning contexts that facilitate the foundations for lifelong learning. These are identified as students' enjoyment of the learning process and their knowledge or understanding of the learning process itself. She recognizes that the major component of an individual's capacity to develop knowledge of the learning process is how capably one can identify one's own learning preferences and develop one's own learning strategies that support successful learning.

In order to facilitate this process, Lepani (1995) and then Beare (2003) concluded that curriculum practices and content need to be reexamined and implemented from a different perspective than that identified as traditional education. Lepani (1995) suggests some ways in which this may be achieved. Global learning resources and materials, for example, must be made more relevant for students by being customized to accommodate the cultural, physical and intellectual differences of the learners. The learners themselves must have a greater stake in determining the learning strategies they will use to facilitate learning, in consultation with their teachers. The actual curriculum materials provided, content examined and practices implemented in educational settings must be designed to promote students' capacities to challenge and change their belief systems and behavior patterns, allowing the educational process to become a principal player in societal transformation and renewal. Student learning needs to be relevant and valid; that is based in experience where students are given opportunities to develop their knowledge and understanding through applying their learning. She envisages that much of this learning will be explored and consolidated through student engagement in collaborative and cooperative learning contexts where students explore and investigate knowledge, concepts and skills as part of a team of students. The final defining characteristic of Lepani's (1995) vision of education for the future serves to summarize her reconceptualization of education. She states that students must be provided with basic skills and knowledge, including those relating to information, communication and learning technologies, so that they are able to access information and construct knowledge when and where they need it.

Gardner (2006) also looks to the future in what he terms an ‘ambitious, even grandiose’ scheme of cultivating five minds for the future (Gardner, 2006 p153). In addition to the disciplined mind (Gardner, 2000c-b), Gardner explores the development of synthesizing, creating, respectful and ethical minds as a means of coping with future changes and challenges. He provides two ‘legitimate’ reasons (Gardner, 2006 p10-11) for changes in educational practice. Firstly, he argues that current educational practices are not actually working in facilitating student learning and secondly, he argues that the consequences of significant changes in the world may demand that educational endeavors are refashioned to ‘stretch’ the minds of learners in ways that have not previously been considered as important educational goals, capacities or competencies. In an interview to discuss a previous work, ‘Changing Minds’, Gardner (2006b) gives some firm indications of two processes that may facilitate change in the sphere of education; multiple representations of knowledge and skills and challenging basic ideas and misconceptions. The notion of presenting knowledge and facilitating skills in a number a different ways is the practice of differentiating the curriculum in both content and cognitive processes. The idea of challenging ideas and beliefs that are held by students is more complex. Their misconceptions may be held in relation to any topic or idea, but the most pressing one for most educators may be the beliefs that are held by school students, their parents and whole school communities that relate to the nature of effective education and the roles that should be assumed by teachers and students.

Although these writers offer differing perspectives and definitions of the skills and competencies that will be required for individuals to live comfortably in the future, there is a common theme throughout; people will have to improve their thinking skills to cope with the complexity of life in the twenty first century. Effective cognition in some specific domains will be the currency of the future and this will bring considerable challenges for everyone involved in educational policy making, leadership and practice, given the degree of student diversity that exists in any group of learners. Henderson (2002) notes that presently most humans use approximately 10% of their brains, so the development of cognitive skills is well within the grasp for most people, but how exactly will this development be facilitated? Smyre (2000 p 5) poses the question ‘how do we introduce into educational curricula the need to think about future trends as well as transforming underlying assumptions?’ The answer may lie in the two processes suggested by Gardner

(2006b); both of which depend on an acceptance of the uniqueness of the process by which individual learners construct knowledge and the need to challenge assumptions that limit students' thinking.

Within the frameworks of policies and systems, much of the responsibility for supporting the development of thinking skills will lie with classroom teachers. Restructuring curriculum necessitates restructuring teachers' roles and redefining teachers' work. Teachers are now being asked to face the challenges of developing and implementing pedagogies that support learning for all students, being mindful of their individual differences, provide realistic opportunities for successful learning and encourage appropriate, educational risk taking. Latham, Blaise, Dole, Faulkner, Lang and Malone (2006 p 135) define teachers who are willing to engage in and develop an understanding of such demanding pedagogies as 'courageous teachers', who acknowledge the challenges and difficulties that surround theories and pedagogies that cater for the learning of all students, rather than just a few. The importance of the beliefs, understandings and theoretical foundations that individual teachers identify as their personal pedagogical approaches to their work cannot be overstated. This is simply because the models of education identified as supporting students in the twenty first century cannot be realized without teachers who have the capacity to make them a reality in everyday classrooms. Lovat (2003 p 11) states

Teacher quality is the single greatest factor in explaining student achievement more important than classroom related issues such as resources, curriculum guidelines and assessment practices or the broader school environment such as school culture and organization.

For students to benefit from these reconstructed curriculum and renewed pedagogical perspectives they would, of necessity, have to operate in rich, supportive, learning environments that provide students with the opportunities to 'stretch' their minds as individual learners. This can only be achieved under the guidance of an appropriate mentor. These 'appropriate mentors' are the 'courageous' teachers (Latham et al, 2006 p 135) who demonstrate specific characteristics such as creativity and flexibility (Brady & Scully, 2005), academic optimism regarding their capacities to 'make a difference' to their students' lives (Woolfolk, 2004; Woolfolk & Margetts, 2007), and recognize the need to provide intellectually challenging and

socially supportive learning environments for all their students (Stipek, 2002; Stefanou, Perencevich, diCinto & Turner, 2004).

Many of the most important characteristics of these teachers are described in Hattie's (2009) model of visible learning. In asserting that what teachers do in classrooms does matter, he perceives that these teachers intervene when they observe that students are not learning successfully. They intervene in very specific, meaningful ways to redirect the focus of the learning in order to ensure that students are able to attain their learning goals. They offer multiple opportunities for students to develop their learning strategies in different ways and they promote both surface and deep understandings of the content knowledge and conceptual skills that are embedded in the learning. They match their students to appropriately challenging learning goals and, most importantly, they join their students and engage in a personal learning journey alongside them.

In order to do this, clear learning outcomes must be kept in mind. Teachers must also know their students' capacities to cognitively engage with their learning tasks and the degree to which they are learning successfully. They must also have the skills and knowledge to intervene when appropriate and to withdraw when students are progressing satisfactorily with their learning by working independently. These teachers must provide students with learning environments that are rich in ideas and socially comfortable, supportive and safe. The safety of these classrooms is not concerned exclusively with physical health and safety, it is also primarily concerned with providing students with an environment in which students can be intellectually challenged, make mistakes and learn from them and in which the teacher develops a personal pedagogy that is dominated by the desire to facilitate the learning needs of the students. The teacher also needs to allow students to engage in such a way as to enjoy their learning challenges, to overcome their inevitable frustrations and to develop a passion for learning. Hattie (2009 p 24) observes that

...teachers who are students of their own efforts are the teachers who are most influential in raising student achievement. Seeking positive effects on student learning ...should be a constant theme and challenge for teachers. As this does not occur by serendipity or accident, then the excellent teacher must be vigilant to what is working and *not* working in the classroom.

Hattie (2009) perceives effective teachers who promote visible learning are those who are instigators of change and innovation in their classrooms. Whilst they are in control of the learning and manage it directly, they do not monopolize classroom talk, are not primarily curriculum driven and do not use teacher power in a manner which is didactic and overly authoritarian. He summarizes his perceptions very simply in saying ‘Effective teaching is not the drilling and trilling to the less than willing’ (Hattie, 2009 p 25).

The teachers to whom these writers refer (Hattie, 2009; Latham et al., 2006; Lovat, 2003) have other characteristics in common. These teachers value high standards and expectations; not just for themselves; but also for their students. This is a particularly important teacher trait for successful teaching and learning. Weis and Fine (2003) found that low teacher expectations regarding students’ capacities had a powerful, negative influence on student achievement, as did environments where teachers focus on the social aspects of interaction and neglect dimensions of intellectual challenge. In order for students to experience changes in school curricula, teachers must seek, identify and engage with pedagogies that both strengthen these productive teacher characteristics and facilitate the development of students as increasingly complex thinkers. What needs to be explored, therefore, are ways to develop such pedagogies within the limitations of present educational systems and restraints and within the context of the characteristics of the learners. The answer must ultimately lie in the planning and implementation of appropriate, differentiated learning programs (Dempsey & Arthur-Kelly, 2007; McGrath & Noble, 1995a, 1995b, 1998; 2005a; Tomlinson, 1999, 2000a, 2000b) and the provision of opportunities for students to develop an understanding of, and responsibility for, their own thinking and learning.

The Australian Context

The frameworks supporting Australian education systems reflect the responsibilities of education policy makers and practitioners in preparing young people for productive roles in society. They also focus on the importance of meeting individuals’ learning needs in order to maximize the learning potential of all students. In Australian educational reports and policies, stress is placed on the significance of individual learning, students’ sense of connectedness and the provision of equity of opportunity for all students to learn effectively in Australian schools.

The *National Goals for Schooling* (Ministerial Council on Education, 1999) was developed with an acknowledged awareness that education was the foundation upon which Australia's future would be built. The Council recognized that Australia's future would depend on each student having the necessary knowledge, skills, understanding and values to participate in an increasingly complex world in a rewarding and productive manner. It was with this in mind that the three primary goals of Australian schooling were developed. The first of the three goals determined by the Council was that 'Schooling should fully develop the talents and capacities of all students' (Ministerial Council on Education, 1999 p2). The remaining two goals serve to elaborate on this, focusing on the necessity for quality curriculum that could facilitate the development of skills and competencies in a range of disciplines and also on the basic principle that schools are required to be socially just, offering appropriate learning opportunities to all students, irrespective of the many forms of student diversity (Abu El-Haj, 2006).

The follow up paper, *The Future of Schooling in Australia*, (States and Territories, 2007 p15), indicates that one of the challenges to Australian schooling is 'to improve the overall level of educational performance in Australia'. This statement is supported by the acknowledgement of the role of education in several aspects of Australian life, namely, securing the country's economic prosperity and workforce demands, providing young people with the skills they need to thrive in an information rich world, addressing challenges and promoting equity in society. In order to do this, it is acknowledged that the primary purpose of education is to provide opportunities and contexts in which all students are able to learn effectively. In order for this to become a reality, high quality education programs must be made available to each individual student. The curriculum itself is perceived to have three main purposes: to provide a solid foundation on which to build students' skills for adult life, to develop their deep knowledge so they may realize their capacities to create and implement new ideas and to expand the flexible thinking skills that would facilitate their skills in working with others and their capacities to work across disciplines. It would appear that the 'one size fits all' method of curriculum delivery will not be able to satisfy these primary roles of education, nor will traditional pedagogical strategies and practices. This paper calls for educational reform, the focus of which must be an emphasis on the importance of diversity and innovation (States and Territories, 2007 p24).

The National Framework for Values Education in Australian Schools (Australian Government: Department of Education, 2005) was developed along similar guidelines. Expressly created to emphasize the necessity to promote values that will allow students to participate fully in Australian education, the Framework also stresses the importance of students developing the skills they will need for the future. Developed as the result of the *Values Education Study* (Australian Government: Department of Education, 2003) for several diverse purposes the framework seeks to support the values that result from the implementation of the *National Goals for Schooling* (Ministerial Council on Education, 1999), to develop guidelines for values education in schools, to enrich all aspects of student development and to help students deal with the challenges of the future. It also aims to provide a response to the ‘challenges’ that were addressed by the study, including those pertaining to ‘.....increasing student engagement, belonging and connectedness to schooling and fostering student empowerment..’ (Ministerial Council on Education, 1999 p3). One of *The Guiding Principles* (Ministerial Council on Education, 1999 p5) reflects a particular concern that resulted from the study: that effective education ‘...includes the provision of curriculum that meets the individual needs of students..’ (Ministerial Council on Education, 1999 p5). The work of Lovat and Toomey (2007), which is based on research into the implementation of this values education framework in Australia, indicates the potential that teaching values education in schools has to revitalize teaching and refocus teachers and schools on their essential purpose; the holistic development of students.

The National Safe Schools Framework (Student Learning and Support Services Taskforce, 2002) was intended to raise awareness of potential threats to student development and to ensure the well being of all students in Australian schools. Although this document was explicitly developed to raise awareness of specific issues of risk to students, the overall focus of the document is to ensure that students experience school as a safe and supportive environment. A ‘supportive’ school must surely be understood as one that promotes and facilitates growth in every aspect of student development, including academic progress. The ‘safe’ environment in which this development may take place must be characterized by policies, procedures and leadership styles that respect individual differences and develop a school ethos that is readily identified with the *National Goals for Schooling* (Ministerial Council on Education, 1999). Classroom teachers are mandated to create classroom cultures that are rich in ideas and that

nurture and support the authentic learning of diverse groups of students. These learning contexts must include a climate of acceptance in which students are able to take risks, learn from their mistakes and engage effectively with teachers who have high expectations of themselves and their students.

Amongst the frameworks that have been explicitly developed to guide teacher practice and their efforts to support students' learning in diverse classrooms and apply these policies in classrooms are *Productive Pedagogies* (The State of Queensland Department of Education, 2002) and the *Quality Teaching Model* (Department of Education and Training New South Wales, 2003). Both these publications explore some basic criteria that underpin strategies and practices that have been proven to support student learning. The *Productive Pedagogies* (The State of Queensland Department of Education, 2002) was one of the first Australian, research based, system wide frameworks to be implemented. The teachers' manual describes twenty pedagogical practices that are productive in supporting improved student learning outcomes in terms of authentic learning and assessment. These twenty practices are subdivided into four categories; Intellectual Quality, Supportive Classroom Environment, Recognition of Difference and Connectedness; each with examples of how the pedagogical practices may be applied in classroom contexts in order to produce improved student learning outcomes.

In similar fashion, the *Quality Teaching Model* (Department of Education and Training New South Wales, 2003 p 4) is described as being '... based on a sound research understanding of how teaching and school improvement can promote improved student learning outcomes. ...' and was developed expressly to support teachers' efforts to achieve the *National Goals for Schooling* (Ministerial Council on Education, 1999). The *Quality Teaching Model* (Department of Education and Training New South Wales, 2003 p 4) focuses on three dimensions of effective teaching; Intellectual Quality, Quality Learning Environments and Significance. While these documents and others provide support for teachers in classrooms, they were not intended to be '...the final word on pedagogy...' (*Quality Teaching Model*, Department of Education and Training New South Wales, 2003 p 5) and the publication of the most recent of the Australian policy document may provide the impetus for the generation of new perspective on some of the aspects and elements of effective teacher practice in Australian schools.

The most recent of these ministerial documents is the *Melbourne Declaration on Educational Goals for Young Australians* (Ministerial Council on Education, 2008), which supersedes the *Adelaide Declaration* (Ministerial Council on Education, 1999). Although similar in nature to the previous document, this document outlined two educational goals for young Australians. The first deals with issues of excellence and equity. The second is devoted to the perceived need to provide educational systems and structures that will enable students to become successful learners and play a role in their own learning. This goal also focuses on the need for these students to have the skills to think deeply, solve problems and become creative and innovative. In addition, educational systems are mandated to provide environments and opportunities for students to develop ‘.....self –awareness and personal identity that enables them to manage their emotional, mental, spiritual and physical wellbeing (Ministerial Council on Education, 2008). The means by which it is proposed these goals are to be achieved include the provision of ‘excellent teachers’ (Ministerial Council on Education, 2008) who are considered to be of ‘fundamental importance’ in this endeavor. These teachers are entrusted with the tasks of providing programs of teaching and learning that can be identified as transformational education for all students. Amongst the acknowledged ways that this can be achieved include the capacities of these teachers to expect and maintain high standards and to facilitate the learning needs of their individual students.

This strong emphasis on the provision of programs of teaching and learning that nurture students as individual learners at the national level of policy making is evidenced more locally in the *New South Wales K-6 Syllabi* (Board of Studies, 1998) documents, which indicate the need for the curriculum content they contain to be arranged and implemented in ways that support the effective learning of all students, irrespective of their differences. The development of models such as Kalantzis and Cope’s ‘*Learning by Design*’ (Healy, 2008b) and its inclusion in a text for Australian educators is a positive indication that these policies are being considered as very serious issues for day to day practice and that support is available for professionals wishing to improve their professional practice.

Lovat (2003) provides a comprehensive summary of the importance placed on ensuring that teachers are prepared for the challenges that these educational guidelines present. In a discussion of the practices currently in place in Australia, he writes

The registration of teachers, the development of national standards, professional autonomy and a code of conduct are but some of the measures that can be taken to prepare teachers to carry out complex and vital work requiring a diverse range of skills and knowledge for the twenty first century (Lovat 2003 p 15).

The *Professional Teaching Standards (NSWIT, 2005)* were developed to by the New South Wales teacher accreditation board who are responsible for registering teachers in that state. They clearly indicate dimensions and aspects of professional practice that are critical for educators who are not only engaged in the implementation of the current documents and policies effectively but who also seek to become critical reflective practitioners. Designed to apply to teachers at all stages of their professional lives, the document details increasingly complex levels of competency in each of the aspects, starting with the expectations relating to beginning teachers. Although the importance of acknowledging student differences is integrated into each of the seven elements identified by the New South Wales Institute of Teachers, one entire element and its aspects are exclusively devoted to identifying aspects of practice that pertain to providing individual students with activities and programs that support their learning. This element is solely focused on developing teacher competencies and capacities so they may fully understand the learning needs of each child and develop the skills for the effective learning of individual students in the context of a diverse range of students' experience and knowledge.

Implications for Educators

Although not explicitly stated, these documents and policies are all underpinned by two insights into the learning process. Firstly, there is the conviction that all students have the potential to be successful learners; and secondly the importance given to preparing programs to suit diverse, individual learners. The first reflects an understanding that learners need to be active in their own learning. One of means by which this may be achieved is found in the basics foundations of Constructivist theory (Hacker, Dunlosky & Graesser, 1998; Hein, 1991) . They propose that individual learners must actively construct knowledge (at times, not without a struggle) in a personally meaningful way and they must be able to attribute meaning to their learning whilst

engaging in dynamic personal and social processes. This is an important insight for those involved in the practical implementation of these policies. Generally known as ‘social constructivism’, (Woolfolk, 2004) and based on the work of Piaget, Dewey, Vygotsky and others (Gruber & Voneche, 1977; Hein, 1991; Woolfolk, 2004) this view of learning impacts on both learning theory and epistemology in that the nature of knowledge itself is personally mediated (Hein, 1991).

Abbott & Ryan (1999 p67) explain ‘Constructivist learning is an intensely subjective, personal process and structure that each person constantly and actively modifies in light of new experiences’. A further challenge is that Constructivism can take many forms, the majority of which include explicit instruction in learning skills and strategies that are designed to support students’ construction of knowledge and are appropriate to the specific learning needs of the students. Matthews, for example, (in Richardson, 2003) identified eighteen different forms of educational constructivism, the major differences being between models of Social Constructivism and those of Psychological Constructivism. However, at its most basic, Behaviorism and Constructivism represent the difference between learning by remembering and learning by understanding. Students need the opportunities to develop robust knowledge. The skills and knowledge students learn in reproductive learning are not able to be transferred easily into other learning tasks or disciplines and are most frequently retained as inert knowledge as opposed to the robust knowledge that comes from productive learning. Robust learning is more readily built into existing knowledge and can be adapted to new learning situations and tasks. An important aspect of the Constructivist perspective is that it is open ended and has no boundaries. In this respect, it mirrors what is actually known about the neural structure of the brain, as this is also open ended (Posner, 2004).

The second insight refers to the awareness that if all students are constructing knowledge as individual learners, albeit with the support of explicit strategy and skills teaching and learning, then programs of work must be planned that allow individual preferences both in the learning task itself and in the means by which these tasks are completed. This approach to teaching and learning is often known as differentiation and Dempsey and Arthur-Kelly (2007) offer a definition. They state ‘differentiation refers to teacher modifications to classroom practice to

meet the needs of individual students within the classroom' (2007 p2-3). They continue by describing a wide range of strategies to support teachers in this task, as do O'Brien and White (2001). Tomlinson (1999, 2000a, 2000b) describes planning differentiation of content as a matter of determining the destination (the learning goals), then planning different, but suitable routes by which to help students achieve these goals. McGrath & Noble (1995a, 1995b, 1998, 2005a) for example, utilize two specific typologies to effect this differentiation of classroom practices. The adaptations that constitute differentiation may be implemented in various ways, all of which have to potential to meet the needs of individual students and support improved student outcomes if they are developed and implemented in a manner which suits the learning preferences and capacities of the students. Armstrong, (2003) emphasizes the importance of differentiation in the teaching of literacy, identifying and describing how many of Gardner's (1983, 1993a, 1999a, 1999b) eight Multiple Intelligences domains can be important in the successful development of skills in literacy.

While there is no explicit statement to indicate that the authors of the Australian Government policies subscribe to any one theory of intelligence, the contention that all students are capable of successful learning and need to be catered for, sometimes by individual programs, is a strong indication that policy makers and educationalists no longer hold the view that intelligence is fixed and a single unitary trait. This has clear implications for classroom practice (St. Julien, 2000) as it compels educators to reflect on the dynamic relationship between an understanding of the nature of intelligence and successful learning. Reese (1998) provides a neurological basis for the learning process from cognitive science research. He identifies the three steps that constitute learning. A very simple explanation of these steps supports both the implementation of constructivist pedagogy and a rationale from a cognitive perspective for implementing differentiated programs of work for learners. Additionally, it provides a physical basis from which to consider the nature of intelligence, strategies for the promotion of successful learning and '....the neurological basis and support for some theories: such as Gardner's theory of Multiple Intelligences.....' (Reese, 1998 p 1). A detailed explanation of these three steps that comprise the learning process underpins effective planning for student learning.

Cognitive Science Perspective of Learning

The acquisition of information is the first step for all learners despite their individual characteristics (Reese, 1998). This involves separating something of interest from the vast amount of sensory stimuli that is constantly present. The selected information remains in the working (short term) memory for a very short time before it is transferred in the long term memory in two stages. Firstly, it is transferred into the long term memory but does not become permanent for approximately a day. Unless hindered by some type of brain injury, the information becomes permanent in the long term memory, which is extremely complex. What is interesting for educators is that different types of knowledge are treated differently. Knowledge about how to do something (procedural knowledge) is scattered into different parts of the brain. Specific information (knowing that water is wet for example) is called a semantic memory and episodic memories are associated, as the name suggests, with time, place, people etcetera. Semantic memories begin as episodic memories that become generalized by experiences of the knowledge in different contexts. Only then does it become implicit knowledge available to be used on demand.

Memory retention is the second step and can be impaired by three processes, although these are not mutually exclusive. Physical decay is not of particular interest in this study, but interference and lack of retrieval clues are pertinent issues for classroom practice. Interference 'is the effect that other information has on learning or retaining new material' (Reese, 1998 p3) This may be proactive, where the information is not simply affirming what is already known and as a result the new knowledge is simply not accepted. It may also be reactive, when new information interferes with what is already known because of the similarity of the information. The lack of specific retrieval clues may cause this interference. In an educational context, it may occur when there is no meaningful orientation or 'memory jogging' clues to help identify and retrieve specific information.

Memory access is the third step and often the most difficult in the learning cycle. Information is categorized and stored in complex related groups or 'schemas'. This organization permits access to information. The richer and more extensive the associations between and amongst the groups in the networks; the more easily the memories are recalled. The initial stages of learning are

considered to be more difficult for two reasons: the schemas are 'sparsely populated', that is they do not contain extensive knowledge as yet, and the ways in which individuals organize and categorize information is unique to each learner, necessitating a 'multi dimensional' approach to teaching. An added complication for specialist teachers is that novices organize their schemas differently from experts, as do experts one from another. The consequences of this 'complication' are that teachers must then find appropriate ways to support learners who are less experienced and who organize schemas differently, not just from their teachers, but also from each other.

Given that rich associations appear to be formed during the consolidation of learning, the context of learning is vital. Students need to interact with, and experience learning in situations and contexts similar to those in which the learning is to be used. This knowledge heightens the need for educators to design rich tasks in equally rich learning environments and to plan for skills and strategies to be learnt in real life contexts as much as possible. Reese's (1998) work stresses, from a perspective other than that of educational psychologists (Armstrong, 2006; Arthur-Kelly, Lyons, Butterfield & Gordon, 2007; Brady & Scully, 2005; Burke, 2000; Cohen, Manion & Morrison, 2004; deCharms & Muir, 1978), the role of individuals' interests and its impact in the learning process. Reese (1998) presents an underlying reason for student engagement in learning tasks that give them opportunities to revisit, redefine and revise their knowledge and understandings in discussion with both teachers and peers and make links between one concept and other, related concepts. The importance of interest in effective knowledge construction provides yet another rationale for differentiated programs of learning as learners and experts organize their understandings and knowledge differently; not only from each cohort, but from their peers in each cohort. This knowledge about the learning process impacts not only on the ways in which educators might organize teaching and learning experiences to maximize learner outcomes, but also influences the ways in which the nature of 'intelligence' can be defined.

Views of the Nature of Intelligence

Traditionally, intelligence has been understood as a static, measurable capacity for learning (Woolfolk, 2004). More recent theories dispute not only the nature of intelligence, but argue that there is more than one type of intelligence. Decades ago Thurstone (1938) proposed the first

multi factor approach to intelligence. He named seven 'primary mental abilities' that constituted intelligence, in opposition to theories such as the one developed by Spearman (Woolfolk, 2004) that placed much significance on 'g' - general ability – which was determined by testing. The work of Sternberg (Sternberg et al., 2000; Sternberg & Williams, 1998; Woolfolk, 2004) has also contributed greatly to understanding intelligence in educational contexts. Sternberg hypothesizes that intelligence can be demonstrated in three different ways. His theory of intelligence comprises analytical, creative and practical abilities of intelligence, all of which are amenable to improvement in response to learning experiences and materials.

Gardner (1983, 1993a, 1999a, 1999b, 2000c-b) developed his ideas about intelligence as a result of 'a comprehensive, thorough and systematic review of empirical data from studies in biology, neuropsychology, developmental psychology and cultural anthropology' (Chen, 2004 p5). His view of intelligence can be succinctly described as '...a biopsychological potential with an emergent, responsive and pluralistic nature'(Chen, 2004 p5) Gardner strongly opposes standardized means of measuring intelligence, not only because of the interactive nature of the Multiple Intelligences, but because some intelligence domains are impossible to measure by traditional pen and paper tests. Despite this, or perhaps because of it, Gardner's Multiple Intelligences (MI) theory (Gardner 1983, 1993a) appears to have received the most attention from educators in classrooms. Evidence of the degree and scope of the attention educationalists have paid to Gardner's (1983, 1993a) cognitive theory include the following authors: Davidson (2005), Ellison (1992, 2001) Hine (2002) and Berman (1995), who consider the implementation of Multiple Intelligences in primary education, Morris, Clifford et al (1996), Glasgow (1999), and Wahl (2002) who discuss the benefits of the application of Gardner's Multiple Intelligences theory on various secondary school subject domains and Armstrong (1994; 2003), Noble (Noble, 2002; Noble & Grant, 1997) and Diaz Lefebvre (2004) who examine the possibilities of utilizing Multiple Intelligences theory (Gardner 1983, 1993a) to improve teaching and learning outcomes. Hoerr (2004) provides some insight into why this would be so. He describes MI as having 'two powerful lures'(Hoerr, 2004 p1). Firstly, he asserts more children find success at school when students are offered different pathways to learning. Secondly, he stresses that '...using MI transforms the role of the teacher'.

Hoerr's (2004 p 1) experience of MI and the impact that this theory can have on educational practice and student learning outcomes provides a basis from which the potential of MI may be further explored. In order for students to choose the pathways to learning that are appropriate for each of them individually, they would need to have some knowledge of their own relative strengths and limitations and the capacity to use these relative strengths to support their learning in areas of relative limitation and to work towards achieving their own learning potential in classrooms. The provision of a differentiated program of work that would allow students to identify the learning tasks that afforded each of them the best opportunity for academic success appears to be a productive starting point for improving teaching and learning outcomes. However, if the impact of a differentiated program of work for improving student learning outcomes is reliant on the students' understanding and knowledge of self as 'learner', then it is possible that a differentiated program of work that focuses on strengthening students' self knowledge as learners may enhance their learning outcomes even more substantially and give direction to their learning endeavors. Such a program would focus on changing or improving students' competencies in Gardner's (1983, 1993aa, 1999) intrapersonal intelligence domain and present some challenges as discussed below.

The implementation of such a program would also challenge traditional perceptions of teachers' work. As Hoerr (2004 p 1) commented, the transformation of the teacher's role would demand that the students were individually mentored, supported in learning new skills and improving existing skills and challenged to undertake tasks that are individually demanding. In this way, teachers would assume the role of facilitators of students' learning. In addition to planning for student diversity in a variety of aspects, they would have to ensure that students had opportunities to develop flexible thinking skills, developed individual strategies to solve new, hitherto unseen problems and become more complex thinkers. It may be that the development and implementation of such a differentiated program of work focused on improving students' understanding of themselves as learners could meet some of the educational demands of the twenty first century.

Conclusion

Australian educators are becoming increasingly aware of the ‘shift’ in educational policies and goals for education and the changing demands of teachers’ work to effectively meet the challenges of teaching in the twenty first century. The stress that is currently placed on ensuring that every student is able to achieve their academic potential in classrooms reflects the transition from more traditional teacher roles to teachers as mentors and facilitators of learning. It also serves to highlight the increasing importance of identifying the teacher characteristics that can support this particular reconceptualization of teachers’ work. This is because this transition is underpinned by teachers’ recognition and acceptance that students need to develop the knowledge and skills essential for success in the twenty first century: basically these comprise an improved capacity to be flexible thinkers, efficient problem solvers and to achieve improved academic success. The specific characteristics of the newly developed policies demand that students are supported in the construction of knowledge as individual learners and that the *potential* of intelligence is enhanced and explored by the implementation of appropriate pedagogical strategies, including the provision of a differentiated program of work for students. However, even in extremely inclusive teaching models, such as that devised by Kalantzis and Cope (in Healy, 2008a), student strengths and learning preferences still need to be known by the students themselves in order for them to participate effectively and have optimum opportunities for success.

The incentives described by Hoerr (2004) and the reasons that other educators are motivated to incorporate Multiple Intelligences into their teaching and learning contexts will be discussed more fully in the following chapter. Australian education is presently dominated by constructivist models of teaching and learning. In order for students to be actively involved in their own learning, they must have sound knowledge of themselves as learners and the opportunities to use this self knowledge in formal learning contexts. Given the impact of Gardner’s’ Multiple Intelligences Theory (1983, 1993a,1999) on educational practice to date and some indication of the reasons for its success in formal learning environments, it may be that a more detailed analysis of this cognitive theory will provide an indication of how successful learning may be facilitated for all students in Australian classrooms and how students may be best prepared for the challenges of the future. In particular, it may be useful to investigate the

characteristics and nature of the intrapersonal intelligence domain and examine the potential of this construct to impact positively on students' efforts to be active participants in their learning and to improve their learning outcomes.

Chapter Two A Discussion of Intrapersonal Intelligence

Gardner's Multiple Intelligences Theory

Gardner's Multiple Intelligences theory is based on two major assumptions. Firstly, it is a cognitive theory (Bereiter, 2000; Gardner, 2000, 2003; Shephard, 2001; Stuss & Levine, 2002) based on the most modern research into the functions of the brain, specifically frontal lobe functions. Reese (1998 p1-3) explains that the brain comprises 'semi-independent' modules for different functions. The modules are all interconnected and influence one another and other functional areas of the brain reciprocally. Additionally, they are influenced by hormones and 'neuropeptides, many of which are central to emotional states'. He identifies these functional centers as being the physical basis for Gardner's (1983, 1993aa, 1999a, 1999b) Multiple Intelligences theory. Secondly in refuting the theory that intelligence is a single, fixed, uniform phenomenon, Gardner (1983, 1993aa) proposes a much wider and more encompassing view of intelligence of eight intellectual domains. Initially, Gardner (1983, 1993aa) identified seven intelligence domains. These then grew to eight intelligence domains with inclusion of naturalist intelligence and it appears Gardner is still open to the possibility of adding others. He comments that '...there is not, and can never be a single, irrefutable and universally accepted list of human intelligences' (1993aa, p59). The eight domains are linguistic intelligence, logical- mathematical intelligence, visual - spatial intelligence, bodily – kinaesthetic intelligence, musical intelligence, interpersonal intelligence, intrapersonal intelligence and naturalist intelligence. Gardner's (1983, 1993aa, 1999a, 1999b) eight 'signs' that determine the inclusion of an intelligence are multidisciplinary. However, he sums up his notion of intelligence as '...a set of skills of problem – solving – enabling the individual to *resolve genuine problems or difficulties.....*' (1993aa, p 60) adding that these skills must also be culturally valued.

Gardner (1983, 1993aa, 1993ab, 1999b) proposes that everyone possesses all eight intelligences as part of their genetic inheritance. What is significant is that no two people are exactly alike. An intelligence profile developed using Multiple Intelligences theory is as unique as a fingerprint; each individual profile comprising a set of relative strengths and relative limitations. To add further complexity to the profile, cultural influences and personal experiences constantly impact on the intelligences (Gardner, 1983, 1993a, 1993ab, 1999b), changing both the profile of the individual and the relationship of the intelligences, one to another. Like Sternberg (Sternberg et

al., 2000; Sternberg & Williams, 1998), Gardner (1983, 1993a, 1999a, 1999b) stresses the importance now placed on the *potential* of intelligences. In order for this potential of intelligences to be realized, stimuli that reflect teacher, parental and personal interests and values must be provided. In an educational setting, parents frequently defer to the values and decisions determined by educators and educational systems. In traditional primary classrooms, the verbal/linguistic and mathematical/ logical intelligence domains are commonly the most readily accepted as the principal foci of primary education. As a result, academic educational outcomes are most commonly gauged in terms of students' accomplishment in these two intelligence domains alone.

Secondly, in developing his Multiple Intelligences theory, Gardner (Gardner, 1983, 1993a, 1999a, 1999b) developed a set of interdisciplinary criteria by which to determine what may constitute an 'intelligence'. He drew on knowledge in biological science, logical analysis, psychological research and traditional psychology to develop his criteria. This set of criteria constitutes the other distinguishing feature of his work on intelligence as it provides a broader, more encompassing theoretical foundation than that utilized by Binet and others involved in the development of IQ tests: the latter provides a narrow focus of educational perspectives of academic success, relying exclusively on verbal/ linguistic and logical/mathematical strengths. The development of this set of criteria has important implications for psychology in general because it linked two major approaches in psychology which still remain relatively separate. Posner (2004 p24) writes

it may be time to salute Gardner by renewing his effort to forge a deeper understanding between cognitive psychology and psychometrics. Current studies in cognitive neuroscience may have potential for accomplishing this goal and could also provide some new approaches to research on education.

The broad theoretical base of Gardner's criteria also accommodates the identification of new intelligence domains. This was evidenced in Gardner's later work (1999b) when he added an eighth intelligence to the original seven (1983; 1993a). Gardner's own reflection on the criteria he uses is very interesting. He comments that the criteria he used in his original work would not necessarily be his last thoughts on the identification of intelligences (Gardner, 2000b p 45), but if he were to rework his criteria in the future he would pay greater attention to the cultural aspects

of intelligence. The strong link between culture and intelligence features in Sternberg's (2004) work. He considers the joint study of intelligence and culture as important as they 'are so inextricably linked' (Sternberg, 2004 p327). Gardner's (1983, 1993a, 1999a, 1999b) process of constant reflection and reformulation of his original thinking is refreshing because it mirrors the challenges faced by all learners in the twenty first century, as new information becomes available and must be analyzed, evaluated and incorporated into established understandings and knowledge.

The considerable impact of MI theory in educational contexts (Arnold, 1999; Bereiter, 2000; Cost & Turley, 2000; Diaz-Lefebvre, 2004; Gardner, 2003; Hoerr, 2004; Jarvis & Parker, 2005; Kornhaber, 1999; McKenzie, 2002; Miltiadou, 1999; Morris & le Blanc, 1996; Smith, 2002; Torff & Sternberg, 2001) is however, most probably due to its usefulness as a tool for planning differentiated learning tasks. In addition to Hoerr's (2004) comments that MI provides greater student success and a more inclusive facilitating role for teachers, MI theory lends authenticity to what experienced, perceptive educators already know –that many students who were not perceived to be particularly successful at school are still able to become high achieving, productive members of society who sustain meaningful, personal and professional relationships (Chen, 2004). These students are intelligent in ways that had not been especially valued in traditional education. Although their relative strengths may lie in a variety of the remaining intelligence domains which are outside those commonly used to establish success at school, it appears likely that these students had accurate knowledge of their relative strengths and limitations. It is also probable that they used their self knowledge to facilitate personal success. Gardner, in his tenth anniversary edition (1993a), began a journey of reconceptualizing, revising and reworking only one of the multiple intelligence domains. He began to rethink the nature of the intelligence domain that he believed to be increasingly important for individuals in the twenty first century; that of intrapersonal intelligence.

Intrapersonal intelligence: Historical and Current Perspectives

Gardner (1983, 1993a, 1999b, 2000c-b) identified seven, and later, eight intelligence domains. Of these, two have unusual characteristics that are not present in the six intelligences. These are the 'personal intelligences'; the intrapersonal and the interpersonal. Interpersonal intelligence is

intelligence about others. Individuals who have strengths in this area are characterized by abilities to cooperate in group tasks, be instinctively sensitive to the feelings and needs of others, have good communication skills with a diverse group of people and naturally and easily make distinctions between people. Intrapersonal intelligence is self intelligence. This intelligence domain is focused on developing strength in knowledge of all aspects of self. Gardner (1983,1993a. 1999a,1999b,2000, 2000c-b) discusses both these intelligences, for the main part, together, although he states that ‘...each form has its own characteristic neurological representation and breakdown’ (Gardner, 1993a p241). Gardner takes this approach because, in normal circumstances, one of the personal intelligences is not developed independently from the other and he has expressed concerns that the two were not artificially separated. However, despite meeting the eight criteria that Gardner devised to designate an intelligence, the unusual characteristics of the personal intelligences include Gardner’s assertion that they interweave to form a ‘sense of self’. This reciprocal interdependence does not apply to the other intelligences, nor are the other intelligence domains as dependent on the influence of cultural norms as are the personal intelligences.

The personal intelligences are largely governed by cultural and societal norms. For example, what is acceptable in one culture may be taboo in another. There is great societal pressure to develop and utilize the personal intelligences. This is because of the need for individuals to establish behaviors that are socially and legally acceptable. This is evidenced by the acceptance of and popular interest in theories of emotional intelligence (Bar On, 1997; Bar On & Parker, 2000; Goleman, 1995; J. Mayer & Salovey, 1997; J. Mayer, Salovey & Caruso, 2000; J. Mayer, Savoley & Caruso, 2004a). This is not necessarily the case for the other intelligences. Various illnesses or pathological conditions may impact negatively on the development of skills in the personal intelligence domains, which in turn impact on the individual’s capacity to adapt socially and engage appropriately in the process of enculturation. Lack of development in any of the other intelligence domains would not result in the same degree of alienation from the wider community. Given that the personal intelligences are of such importance for all individuals, it is interesting that Gardner (1993a; Moran & Gardner, 2007) observed a lack of research interest in the intrapersonal intelligence domain from other cognitive psychologists although it is not known if this statement is still as accurate as when it was originally stated at the time of publication.

Despite his concerns regarding the separation of these personal intelligences, Gardner himself has repeatedly done just this as he focused increasingly on the importance of intrapersonal intelligence and the uniqueness of this intelligence domain, excluding any special focus on interpersonal intelligence (Gardner, 1993a, 1993a, 2000c-b; Noble & Grant, 1997). As early as his original work (Gardner, 1983) on the development of his Multiple Intelligences theory, there has always existed a ‘duality’ in the nature of intrapersonal intelligence that is not found in any other intelligence domain (Gardner, 1993a). It is not enough to simply develop a ‘viable model of self’ (Gardner, 1993a); or a ‘working model of self’ (Gardner, 1999b). Instead, Gardner observes that individuals must also be able to use this understanding of self effectively in the context of their life choices in order to be regarded as having a relative strength in this intelligence domain. Gardner’s continued interest in defining and redefining intrapersonal intelligence began in 1983 and continues into the most recent publication of his work in this area (Moran & Gardner, 2007). The original definition that Gardner (1983, 1993a) devised was predominated by the impact of emotion. He wrote of intrapersonal intelligence as

.....the development of the internal aspects of a person. The core capacity at work here is access to one’s own feeling life – one’s range of affects or emotions: the capacity instantly to effect discriminations among these feelings and, eventually to label them, to enmesh them in symbolic codes, to draw upon them as a means of understanding and guiding one’s behavior.’ (Gardner, 1983, 1993a)

The first indication that Gardner was reflecting and revisiting this definition appeared in the Forward to the tenth anniversary edition of *Frames of Mind* (1993a p ix). Neither the general discussions nor the definitions of the other intelligence domains were altered. The solitary nature of this revision is indicative of the importance Gardner placed upon the intrapersonal intelligence domain. He states:

‘It is pertinent to point out that my notions of intrapersonal intelligence have shifted somewhat in the last decade. *In Frames of Mind* I stressed the extent to which intrapersonal intelligence grew out of and, and was organized around, the feeling life of the individual. If I were to rework the relevant parts of Chapter 10 today, I would stress instead the importance of having a viable model of self and of being able to draw effectively upon that model in making decisions about one’s life.

As a result of his reflection and introspective thinking, Gardner again highlighted the evolving nature of his work on intelligence. By 1999, this ‘viable model of self’ had become a ‘working model of self’ (Gardner, 1999b) and the most prominent stress was firmly placed not only on the development of intrapersonal intelligence itself, but the capacity that individuals have to use self knowledge to make suitable choices and appropriate decisions in life. He places strong, accurate intrapersonal intelligence firmly in educational contexts in his discussion of the importance of personal choices in learning. He specifically explores the role of ‘...human emotions, personality and cognition..’ and the relationship between ‘..the understanding of one’s own mind(and) personal responsibility for one’s own education’(Gardner, 1999b p51). Perhaps one of the strongest indications of Gardner’s thinking regarding intrapersonal intelligence at this time is evidenced in this statement;

Personal knowledge about the mind might furnish people with a sense of agency with respect to their cognitive lives that would have seemed utopian in an earlier era. Metacognition, self consciousness, intrapersonal intelligence, second order thinking, planning (and revising and reflecting), systematic thinking, and their interrelations need not just be psychological jargon or ‘self help’ buzzwords: to put it plainly, individuals can play a far more active role in determining the truth, beauty and goodness that will suffuse their own lives (Gardner, 1999b p52).

Here, in this text, Gardner shows clearly and purposefully the importance of intrapersonal intelligence in educational contexts. It appears that of all the ‘forces’ that impact on education, there is one over which individuals have some control; the capacity to develop strong, accurate intrapersonal intelligence and the competence to use this self knowledge to interpret, moderate and construct meaning from educational experiences. This is reflected in Gardner’s most recent and most explicitly detailed definition of intrapersonal intelligence:

Intrapersonal intelligence is a cognitive capacity that processes self- relevant information. It analyses and provides coherence to abilities, emotions, beliefs, aspirations, bodily sensations and self-related representations in two ways: through increasingly complex understandings of one’s self (self awareness) and through increasingly complex orchestrations of aspects of oneself within situations (executive function). Intrapersonal intelligence simplifies the vast amounts of information a person receives or generates by subjectifying it, turning “it is” information into “ I want/need” or “for me” information. (Moran & Gardner, 2007 p21).

This definition contributes significantly to the writing on intrapersonal intelligence. Gardner's original writings have shown subtle, but distinct differences in the way he perceived intrapersonal intelligence. Although he consistently represented the dual nature of intrapersonal intelligence; he had not previously indicated any particular means by which strong personal knowledge impacted on the students' capacities to achieve increased academic success. By offering a precise definition of intrapersonal intelligence and clearly defining the relationship between the internal components of intrapersonal intelligence and the cognitive capacities represented as skills in the demonstration of the external dimensions in new terms, i.e. as the skills that are the characteristics of executive function, a clearer understanding emerges of both the importance of intrapersonal intelligence for students and the processes by which educators may promote and assess students' progress in this vital area. Moran and Gardner's (2007) summary of the means by which individuals can achieve success; '*the hill, the skill and the will*'; offers some guidelines that may prove to be very powerful in supporting educators in the complex task of facilitating the learning of diverse individuals in a classroom. These deceptively simple guidelines allow educators to focus on developing and assessing three specific areas of student competencies and behaviors that may effectively support student learning.

Research and Intrapersonal Intelligence

Studies that focus on all the Multiple Intelligences are plentiful (Cost & Turley, 2000; Davidson, 2005 ; Diaz-Lefebvre, 2004; Hoerr, 2004; Kornhaber, 1999; R. Mayer, 1996; Morris & le Blanc, 1996), however, there are few research articles reporting on studies that focus specifically on the area of intrapersonal intelligence. As mentioned previously, Moran and Gardner (in Meltzer, 2007a p22) acknowledge that 'Intrapersonal intelligence has been less studied from cognitive and educational perspectives than have the other intelligences'. One example of a study that investigated intrapersonal intelligence was that of Anderson and Lux (2005). They link executive function to accurate self assessment, but not from a Multiple Intelligences or educational perspective.

This paucity of research may be reflective of the difficulty of conducting studies of intrapersonal intelligence in educational settings. It may also be a result of the impact of narrow interpretations of MI theory in general and intrapersonal intelligence in particular. An example of

the latter can be found in a study in Singaporean schools (Teo, Quah, Rahim & Rasanayagam, 2001). This study sought to investigate self –knowledge of gifted students in one specific area, that of their hemispheric functioning. Using Gardner’s (1983) definition of intrapersonal intelligence as their definition of self knowledge, the authors identified four hundred and ninety seven grade five, gifted students in Singapore primary schools. They conducted an *Intervention Program* comprising five one hour lessons over a period of five weeks.

The intervention was implemented during the timeslot for Civics and Moral Education. The students were introduced to medical research findings regarding the inherited, innate and acquired characteristics of humans. Then they were taught about various aspects of human development and maturation under the headings of the soul and emotional, physical and intellectual development. ‘The theory that human beings have Multiple Intelligences, that gifts and talents are like invisible fruits (invisible potential) and that living organisms need to grow holistically in all aspects were expounded’(Teo et al., 2001 p 7). After the instruction on the stated topics, the students were then asked to set ‘personal goals for growth’. A questionnaire was administered to determine their preferences in preparation for the next lesson, the subject of which was the development of brain and mind. Included in this lesson was information about atrophy, focusing the mind and enhancing thinking.

Unusually, the impact of the intervention on the students’ academic progress was not available at the time of publication, but the research plan was to monitor the students’ academic progress for a year in order to establish the efficacy of the ‘self-knowledge education’. What was reported, however, was that the majority of the sampled cohort of gifted pupils in Singaporean primary schools were right brained, whilst the majority of the students in the mainstream classes were left brained. Studies such as this contribute little to the understanding of the role of self knowledge in educational success. Little is gained from analyzing the results of the first research question and the second research instrument mentioned in the report is neither referenced nor discussed. It is simply referred to as the ‘newly devised Self Knowledge Checklist (SKC) with a reliability coefficients of .947 (n=1042)’(Teo et al., 2001 p 6). Further explanation and examples of this instrument may have contributed something of interest in relation to the difficulty of assessing intrapersonal intelligence in educational contexts. What is surprising is that the findings relating

to intrapersonal intelligence were solely based on the learners' perceived needs to work with others when learning a new language. This was not discussed in terms of how these individuals preferred to learn generally, in any context.

Although not specifically focused on the study of the intrapersonal intelligence domain, Loori (2005) investigated what he termed the 'intelligences preferences' of ninety first year tertiary students who were learning English as a second language. Using the Teele Inventory for Multiple Intelligences, which was administered to students in their usual classes, he established that there were some strong trends in the male and female preferences of these adult learners. One result indicated that the least preferred intelligence by both males and females overall was the intrapersonal intelligence domain. Loori (2005) suggested this data indicated that these learners of English as a second language preferred not to work alone while acquiring a second language, which is not surprising, considering spoken language is used to communicate with others.

However, the explanation for the other major finding indicates that the understanding Loori (2005) employs of intrapersonal intelligence is closely associated with learners' engagement in, and preference for, solitary activities. Loori (2005 p83) states '...this indicates that female learners possess a higher preference for individual –work type learning activities, whereas the male learners prefer more group – work type learning activities'. This extraordinary statement implies an artificial separation between the intrapersonal and the interpersonal intelligence domains and diminishes the 'interrelatedness' (Gardner, 1993a) of the personal intelligences. This perspective also aligns intrapersonal intelligence preferences with solitary activity and interpersonal intelligence with interaction with others, challenging Gardner's (1993a) hypothesis that the 'interweaving' of both domains forms a 'sense of self'. Knowledge of this 'sense of self' and the capacity to use it to make sound decisions are the twin aspects of intrapersonal intelligence; a clear understanding of intrapersonal intelligence acknowledges both the solitary and interactive aspects of its formation in a manner that Loori (2005) does not.

One study that does focus exclusively on a cognitive and educational perspective of intrapersonal intelligence is that of Shephard, Fasko and Osborne (1999), who concluded that students with

high degrees of intrapersonal intelligence achieved highly in academic tasks and displayed a range of characteristics usually associated with successful learners. In the report and discussion of their findings, Shepherd, Fasko and Osborne (1999) linked intrapersonal intelligence directly to self-efficacy, self-regulation and to higher than average levels of achievement and motivation. These constructs have been extensively researched over the past few decades as they have been found to be instrumental in predicting students' academic success, their capacity to self regulate and their willingness to take responsibility for their own learning when combined with the strategy of goal setting. Amongst the most commonly accepted definitions of these constructs in educational literature are those from some eminent scholars. However, before a discussion of related constructs is undertaken, it is interesting to investigate what has been understood and promoted as intrapersonal intelligence by the authors of MI texts for practitioners, as these are frequently a major influence on the practical implementation of educational theory.

Interpretations of Intrapersonal Intelligence

Whilst it is important to bear in mind that the authors discussed were interested in MI theory as a whole, not specifically in intrapersonal intelligence; the range of definitions and perspectives on this intelligence domain is much more diverse than those of the other intelligences. Publication dates also impact on the understanding of intrapersonal intelligence as they reflect the definitions that Gardner himself was working through in various stages of his thinking regarding this intelligence domain. One of the most influential writers of professional development material for practitioners is Lazear (1999a, 1999b). He focuses extensively on the capacity of strong, accurate intrapersonal intelligence to raise individuals to new consciousness and 'self transcendence' (1999a p149). He indicates that exercises that focus on self reflection and raises questions relating to the nature of 'self' can develop strength in this intelligence domain. He writes

I like to call intrapersonal intelligence the introspective intelligence for it involves awareness about the self and feelings... Intrapersonal intelligence,.....looks inward and knows in and through investigating the self..... Intrapersonal intelligence needs all the other intelligences to express itself, and thus it is an integrator and synthesizer of the other ways of knowing (1999b p111).

Lazear (1999b) does indicate a clear understanding of the importance that Gardner (1993aa) has constantly placed on intrapersonal intelligence and the reasons behind this emphasis. He identifies six aspects of self, including metacognition, higher order thinking and an awareness and expression of different feelings and he details specific exercises for the successful promotion of each. He continues by describing the attitudes of mind, breath and body that are necessary for clearing and focusing the mind in order to reach untapped potential.

These practices may indeed improve self knowledge and self awareness, but the focus on serious, complex individual reflective practices makes them impractical and improbable in regular classrooms. The researchers that are quoted by Lazear (1999a-b) and their nominated 'key contributions' do not exhibit a focus on thinking for teaching and learning; but on promoting deeper understanding of consciousness and intuition. This focal point is reflected in the text, (Lazear, 1999a-b) in which Lazear promotes a 'model' for teaching 'with' intrapersonal intelligence (Lazear, 1999a-b). Each of the four stages in the model is illuminated by practices and tasks to engage students in thinking about aspects of self. What is problematic, however, is that the suggested activities are superficial in comparison to Lazear's (1999a) six aspects of intrapersonal intelligence and they rely exclusively on students' competencies in literacy and language. Students are involved in many solitary tasks and where they are paired the activities are problematic. Each student in the group is 'engaged' in the same task with a partner and the tasks are not sufficiently open ended to allow for diverse means of individual responses.

The writers at the more practical end of the spectrum suffer from much the same limitations. A series of texts intended for use in the various sections of primary schools and published by well known educational publishing houses provide good examples of texts that may be used in classrooms but which also contain seriously limited perceptions of the nature of intrapersonal intelligence (Unauthored, 2004a, 2004b, 2004c, 2004d) . These texts present intrapersonal intelligence with an overly simple definition and list characteristics of students with intrapersonal intelligence. These characteristics include 'can easily express his/her feelings or opinions', 'enjoys working on his/her own' and 'likes to think about his/her feelings'. These attributes do not appear to reflect Gardner's idea of a 'viable model of self'; nor are they necessarily indicative of strong intrapersonal intelligence. Two misconceptions pervaded these and other

texts; that students with strong intrapersonal intelligence enjoyed working alone and those tasks designed for individual engagement promoted intrapersonal intelligence. One trait that was identified in these texts as a characteristic of intrapersonal intelligence was the capacity to set and achieve goals. This was also acknowledged by Berman (1995) and other authors (Arnold, 1999; Campbell, 1997; Jasmine, 1995; McKenzie, 2002). What is noteworthy in the light of Gardner's (Moran & Gardner, 2007) latest definition of intrapersonal intelligence, is the acknowledgement of its relationship to the cognitive skills and behaviors known as 'executive function' and the means by which competency in this intelligence domain may be determined, established and evidenced. The definitions closest to Gardner's explanations of intrapersonal intelligence are consistently found in McGrath and Noble (1995a, 1995b, 1998, 2005a), whose most recent publication defines intrapersonal intelligence as

...the ability to generate a coherent model of oneself, and to use this self – knowledge to plan and direct one's life effectively. It includes skills in self reflection, goal setting, metacognition, emotional literacy and self analysis of one's strengths, limitations behavior and fears (McGrath & Noble, 2005a p10).

The activities and suggestions in this text for practitioners are practical and reflect Gardner's own definition of intrapersonal intelligence at the time of publication. McGrath & Noble (2005a) avoid the misconceptions found in other writers in that they recognize that solitary tasks are not necessarily exclusive in promoting intrapersonal intelligence. They also acknowledge the important role that interaction with others plays in developing strong intrapersonal intelligence and do not infer that students with strong accurate intrapersonal intelligence prefer to undertake solitary learning tasks.

Conclusion

Gardner's MI theory (1983b, 1993aa) has been extensively adapted in classroom contexts as a practical tool for differentiating the curriculum, enhancing strengths in various intelligence domains and supporting the learning of individual students (Arnold, 1999; Campbell, 1997; Cost & Turley, 2000; Davidson, 2005; Diaz-Lefebvre, 2004; Gardner, 2000, 2003; Groundwater-Smith, Ewing, & Le Cornu, 2003; Jasmine, 1995; Marzano, 1992; McKenzie, 2002; Scheepers, 2000; Smith, 2002). His theory of intelligences is underpinned by current research from cognitive science psychometric research (Posner, 2004; Reese, 1998) which itself makes considerable

contribution to the understanding of the learning process by investigating the brain and how it operates effectively.

However, Gardner's ongoing efforts to adequately define intrapersonal intelligence has focused attention on this single intelligence domain (1983b, 1993aa, 1999b, 2000c-b), as have his comments about its 'narrow interpretation' (Noble & Grant, 1997). This is supported by his views that strength in this intelligence domain would be an important aspect of success in twenty first century learning (1993a, 1993a, 2000c-b). Gardner's most recent definition of intrapersonal intelligence (Moran & Gardner, 2007) provides a more detailed understanding of this construct. It also clearly explains the relationship between the internal components of intrapersonal intelligence and the external dimensions, evidenced as the cognitive skills and behaviors of executive function. This clarification allows educators to appreciate Gardner's (1983, 1993a, 1999a, 1999b) perspective of the importance of intrapersonal intelligence for learners, to identify a starting point for individualized teaching and learning programs and add a new dimension to established methods of differentiated planning and learning in the classroom context.

Chapter Three The Relationships between Intrapersonal Intelligence and Related Constructs

Intrapersonal Intelligence: Knowledge of Self

This chapter concentrates on the dimension of intrapersonal intelligence that is identified as self knowledge. As discussed, there are few research articles reporting on studies that focus specifically on the area of intrapersonal intelligence. As a result, there are few opportunities to study others' interpretations of the relationship of intrapersonal intelligence and other self constructs that are associated with successful learning. Another reason for this paucity of research may lie in the difficulties associated with establishing the dissimilarities between the self knowledge aspects of intrapersonal intelligence and related constructs, one of which is emotional intelligence. Evidence of the lack of clarity between emotional intelligence theories and the intrapersonal intelligence domain can be found in various texts; perhaps the most important of these are teacher orientated texts such as that by Ellison (2001). This work does not give a clear picture of either intrapersonal intelligence or any model of emotional intelligence as the key terms are used interchangeably and without definition. As a result a detailed discussion is provided in this chapter to explain, in some detail, the origins of the theories of emotional intelligence, the limitations of the models of emotional intelligence and the distinctions that separate these understandings from Gardner's (1983, 1993a, 1999a, 1999b) theory of the intrapersonal intelligence domain.

Other related constructs to intrapersonal intelligence include metacognition (Flavell, 1977) which is recognized as a component of intrapersonal intelligence, but is not as inclusive in nature. Metacognition relates only to self knowledge about learning and not to the self knowledge about all aspects of life and development that is meant by intrapersonal intelligence. Self efficacy beliefs (Bandura, 1994; Pajeres, 1996a, 2000; Schunk & Pajeres, 2001; Zimmerman, Bonner, & Kovach, 1996) are also discussed as this theory is a well established educational construct. Self efficacy has been widely explored in the research literature and the benefits to students and their learning widely published. The implementation of self efficacy as a self theory in the educational contexts in which it is used, has some theoretical links to intrapersonal intelligence and these are explored, as are the conceptual links to self schema (Ng,

2002) and to self theories of intelligence. These self theories, developed by Dweck (2000, 2006), focus on individuals' notions of the nature of intelligence and how these impact on their learning strategies and attitudes to learning., However the theories that are most closely conceptually linked with intrapersonal intelligence are those that explore the notion of emotional intelligence. These theories are discussed in some detail to examine the differences and similarities in these theories, which, as noted, are at times used interchangeably (Ellison, 2001).

Intrapersonal Intelligence and Emotional Intelligence

Although influenced by Gardner's thinking about intelligence (1983), Salovey and Mayer's (1990) original writing on emotional intelligence was indicative of the resurgence of interest in social intelligence, historically investigated by theorists such as Thorndike and Cronbach (Cronbach, 1960; Thorndike, 1920; Thorndike & Stein, 1937). Salovey and Mayer established a comprehensive definition for emotions, describing them as interdisciplinary 'organized responses' that arise in response to events that are meaningful for the individual. The interdisciplinary nature of these responses was understood to breach the boundaries of seeming separate psychological subsystems, including those that regulate cognition and motivation, reflecting the authors' interest in the relationship between cognition and emotion (Bryan, 2006; J. Mayer, undated a, undated e; J. Mayer, Carrochi, & Michela, undated b; J. Mayer & Landy, undated c; Salovey & Sluyter, 1997; Salovey & Mayer, 1990). Integrating this notion of emotions with Wechsler's (1958) definition of intelligence, Salovey and Mayer (1990) labeled the set of skills that they hypothesized contributed to the appraisal, regulation and expression of the emotions of self and others as 'emotional intelligence'. This description was later clarified (J. Mayer et al., 2004a) and the emotional intelligence model developed by these theorists was defined as

The capacity to reason about emotions, and of emotions to enhance thinking. It includes the abilities to accurately perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth.

However , it was in their original writing that Salovey and Mayer (1990) provided a definitive explanation of the relationship between the work of Salovey and Mayer and that of Gardner (Gardner, 1993a).

Salovey and Mayer (1990 p 189) describe emotional intelligence as a 'part' or 'subset' of Gardner's personal intelligences (1983b). They portray emotional intelligence as 'quite close to one aspect of Gardner's personal intelligences; that of the intrapersonal intelligence, as it was defined in the original edition of *Frames of Mind* (1983 p239)

The core capacity at work here is access to one's own feeling life -one's range of affects or emotions: the capacity instantly to effect discriminations among these feelings and, eventually, to label them, to enmesh them in symbolic codes, to draw upon them as a means of understanding and guiding one's behavior.

Coupled with interpersonal intelligence, this aspect of intrapersonal intelligence is a particularly important component of emotional intelligence. Savoley and Mayer (1990) acknowledge, however that further aspects of intrapersonal intelligence; that is, an awareness of self in other dimensions and the capacity to use the knowledge that is the result of that awareness effectively in life; are not included in their conceptual model of emotional intelligence. In this manner the emotional intelligence model they developed is neither synonymous with intrapersonal intelligence nor identical to Gardner's (1983) personal intelligence domains. In their later works on emotional intelligence (J. Mayer & Salovey, 1997; J. Mayer, Savoley, & Caruso, 2004; J. Mayer et al., 2004a), consistently acknowledge that their thinking on emotional intelligence was influenced by the psychologists seeking to broaden thinking about intelligence, especially those who developed theories of specific Multiple Intelligences, including Gardner (1983,1993a, 1999a, 1999b).

The development of their four branch model (J. Mayer & Salovey, 1997; J. Mayer et al., 2004, 2004a) of emotional intelligence skills and competencies continues to focus exclusively on emotions and still does not include those areas of intrapersonal intelligence that were identified as absent in their original thinking. It is interesting that, like Gardner (1983) they have developed their own three criteria that qualify emotional intelligence as a general intelligence and are both development theories. However, unlike Gardner, Mayer & Salovey (1997) do not explicitly place emphasis on development within social and cultural contexts. Admittedly, it would be rare for any individual to live without human contact or interaction with society, but to conclude that the maturation process of emotional intelligence is determined by chronological age and not the

quality of interaction and self reflection that the individual is engaged in is rather unusual. If this intelligence is naturally present in all individuals to a greater or lesser degree, then intrapersonal and emotional intelligences are fundamentally very different, as Gardner (1983) consistently stresses the *potential* for his Multiple Intelligences domains, including the intrapersonal intelligence domain, is strengthened by appropriate learning interactions and experiences.

However, Salovey and his colleagues are not alone in their interests in emotional intelligence. Other well known theorists include Bar-On (Bar-On, Tranel, Denburg, & Bechara, 2003; Bar On & Parker, 2000) and Goleman (Boyatzis, Goleman, & Rhee, 2000; Goleman, 1995) who have both developed theories of emotional intelligence. Goleman (1995a) in particular did much to bring the notion of emotional intelligence to the notice of the general public. However, the success of Goleman's text (1995), was, according to Mayer et al, (2000), not necessarily a result of the calibre of intellectual content, but the result of societal tensions at that time. They argue that the promotion of an intelligence, that anyone could have, that gave individuals the potential to overcome difficulties and promote greater success in a variety of learning and workplace contexts came at a time when societal tensions rendered the public most susceptible to this notion (Freedman, undated)

Despite its public appeal, Goleman's work on emotional intelligence (1995) appears to have attracted a significant degree of academic criticism. Mayer et al (2000 p 102) comment that 'at first it was presented as a journalistic account of our own theory', despite the resultant publication containing significant differences to their work, most notably the absence of any attempt to develop or explore any relationship between emotion or cognition; a critical focus of the work of Salovey, Mayer & Caruso (2004). Another issue centers around Goleman's (1995) reluctance to decide on a definition for emotional intelligence. Whilst Gardner may have developed and refined the definition of intrapersonal intelligence (Gardner, 1983, 1993a, 1999a, 1999b; Moran & Gardner, 2007) over a period of many years and as the result of reflection, Goleman's definition 'snowballed' within the text until the traits included in his final definition were described by Mayer et al as it '.....encompasses the entire model of how one operates in the world' (J. Mayer et al., 2000 p101-102). Gardner (Noble & Grant, 1997 p 24-26) also appears to have some problems with Goleman's model of emotional intelligence

Interpersonal and intrapersonal intelligences add up to Dan Goleman's emotional intelligence. But I think he goes on to talk about other things like having a certain stance on life... My major quibble with his book is that he kind of collapses description and prescription... I think that Dan wants people to be a certain way.....(Noble & Grant, 1997 p 24-26).

This comment illustrates that Gardner himself has some problems with Goleman's (1995) model of emotional intelligence and the most significant of these is that this model goes beyond the boundaries of Gardner's own understanding of the personal intelligences, which are part of a theory of cognition. It is possible that the prescriptive nature of Goleman's work actually places boundaries on the potential of individuals to develop these intelligences and that it may even promote a type of homogeneity that is contrary to Gardner's emphasis on the need to find personal meaning and understanding in life. Whilst Gardner's (1983, 1993a, 1999a, 1999b) intrapersonal intelligence domain requires individuals to express this capacity as the skills of executive function, Goleman's (1995) theory of emotional intelligence appears to require individuals to conform to a particular perspective of life that is the most socially acceptable.

Bar-On's (1997) emotional intelligence theory is problematic for several reasons. These include the use of the terms that are normally associated with Gardner's (1983, 1993a, 1999a, 1999b) intrapersonal intelligence and the total exclusion of any cognitive traits. Bar-On's definition (1997 p14) of emotional intelligence is similar to Goleman's in that it is an extensively inclusive collection of non - cognitive traits. He defines emotional intelligence 'as an array of non cognitive capabilities, competencies and skills that influence one's ability to succeed in coping with environmental demands and pressures'. Using an analysis of his own self reporting scale, the value of which is disputed by others in the field (J. Mayer, Carrochi & Michela undated), he has developed a theory that comprises five categories of competencies. The two that are of interest in this study are, firstly, intrapersonal emotional intelligence, subdivided into emotional self awareness, assertiveness, self-regard, self -actualization and independence. This represents a very different view of intrapersonal intelligence from that defined and redefined by Gardner (1983, 1993a, 1999a, 1999b; Moran & Gardner, 2007). The other emotional intelligence to be considered is interpersonal emotional intelligence: characterized by empathy, interpersonal relationship and social responsibility. Whilst these two components of Bar-On's emotional

intelligence have similar titles to Gardner's 'personal intelligences', they are very different in nature and, once again, do not form part of a theory of cognition.

Like Goleman's work, Bar-On's model of emotional intelligence has been understood to be simply a renaming of personality theories and research (Mayer et al 2000). Mayer et al (2000 p103) 'take issue' with theories that are relabeling all the parts of personality as emotional intelligence and comment that these theories have moved significantly away from their base; which was Gardner's intrapersonal and interpersonal intelligence domains. In doing so, they have widened the gap between intrapersonal intelligence (1983, 1993a, 1999a, 1999b; Moran & Gardner, 2007), and theories of emotional intelligence that have no relationship to cognition. This is despite the fact that the capacities to understand one's emotions and generate them to support more effective thinking are integral to sound intrapersonal intelligence (Gardner, 1983, 1993a, 1999a, 1999b; Moran & Gardner, 2007), especially in the component of executive function identified by Moran and Gardner (2007) as the 'will'. Emotional intelligence theories, therefore, although remaining conceptually linked to intrapersonal intelligence (Gardner, 1983, 1993a, 1999a, 1999b; Moran & Gardner, 2007), and may still be acknowledged as a subset of intrapersonal intelligence, have developed and evolved in a direction that is significantly different to that taken by Gardner as he refined his notion of the exact nature of the intrapersonal intelligence domain.

Intrapersonal Intelligence and Metacognition

One construct that is very closely related to intrapersonal intelligence (Gardner, 1983, 1993a, 1999a, 1999b; Moran & Gardner, 2007) is metacognition. It is a key construct to consider in relation to intrapersonal intelligence for a number of reasons. Firstly, it may be understood as a component of the '*skill*' parameter (Moran & Gardner, 2007) of the external expression of sound intrapersonal intelligence: executive function, which will be discussed more fully in following chapters. Metacognition is a construct that can be developed by interaction with appropriate experiences and materials and may also be critical in the development of the '*master stage*' of executive function, specifically in relation to the meta – skill known as interpolation (Moran & Gardner, 2007 p 30). Interpolation (Moran & Gardner, 2007 p 30) requires individuals to not only have highly developed knowledge in the intelligences other than the intrapersonal domain,

but also to have the capacity to understand and use their knowledge and skills in the processes of highly personal reflection. This personal reflection is important in the setting of personal learning goals and the capacity to remain focused and motivated in order to successfully complete them.

It could easily be argued that thinking about one's own thinking and determining the ways in which individuals can maximize their own learning by using personal strategies, builds individual awareness of one's relative strengths and limitations. It could also be contended that metacognitive practices lay the foundations for the extremely complex process of interpolation. This may be especially so when metacognitive development is specifically designed to promote 'deep approaches' to learning (Case & Gunstone, 2002) and is discussed as a complex set of cognitive strategies and knowledge, rather than just as 'thinking about one's thinking' (Hacker & Dunlosky, 2003; Livingston, 1997). The increasing popularity, in education, of the theory of metacognition, originally developed by Flavell (1977), resulted in Gardner not only coining it a 'buzzword' (1999b, p52), but also commenting on the general practice of interpreting intrapersonal intelligence as metacognition (Gardner, 1997b). In fact, a discussion of metacognition serves to illustrate the disparity of the two constructs.

Metacognition (Flavell, 1977; Livingston, 1997) is generally understood to have three components; strategic knowledge, task knowledge and self knowledge. Kuhn (2000) goes further and details the meta-levels of metacognition and then describes how these impact positively on learners and learning in a cyclical manner. Hartman (2001) confirms the view that metacognition can be learnt and is not a fixed construct, but one that is capable of gradually evolving. She links metacognition primarily with reflection, but also with other skills relating to successful learning; skills that can be improved with practice. She states '... reflective thinking is the essence of metacognition' (2001, p xi). While the capacity to be strengthened and changed may be common characteristics to both metacognition and the intrapersonal intelligence domain, metacognition is a simpler construct.

Metacognition does not comprise the complexity and all encompassing nature of intrapersonal intelligence and is therefore a more limited construct in comparison. Hall, Myers, & Bowman (1999) share Gardner's view that metacognition is too limited a construct to be interpreted as

intrapersonal intelligence as (Gardner (1997b) comments that metacognition ‘..... is the awareness of one’s mental processes- rather than (on) a full range of emotional abilities (Gardner, 1997b p 21). Gaskins and Pressley (2007 p 262) note that ‘.... metacognition involves knowing about thinking and knowing how to employ executive function processes to regulate thinking’. They also comment that metacognition is about the students’ knowledge of their personal attributes and beliefs. Scant attention is given to their awareness of their emotions. The ‘awareness of one’s mental processes’ i.e. self knowledge, associated with metacognition appears to be purely knowledge about an individual’s capacity to evaluate, monitor and regulate his/her relative strengths and limitations in terms of the strategies they have to complete a specific task.

The range of emotional abilities associated with metacognition are limited to how individuals feel about specific tasks. So, while this is certainly very useful in learning contexts, metacognition may be considered to be a significant part of the intrapersonal intelligence domain as these basic competencies contribute to sound intrapersonal intelligence and not the reverse. However, metacognition (Flavell, 1977; Livingston, 1997) is not as inclusive as intrapersonal intelligence in that it does not have the dual nature of the latter construct. It also does not have the potential to develop the cognitive skills and strategies associated with the executive function of intrapersonal intelligence. The constructs have differing limitations and potential and the terms cannot be used interchangeably. As such, metacognition (Flavell, 1977; Livingston, 1997) remains only one component of Gardner’s (1983, 1993a, 1999a, 1999b; Moran & Gardner, 2007) notion of intrapersonal intelligence.

Intrapersonal Intelligence and Self Efficacy

Another construct that is useful to discuss in an attempt to fully understand Gardner’s (1983, 1993a, 1999a, 1999b; Moran & Gardner, 2007) notion of intrapersonal intelligence is self efficacy; specifically students’ academic self efficacy. This self belief is recognized as being important to the motivational aspect of the executive function of intrapersonal intelligence identified by Moran and Gardner (2007) as the ‘will’. Self-efficacy has been traditionally associated with Bandura (1994), who also recognizes thatthe development of self – knowledge is a cognitive construction rather than simply a mechanical audit of one’s

performance' (Bandura, 1997 p81). He discusses this construct 'as the belief in self' that individuals have that they will be able to perform certain tasks successfully and to the standard required. He identified four sources of self efficacy experiences. These are what he termed 'enactive mastery experiences' (Bandura, 2007 p 80). These are the direct student experiences that either raise their efficacy levels (success) or lower them (failure). The four sources are emotional arousal, psychological arousal, vicarious experiences and social arousal. The manner in which interactions with these sources are interpreted impact on the degree of self efficacy that students exhibit in preparation for a task. In other words, individuals who believe they can cope with new challenges have a high degree of self- efficacy and increase their chances of success. Bandura's (1986, 1994, undated) work has attracted a significant amount of research interest and has been linked to a range of procedures and strategies that have been assessed as supporting effective learning.

Pajeres and his colleagues' (Pajeres, 1996b, 2001; Pajeres & Valiante, 1996, 2000; Schunk & Pajeres, 2001) research into the contribution of self efficacy as an expectancy belief in academic achievement, has been an important contribution to understanding the impact of self efficacy beliefs in educational settings. Schunk and Pajeres (2001) in particular identify the characteristics of self efficacy in relation to other constructs, among these the motivational constructs of outcome expectancy and effectance motivation, which they indicate are not synonymous with self efficacy beliefs. They also, as do other writers in this field, separate self efficacy from self concept, indicating that self concept includes feelings of self worth that are not a component of the self efficacy construct. They assert that self evaluation skills improve with chronological age, but the only indication of how this process occurs is related to school based learning competencies and experiences.

However, the systematic separation and delineation of the various aspects of self that are entrenched in Bandura's (1994) Theory of Social Cognition are contrary to the holistic nature of intrapersonal intelligence as defined by Gardner (1983). As mentioned, students' self – efficacy beliefs do link conceptually to intrapersonal intelligence as this self-knowledge has significant impact on motivation and thus on learning outcomes (Bandura, 1994; Gibbs, 2003; Pajeres, 1996a, 1996b, 2001; Pajeres & Valiante, 1996; 2000; Pintrich & Schunk, 1996; Sewell & St.

George, 2000; Zimmerman et al., 1996). However, the development of intrapersonal intelligence relies on much more than the results of performance feedback, interaction with modeled experiences and interesting and satisfying learning experiences. The construct of intrapersonal intelligence stresses the importance of students being motivated by accurate self perceptions of self as learner; otherwise those with inaccurate self- knowledge are doomed to an increasing demoralizing pattern of not coping well and not succeeding to fulfill their expectations of themselves. The work of Pajeres and Schunk (2001) on the increasing importance of self evaluation strategies may do much to minimize the impact of this lack of attention to student accuracy in their self efficacy beliefs . It may also promote a greater understanding of self efficacy and limit studies that find students' self accuracy beliefs to be inaccurate (Schunk & Pajeres, 2001; Sewell & St George, 2000) and those that find developmental and maturation factors impact negatively on students' self efficacy (Nicolaou &Philippou ,2004; Harter ,1999; Midgley, Feldlaufer & Eccles, 1989).

Self efficacy is not 'future' orientated in the way that is used by Beare (2003), Burchsted (2003) and other educationalists referring to twenty first century education. Self efficacy refers to specifics; namely students' perceptions of their specific competencies in predetermined learning tasks in well defined subject domains (Pajeres, in Woolfolk, 2004) in the immediate future. Many of the problems students are faced with in the classroom or in life, or will be faced with, are not able to be anticipated, have no precedence or are simply too different in their nature or structure to be successfully assessed in terms of self efficacy beliefs. Students are not necessarily, sufficiently engaged in reflective, metacognitive processes, although the work of Pajeres and Schunk (2001) certainly places more emphasis on the importance of reflection in the learning process. In self efficacy studies students are not charged with the task of evaluating their physical, emotional and academic capacities in a holistic manner and interweaving these competencies to form an entire sense of self and then evaluating their various competencies in relation to new learning tasks.

Bandura' s development of self efficacy (1986, 1994,1997) presents a very different perspective of students' self beliefs in teaching and learning contexts when compared with the complexity of Gardner's (1983, 1993a, 1999a, 1999b) theory of intrapersonal intelligence, which provides a

another , more expansive lens through which to view and explore students' academic self beliefs. It may be argued that one of the major limitations of self efficacy theories is that these theories do not provide sufficient intricacy of the cognitive processes to facilitate teachers' practice in the development of the cognitive skills associated with executive function, despite Bandura's (1997) argument that skill development has a limited direct impact on students' academic performance and their academic efficacy beliefs. Bandura (1997 p 216) asserts that '...perceived efficacy ..' has a more powerful effect on academic performance by directing the quality of the students' thinking and cognitive skills and by promoting persistence. From this perspective, Bandura (1997) firmly places the 'will' of executive function in a more important, dominant position than that of the other two parameters of Moran and Gardner's (2007) perspective of the executive function of intrapersonal intelligence. From this perspective, true interpolation of the 'will' the 'will' and the 'skill' appears to be difficult. Various limitations are also perceived in the following theories of 'self', although these could also be considered to have conceptual links with intrapersonal intelligence (Gardner, 1983, 1993a, 1999a, 1999b; Moran & Gardner, 2007).

Other Theories of Self

Ng (1998, 2000) researched the impact of self-schema on students' learning behaviors. Self-schema is defined as 'the cognitive generalization of one's self-knowledge in a specific domain from past experiences' (Ng, 1998,p2). Although this understanding of self is much narrower in definition than intrapersonal intelligence, it is interesting that Ng found that self- schema had strong links, not only with the students' achievement goals, but also with their perceived achievement. Students who observed that they were 'good' students took more control of their learning and gained better results than those who had negative perceptions of themselves as learners. Ng (1998, 2000, 2002) also points out that students who did not know how to learn were not able to increase their performance levels by motivation alone. However, he gives no indications of how students learnt how to learn. Van Damme, Opdenakker, De Fraine and Mertens (2004) found that a student's self concept, was an important motivational factor in learning. Dermitzaki and Leondari (2004) also found that, although self concept in very young students was not related to their cognitive or metacognitive processing of information, it was significantly related to their degree of motivation.

Useful as these theories may be, they comprise only a part of the depth of self- knowledge that is seen by Gardner (1983, 1993a, 1999a, 1999b) to be so essential to successful learning. Each of these writers serves to highlight the importance of intrapersonal intelligence as defined by Gardner. Bandura's (1994) self- efficacy theory could not have been developed without individuals having some knowledge of their relative strengths and weaknesses. Nor could individuals develop a self-schema as discussed by Ng (1998, 2000,2002). It is highly unlikely that students would be able to develop and implement a range of personal learning strategies, and monitor their progress, if they had not first had the opportunities to build a repertoire of strategies that each student found personally meaningful. These writers appear to focus on the characteristics that can be observed in learners as the result of strong intrapersonal intelligence. Unlike Gardner (1993a), these theorists have not first addressed the basic understanding of self that contributes to the development of these characteristics and therefore each of these other self theorists failed to engage fully with the complexity of diverse learners and what supports their learning and what makes them fail.

In comparison to Gardner's (1983, 1993a; Moran & Gardner, 2007) comprehensive definition of intrapersonal intelligence, the focus on a single characteristic, for example 'self efficacy' or 'self schema' is less inclusive. The 'self theories' explored by Dweck (2000) and her colleagues are similarly less inclusive than that of Gardner and rely exclusively on the students' conceptualization of the construct of intelligence. While the other theorists attribute successful learning to characteristics that indicate the students who were studied had already developed some understanding of their relative strengths and limitations, Dweck (2000) bases her theoretical conclusions on success resulting from the students being exposed to and embracing a single understanding of intelligence and the implications of this viewpoint.

Dweck (2000) describes and explains two diametrically opposed views of the nature of intelligence and their impact on motivation, achievement, development and personality. The 'traditional' understanding of intelligence portrays this construct as a fixed, inherited trait that cannot be changed, rather like a genetic inheritance, such as the color of one's eyes. This is termed 'entity theory'. Dweck (2000) and her colleagues found that there were many negative repercussions for students holding this view. Firstly, they may worry about how intelligent they

actually are and what sort of IQ score they might attain. More importantly, they felt considerably challenged by any tasks that presented some difficulties as these tasks threatened their self esteem. When faced with difficult tasks such as these, students who embraced the 'entity view' of intelligence were observed to use strategies that undermined their potential to succeed, engaging in 'self handicapping' (Dweck, 2000 p 4) to protect their sense of self worth. They associated effort with low intelligence; feeling that 'smart' people always found tasks easy.

In contrast, students who understood intelligence as a 'trait' that could be strengthened and cultivated through meaningful activities and experiences where more pro - active in the learning process, especially when challenged by difficult tasks that required a great deal of effort and perseverance. Naming this notion of intelligence 'the incremental theory of intelligence', Dweck (2000), and her various collaborators in a number of studies, found that repercussions of subscribing to this belief were singularly positive for students' learning and academic achievements. The students valued effort and persistence. One research result (Henderson & Dweck in Dweck, 2000 p 28 - 32) that is of particular interest for this study focused on the coping capabilities of students from primary school settings to junior secondary or to middle school contexts. Traditionally, these transitions have proven difficult for some students and their academic progress has been less consistent than it was previously. This is considered to be because the work gets harder, often the teachers differentiate less for individual learning preferences, grades become more important and the workload increases and students undergo physical, cognitive and emotional changes (Blakemore & Choudhury, 2006).

The researchers found, amongst other things, that students with high confidence who held the entity theory of intelligence were amongst those who managed only low academic success, in contrast to the students who subscribed to the incremental theory of intelligence. Several individuals from the latter group were students who had expressed low confidence in their intellectual ability. However, they had risen to the challenge of the secondary classroom and were working to improve their competencies. They had achieved the most impressive academic gains. The students from the two groups also differed in the explanations they would give if they did not achieve highly at school. The students whose beliefs were based on incremental theory were more likely to say that they needed to make more effort or to revise their learning

strategies. The students whose beliefs were based on entity theory were more likely to say that they were not smart enough.

While it is not difficult to determine which theory of intelligence underpins Gardner's (1993aa) work, it is difficult to understand how exactly the students who held the incremental theory of intelligence were able to independently develop the strategies and modus operandi required to succeed in a more complex and demanding learning context, while the other group of students were not. Perhaps Dweck (2006 p 11) provides a clue in a later publication where she states

‘Howard Gardner, in his book *Extraordinary Minds*, concluded that exceptional individuals have “ a special talent for identifying their own strengths and weaknesses”. It is interesting that those with the growth mindset seem to have this talent’

The growth mindset to which she refers is the perspective of those who believe the incremental theory of intelligence.

While Dweck's (2006) theory on growth mindset and achieving success appears to have a sound theoretical background, there is a lack of detail on how exactly individuals can acquire the skills the skills, knowledge and attitudes that can facilitate success. It appears that subscribing to one specific conceptualization of the nature of the construct understood generally as ‘intelligence’ would be an important start, but how exactly do students, in particular young secondary students turn this perspective into academic success? Obviously, the understanding of intelligence potential may motivate students to try harder, but there are occasions when trying harder alone would not be enough to make a substantial difference (Ng, 2000, 2002). Similarly, accepting that poor grades do not necessarily mean that individuals are not intelligent is a useful and positive perspective, but how do students revise strategies and find other ways to make personal meaning of their learning? These practical considerations are part of the essence of the teaching and learning dynamic engaged in daily in educational contexts and are important questions that are left unanswered by Dweck's (2006) theory of ‘mindsets’ based on individuals’ perceptions of the nature of intelligence.

Conclusion

This chapter has explored and explained the differences between intrapersonal intelligence and some of the other constructs that have been associated with, or developed from this intelligence domain. In particular, it sought to clarify the relationship between the characteristics of intrapersonal intelligence and those of the various theories of emotional intelligence. The distinctions are important. Although theories of emotional intelligence have been strongly influenced by the intrapersonal and interpersonal intelligence domains of Gardner's (1983a) cognitive framework, they have subsequently gained identities of their own and differ from Gardner's (1983, 1993a, 1999a, 1999b; Moran & Gardner, 2007) perspective regarding intrapersonal intelligence and are not synonymous constructs with the intrapersonal intelligence construct or with each other.

Intrapersonal intelligence (Gardner 1983, 1993a, 1999a, 1999b; Moran & Gardner, 2007) also provides a more comprehensive understanding of 'self' than does metacognition. The awareness that metacognition refers explicitly to various, academically orientated skills, including emotions in relation to tasks and not to a full range of emotions, knowledge and perceptions of self, makes it possible for educators to fully understand differences between this and the comprehensive, complex nature of the intrapersonal intelligence domain (Gardner 1983, 1993a, 1999a, 1999b; Moran & Gardner, 2007).

The all embracing nature of intrapersonal intelligence is further demonstrated in the discussion of other theories relating to 'self'. While the work of Bandura (1997) on self efficacy, Ng (1998, 2000, 2002) on students' self schema and Van Damme, Opdenakker, De Fraine and Mertens (2004) and others on the role of self concept in motivation illustrate many of the benefits of students developing these self-understandings, these researchers arguably have investigated constructs that are single components of intrapersonal intelligence only. Many of these constructs do not have the depth of understanding regarding the complexity of the individual nature of learning or of the impact of the intricate personal attributes that contribute to successful learning that is provided by Gardner's (1993aa) intrapersonal intelligence domain. Similarly, Dweck's theories of 'self' (2000) and the mindset for success (2006) highlight the importance of understanding intelligence as a dynamic construct capable of change and development; but it

does not provide sufficient detail of the processes or strategies that individuals need to master or understand, in order to maximize the potential of this perspective of intelligence or the role of the teacher in this process.

It appears that although Dweck (2000, 2006) has successfully identified the potential of understanding this view of intelligence and Bandura (1997, 1986), Ng (1998, 2000, 2002), and others have identified specific advantages of having strengths in some aspects of intrapersonal intelligence; it has been left to Gardner (1983, 1993a) to provide the insight into what goes in between. Intrapersonal intelligence as described by Gardner in his successive texts (1983, 1993a, 1993ab, 1999b, 2000c-b) arguably remains the single substantial, all encompassing theory of the importance of self knowledge and executive function in successful learning.

Chapter Four Executive Function in Education

Introduction

The discussion in the previous two chapters has concentrated on Gardner's (1983; 1993a, 1999b; 2000c-b) theories of the self knowledge dimension of intrapersonal intelligence and its conceptually related constructs. The focus has been on following the development of Gardner's (1983; 1993a,; 1999b; 2000c-b) own reflections on the nature of his intrapersonal intelligence domain and the impact this has on his definitions of the construct. Each new notion helped clarify exactly what he intended educators and others to understand by intrapersonal intelligence. This was further elucidated by an examination of related constructs (Bar-On et al., 2003; Flavell, 1977; Goleman, 1995; J. Mayer & Salovey, 1997; J. Mayer et al., 2004; Bandura, 1994; Dweck, 2000, 2006; Ng, 1998, 2000, 2002) and other theories of 'self' which also served to highlight the differences and commonalities found in these theories.

However, intrapersonal intelligence is composed of two aspects; the sense of self that is not observable and which is identified as the 'core of intrapersonal intelligence' (Moran & Gardner, 2007 p 35) and the expression of self through observable skills. Moran and Gardner (2007 p 35) define the latter in this manner 'the expression of self involves the second aspect of intrapersonal intelligence- the executive capacity to integrate one's goals, skills and motivation'. This executive capacity is also known as executive function (or functions) and is becoming increasingly important in educational contexts (Meltzer, 2007b), especially as curriculum changes place increasing pressure on primary aged students to demonstrate the cognitive processes that are associated with this construct, become more active participants in their learning and construct their own understandings and knowledge. As a result the executive function of intrapersonal intelligence (Moran & Gardner, 2007) and the constructs it comprises are the focus of this chapter.

Whilst the term 'executive function' may not be used frequently in educational contexts at present, the skills that comprise the various aspects of this construct are more familiar and have attracted the attention of educational researchers for some time, as these skills are believed to be critical to the learning process. The developmental aspects of these cognitive skills such as self regulation, task engagement and motivation create an increasingly complex notion of the already

multifaceted components of executive function. Narrowing the focus of the discussion to Moran and Gardner's (2007 p 20) definition of executive function as '*the will, the skill and the will*', still leaves the task of unpacking the intricate relationship of factors such as student engagement and the concept of 'flow' (Csikszentmihalyi, 1988, 1991b), the perspectives presented by educational scholars examining the important construct of motivation (Elliott & Dweck, 2005; Hartman, 2001; Munns, 2004; Pintrich & Schunk, 1996; Woolfolk, 2004) and diverse notions of what constitutes self regulation (Bandura, 1994; Boekaerts & Corno, 2005; Hartman, 2001; Schunk, 2001b; Zimmerman et al., 1996; Zimmerman & Schunk, 2001). Also important are the ways in which these constructs integrate to encourage the development of individuals' capacities for persistence and perseverance, for increased flexibility in thinking skills and their working memory and for their increasingly confident attempts to successfully achieve personally challenging learning goals.

Discussions of theories of self regulation in particular, have strong associations with hypotheses regarding the role of setting academic goals (Schunk, 2001b), while investigations into motivation are theoretically linked to newer perspectives of the role that theories of self (Dweck, 2000, 2006; Elliott & Dweck, 2005) play in attributing reasons for academic success and failure. Motivation theories also link conceptually to recent developments in the area of positive psychology, most specifically to notions of the importance of positive emotions (Fredrickson, 2000, 2001) in learning contexts. The investigations of recent theories of intrinsic and extrinsic motivation (Woolfolk & Margetts, 2007) and performance and mastery goals (Woolfolk & Margetts, 2007) that explore the exclusive nature of each construct contributes to the complexity of the notion of executive function that Moran and Gardner (2007) have presented. The simplistic definition offered by Moran and Gardner (2007) belies the exceedingly complicated hypothesis that they identify as executive function. However, in addition to offering a theoretical perspective on executive function, Moran and Gardner (2007 p 34) summarize the current educational climate and present their thinking on the rationale behind the growing interest in this paradigm,

We suspect that executive function has become a hot scholarly topic at the start of the 21st century because its aims are becoming more important. Educational reform has stimulated a call for students to take more responsibility for their learning.....Social mobility,

diverse initiatives, globalization and technology require people to coordinate more varied types of information and adapt to a wider array of situations than ever before, often with considerably less time for deliberation.

Views of Executive Function

Formerly found almost exclusively in clinical settings, the term executive function has risen to new prominence in learning contexts as a result of the increasing interest of educational practitioners to access the findings of medical research into learning and the brain to inform their teaching and learning (Denckla, 2007). However, this is not a simple task (Bernstein & Waber, 2007). Meltzer (2007b p 1) comments that ‘fuzzy definitions still abound’ and that ‘furthermore, different theories and models still compete to explain the development of executive function processes’. What can be determined, however, is that executive function(s) is a general term that is used to identify ‘the complex cognitive processes that serve ongoing, goal-directed behaviors’. It can also be determined, on further examination of the constructs that comprise executive function and the associated research findings, that executive function processes are processes that are recognized as supportive of student academic endeavors learning and have been shown to improve learning outcomes. Meltzer (2007b p 1-2) identifies the following traits as common elements of many of the definitions of executive function:

- Goal setting and planning
- Organization of behaviors over time
- Flexibility
- Attention and memory systems that guide these processes (e.g. working memory)
- Self regulatory processes such as self monitoring.

These fundamental skills align neatly to those described in the model offered by Dawson and Guare (2004 p 1-2) and Dendy (2002) The former also offer a definition of executive skills, indicating that these cognitive processes have a major role in developing self regulatory behaviors. They state

Executive skills allow us to organize our behavior over time and override immediate demands in favor of longer term goalswe can plan and organize activities, sustain attention and persist to complete a task. Executive skills allow us to manage our emotions and monitor our thoughts in order to work more efficiently and effectively (Dawson and Guare (2004 p 1-2).

Dawson and Guare (2004) believe that executive function is facilitated in two ways. Firstly, by using the specific cognitive processes and demonstrable skills acknowledged as representing executive function to determine goals and achieve them. They identify these skills as planning, organization, time management, working memory and metacognition. The second group of executive skills, response inhibition, self regulation of emotions, task initiation, flexibility and goal directed persistence function to modify behaviors so that goals may be successfully completed.

Moran and Gardner's (2007) definition of executive function is congruent with those offered by others, but they place 'expression of self' in real contexts to firmly establish this construct as the other aspect of intrapersonal intelligence. They affirm the interconnectedness of both aspects of intrapersonal intelligence while specifying the distinctive function that each retains as a unique aspect of intrapersonal intelligence. They explain

If the self involves paths within a social landscape, then intrapersonal intelligence is the map that conceptually organizes the self, and executive function is the orienteer who figures out routes to express, enhance or develop the self. Executive function computes the appropriate next step. Should one keep going or change course? Once fully developed it interpolates, connecting dispositions, preferences, interests and self concept to encounters with the environment. "How does that relate to *me*?" and "What should I do now?" (Moran & Gardner, 2007 p22).

In the Multiple Intelligences perspective, executive function itself comprises three parameters, which Moran and Gardner (2007 p 20) assert have the potential to develop more fully as individuals mature, gain more experience in life and get older. The three 'parameters' that they identify are the *hill* (the goal itself), the *skill* (strategies and procedures for attaining the goal) and *the will* (the motivation to persevere until the goal is achieved). However, as executive function is part of the overall process of cognitive development, it does not always work in the same ways. At various stages of life the three parameters interact differently and in the early stage, named the "*apprentice stage*" by Moran and Gardner (2007), a student's schooling has a significant impact on the development of executive function. However, it may be most useful at this stage to discuss what Moran and Gardner (2007) consider to be the most effective and

mature expression of executive function, found only in particular adults who have the capacities to bring the three aspects of this construct together in an exceptionally complex manner.

The '*master stage*' of executive function is exclusive to individuals who have developed an extensive knowledge of self and who are able to organize and integrate their skill, skill and will together in such a way that they have a personally meaningful purpose in work and in life. In order to do this, individuals must embrace the maturity, wisdom and knowledge that come from experiences over an extended period of time. They must use these qualities to determine in what ways they can use their energies to set personal goals that reflect and express their uniqueness and self expression. The major characteristics of this stage are the demonstration of initiative, reflection and creation. Moran and Gardner (2007 p 29) describe the process in this way:

'master stage' executive function involves a more complex orchestration of skill, skill and will that can maintain progress despite the uncertainty of external support or outcome. It entails responsibility, or being the source or cause of one's own actions without appeal to external authority. Setting one's own goals, reconfiguring cultural resources, and staying limber as unexpected obstacles arise become the hallmarks of executive function. Goals come into ascendance and involve more initiative and autonomy; skills increasingly involve stronger interpolation and may extend beyond those that are culturally valued; and will coordinates intercalation between goals and skills.

The '*master stage*' allows for the expression of personal interest, for the development of mastery goals and for the development of skills for the purpose of achieving these goals. Comparisons and competitions with others are not considered to be of value in achieving these goals; instead, developing and creating one's own skills base are increasingly important. Moran and Gardner (2007) indicate that '*will*' is frequently only perceived to be present when obstacles arise because individuals who have graduated to the '*master stage*' have integrated their goals so extensively into their perceptions of self and their future that they are generally not conscious of the efforts they expend in pursuit of their goals. They are able to 'go with the flow' as choices and variations appear. Indeed, they can be said to be so absorbed and focused on their goals that they become unaware of outside distractions and literally are in the state of consciousness identified as 'flow' (Csikszentmihalyi in Moran & Gardner, 2007).

Interpolation, described as ‘...the meta skill of bringing self knowledge to bear on other information already highly processed by the other intelligences’ (Moran & Gardner, 2007 p 30), facilitates the reflective process as individuals maintain reflective journals, seek opinions from others and reflect on these and generally persist in asking themselves questions of personal relevance. These questions may include “What is best *for me?*” and “What does this mean *for me?*”. Moran and Gardner (2007) stress that the more effectively one interpolates; the easier it is for experiences, concepts, emotions and goals to integrate. In turn, the better integrated these aspects of self are, the easier it is to bring self knowledge to bear on new information. While this comfortable level of functioning is certainly something to strive for, and ideally, attain, the journey to this optimum stage looks less than easy. Given the complexity of the ‘*master stage*’ of executive function and the understanding that some individuals do not ever engage in this stage, even as adults, the task of supporting the development of executive function in school aged learners presents itself as one of considerable challenge.

Developmental Perspectives of Executive Function

The challenge of supporting the cognitive skills and processes that are associated with executive function is made more manageable as the result of many theorists linking the stages of development of executive function to regular cognitive developmental phases. The proposition that executive function and development are closely aligned appears to be a logical one. Bernstein and Waber (2007) actually believe that the vast majority of individual differences in executive function amongst children can be related to differences in maturation. They acknowledge that capacities for executive function are evident in babies and continue to develop through toddlerhood, childhood and adolescence. They also contend that much of children’s learning in the areas of cognition, and social and emotional development are actually evidence of the development of the skills of executive function. Additionally, they use the same type of evidence as Moran and Gardner (2007) to support the developmental nature of this construct.

Both Bernstein and Waber (2007) and Moran and Gardner (2007) present evidence from neuro-imaging literature that established the fact that adults utilize different parts of the

brain for problem solving to children. From the Multiple Intelligences perspective (Gardner, 1983, 1993a, 1999a, 1999b; Moran and Gardner 2007), executive function grows out of sound, accurate intrapersonal intelligence. As became evident in the discussion of the ‘*master stage*’, it takes time and experience to develop much of the knowledge and self awareness that comprises intrapersonal intelligence. It also takes time and experience to develop the capacity to regulate one’s behaviors in order to achieve one’s purpose. As a result, Moran and Gardner (2007) also espouse a developmental overview of executive function that would apply to most babies, children and adolescents.

Moran and Gardner (2007) recognize that the actions of babies are predominantly governed by their biological and emotional systems. As they grow, they begin to develop some sense of self, usually in the second year of life and by the time they are ready for school, most young children have developed the ability to regulate their behaviors in response to the expectations of others, recognize and utilize a basic sense of self and remember information over a period of time (Isquith, Crawford, Espy & Gioia, 2005). However, the three components of executive function identified by Moran and Gardner (2007) are not yet working together in anything other than a rudimentary manner to satisfy immediate needs. This stage is acknowledged by Moran and Gardner (2007) as the beginning of the development of executive function. From this beginning they distinguish two further phases of development in executive function. One has already been discussed as the ‘*master stage*’, the other is the ‘*apprentice stage*’.

The ‘*apprentice stage*’ (as posited by Moran and Gardner, 2007) is dominated by skill development, although children have a sense of self as distinct from others. Frequently this concept of ‘self’ may be unrealistic and idealized. They acquire the knowledge and skills that allow them to participate in society. *Hills* or goals are usually set by the significant adults in the children’s lives; their teachers and families, especially their parents. Children in this stage have realized that they can use their energies to achieve increasingly longer term projects as they mature. They begin to learn and understand cultural conventions and societal norms and begin to compare themselves to others in various contexts. Moran and Gardner (2007) perceive the ‘*apprentice stage*’ as being almost exclusively about meeting expectations and children being ‘fundamentally conscious’ (2007 p 25) of the effect they have on others and vice versa. The

students become increasingly aware of the behaviors that promote their goals and that are detrimental to them. Intrapersonal intelligence is developed mainly from the feedback that comes from interaction with others. However, whilst Moran and Gardner (2007) have not presented an absolutist framework of the ‘*apprentice stage*’ of executive function to which every child must adhere, their notion of this developmental stage may have some shortcomings.

Also curious is the scant attention given to aspects of intrapersonal intelligence (Gardner 1983, 1993a, 1999; Moran and Gardner, 2007) that are focused on the knowledge of self. The *I need* and *I want* and *For me* aspects of students’ self knowledge as learners appears to play a relatively minor part in this framework of the apprentice stage of executive function, despite it being the foundational strength from which executive function is developed. Instead, there is considerable emphasis on the development of intrapersonal intelligence that comes from interactions with others. Whilst it is acknowledged that strong intrapersonal intelligence is developed by both individuals themselves and their experiences of interacting in social contexts with others, intrapersonal intelligence as defined by Gardner (1983, 1993a, 1999) is primarily the knowledge individuals build of themselves as a result of self awareness and reflection on both sources of information and, then, their capacity to use this self knowledge effectively in the learning context.

Moran and Gardner’s (2007) description of the ‘apprentice stage’ of executive function does not appear to explicitly accommodate students’ knowledge of self as learner as a major factor at this point in their development. This is particularly apparent in the following statement ‘Apprentice executive function involves keeping oneself in line with expectations’ (Moran & Gardner, 2007 p 25). Although there certainly are societal, parental and educational expectations that impact on students’ capacities to develop the knowledge, skills and understandings that are integral to executive function, there is a degree of uncertainty surrounding the executive function status of students at this stage who do not keep themselves ‘..in line with expectations’.

Moran and Gardner’s view of the apprentice stage hence presents a rather unbalanced stress on the impact of influences outside of students at this stage at a time when they are increasing aware of themselves as identities unique and different from all others. Students in the middle school

years also are conscious that their knowledge of self is enhanced by exclusively personal experiences and understandings and that these may facilitate knowledge of self that is quite different from the knowledge that others have of them. It could also be argued that the limited emphasis on students' self knowledge has 'split over' onto the understanding of 'will' at this stage of executive function. Moran and Gardner (2007 p 27) stage '...will at this stage is motivation in the classic research tradition: the impulse to act toward proper incentives presented by cultural authorities'. This definition does suggest the type of motivation that Corno (in Zimmerman & Schunk, 2001) describes as 'conation'.

The distinguishing character of conation is that it is deliberate, planned and intentional. It is the 'striving' component of motivation and can be closely aligned to volition and successful goal completion, identified here as the 'hill'. These considerations may constitute a limitation of the MI perspective of executive function, given that at the '*apprentice*' stage, students are understood to be developing an increasingly complex and sophisticated awareness of themselves as individuals. The most critical impact of this lack of stress on students' capacities to know themselves as learners at the '*apprentice stage*' of executive function is that it effectively limits the possibility that some students may, in fact, have the capacity to successfully interpolate the three parameters of executive function within the limitations of their learning context and their developmental stage.

Despite this, the notion of an '*apprentice stage*' of executive function is a particularly useful framework within which to explore new ways in which students can interact effectively in school settings and develop the knowledge, skills and understandings related to the components of executive function. Firstly, as the goals which students pursue in school settings are ultimately determined by the curriculum, school management and organization, the learning context limits the students' capacities to exclusively select the goals that they elect to pursue. As Moran and Gardner (2007) noted, the goals that students at this developmental stage are able to set are, to a large degree, culturally determined, as indeed, it could be argued are many of those at the '*master stage*' of executive function. However, a degree of student autonomy is possible within this culturally determined framework which may provide students with the opportunities they need to become more active and independent learners. So, whilst the students may not have total

freedom to set their learning goals and so cannot explicitly emulate the '*master stage*' as described by Moran and Gardner (2007), they are firstly able to be 'apprenticed' into the parameters of the '*master stage*', a concept that is culturally embedded into the structures of formal schooling.

Secondly, as students engage with the specific educational experiences that are characteristic of learning in a school context, they are more likely to have some skills that may facilitate goal completion. The view that students can have some degree of competency in a variety of knowledge, understandings and skills without necessarily maintaining parallel competence in each at any specific age or stage of schooling is reflected in the overall constructivist notions of pedagogy and developmental considerations. It is also to be found in the practical means by which teachers assess student competencies; for example by using the incremental terms *Not Evident*, *Working Towards*, *Working At* and *Working Beyond* they provide the benchmarks for the specific educational knowledge, understandings and skills their students require to be successful in the learning process. The notion of an '*apprentice stage*' of executive function provides the same type of developmental perspective in relation to the competencies embedded in the components of executive function. It allows for the development of knowledge, understandings and skills over a period of time.

Towards the end of this '*apprentice stage*' the role of executive function skills is to support engagement in various roles within the students' communities and to facilitate their acquisition of the skills and attitudes that will enable them to play a productive role in adult society. By the end of the apprentice stage, individuals should be able to meet the expectations of others with little conscious thought. The importance of the skills or formal goals rises to prominence at this time as behaviors and skills become automatically in line with societal expectations. Whilst personal choices of goals are available and possible to pursue, Moran and Gardner (2007) do concede that many goals are defined by cultural expectations and authorities. That leaves the third parameter- the will, volition or motivation to expend energy in order to achieve goals for discussion. Csikszentmihalyi et al (in Moran & Gardner, 2007 p 29) suggest that the '*inside/outside tensions*' caused by the determination of some individuals at the '*apprentice stage*' to pursue personal, 'inner' goals that are outside those considered culturally appropriate

may partly account for the considerable differences in young people's attitudes to motivation and planning for the future. However, some of the tensions may have physiological grounds which are important to consider as part of the developmental perspective as they are directly related to the process of maturation.

A recent study (Blakemore & Choudhury, 2006) has supported Peterson's (1988) earlier work in the area of adolescent development. Both Blakemore and Choudhury (2006) and Peterson (1988) have found that, in addition to the hormonal and physical changes that characterize puberty there are significant changes in self identity, self consciousness and, importantly, cognitive flexibility. Although empirical research into cognitive and neural changes in puberty and adolescence is in its early stages has established that adolescents are more self-aware and more reflective than prepubescent children, they also develop the capacity to think in a more strategic manner and can manage more multidimensional concepts. It appears that the two regions of the brain that undergo continual development during adolescence are the prefrontal cortex and the parietal cortex, the location of the cognitive skills that relate to executive function (Blakemore & Choudhury, 2006).

There is evidence to support the hypothesis that, as changes occur in these areas of the brain in adolescence, there are also changes to students' capacities to develop and improve the cognitive skills associated with executive function during this time. These skills may include selective attention, decision making, response inhibition and the capacity to multi task. Although it is considered that different aspects of executive control may develop at different times, Anderson, Anderson, Northam, Jacobs & Catroppa (2001 in Blakemore & Choudhury, 2006), found that students between the ages of 11-17 demonstrated increased competence in tasks involving selective attention, working memory and problem solving. Other cognitive factors dependent on these parts of the brain, such as recognition of emotions, improve with pubertal development. These findings challenge the more established view that executive function develops towards the end of formal schooling (Ylvisaker & Debonis, 2000). During adolescence, a time of major change, it could be that students may temporarily experience difficulties demonstrating the behaviors associated with specific aspects of executive functioning. The most significant impact may be on the individual's capacity to cognitively process self relevant information, principally

in the areas of emotion and bodily sensations and this, in turn may impair their ability to further develop the cognitive processes related to executive function; especially those that relate to the degree of attention and concentration that are embedded in the notion of optimal experience (Csikszentmihalyi, 1988, 1991b).

Engagement and The Concept of Flow

The theory of flow experience holds considerable relevance for those interested in the Multiple Intelligences (Gardner, 1983, 1993a, 1999a, 1999b; Moran & Gardner, 2007) theory of executive function as it may inform and determine individuals' choices of goals. This theory of flow (Csikszentmihalyi, 1988, 1991b) also considers the development of personal potential from a holistic perspective and identifies the characteristics of tasks that may facilitate optimal experience. Csikszentmihalyi's (1988) investigations into the state of consciousness known as 'flow' appear to have developed as a reaction to the trends of twentieth century behaviourist scholars to espouse reductionist theories of human action, in their attempts to explain behavior in increasingly scientific terms.

Csikszentmihalyi tracks the development of the notion of 'self' and maintains that once the self is established in one's consciousness, its main purpose is its own survival. To this end, the self represents its interests as goals. Most goals are genetically determined; such as the need for shelter, food and the basic necessities of survival; or culturally determined, although individual choice does exist within these frameworks. New information is received in terms of supporting the goals of self, or not. Csikszentmihalyi's (1988, 1991) work is important because, while there appears to be a significant amount of information available on the negative response of self, much of which neglects the dimensions of affect and motivation, a great deal less has been known about the extreme positive response; 'a condition of consciousness known as psychic negentropy, optimal experience, or flow.....(this), is obtained when all the contents of consciousness are in harmony with other, and with the goals that define the person's self' (Csikszentmihalyi, 1988 p 24).

Once experienced, the total compatibility of the self and its own goal-directed structure becomes a priority and the self seeks these optimal experiences as an ongoing process. This is what

Csikszentmihalyi (1988 p24) terms the 'teleonomy of self, the goal seeking tendency that shapes the choices we make among alternatives'. In addition to the biological and cultural teleonomies, this is the third of the three teleonomies that individuals use to safeguard the consciousness of self. Little is known about this third teleonomy, although the other two have been extensively investigated.

It is suggested that pleasure (genetic teleonomy), power (cultural teleonomy) and participation (teleonomy of self) are all used to shape consciousness. However, Csikszentmihalyi (1988) asserts that consciousness evolves. He maintains that pleasure, power and participation are not sufficient motivation to account for the new goals that people pursue. He believes that when individuals have new, unprecedented experiences that are so positive in nature as to be exhilarating, the activity that created these experiences will be sought out again and again. When individuals expend psychic energy on goals that exhilarate, they begin to build a sense of self based on these emergent goals. Csikszentmihalyi (1988 p 28) terms this 'autotelic motivation' because the goal is actually the experience itself; not the product that is the goal.

The flow experience appears to create similar responses irrespective of the content domain or specific contexts. What is interesting is that in order to sustain the flow experience, the complexity of the challenge must increase with the frequency of the experience. The flow experience forces individuals to develop new competencies and skills. A key component of experiencing flow is that individuals have sufficient, accurate self knowledge in order to recognize activities for which they have skills and to evaluate the level of challenge embedded in the tasks. It appears that accurate intrapersonal intelligence (Gardner, 1993a, 1999b) is a prerequisite for flow. If the challenge level in a task is too high then anxiety, frustration and other negative responses will replace the flow experience. If the challenge level is low or nonexistent, or the task is intrinsically simple, then boredom or apathy may easily replace the flow experience. Flow experiences occur when the individual's skills and challenge level are balanced.

Flow experiences can occur in everyday situations when the complexity or challenge of a routine task is raised. It can also occur whether individuals anticipated enjoying the task or not; or even when they originally did not want to do the task! Amongst the common characteristics of flow

are, as mentioned, the correct balance of skills and challenge, clear goals and immediate feedback. However, it appears that other characteristics are commonly experienced. These include a total focus to the exclusion of everything else going on around which is the state of totally focused consciousness described by Moran and Gardner (2007) when individuals have graduated to the '*master stage*'. This occurs when individuals have integrated their goals so extensively into their perceptions of self and future that they are generally not conscious of the efforts they expend in pursuit of their goals. Other characteristics of the flow experience include the feelings of complete control, the distortion of one's sense of time, a disregard for problems and the total lack of self consciousness. Csikszentmihalyi (1988 p 35) himself conceptually links the flow experience with the development of intrapersonal intelligence (Gardner, 1983,1993aa,1999b; Moran & Gardner, 2007) and the cognitive processes as expressed as the skills of executive function when he states that 'the flow experience is important because it provides a key for understanding the strivings of self' (Csikszentmihalyi, 1998 p 35). The pursuit of flow experiences that have the capacity to enrich and develop 'self' are inspired by autotelic motivation; otherwise known as intrinsic motivation; but this type of motivation is not always what initially prompts individuals to engage in tasks.

Motivation and Positive Psychology

Psychologists differ in their understandings of what exactly causes individuals to be motivated (Woolfolk & Margetts, 2007), but it is generally recognized that there are two types of motivation. Intrinsic motivation is not stimulated by external factors, rewards or grades as indicated by the notion of autotelic motivation explored in Csikszentmihalyi's theory of flow (1988). It is created by internal factors and is invariably intrinsic to the task itself. Gardner's own definition of volition reflects this intensely personal process. McComb (in Zimmerman and Schunk, 2001 p 73) explains Gardner's views on motivation as 'a generative structure that is goal directed, purposeful, or teleological in nature....'. External motivation, however, is the result of any one of a variety of influences, pressures and responsibilities that are external to, or unrelated to the task itself. Reeve (in Woolfolk & Margetts, 2007) astutely draws attention to what may be an obvious, but a critical point for educators; namely that it is not possible to determine what type of motivation students are engaged in by observation alone. This is because the essential difference in the two types of motivation is centered around the 'locus of

causality' (Woolfolk & Margetts, 2007 p 376). In order to establish the nature of the motivation which has produced the observable behaviors of on task engagement, it is important to know why individuals engage in tasks. Establishing this is not always simple.

Woolfolk and Margetts (2007) indicate that the notion of intrinsic and extrinsic motivation as the extreme ends of one continuum (Woolfolk, 2004) has been challenged. The most recent understanding of motivation is that intrinsic motivation and extrinsic motivation are discrete constructs and that individuals can be motivated by a degree of each at any one time. This conceptualization of the nature of motivation validates Csikszentmihalyi's (1988) apparently contradictory notion that flow experiences can occur irrespective of the individual's initial desire, or lack of desire to engage in the task. The extrinsic motivators that served as the initial prompts for individuals to engage in a task may still be present, but at some point during the task, the task itself becomes the primary reason for continued absorption and engagement, facilitating an optimal 'flow' experience. The precise nature of the initial 'will' to engage in goals may not be a contentious issue in the '*master stage*' of Gardner and Moran's (2007) Multiple Intelligences' perspective of executive function, as this stage is characterized by the capacity of individuals to determine and develop goals that reflect personal interests and competencies. However, it certainly is of interest in the '*apprentice stage*'. At the '*apprentice stage*', as previously noted, many goals reflect social and cultural influences and are imposed by others. Additionally, '....will at this stage is motivation in the classic research tradition..' (Moran & Gardner, 2007 p 27).

The traditional research approaches to motivation include those from four main perspectives. Firstly, Behavioral approaches focus on the stimulus- response relationship. If individuals are rewarded for specific behaviors and discouraged or punished for indulging in others, then the continual reinforcement of the approved behaviors encourages these individuals to habitually exhibit the behaviors that are rewarded. Incentives or rewards are fundamental components of this approach, which results in individuals adopting an exclusively extrinsic motivational approach to tasks (Pintrich & Schunk, 1996; Woolfolk, 2004; Woolfolk & Margetts, 2007).

Secondly, an equally exclusive, but conflicting view is presented by the Humanist approach. Amongst these models, which focus on human dignity and fulfillment the *Hierarchy of Needs* model developed by Maslow (Woolfolk, 2004) is the mostly commonly utilized in school contexts. The model comprises five levels of need. The first four levels consider the needs common to all humans and without which individuals' personal development would be impaired. Maslow theorized that once these basic human needs were met, then another level of needs became important; the need for self fulfillment, creativity and productivity. This fifth level of need in turn provided an explanation for motivation; the human need for self actualization. However, whilst this perspective presents a rather simplistic argument that discusses motivation as an exclusively intrinsic characteristic, which is unable to be activated until all more basic needs are first satisfied; Maslow (in Woolfolk 2004) does invest in a holistic view of individual development. This not only contrasts with Behaviorist views, but highlights the complex and highly individual nature of how and why individuals choose their behaviors and tasks.

Thirdly, cognitive theorists attribute motivation to the processes that individuals engage in when thinking about their behaviors and those of others in order to establish explanations and causes for successes and failures. Weiner (in Elliott & Dweck, 2005), relates attribution theory to educational contexts but it is unclear where exactly this version of attribution theory is placed in terms of a range of theoretical perspectives. Weiner (in Elliott & Dweck, 2005; Weiner 2000) offers what he terms the 'intrapersonal theory of motivation' and the 'interpersonal theory of motivation'. Intrapersonal theory, as expected, is concerned with the individual endeavoring to make sense of their own thoughts and feelings regarding a particular event or result.

Interpersonal theory is concerned with the impact of the comments, judgments or reaction of others to the same event or result on the individual. He hypothesizes that, although explained as separate theories, these two perspectives; the intrapersonal and the interpersonal; are closely intertwined. The affective reactions to the result or the event, both the individual's and those of others, are heavily influenced by the individual's attributed causes of the result.

Weiner (2000) suggests that most of the attributed causes of success and failure can be placed in one of three categories; whether or not the cause is internal or external to the individual, whether or not the cause is capable of being changed and whether or not the person can control the cause.

He links the first category to feelings of self esteem, the second to expectations about the future and the third to emotions. He argues that, because these causal categories are closely related to expectancy and value, they have important implications for motivation. However, in describing the significance of his theory in these specific terms, he aligns his interpretation of attribution theory with the theorists that have a ‘blended’ perspective of motivation.

Fourthly, expectancy x value theorists (for example Bandura 1994) combine the importance of the impact of individual thinking and the consequences of behavior to explain motivation. The importance of Bandura’s (1988) work on self efficacy may easily be determined by the impact of self efficacy beliefs on motivation. Unfortunately, the two foundational tenets of this theory are both problematic in terms of the Multiple Intelligences perspective of executive function (Gardner, 1983, 1993a, 1999a, 1999b; Moran & Gardner, 2007). Firstly, the learning tasks must have defined characteristics and individuals must be able to assess their competencies against the skills required to complete a task successfully. Secondly, the learning task must be valued by the individual. The difficulty is that this approach does not explain how individuals become motivated to accept challenges where problems may not become apparent until a degree of progress has been made. Although Bandura (Bandura, 1994; Gibbs, 2003; Pajeres, 1996a, 1996b, 2001; Pajeres & Valiante, 1996, Pajeres 2000; Pintrich & Schunk, 1996; Sewell & St. George, 2000; Zimmerman et al., 1996) and Weiner (in Elliott & Dweck 2005; Weiner 2000) offer theories that encompass self knowledge components, which are an important aspect of motivation, the accuracy of individuals’ perceptions of self do not appear to be of importance in these hypotheses. It appears to be assumed that students’ self perceptions are consistently precise and correct. Additionally, these writers neglect other factors that may contribute to motivation. One of these factors concerns the individual’s perceptions of other important aspects of self; another concerns the impact of social and cultural expectations.

Dweck (Dweck, 2000, 2006; Woolfolk & Margetts, 2007) hypothesizes that an individual’s understanding of the nature of intelligence impacts on the manner in which success or failure is excused or explained. This complicates both the intrapersonal and interpersonal theories of motivation forwarded by Weiner (in Elliott & Dweck 2005; Weiner 2000). As Weiner has noted (in Elliott & Dweck 2005; Weiner 2000) the explanations or attributed causes for an individual’s

success or failure in a task may be interpreted differently from the intrapersonal perspective and from the interpersonal perspective. This may cause tensions regarding feelings of future motivation from the individual's perspective, which may be further exacerbated if the understanding of the nature of intelligence is also conceptualized differently in the immediate contexts in which individuals work or study.

A further complication to effective motivation may arise if individuals cannot sufficiently identify with the communities with which they attempting to participate. Moran and Gardner (2007) noted that individuals at the '*apprentice stage*' of executive function identify themselves in terms of the roles they play in their social and cultural community contexts. Consequently, the sociocultural contexts in which individuals interact are likely to play a significant role in their motivation. In order to maintain their identities, individuals engage in socially and culturally acceptable tasks, which would include those undertaken in educational settings. The major influences on student motivation, are, from the sociocultural perspective, the students themselves, their parents, teachers and the wider school community (Woolfolk & Margetts, 2007). The degree to which students are motivated is dependent on the number of encouraging and discouraging factors that are present, the nature of the comments they receive and the intensity of these factors and comments. Amongst the discouraging influences are their anxiety, their fears, their family's stresses and their negativity. Amongst the encouraging influences are supportive parents and teachers, personal involvement and identification with the learning community and their positive feelings of 'self'. These positive feelings have been shown to have strong links to motivation (Munns, 2004).

Positive Emotions

The capacity to be positively motivated may indeed be the key to optimal human functioning. The evidence that Fredrickson (2000, 2001) brings to her 'broaden and build' model of positive emotions provides a clear link to cognition, interest, attention and intrinsic motivation. Her hypothesis focuses on the potential of positive emotions; namely joy, interest, pride, contentment and love; to '...broaden people's momentary thought-action repertoires, widening the array of the thought and actions that come to mind..' (Fredrickson, 2001 p 220). In one example of the impact of positive emotions, she explains how interest creates the urge to explore and take in

new information and experiences. In much the same way as Csikszentmihalyi's (1988, 1991a, 1991b) flow experiences facilitate personal growth, Fredrickson (2000, 2001) details how this process of exploration allows for an 'expansion of self' (Fredrickson, 2001 p 220). While these findings are important for the promotion of emotional, cognitive and perhaps, physical well being, they are also an important consideration in any attempt to understand the complexity of factors that influence motivation.

In this context, it could be that positive emotions both encourage initial engagement, perseverance and facilitate more successful outcomes. If this is so, then individuals may become encouraged to continually extend their efforts to develop an increasingly intrinsic motivational focus. Evidence (Fredrickson, 2001 p 220) supporting Fredrickson's 'broaden and build model' also highlights another important benefit of positive emotions; the development of psychological resilience. Whilst a study of resilience is outside the limitations of this study, the link is clear; resilient individuals are able to recover from adversity and disappointment more rapidly than their less resilient peers. It could easily be that positive emotions support individuals who are coping with challenges. Individuals who benefit from the impact of positive emotions are more resilient and may find it easier than others to become sufficiently motivated to persevere with intricate tasks and to recover more positively from lack of success.

The impact of positive emotions may also make some contribution to understanding the importance of self efficacy beliefs in motivation. Pride, a positive emotion that is the result of personal achievement, not only influences current feelings of competence, but encourages individuals to strive for greater achievements and successes. A feeling of contentment may form part of the self efficacy beliefs of individuals and form the foundation that facilitates the reconceptualization of self beliefs that is observed as improved self efficacy. The impact of positive emotion may even inform Dweck's theories (2000, 2006) of psychology for success. Individuals who hold an incremental view of intelligence have hope. By embracing theories of intelligence that allow them to exert some control over their potential to improve their performances, they are able to anticipate changes for the better. If they believe that there are strategies they can implement that may impact positively on the probability of improved outcomes, then this must influence motivation. It is not difficult to envision the potential of love

itself on motivation; love of an area of learning, love of school life and community; can have a positive impact on motivation as the contexts of safe, enjoyable relationships are acknowledged as powerful indicators of student success (Arthur-Kelly et al., 2007; Cope, 2005; Foreman, 2005; Groundwater-Smith et al., 2003; Latham et al., 2006; Woolfolk & Margetts, 2007). In terms of positive psychology, and in particular positive emotions, love broadens cognitive competencies because of its capacities to engender exploration, play and enjoy shared experiences. What is remarkable about the benefits of positive emotions is that they are not lost after the experiences that engendered the feelings have passed. They remain as a support mechanism for times of adversity and difficulty.

Motivation for learning may easily be explained by drawing on the four major perspectives. It is likely that individuals are motivated in different ways when contemplating different tasks and situations. The precise nature of the relationship between intrinsic and extrinsic motivation is still being explored (Woolfolk & Margetts, 2007) and doubtless the quest for understanding exactly what motivates individuals will continue to be a focus for researchers in the future. However, the potential of Fredrickson's (2000, 2001) 'broaden and build' model to contribute to a deeper understanding of motivation should not be ignored. Moran and Gardner's (2007 p 29) description of the individuals at the '*master stage*' of executive function, engaging in tasks that are 'individually conceived' and pursued with 'authentic agency' is reminiscent, in one sense, of what may have been termed '*a labor of love*'. It could be that a consideration of the cognitive (and social) benefits of positive emotions may be an important component of educational planning for individuals at the '*apprentice stage*', when the *will* is not so interpolated with the other two components, and when enticing students to engage and persevere in challenging tasks is paramount. Perseverance itself required not only motivation, but considerable skills in self monitoring and self regulation.

Volition

Corno (Boekaerts & Corno, 2005; Corno, 2004; in Zimmerman & Schunk, 2001) argues that volition itself is a major part of the skills and strategies that are demonstrated as self regulation. She states that cognition and motivation alone are not sufficient to explain self regulation. These are aspects of volition. Self regulation is perceived by Corno (Boekaerts & Corno, 2005; Corno,

2004; in Zimmerman & Schunk, 2001) to be part skill and part work style. She acknowledges that volition is a very important construct in school contexts where students have to cope with considerable attentional demands despite a multitude of distractions. She believes ‘the ability to maintain concentration in the face of obstacles is a fundamentally volitional aptitude for many tasks of schooling’ (in Zimmerman & Schunk, 2001 p 192-193). Corno (Boekaerts & Corno, 2005; Corno, 2004; in Zimmerman & Schunk, 2001) explores volition in an insightful study of classroom interactions and demands. She also explains definitively the difference in volition and motivation. She states

Motivational aspects of learning and performance, such as interests and goals, shape intentions and establish commitments. Motivationally relevant cognitions, such as perceptions of efficacy and attributions for past performance, can either fuel task performance or bring it to a halt. Volition becomes important partly because intentions are fragile and people often waver on commitments. The volitional aspects of SRL help a person give priority to commitments, and function to steer involvement along (Corno in Zimmerman & Schunk, 2001 p 196).

In introducing the term *conation*, Corno (in Zimmerman & Schunk, 2001) brings together the notions of motivation and volition, rather like two sides of the same coin. The distinguishing character of conation is that it is deliberate, planned and intentional; it is the ‘striving’ component of motivation and it is closely aligned with the concept of volition.

Volition is not automatic. Its development can be supported and it continues to be developed throughout adolescence. However, there are developmental considerations, which are significantly influenced by socialization expectations and practices, especially in the individual’s home context. Volitional control strategies include those that monitor cognition, those that facilitate self control by controlling the environment, those that manage affect and those that direct motivation by prioritizing intentions. In Kuhn’s taxonomy of volitional controls (in Corno, in Zimmerman and Schunk, 2001) the environmental controls are those most easily altered by interventions. Individuals can modify tasks or divide them into achievable, proximal sub goals or they can design rewards for themselves if they are able to successfully stay on task or complete goals. In this way, volition impacts positively on the task outcome. Individuals can also make decisions that change task contexts in order to provide themselves with more substantial support for positive task outcomes. They can control others in the task setting for the same reasons. All

the volitional controls are believed to have the capacity to improve concentration and affect and to support attempts by individuals to self regulate in educational contexts.

Self Regulation and Goal Setting

Motivation remains one of the critical aspects of self regulation. However, initially, it may be useful to clarify what is intended in this context by the term 'self regulation'. Zimmerman and Schunk (2001 p 5) offer a general definition of self regulated learners that identifies the key characteristics that are common to all theoretical perspectives.

Students are self regulated to the degree that they are metacognitively, motivationally, and behaviorally active participants in their own learning process. These students self generate thoughts, feelings, and actions to attain their learning goals (Zimmerman & Schunk, 2001 p 5).

Self regulation is considered to be neither a mental ability nor an academic performance skill. Instead it is considered to be an approach to learning that facilitates improved learning outcomes. Zimmerman (Zimmerman & Schunk, 2001) identifies three characteristics of self regulation, arguing that all theorists, irrespective of their differences, identify self regulation as processes, strategies or responses in which individuals engage in order to achieve their learning goals. Firstly, students are assumed to be aware of the benefits of self regulation in their attempts to improve their academic achievement.

Secondly, there is required to be some form of feedback from the individual in the manner of self monitoring. This allows individuals to revise their progress and replace one strategy with another if necessary. The third common dimension is an explanation of how and why individuals engage in the self regulation process. This third element is important in understanding student motivation. The various theorists also seek to explain why students do not self regulate when they could, or should. Some theorists include a developmental component in their perspectives, but all agree that the ability to self regulate is not solely dependent on the developmental stage of the individuals. However, most agree that very young students have limited capacity to formally self regulate during their learning (Zimmerman & Schunk, 2001).

Despite this degree of consensus, there are some significant differences between the major theoretical models. One of the most recent approaches (Woolfolk & Margetts, 2007) is a

departure from the traditional Behaviorist approach. It appears that behaviorist theorists were prompted to look more closely at the role that the individual plays in self regulation by the realization that students taught by traditional behaviorist methods were not developing robust self knowledge or flexible thinking. There was no evidence to show that students utilized their new learning and skills in contexts other than those in which they were learnt. This has led to a new behaviorist focus on self management (Woolfolk & Margetts, 2007), one that regarded individuals as partners and not just subjects in their learning. However, the procedures remain highly organized and do not take account of the diversity of individual learning processes.

Behaviorists (Woolfolk & Margetts, 2007) have analyzed the self regulatory process into several elements. These include self monitoring, self instruction, self evaluation and self correction. The self monitoring process usually comprises activities such as recording duration of activities, diary keeping and anecdotal records. Reactivity of self monitoring is the change of behavior that occasionally occurs as the result of behavior reinforcement brought about by the activity itself. Forms of self instruction include compliance with checklists, self talking through a sequence of questions before attempting a task and the use of rules for reinforcing both knowledge of discipline content and promoting the desired behaviors. Breaches of the rules pertaining to acceptable behaviors result in the imposition of some type of penalty. Self evaluation and self correction are equally structured and include comparisons of own work samples with a model or correct format. Errors or deviations in individual work are then corrected. Self reinforcement involves individuals rewarding themselves after successfully meeting a target or completing the lesson objectives successfully. As with the behaviorists' views on motivation, self regulatory behavior is understood to be generated as the result of outside influences, not from any internal desire that the individual may experience.

In contrast, the phenomenological perspective presents self regulation as an exclusively personal phenomenon (Zimmerman & Schunk, 2001). Discounting the theories that approach behavior modification as either passive environment- active participant (Piaget & Chomsky) and the active environment- passive participant models discussed above, McCombs (in Zimmerman & Schunk, 2001) discusses an approach that recognizes the complex interactions of both an active participant and an active environment and acknowledges the contribution made by Gardner.

This view focuses on personal agency. In discussing ‘authentic agency’ McCombs (in Zimmerman & Schunk, 2001 p 83), in discussing the phenomenological view, states

The concept of authentic agency as described by Robinson (1987) – the self determined and volitional aspects of self – cannot be equated with the structures (the ‘what’ or content of self knowledge) or with the self creative and self defining processes (the ‘how’ or metacognitive means for self definition).....
...but it can continue to assist us to understand the ‘who’ aspects of self as both the knower and the known, the constructor of meaning and what is constructed.

The phenomenological theory of self regulation is based on individuals’ perceptions of self. Self concept beliefs can be viewed as either positive or negative and impact on all aspects of behavior. The role of the self systems, and self concept in particular, is to generate motivation and persistence during learning tasks. An important aspect of this role is to evaluate the personal relevance of tasks and the ‘goodness of fit’ they may have with the individual’s own relative strengths and limitations as learners. The importance of accurate evaluations of one’s own relative learning strengths and limitations is once again highlighted.

Mc Combs (in Zimmerman & Schunk, 2001) organizes self systems into two separate capacities; global and domain specific. The global self concept is the general perceptions that individuals have of themselves as learners, based on their assessment of their knowledge, skills and abilities as learners. This is not context bound and is frequently connected to future aspirations. The domain specific self system is the individual’s appraisal of their capacities to ‘...direct and control their motivation, cognition, affect and behavior in specific domains...’ (Zimmerman & Schunk, 2001 p 13). This domain specific self system is the key to individuals’ self regulation in differing knowledge domains, for example learning in English or Mathematics. The effect is a pivotal part of this theory. If the self perceptions regarding a specific task are negative, then this lowers motivation. If the reverse is observed, then the individual demonstrates a high degree of both persistence and intrinsic motivation.

This theory is underpinned by the notion that self awareness is a constant, conscious component of human psychological functioning and does not have to be taught. However, this inherent capacity can be distorted or limited by individuals’ defensiveness, which may result in task avoidance and task anxiety. This is associated with low self consciousness. A high degree of self

consciousness is believed to be associated with a desire for accurate self knowledge (Mc Combs in Zimmerman & Schunk, 2001). In order to support students who have low self consciousness it is suggested that educators engage students in self monitoring and self evaluative activities by identifying and recording what they are thinking and feeling during tasks and on completion, so that students develop a greater awareness of self.

Mc Combs (in Zimmerman & Schunk, 2001) regards the more traditional components of self; self worth and self identity as important components in psychological functioning. She labels these 'self system structures'. These are understood to be critical determinants of the degree to which individuals have the capacity to engage in the characteristic processes of self regulation; self encoding, decoding, planning, goal setting, using strategies and retrieval of knowledge and information. In common with other phenomenologists, Mc Combs (in Zimmerman & Schunk, 2001 p 91) attributes the development of self regulation strategies to self system processes, which are also global and domain specific. She discusses the importance of

'.....self awareness, self evaluation, judgments regarding the importance of specific competencies, expectations for success or failure, self development goals and the evaluations of the personal significance of the task assessed against these goals and the outcomes of other self processes'.

As noted already, she adds the processes of self monitoring and self evaluation. Of these processes, she explains self evaluation as the key factor in the cyclical process of evaluating task requirements against one's own competencies and interests, engaging in the task or otherwise and resultant influence of the results on the individual's self system structures.

Interestingly, Mc Combs (in Zimmerman & Schunk, 2001 p 99) identifies the work undertaken by Schunk and his associates as 'a complementary line of research on self process influences of learning'. Schunk's work is developed from the work of Bandura on social cognitive theory, in which self efficacy judgments are understood to be the individual's personal assessment of his or her competency to complete a given task. Schunk (in Zimmerman & Schunk, 2001) also emphasized the role of self regulation in the learning process and identified three self regulation processes that he considers critical. These are identified are self observation, self judgment and self reactions. He asserts that these processes influence

concentration and attention, organizing, rehearsal of information to be

remembered, and effective use of resources; beliefs about self, learning tasks and outcomes and the experience of satisfaction and pride in one's work (Zimmerman & Schunk, 2001 p 99).

However, this theory does not differentiate the processes as phenomenologists do. Schunk (in Zimmerman & Schunk, 2001 p126) describes self regulation as 'situationally specific', indicating that the social cognitive perspective does not associate self regulation with any developmental stage or general capacity.

He argues that individuals are not generally self regulating or non self regulating and that they are not expected to self regulate equally well in all situations or knowledge domains, in contrast to Mc Combs' (in Zimmerman & Schunk, 2001) theory of global and domain specific structures and processes. However, social cognitive theory (Bandura, 1986) remains a reinforcement theory. The one major tenet that serves to separate social cognitive theory from the perspectives of the behaviorists is the role of cognition. Behaviorists acknowledge that cognitive processes may accompany behavioral change, but they do not influence it, firmly placing the impact of the environment, as previously noted, as the major component in self regulation. Social cognitive theorists support the contention that the self processes engaged in by individuals do have some impact on self regulation. They indicate that behavioral consequences are a source of information and contribute to motivation in that individuals are able to use this information to select activities and actions that will benefit them by facilitating rewarding consequences. The role of self processes is significant, but may be regarded as relatively minor in comparison to the role of the environment in developing self regulation.

Although phenomenologists in general acknowledge the impact of the environment in the process of individuals developing sound self systems, the major focus remains with the students' perceptions of their learning environments. Mc Combs in particular, (in Zimmerman & Schunk, 2001) recognizes the active role of educators in developing student centered activities and in encouraging students' self confidence as learners. She also considers the developmental component; suggesting that students under eight years of age have difficulty making self judgments about their abilities. However, after about this age, individuals begin to develop a more differentiated sense of their own academic competencies and global self concepts begin to

emerge. Cognitive constructionists, like Piaget for example, however, have historically explained their perceptions almost entirely in terms of developmental stages. The *second wave of constructivism* as developed by Paris, Byrnes and Paris (in Zimmerman & Schunk, 2001 p 32) is no different in that respect, but they include in their theory the impact of theories of self and other constructs that seek to explain the performance of self regulation in addition to the individual's competence or capacity to self regulate.

Piaget (in Zimmerman & Schunk, 2001) and other traditional cognitive constructivists, hold the view that humans have an inherent need to construct meaning from their experiences, and this is an intrinsic motivation. When individuals experience information that cannot be assimilated into their existing schema on the grounds that it is in conflict with existing notions, they are forced to accommodate it to maintain cognitive equilibrium. Although self awareness is critical to the formation of cognitive schemas, it is asserted that complete self awareness is not able to be developed until individuals have reached the level of formal thinking. Flavell (in Zimmerman & Schunk, 2001) uses the term metacognition at this level to indicate that the cognitive processes are now able to be organized and monitored at a higher level than previously. More recent research findings from constructivist theorists (Paris, Byrnes & Paris in Zimmerman & Schunk, 2001) have proposed some developments to the original cognitive constructive theories. Their findings indicate that young students have unrealistically high perceptions of their academic competence, which declines as they reach the later stages of primary and early stages of secondary school; in other words, as they reach the levels of concrete operational and formal thinking. At this stage their perceptions are believed to become increasingly accurate, differentiated and domain specific.

More significantly, Paris et al (in Zimmerman & Schunk, 2001), explain their theory of self regulated learning as a multi faceted construct and indicate that self identities are also important. This is because they posit the self regularity practices that students exhibit are a reflection of these perceptions of self. These perceptions of self are created from past experiences. Developmental changes create shifts in these perceptions of self and individuals in middle childhood; which are identified as the later stages of primary school and the early stages of secondary school; are believed to develop their own identities and move away from the goals and

standards set by others. They argue that individuals' perceptions and understandings of several aspects of the learning context and of their own competencies influence the self identities that are developed. These, in turn, influence the direction of learning and the use of self regulatory strategies. Paris et al (in Zimmerman & Schunk, 2001) hypothesize that individuals then begin to construct theories in order to control four key aspects of their learning. These four aspects are (i) self competence, (ii) schooling and academic tasks, (iii) agency and control and (iv) strategies. The importance of and definitions of strategies does not differ from most cognitive constructive theories. Strategies are understood to be deliberate actions in which individuals engage to achieve goals. These actions include information processing and managing constructs such as motivation, emotions and even time. An individual's theory of strategies would include declarative, procedural and conditional knowledge. These latter two types of knowledge are frequently referred to as metacognition.

The new contribution to cognitive constructive theory of self regulation is a hypothesis to explain self regulated performance, in addition to the traditional focus on competence. Paris et al (in Zimmerman & Schunk, 2001) posit that self regulation performance is governed by individuals' perceptions of their capacity to self regulate, their understandings of what constitutes success and failure and how students evaluate tasks. These latter perceptions reflect how students feel about a range of task properties. These task properties include individuals' beliefs regarding how personally relevant tasks may be, how diverse tasks are, the degree of control they may have over task selection and the extent of the challenge the task offers. All these factors are believed to influence the degree to which individuals are initially motivated to engage in tasks and the types of goals individuals choose to pursue. As the discussion of self regulation reveals, the latter is a significant factor in educational contexts.

Goal Setting

Goals give meaning to executive function (Moran & Gardner, 2007). They are the common focus of the diverse perspectives developed by educational theorists to explain the constructs of motivation (for example Bandura, 1986, 1994; Barker, McInerney & Dowson, 2002; Dweck, 2000, 2006), volition and conation (for example Corno in Zimmerman & Schunk, 2001), positive emotions (Fredrickson, 2000; 2001), the concept of flow (Csikszentmihalyi, 1998) and

self regulation (for example Zimmerman & Schunk, 2001; Woolfolk 2004; Woolfolk & Margetts 2007). Each of these constructs contributes to the deeper understanding of the complexity of the 'will' or motivation parameter of Moran and Gardner's (2007) perspective of executive function. However, the process of setting educational goals, the 'hill' component (Moran & Gardner, 2007) of executive function, is not only significant as a constituent of these theories but is also one of the three parameters that define executive function from a Multiple Intelligences perspective (Moran & Gardner, 2007). Goal setting in the context of this notion of executive function (Moran & Gardner ,2007) is distinguished by well defined characteristics.

Educational goals are generally considered to be of two major types; mastery goals and performance goals (Pintrich & Schunk, 1996; Woolfolk, 2004). Both of these goal types have a positive and negative orientation. With an achievement focus, mastery goals are planned to develop skills, improve performance and, frequently, to engage in challenges. They are designed to progress the deep understanding and achievement of the individual. Mastery goals with an avoidance focus stress the importance of not being wrong and avoiding misunderstanding. Mastery goals are also sometimes referred to as task goals or learning goals (Woolfolk, 2004).

Performance goals are more competitively orientated, even with a positive and not an avoidance focus. Individuals who set performance or ego goals aim to win, demonstrate their competence, avoid failing, or gain better grades than others engaged in the same or similar tasks (Pintrich, 2000; Pintrich & Schunk, 1996). Performance goals with an avoidance focus place great stress on not losing, being last or being the slowest, depending on the specific nature of the goal that is set.

These goals, like intrinsic and extrinsic motivation, are not mutually exclusive. Students may engage in mastery and performance goals simultaneously or develop goals that encompass elements of both. Woolfolk and Margetts (2007), however, argue that mastery goals are more likely to be intrinsically motivated, whereas performance goals are more often motivated by extrinsic motivation. They also posit that individuals who pursue mastery goals are more likely to seek and accept constructive criticism, attempt more difficult tasks, which further supports the development of their skills and academic progress. Students who plan and engage in

performance goals have a tendency to set simpler goals in order to demonstrate how easily they can be accomplished or demonstrate their superiority by completing the greatest number of goals (Pintrich & Schunk in Woolfolk & Margetts, 2007). Two additional types of goals are identified. One is associated with individuals who evaluate the degree of success they have attained by the ease and speed with which they complete tasks. They have no real interest in learning or appearing to be clever. They are labeled as ‘work avoidant learners’ (Nicholls in Woolfolk & Margetts, 2007 p 385). The final category is social goals which can compete with learning goals for the students’ time and attention.

It appears that the most personally beneficial goals for learners to develop, monitor and achieve are mastery goals as these focus on the challenge of the task rather than their comparative performance. Moran and Gardner (2007) describe how educationalists can support individuals’ efforts to develop mastery goals at the ‘*apprentice stage*’ of executive function and, at the same time, to explore and cultivate many of the skills that are characteristic of the more mature stage of executive function. They explain

For example, if a parent or teacherdoes not provide real choices, if everything is mandatory and compulsory, there is no impetus to develop mental flexibility or cope with uncertainty. If one’s environment is kept stable, if fluctuations are kept from the child, there is no impetus to develop updating faculties. If freedom to fail is not allowed, children do not have the opportunities to develop response inhibition or a new repertoire of responses (Moran & Gardner, 2007 p 33).

Moran and Gardner (2007) suggest the means by which students mature and increase the cognitive skills demonstrated as executive function centers on them not being allowed to become too comfortable and complacent. Instead, they recommend that educators in regular classroom settings facilitate learning rather than teach. They argue that teachers should provide only the necessary support for individuals with low executive function skills and gradually withdraw this aid as students progress. They contend that students at the ‘*apprentice stage*’ should increasingly take responsibility for their own goal setting, expended energy and skill development. With support, students should begin to take responsibility for each of the *hill*, *will* and *skill* parameters of executive function. They should do this by developing increased sensitivity to ‘nuances within themselves and their environment’ (Moran & Gardner, 2007, p 32 – 33), by evaluating their

relative strengths and limitations of their current self regulatory behaviors and by taking opportunities to develop mental flexibility. In other words, Moran and Gardner are advocating that students use their knowledge in the intrapersonal intelligence domain to direct their efforts into discerning and utilizing self relevant information in educational contexts. They posit that an individual's degree of competency in executing these processes will be expressed as the individual's capacity to demonstrate the cognitive skills of executive function.

Conclusion

This chapter discussed Moran and Gardner's (2007) executive function as an emergent construct from intrapersonal intelligence. It details the intricacies of the master and apprenticeship stages of this construct from a Multiple Intelligences perspective. In doing this, the developmental and social aspects of this hypothesis are also considered. Explicit links are made between the '*will*' parameter of this theoretical perspective and other related theories of motivation. Throughout this discourse the deceptively simple term '*will*' is exposed as one of the most debated and complex educational issues as a result of its significance as a component of successful academic achievement. The nature of intrinsic and extrinsic motivation is described and the relationship of these goal orientated behaviors is explored. Theories of optimal human performance and optimal experience are shown to have firm links to the volitional components of executive function, and may indeed, be pivotal characteristics of the mature stage of executive function identified as the '*master stage*' (Moran & Gardner, 2007). The importance of variously defined and delineated self structures or schemas became evident, highlighting the personal elements that motivate, engage and give expression to a student's capacity to learn.

Theories of self regulation also acknowledge the importance of volition, conation and motivation and, once again, the perceptions one has of one's own capacities, competencies and affect are fundamental components of the degree to which individuals engage in tasks and persevere when challenged. Among the theorists from different schools of thought there appears to be consensus regarding the aim of self determination or self regulative behaviors. It is agreed that the critical element is the successful achievement of goals. In educational contexts the most beneficial goals are those that have the characteristics of mastery goals as these goals are focused on personal improvement, challenge and intellectual growth.

The model of self regulation that is presented by phenomenologists appears to be very close to that understanding that Gardner brings to the debate. The active individual and active environmental viewpoint of Behaviorist theories of learning highlight the constant tension between individual expression and desires and the human need to be socially and culturally engaged and accepted. It also emphasizes one of the critical aspects of the development of executive function; the degree to which one's socialization becomes one's executive function, or the degree to which individuals feel able to achieve what they desire in a manner which is personally meaningfully for them. It is only when this occurs that the integration and orchestration of one's goals, skills and volition becomes truly personal. It is at this point that the sense of self identified as the cognitive capacity of intrapersonal intelligence emerges as the expression of self; namely the skills of executive function.

No other theorists have brought together the components of self and the expression of self in such a comprehensive manner, if indeed at all. This may be because none of the foundations of the hypotheses developed by other educational psychologists were laid with a construct as inclusive as Gardner's (1983, 1993a, 1999a, 1999b) understanding of intrapersonal intelligence. Gardner's (1983, 1993a, 1999a, 1999b; Moran & Gardner, 2007) theory of intrapersonal intelligence is deceptively simple. It is not solely concerned with accurate, inclusive aspects of self knowledge. One aspect of the construct of self knowledge is the awareness of the 'emergent self' (Csikszentmihalyi, 1988, 1991b; Elliott & Dweck, 2005). Another aspect of intrapersonal intelligence is the understanding of how one can use one's intrapersonal intelligence to realize this 'emergent self'. Other theories of self, including those related to self regulation, fail to embody the subtle complexity of Gardner's (1983, 1993a, 1999a, 1999b; Moran & Gardner, 2007) theory. It appears that other theorists, whilst acknowledging the evolving nature of theories of self and the factors that may impact upon its development, have not woven their hypotheses as firmly to the multifaceted processes that are commonly referred to as learning.

Chapter Five The Intervention Program

Introduction

The literature discussed in previous chapters suggests that the development of students' intrapersonal intelligence skills, knowledge and understandings may support them as learners in formal learning contexts. The MI (Moran & Gardner, 2007) perspective of executive function, which details the characteristics of the '*apprentice stage*' of executive function, is of particular interest as it provides the information from which a framework can be developed to support the development of executive function of students in classrooms. This framework can then be utilized by teachers to systemically plan activities to develop their students' cognitive capacities known as the executive function of intrapersonal intelligence in an attempt to more fully prepare them with the skills they will need as learners in the twenty first century.

This chapter discusses the development of a classroom program of work designed to support and enhance students' understandings of self; that is, their intrapersonal intelligence. In particular, the program was planned to explore the possibility that student participation in a differentiated program of work could facilitate the development of the skills that were associated with both the self knowledge and executive function components of intrapersonal intelligence (Moran & Gardner, 2007). This chapter explores the various requirements and criteria that were considered to be vital components of the differentiated program, in addition to presenting the practical considerations that were critical to the implementation of the program in everyday classroom contexts. These practical considerations included acknowledging the aims of Australian national and state policies and educational documents, amongst which is the provision of an education that enables all Australian students to develop into successful, confident learners and active and informed citizens. In the development of this differentiated program of work the requirements of the educational system and the school and the expectations and standards of the teachers and students who agreed to participate are also considered.

It is also considered to be important that the resultant program incorporates the types of learning relationships that are vital to student holistic development. These include being mindful of the potential of the program to create differentiated learning opportunities for students to building supportive learning communities and developing strong and effective relationships with their

teachers and peers built on mutual respect and care (Hattie 2009; Lovat & Toomey, 2007) . The program must reflect high academic expectations. It must also give teachers opportunities to demonstrate specific characteristics such as creativity and flexibility (Brady & Scully, 2005), academic optimism regarding their capacities to ‘make a difference’ to their students’ lives (Woolfolk, 2004; Woolfolk & Margetts, 2007), and incorporate strategies that foster intellectually challenging and socially supportive learning environments for the students and teachers (Stipek 2002; Stefanou, Perencevich, diCinto & Turner, 2004).

The following two research questions have been developed to guide this study and as a focus for the *Intervention Program* (Appendices, p 251).

Research Question One

Will the implementation of a differentiated program of work in English improve or change the intrapersonal intelligence skills of Stage Three students?

Research Question Two

Do Stage Three students who have participated in the differentiated program of work in English reflect the distinct characteristics of the ‘apprentice stage’ of the executive function of intrapersonal intelligence?

The *Intervention Program*: Developmental Foundations

The Intervention Program (Appendices, p 251) needed to be developed so that it was able to meet a number of educational goals and to be implemented in a manner sympathetic to the purpose of the study. These criteria included planning for students to make real choices about their learning in English, provide the necessary framework within which students can develop and achieve their own learning goals, planning tasks that embedded various levels of challenge, allowing the students to have opportunities to take academic risks, promoting flexible thinking, meeting students’ interests and learning needs and emphasizing the importance of skill development in English. In order to accomplish this effectively any program must then also be underpinned by an understanding of how students actually learn. This program was developed using a cognitive science perspective of learning (Reese, 1998), which placed great emphasis on the role of individual interest, rich associations of the learning content and context, on the development of useful and purposeful skills and strategies in learning situations and which

acknowledged the different ways in which students organize and build personally meaningful schema.

The implementation considerations revolved around the teacher, school and system requirements and preferences. Moran and Gardner's comment (2007 p 32) that identified school classroom contexts as the ideal place in which to develop students' skills at the 'apprentice stage' of executive function did not take into account individual teachers' conceptualizations of the nature of intelligence and their personal pedagogical practices. This is an important consideration as different teacher perspectives would have an impact, however, subtle, on the implementation of any *Intervention Program*. This particular *Intervention Program (Appendices, p249)* relied heavily on the knowledge, skills and attitudes of the participating teachers for its purposeful implementation. It was pedagogically very different from their regular classroom practice in English. It demanded that the teachers play a very different role in facilitating learning for their students.

Ideally, the teachers would be prepared to commit themselves to the attitudes and teaching and learning approaches that were described in Hattie's (2009) visible learning model; both in their preparation for teaching and learning and in their own behaviors and responses. Firstly, they would need to engage the students in developing their knowledge and skills by introducing the type of curriculum that reflected Hattie's (2009 p 35) three criteria for suitable curriculum to support visible learning. These three criteria were expressed as (i) provision would need to be made to include a balance of surface and deep learning and understanding, as one is built from the other (ii) there must be a strong focus on skill development which was particularly appropriate for students at the '*apprentice stage*' of executive function and (iii) the active identification and planning of deliberately focused programs of work that were developed to teach students strategies and skills in problem solving and were differentiated in content and in cognitive process. Hattie's (2009) model stressed the active, as opposed to passive, participation of students and the provision of opportunities for students to access useful, critical and supportive teacher feedback. Additionally, the teachers would need to develop the skills that were articulated in Hattie's (2009) guidelines for teachers wishing to promote greater levels of student achievement. Amongst these he suggested that teachers needed to have high expectations

of both themselves and their students, be open and engage all students in the learning process and acknowledge the importance of the students' efforts in their feedback to students.

As the student participants would be at the '*apprentice stage*' of executive function, they would need opportunities to build skills as skill development 'dominates' at this stage (Moran & Gardner, 2007 p 26). The students would also need specific opportunities to learn new skills and occasions on which to use these skills repeatedly in order to develop their competencies. The students would also need opportunities to strengthen and test their perceptions of self as learners, especially those relating to their knowledge of their own relative strengths and limitations. They needed to enjoy participating in the intervention and completing tasks with interest and enthusiasm as this would then impact on their capacities to sustain their efforts and be motivated positively towards future tasks. The completed learning tasks, in order to be evaluated authentically, were required to be assessed in terms of degrees of academic competency against some benchmark standards. These selected standards needed to satisfy both school and system requirements. Finally, the *Intervention Program* needed to be differentiated in both content and cognitive processes in order to meet the learning needs of a diverse group of students.

Reese's (1998) work stresses, from a perspective other than that of educational psychologists (Armstrong, 2006; Arthur-Kelly et al., 2007; Brady & Scully, 2005; Burke, 2000; Cohen et al., 2004; deCharms & Muir, 1978), the primary importance of the role of individuals' interests in their engagement in the learning process. It presents yet another reason for students to engage in learning tasks that give them opportunities to revisit, redefine and revise their knowledge and understandings in discussion with both teachers and peers. Planning to introduce and enrich learning skills within the context of students' interests also allows links to develop between one concept and other, related concepts. A focus on activities that were of interest to the students provided yet another rationale for differentiated programs of work.

System, School and Teacher and Student Factors

As '...education is a fundamental aspect of enculturation..' (Moran & Gardner, 2007 p 26) and most formal education is undertaken in the contexts of schools, it is understandable that there are few Australian schools that are not part of one system or another. As part of a school system,

financial support is received from various Government departments to support teaching and learning in these establishments and to provide for the students, who, by law, must attend school if no other arrangement is made for their education. The practical responsibilities that are assumed by the funding bodies include the establishment of panels of experts to advise and develop educational policies and curricula for schools. These expert panels, in consultation with professionals and practitioners, determine such matters as what is to be learnt by students at the various stages of their education in each of the nominated key learning areas. In addition to deciding the developmental sequence of teaching and learning in discipline areas and producing these as syllabus documents, they may also rule on other matters related to the teaching and learning cycle such as structures for reporting student progress to parents and even the allocation of school teaching and learning time that may be devoted to each discipline area.

Schools that receive funding must comply with current syllabus documents, time allocations for different subject areas and mandatory reporting structures if these exist. Regular school reviews evaluate how well schools are able to comply with all the requirements. The school teaching staff is able to demonstrate its understanding and implementation strategies by developing programs of work in various discipline areas that reflect the mandatory knowledge, concepts, understandings and attitudes that are detailed in the syllabus documents. They also demonstrate their commitment to professional accountability by developing individual records of student progress for each pupil and using these as the basis of their formal and informal reporting to parents.

Teachers who believe that they are facilitators of student learning and who assist students to develop a sense of responsibility and control over their own learning play a different role in the teaching and learning environment than those who do not (Latham et al., 2006). Facilitating student learning is a complex task. The intricacies include not only knowing students as individual thinkers and problem solvers and then planning for their learning; it encompasses every aspect of teacher - pupil relationships and the physical space they share. Facilitating learning involves sharing responsibility and ownership for classroom environments, teaching and learning tools and resources and, most critically, it is heavily dependent on the capacity of the teacher to promote student initiative and their growing independence. Facilitating learning is

based on partnerships. These student – teacher partnerships do not only rely profoundly on teacher perceptions, they also require students to be ‘active learners’, who have strategies for ‘moving on’ when they are ‘stuck’(Latham et al., 2006 p 187) and who make decisions about their own learning. As a result, teachers who act in the role of facilitating learning frequently face the challenges of supporting the students as they make the transition from passive to active learners.

One of the important aspects of the *Intervention Program* (*Appendices, p249*) was to provide, through the teachers, sufficient support for the students (Moran & Gardner,2007) who found the challenge of become a self directed, active learner highly problematic. Another significant aim was to firmly place the *Intervention Program* in the context of constructivist theory so that the three teachers were able to explicitly focus on the principles of this theory of learning. Many important characteristics of constructivism are embedded in the cognitive science perspective of learning (Reese, 1998). Additionally, the teachers needed to actively encourage student initiative and autonomy (Cohen et al., 2004), challenge students’ ideas and assumptions in addition to their own (Gardner 2006b) and enter into dialogue with students in regard to their thinking and learning (Cohen et al., 2004; Gardner, 2006b; Groundwater-Smith et al., 2003).

One other aspect of the program was to focus on positive thinking. Fredrickson’s (2000; 2001) model indicated the importance of positive thinking, both in terms of cognition and wellbeing. In this educational context the positive educational practices framework (Noble & McGrath, 2008) were also considered to be an important aspect of the intervention. The explicit teaching of social and emotional competencies included supporting students to understand their emotions and cope effectively with their challenging tasks, to seek assistance and feedback when they needed to and the teaching of helpful thinking skills in relation to problem solving. The teachers also needed to act positively, in much the same way as Hattie (2009) suggested by having high expectations of their students, celebrating effort and promoting both teacher and peer affirmation when students have achieved their learning goals successfully. Student enjoyment of tasks, in turn was considered to engender more positive student attitudes and expectations of academic success.

The establishment of positive relationships was considered to be a byproduct of the inclusive practice foundations upon which differentiated programs of work were built and the implementation of this program would require teachers and students to regularly engage in one to one discussions (conferences) about the students' work, their thinking strategies and their ideas. Much of the program was designed to promote collaborative working with their teachers and peers, cooperation in task completion and to provide opportunities for students to develop an awareness of the relative strengths and knowledge that their peers had to share. It was anticipated that much of the student enjoyment of the learning tasks would be founded in their opportunities to develop some degree of academic autonomy; to select their own learning tasks and use their knowledge of their relative strengths in these selections.

The students needed to be provided with activities that utilized their area of relative strength, interested them and provided a degree of challenge. In this way, they had opportunities to not only use their relative strengths in a formal learning environment, but improve their competencies in these areas and employ them to help overcome difficulties presented by activities related to their areas of relative limitation. In turn, the implementation of all these positive educational practices would allow students to engage more purposefully with their learning tasks, especially if they were self selected learning tasks designed to be presented to a wider audience than the teacher or a small peer group. In this way, the learning of new skills and the developing competencies in others would have more relevance, meaning and purpose to the students.

However, if all these components were able to be incorporated and the system, school, teacher and student requirements were able to be satisfactorily accounted for, it was believed that it would be possible to develop programs of work that supported students' development of the skills of executive function at the '*apprentice stage*'. Systematic, explicit implementation of this program may also accommodate teaching and learning environments that both permitted and prompted teachers to provide the type of support that Moran and Gardner (2007) recommended for students with poor executive function skills. In this way, the students would have two significant aspects of their learning environment; the *Intervention Program* (*Appendices, p249*)

and the underpinning pedagogical practices; specifically designed to support and improve their skills in executive function.

The Intervention program

A review of the literature sourced from different perspectives of development (Bernstein & Waber, 2007; Blakemore & Choudhury, 2006; Isquith et al., 2005; Moran & Gardner, 2007; Petersen, 1988) indicated that Stage Three students may be the most appropriate age group with which to implement a project such as this. The students would normally be aged ten to twelve or thirteen years, have had experience in the formal teaching and learning context and would usually be at an appropriate stage of development to widen and improve various types of self system processes and structures (McCombs in Zimmerman & Schunk, 2004). The *Intervention Program* (Appendices, p 249) was developed as a wide range of tasks. These were organized using a Bloom's /Gardner's matrix (McGrath & Noble, 2005b; Noble, 2002). Gardner's (1983, 1993a) where Gardner's Multiple Intelligences was combined with the Revised Bloom's Taxonomy (Anderson & Krathwohl, 2000) to provide a framework for curriculum differentiation.

Gardner's (1983, 1993a) Multiple Intelligences domains allowed for skills and understanding to be approached from various cognitive perspectives. As previously mentioned, this aspect of Gardner's theory of cognition is what has attracted so much attention in school contexts as teachers search for ways to present teaching and learning activities that offer multiple ways of knowing and thinking. The Revised Blooms' Taxonomy (Anderson & Krathwohl, 2000) was selected for several reasons. Firstly, it was critical that students were given opportunities to engage in tasks that challenged their thinking and widened their perspectives. It was paramount that, as students in the twenty first century, they are able to be educated in ways that will adequately prepare them for the society in which they will live (Beare, 2003; Burchsted, 2003; Dickinson, 2002; Gardner, 2006, 2006b; Lepani, 1995). Incorporating the Revised Bloom's Taxonomy into the planning of a differentiated program of work for students ensured that the tasks designed contained various levels of cognitive challenge ranging from Remembering and Understanding to higher order thinking skills of Analysing, Evaluating and Creating.

This continuum of cognitive complexity was perceived to be an ideal framework for developing activities from which students can independently choose tasks in each of the categories of *Easy*, *Consolidate* and *Challenge* and develop their individual plans for their learning goals.

It was important to use the Revised Blooms Taxonomy (Anderson & Krathwohl, 2000) for this study and not the original Bloom's Taxonomy (Bloom & Krathwohl, 1964) as the rationale provided for the revisions of the original document reflect much of the thinking that necessitated the development of this study. The rationale acknowledged the extensive changes that have occurred in society since the publication of the original handbook and the need to 'incorporate new knowledge and thought in the framework' (Anderson & Krathwohl, 2000 p xxii). The importance placed on the development of notions regarding how students learn and how teachers might manage the planning for teaching and learning was congruent with the reasoning that underpins this study. Finally the reassessment of several cognitive processes complemented the system requirements as indicated by the standards based NSW Board of Studies English syllabus documents.

The learning tasks for the differentiated unit of work using the Bloom's/Gardner's matrix were mainly developed using differentiated classroom strategies from McGrath and Noble (2005a). As the *Intervention Program (Appendices, p251)* was designed to be implemented during the time that was allocated to English, an appropriate literacy component was attached to each original task if the task did not predominantly focus on the verbal / language intelligence domain. In addition, each task was cross referenced with the outcomes and specific indicators from the current NSW K-6 English Syllabus (Board of Studies 1998). Also included on the learning task cards was a rubric indicating the key aspects of the tasks from a literacy perspective.

The rubrics indicated what the students needed to achieve in varying degrees of competency. These were not couched in language that every student could understand, but were designed to support the teachers who were evaluating the tasks, as they had acknowledged that they were not sufficiently familiar with the K-6 NSW English syllabus (Board of Studies 1998). In order to evaluate the learning tasks effectively, teachers generally identified the outcomes and indicators of the tasks they were preparing for students and then assessed the students' product, observed

their demonstrated abilities and discussed the students' ideas in one to one, teacher – student conferences. The assessment results were recorded in a teacher-developed code on a checklist of indicators, one list for each of the targeted outcomes and supported by anecdotal records. In this way, the three teachers could determine both the academic achievements of the students and their progress. Common codes that are used by teachers are variations of the following notations as indicated in Table 1.

Table 1 Teachers' Assessment Codes

N/E	Not evident	No score
W/T	Working towards competencies at the appropriate stage of the syllabus	Score 1
W/A	Working at the level that is indicated in the appropriate stage of the syllabus document	Score 2
W/B	Working competently at skills that are beyond the appropriate stage level for the class	Score 3

Table 5.1 Teacher assessment codes for English progress using indicators and outcomes

Not evident (n/e) indicated that the skill, knowledge or concept was not evident in the data the teacher has collected for the individual student for whom the record was being compiled.

Working towards (w/t) established that a student was working towards competency in the capacities described in the indicator. Working at (w/a) showed that a student was consistently demonstrating competence in the indicator skills and could do so in a variety of contexts.

Working beyond (w/b) assessments determined that a student was able to work at a level beyond that described in the indicator. Students who received working beyond assessments were frequently working from specific outcomes and indicators from the next stage which reflected their areas of relative strength and provided them with a degree of challenge. Although the rubric headings were not identical to this code, the equivalent assessment code was apparent if the rubric was used to inform teacher evaluations.

To fully support the teachers' evaluation of students' work samples, students' demonstrations and the recording of the student and teacher conferences, a spirally bound booklet was prepared containing the targeted outcomes and indicators from both Stage Two and Stage Three of the K-6 English syllabus (Board of Studies, 1998). The class lists were inserted on each page when the teacher participants and their classes were identified. Students were then able to present their teachers with the task card with the details of outcomes, indicators and rubrics already identified, at times of assessment. Teachers were required to assess the work, determine a code that reflected the student's accomplishments and record the assessment in the corresponding grid

square. To enable multiple recordings, the grid squares could be divided into quarters if the teacher wished. Additional information could also be recorded freehand on the back of the previous page, which was deliberately left blank for this purpose. Although the format for reporting to parents was not a sensitive measure, this method of cross referencing the students' skill development over several tasks provided opportunities for authentic, multiple assessments of each indicator, irrespective of the learning context. It also provided detailed information of the students' progress in relation to the mandatory, targeted English syllabus outcomes which formed the basis of the teacher comments in the format for reporting to parents. This system of evaluating and recording assessments becomes invaluable when the students in the three classes involved in this *Intervention Program* were not all completing the same learning tasks at the same time or even not the same learning tasks at all.

The *Intervention Program* (*Appendices, p251*) learning tasks were designed to be tasks completed by individual students or small groups of students. The tasks were detailed on individual sheets of paper. Full details of what was required were provided, as were examples of specific formats or styles; for example, how to develop a 'sound off', or what a 'concept map' would look like. The titles and brief descriptions of the tasks were then inserted onto the appropriate cell of the Revised Bloom's /Gardner's matrix (Noble 2002; McGrath & Noble 2005). Each cell was accorded a code based on the Multiple Intelligence domain (Gardner, 1983, 1993a) in which the task was placed. Some cells contained more than one task. The matrix could be extended to contain as many tasks as were required. Each matrix represented a unit of work based on a topic or theme such as 'Journeys' and the task cards were designed to develop students' skills, knowledge and understandings on that topic across Gardner's eight intellectual domains and the Revised Bloom's taxonomy of six levels of thinking. In this manner, it was hoped that students would be scaffolded in their attempts to develop flexible thinking skills and problem solving strategies (Moran & Gardner, 2007).

The implementation of these matrices required students to be responsible for their own learning in that they had to make choices (Dawson & Guare, 2004; Moran & Gardner, 2007). The individual copies of the matrix that were chosen for use were distributed to the students, who then made some choices about the activities that they would like to comprise their learning goal

(*Learning Goal Plan Appendix, A p 277*). Students were also given the individual plan or proforma on which to record the codes that identified their chosen tasks. This procedure allowed students to select activities that were of interest to them, work on them over a period of time and form the rich associations that are integral to successful learning (Reese 1998). In addition to this, and most importantly, students were required to select a number of the differentiated tasks from the Bloom's /Gardner's matrix that (i) they had assessed as being easy for them,(ii) a number of tasks that consolidated their skills, knowledge and concepts that they felt they were reasonably competent at using effectively and (iii) a number of tasks that they assessed as being challenging tasks for them.

The teachers were asked to support students in their task selection by advising them about their choices and, on occasion, predicting any significant difficulties that may result from the students' task choices (Moran & Gardner, 2007). The students themselves determined the level of difficulty of their selected tasks. There were some restrictions. The students were not permitted to choose all easy or all consolidating tasks. The number of easy tasks or consolidating tasks could not be more than the number of challenge tasks. Finally, there had to be tasks chosen for each category of difficulty and a reason provided to validate the selection of each. The total number of tasks selected constituted the individual student's learning goal. The students were asked to make their choices at the beginning of the unit, with the exception of the introductory period in Phase One, when they were asked to just select as many learning tasks as they could initially and complete their *Learning Goal Plan (Appendices, p 277)*. In Phase Two, as they became more familiar with the organization of the intervention and their new roles in their own learning, the students completed these *Learning Goal Plans (Appendices, p 277)*. They completed them in each subsequent phase until the conclusion of the *Intervention Program (Appendices, p 251)*.

The tasks were organized in easy, consolidating and challenge for several reasons. Firstly, it was important to establish the new procedures during the English lessons with a minimum of student stress. It was important that students enjoyed both the freedom to choose tasks that interested them and the tasks themselves, as these were critical elements of the *Intervention Program*. Providing the opportunity for students to evaluate their capacities as learners was an essential

aspect of students developing sound intrapersonal intelligence. It was not really critical if students did not select tasks that accurately reflected their academic skills, knowledge and concepts when compiling the first learning goal. The experience itself could be regarded as a significant factor that influenced future choices and increased their self knowledge. The wide variety of tasks in the Multiple Intelligences domains allowed students to acquire new skills, knowledge and concepts in a curriculum unit that would be personally meaningful. It also allowed students to use skills, knowledge and concepts that they had learnt in other learning situations in a new learning context that would be self selected and personally interesting.

It was considered that the easy tasks may provide some degree of success that may impact positively on the student's degree of motivation to continue selecting tasks and to their positive emotions towards their tasks (Fredrickson, 2000; 2001; Noble & McGrath, 2008). This opportunity to engage in tasks that encouraged students to highlight their strengths and develop positive attitudes towards the *Intervention Program* may well have influenced their thinking regarding their capacities to complete more personally demanding tasks successfully, at a later stage. The easy tasks also provided a 'safe' context in which the teachers could begin to challenge students' ideas and assumptions and engage them in dialogue about their thinking and learning.

Conclusion

The parameters of a suitable intervention program were detailed and the impact of teacher and student variables acknowledged. The conditions under which students at the '*apprentice stage*' of the theory of executive function from a Multiple Intelligences perspective (Moran & Gardner, 2007) may develop increased intrapersonal intelligence (Gardner 1983, 1993a, 1999a; 1999b; Moran & Gardner, 2007) and begin to exhibit the characteristics of executive function were explored in addition to other considerations that were of importance to the intervention design. Amongst these was (i) the cognitive science perspective of how effective learning takes place (ii) the requirements of systems, schools, teachers and students (iii) the importance of teacher attributes, attitudes, values and perspectives regarding their professional practice and (iv) the components of the intervention program itself.

The Intervention Program (Appendices, p 251) was designed to be implemented in a conventional school environment to and take account of the system, school and teacher constraints that influence all teaching and learning activities in New South Wales schools. The most important features of *The Intervention Program (Appendices, p 251)* have been determined by the characteristics and elements described by Moran and Gardner (2007) as constituting an effective educational environment for the support of students at the 'apprentice stage' of executive function.

The resultant program was distinguished by four major features; (i) the requirement that students make their own decisions about the tasks that comprise their learning goals in English from a differentiated program of activities, (ii) the accuracy with which they are able to judge their own relative strengths and limitations as learners in English (iii) the degree to which these cognitive processes impact on the demonstrable skills that are identified as characteristic of the cognitive capacity of executive function of intrapersonal intelligence and (iv) the teachers' capacities to promote a positive, engaging and academically demanding learning environment (Bernstein & Waber, 2007; Blakemore & Choudhury, 2006; Dawson & Guare, 2004; Moran & Gardner, 2007; Noble & McGrath, 2008; Petersen, 1988). At the 'apprentice stage' of executive function (Moran & Gardner, 2007) these characteristics are related to developing skills in self monitoring of both cognition and behaviors. Included in these skills are the individual student's capacities to set appropriate learning goals. In order to accomplish this successfully, individuals must also use their 'knowledge of self' to assess their own competencies in the skills required to achieve these goals. Additionally, they must possess the ability to recognize and select the tasks that constitute their goals with reference to their personal interests and motivation.

The structures and procedures of the *Intervention Program (Appendices, p 251)* acknowledged that at the 'apprentice stage' (Moran & Gardner, 2007), students may need support and guidance to successfully negotiate these three key features. Provision was made for some skill development in large or small cohorts; this is in whole group or small group activities determined and implemented by the three teachers using their customary pedagogical practices. The participating teachers also had key roles in the implementation of the intervention itself. These roles were not confined to observation of students' work habits and evaluation of the

quality of student products. The teachers were required to challenge students' ideas and engage in meaningful dialogue relating to their thinking and learning. Embedded in the implementation of the *Intervention Program* (*Appendices, p 251*) was the necessity for the teachers to act in the capacity of both guiding and advising student participants; a role described by Moran and Gardner (2007 p 33) as a 'prosthetic frontal lobe'.

Chapter Six Methodology

Introduction

This chapter provides details of the research project that was designed to examine the possibility of effectively supporting students in Stage Three of their school education to develop stronger intrapersonal intelligence. The research was also designed to explore any evidence that emerged relating to the relationship of strong intrapersonal intelligence and the demonstration of the associated cognitive processes that are expressed as skills in executive function. The chronological age of the students (8 -10 years) indicates that they are in the '*apprentice stage*' of developing these skills in executive function and this developmental factor was considered in the design and implementation of the research tools and the *Intervention Program* that provides the framework for the investigation. These issues and other practical considerations were the foundations of the research project that was planned and implemented during the timetabled English sessions only.

The design of the project itself is discussed and a clear rationale provided to validate the selection of this particular methodology and confirm its suitability for use in this research project. Issues of reliability and validity are discussed, in relation to the research tools and methodology. The research tools are described, their rationales explored and their role in the research plan are specified in an attempt to establish a clear audit trail when presenting the research findings. The details of scales and methods of comparing data from diverse sources are also explained. The context of the study and the school environmental and organizational particulars are described. The appropriate, related, personal details of the teachers and some basic information relating to the student participants are explored, as are some particular school related factors that have relevance to the research findings.

Research Focus

The area of focus in this study was to investigate and describe the impact of an intervention program based on Gardner's (1983, 1993a, 1999a, 1999b) theory of intrapersonal intelligence using the most recent definition of intrapersonal intelligence; that of Moran and Gardner (2007). This definition included the specific purposeful means by which self knowledge can be expressed as the skills of executive function. Additionally, their definition (2007) of executive

function was also utilized. There are three specific aspects that are of importance. The first was to determine if the students have changed or improved any of the skills related to the self knowledge component of intrapersonal intelligence as a result of the implementation of the program. The second was to determine if students' participation in the differentiated program of work in English caused any change or development in their demonstrations of the second aspect of intrapersonal intelligence; the cognitive capacity expressed as the skills understood to comprise executive function (Moran & Gardner, 2007). The third component that was investigated relates to the students' capacities to demonstrate the distinct characteristics of the 'apprentice stage' of executive function as described from Multiple Intelligences (Moran & Gardner, 2007) perspective of executive function.

Research Question One

Will the implementation of a differentiated program of work in English improve or change the intrapersonal intelligence skills of Stage Three students?

Research Question Two

Do Stage Three students who have participated in the differentiated program of work in English reflect the distinct characteristics of the 'apprentice stage' of the executive function of intrapersonal intelligence?

Research Design

The challenges of designing and implementing educational plans or programs to support students at the 'apprentice stage' of executive function to strengthen their skills in this area of development was regarded as substantial. However, Moran and Gardner (2007 p 32), with deceptive simplicity, state

The 'apprentice stage' provides an arena *par excellence* for the educator. To support strong executive function within this stage, the current models of schooling are generally appropriate. The format is lessons. The focus is on understanding.

In the context of regular classroom settings, which were clearly considered by Moran and Gardner (2007) to be the most suitable environments in which to support executive function at the 'apprentice stage', an action research project is selected as the most practical and informative design for this research, focusing on informing and improving teacher practice in the light of

how best the students can learn. Action research supports the perspectives of this study as the model allows opportunities for the teacher and student participants to offer personal evaluations, reflections and comments. It also allows the students to make statements that are directly related to their personal functioning in the areas of volition and self regulation. The comments of the teachers and especially the students are important for several reasons. Teachers' evaluations allowed the intervention program to be revised and modified periodically to meet the changing needs of the students. The teachers were able to observe students as they interacted with different tasks, conference with them about their thinking over an extended period of time and to assess the impact of the study on the students' progress in English.

The student comments and evaluations were considered and provided important data regarding which activities they found most engaging, the level of satisfaction they experienced in regard to their choices, the degrees of concentration the tasks demanded, their reflective evaluations of their work, the energies that they expended in pursuit of their goals and their emotional responses to their selected tasks. All of these aspects of the learners and the learning process are directly related to the research questions.

Action research methodology best suited the purpose of this study, which was essentially developed to explore a means by which students may improve their intrapersonal intelligence. Action research methodology facilitated some quantitative research tools being effectively utilized (Gay, Mills & Airasian, 2006) in addition to teacher observation, teacher evaluation of set criteria and products and student – teacher conversations relating to the students' learning. It also accommodates the necessity to consider and account for some significant variables. Mills (2000 p 6) defines action research in this manner

Action research is any systematic inquiry conducted by teacher researchers, principals, school counselors, or other stakeholders in the teaching and learning environment, to gather information about the ways their particular schools operate, how they teach and how well their students learn. This information is gathered with the goals of changing insight, developing reflective practice, effecting positive changes in the school environment and (and on educational practices in general), and on improving student outcomes and the lives of those involved.

In addition to the theoretical considerations generated as a response to Gardner's perspectives (Zimmerman & Schunk, 2001; Moran & Gardner, 2007), action research models are particularly suited to investigations carried out in school settings (Burns, 2000). Gay (1992) notes that action research gives opportunities to find solutions to classroom problems in a scientific manner, while remaining focused on a specific situation. The Action Research model discussed by Gay, Mills and Airasian (2006) can be implemented on several levels. It is suitable for use with individual teachers and classes, groups of teachers in one department or whole school communities. They state 'elementary teachers might form a small group.....or some teachers may be involved in collaborative or participatory research with university-based researchers' (Gay et al., 2006 p 503). Five characteristics of action research are developed. Firstly, action research must be persuasive and authoritative. The sources of data that are selected, designed or identified must have the capacity to provide persuasive, insightful, accessible data that provide answers to the problems being investigated. Secondly, the research must address a real issue that is relevant for teachers and be conducted in situations that are sufficiently similar to the working environments that are currently experienced by teachers. In this way, teachers are able to identify with the findings of educational research that is meaningful. Thirdly, the findings of action research must be accessible in that they must have the capacity to change teacher practice.

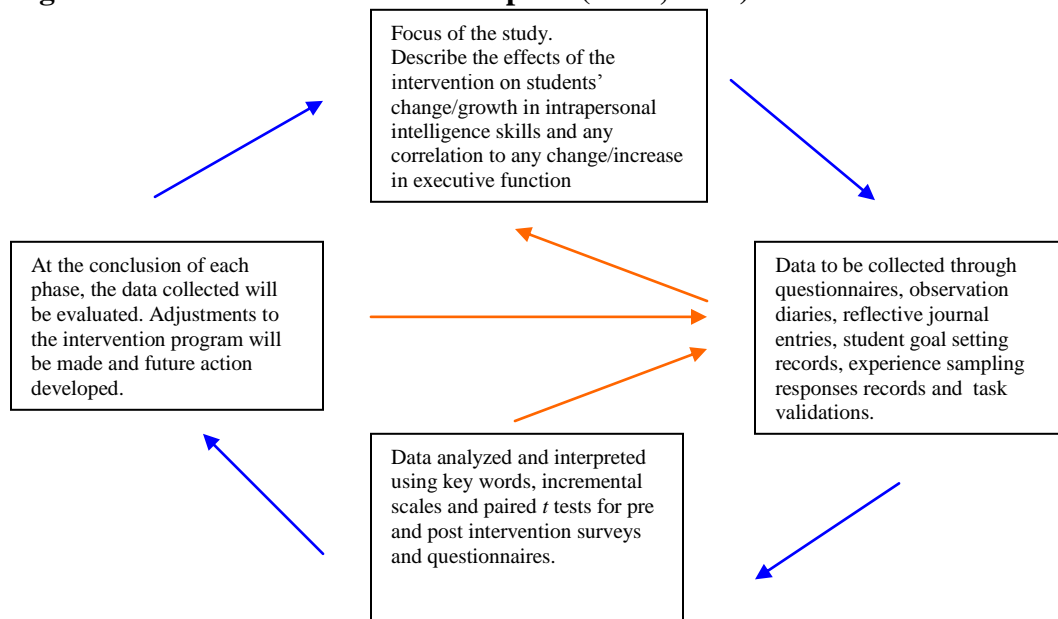
Findings in educational research that fail to address teachers' prior beliefs and values are unlikely to elicit change, even if they are made available to teachers. The power of action research lies in its potential to challenge the assumptions the participating teachers have about aspects of teaching and learning related to the study, which may be important considerations for this project as the impact of the teachers' actions and attitudes may be significant in the interpretation of the findings. Teachers' willingness to reflect on and change their practice is evidence that their research findings are able to positively affect practice. Fourthly, action research challenges the view that educational systems are intractable. It facilitates teacher opportunities to have some control over the process of educational and systemic reform by incorporating action research into the everyday work of teachers. This, in turn, makes action research an integral part of the educational system and process. Finally, action research is essentially what effective teachers have always done; reflected on their practice, assessed its effectiveness in terms of student progress, identified strategies for problem solving and made

plans to test these out in their everyday work; processes that are fundamental for an authentic answer to the research questions.

Ensuring that all of the characteristics above are present in the research design allowed the teachers to mirror their own sequence of work -related activities and combine new ideas into their usual practice with the minimum degree of disruption. The nature of this Practical Action Research (Gay et al., 2006) model emphasizes the role of teachers as reflective practitioners who engage in professional development to inform their practice and improve the outcomes for their students. It allows teachers to determine the focus of the study, collect data that is legitimate, relevant and comprehensible and to conduct evaluations of innovations in contexts that are meaningful and important to them; their own classrooms.

The cyclical nature of action research reflects the means by which teachers organize their professional lives in classrooms (Mills, 2000). The teaching and learning cycle utilized by teachers to organize their classrooms comprises of four tightly related components. These are; identifying the focus of the lessons (the outcomes and indicators), implementing the lessons and collecting data, analyzing or assessing the data using the indicators and outcomes that were the lesson focus and determining what actions to take as the results of the assessment. In the same manner, the Dialectic Action Research Spiral (Mills, 2000 p 19), selected as the specific design for this research project, reflects the same process.

Fig. 1 Dialectical Action Research Spiral (Mills, 2000)



Finally, the implementation of this practical action research design, unlike experimental and quasi experimental studies, allows for changes and adjustments to be made in response to the learning needs of the student participants, the reflections, particular strategies and preferences of the participating teachers and the school organization and commitments.

The School Context

The research was conducted in a non denominational Kindergarten to Year 12 Christian School in the west of a provincial town. Originally established as a settlement for employees of the nearby sawmills and coal mines, only one coal mine is currently operating in the area. This provides some local employment but many residents travel out of the area to work, making use of the railway link to the city and state capitols. The local population remained small and the school and small township are surrounded by bush land. The socio – economic status of the school’s parent community was very varied. The school was relatively new, having been established in 1998 with only seven pupils. Ten years later, the current enrolment was approximately 420 pupils. The school was divided into three sections; the Junior School, which houses Kindergarten to Year 4, the Middle School which comprised Year Five to Year Eight and the Senior School which was the students in Year Nine through to Year Twelve. The school had experienced considerable growth in the Middle School in recent times, adding an additional class to its Stage Three cohort in 2008 and currently has enough new enrolments to add another Stage Three class in 2009.

The study was implemented in Stage Three classrooms. The three classes were each composed of both Year Five and Year Six students. The participating students in each of the classes are referred to throughout as Class A (n=19), Class B (n=11) and Class C (n=10). The identifiers that were assigned to each group of participating students and to their teachers were determined solely by the size of the cohort. As a result, the largest group was identified as Class A. There was no separate teaching and learning plan for the different year groups, in each of the classes the teaching and learning activities were planned for the entire group Each group was assigned a ‘core’ teacher who was basically their classroom teacher when they were not engaged with the school’s specialist teachers, who taught subjects such as French, Music and Personal

Development. Some of the ‘core’ teachers also taught specialist subjects to all the Stage Three students and to other students in the Senior School.

The students and their three teachers had some experience of differentiated teaching and learning, having been familiar with programs of work designed using Bloom’s /Gardner’s matrices for integrated units of work developed from the Human Society and its Environment (Board of Studies, 1998) syllabus document. The students engaged with these programs once a week, developing a contract of the tasks they could complete to fulfill the required points score that the teachers had set for completion of the program. These programs differed in some significant ways from the *Intervention Program*. Firstly, much of the introductory information was provided and presented by the teachers themselves. Secondly, many of the tasks were accompanied by worksheets and proforma type response sheets that limited the type of answers students could offer. Thirdly, some of the activities were accompanied by extremely detailed instructions, leaving little room for student variation. Fourthly, other activities did not sufficiently engage students in the complex cognitive processes that their position in the Revised Bloom’s (Anderson & Krathwohl, 2000) hierarchical cognitive taxonomy would indicate as necessary for successful task completion.

The Middle School also implemented a ‘smarTrack’ program for its Stage Three students. The information to parents describes this program as

...an innovative feature of our Middle School and is designed to help students develop the God – given gifts that they have in specific areas by providing opportunities to extend these abilities on a more significant level.

There were three ‘smarTrack’ classes for students to consider in 2008, with another option (ecoTrack) being planned in 2009 to accommodate the increasing student numbers. In 2008, the students and their parents were asked to consider which of the three available options best suited each student. The ‘thinkTrack’ information included entry requirements that indicated that students who wished to be part of this cohort must:

- Display commitment to learning and enjoyment of the learning process
- Demonstrate a willingness to focus on academic work
- Maintain a high behavior level
- Display confidence in using technology and a desire to improve and learn more.

The 'sporTrack' class information also indicated some entry requirements. These were that students must:

- Display a developing proficiency in sporting ability in preferred sports and a keen interest in the field of sport
- Demonstrate an involvement in, or willingness, to be involved in school sport and some interest in club sport
- Demonstrate a willingness to focus on academic work
- Maintain a high behavior level

The third 'smarTrack' was known as 'cappaTrack'. This class focused on the 'Creative And Practical Performing Arts'. There were no entry requirements listed and no information about expectations relating to standards of behavior or academic expectations. Students and their parents were advised to discuss the most suitable 'smarTrack' group for each student to nominate and the final decisions were reached in consultation with the teachers. The students remained in Stage Three for two years, but not necessarily in the same 'smarTrack'. They were able to go through the selection procedures a second time during their second year in Stage Three to experience another 'smarTrack' class or elect to stay in the same class for the duration of Stage Three.

The three Stage Three teachers were also matched by the school principal to their classes, having met some selection criteria and then being assigned to their respective groups. One teacher had formerly had a successful career in extreme sports prior to becoming a teacher and was not only assigned the 'sporTrack' class but was involved extensively in preparing the senior students to participate in other activities such as the Duke of Edinburgh Award Scheme. This teacher also taught French in the Senior School. The teacher assigned to the 'smarTrack' class was an experienced teacher who also had experience of teaching English at secondary school level. The third teacher was also a musician and taught music to all the Stage Three students and played a prominent role in other musical projects across all levels of the school, including the school concert that involved the entire school in public performances and that was produced every second year. All three members of staff were parents of primary school aged children and mentioned that this role contributed to their interest in differentiated programs of work and their implementation. However, because of the different interests and priorities of the participating teachers and the prominence of these differences in their professional lives, the data received

from the participants in each of the three classes was initially explored separately. In this way, any impact that results from the 'smarTrack' program and the specific criteria used to allocate teachers to these classes may be more readily recognized.

The teachers themselves, two females and one male were at different stages of their careers, despite being somewhat similar in age. One of the teachers had received a teaching qualification twenty six years prior to the commencement of the study. Another teacher had completed a teacher training course twenty years previously and the third had completed a teaching degree within the last five years. The most recently qualified teacher had been employed at the school since graduating. The other two teachers had previously been employed as classroom teachers in the public school system run by the New South Wales Department of Education and Training.

All three of these Stage Three teachers participated in the research project along with a number of students from each of their classes. Forty two student participants were involved in the research. Both boys and girls were aged from 10 years – 12 years at the commencement of the study. There was a noticeable lack of student diversity in the following areas. No students were identified as speakers of English as an additional language and no students were identified as being from an indigenous background. One student was identified as suffering from Aspergers Syndrome and had the assistance of a teacher's aide for part of the school day. Another student had recently been prescribed glasses with Irlen lenses to help overcome problems caused by dyslexia. Towards the conclusion of the study a third student was prescribed glasses to correct a visual problem.

Seventy seven students were enrolled in the three Stage Three classes and the school executive and Stage Three teachers agreed to implement the *Intervention Program (Appendices, p 251)* with all of the students as part of their teaching and learning in English time. Thirteen students did not return their parental consent forms that would have enabled them to participate in the research project, implying that either the students or their parents did not wish their child's work to be included in the study. The remaining sixty four students gave consent for their reflections, evaluations and other relevant materials to be viewed by the researcher. The research tools that were designed for student completion during the *Intervention Program (Appendices, p 251)* were

to be completed by all the students but only the responses completed by the consenting students were accessed by the researcher. However, some of the participating students had significant problems related to the effective management of their paperwork in the storage folders provided for this purpose and unfortunately had very little evidence from the *Experience Sampling Records (Appendices, p273)*, the *Reflection Responses (Appendices, p 276)* or the *Goal Plans (Appendices, p277)*. Some other students had none of these records available at the appointed collection time as they had erroneously cleaned them out of their folders with their other materials at the direction of their teacher or simply discarded them on completion. One group of students was attending an ‘out of school’ event when the questionnaires and evaluations were completed at the conclusion of the study and seven other students did not identify themselves on the questionnaires or did not complete both sides of questions. As a result, forty students completed and contributed sufficient research information, using the research tools, to be included in the final results.

Class Profiles

Class A had the largest number of students. It comprised fourteen boys and thirteen girls. No differentiation was made between the year five and year six students. Of these students all but one boy returned the permission note and indicated they would like to participate in the study. Of these twenty six students, the data represents nineteen. The other students were either absent at the time of final data collection or only partially completed the questionnaires at the commencement and conclusion of the study. Two students submitted questionnaires without any identification. Class B was made up of twenty five year five and six students. It was a Stage based class of fifteen boys and ten girls. The teacher made no differentiation between the year five and the year six students. Four girls and five boys did not return the permission notes to be part of the study. Of the remaining sixteen students who had expressed an interest in the study, the data presented represents eleven. The other five students had similar problems to those in Class A. One student routinely submitted a folder with nothing in it; others were unavailable during the administration of the questionnaires or had significant amounts of data missing from their folders. Class C comprised twenty five students, twenty two of whom returned permission notes signed by both themselves and their parents, indicating that they would like to participate in the study. The group was made up of six year five girls, four year five boys, twelve year six

girls and three year six boys. One year five boy and two year six girls did not give permission for their records and work samples to be available for the purposes of the study. Of the twenty two students who indicated they wished to participate in the study, ten are represented in the data. This group found it particularly difficult to organize and store their paperwork effectively.

Research Timeline

A variety of data collection tools were used in order to facilitate the triangulation of the data; considered by Wolcott (in Mills 2000 p 49) to be an extremely important aspect of qualitative research. She states '...the strength of any qualitative research lies in its triangulation...'. This process of triangulation included utilizing information from student questionnaires; student reflection responses and teacher observation diaries compiled by the teachers and the researcher. Evidence of specific areas of change, growth or development was tracked using these observation journals and diaries. Other sources of data that were employed in the triangulation of evidence included students' justifications of task selection in each of the categories, students' records of learning goals, reflection responses and experience sampling responses from participating students.

The study was conducted in four phases. Burns (2000) recommends that at least three or four 'cycles' or phases are completed in a classroom action research study so that the impact of any change or intervention can be satisfactorily assessed. Each phase had a specific purpose. Some of the research tools were introduced gradually and added to those used in previous cycles. In this way the amount and specificity of data was gradually increased and all the research tools were implemented. The phases were planned to be equal in duration, depending on the participating teachers and their other school based commitments and general schedules. The timeline planned was generally successful except for the final phase which was extended at the request of the students and teachers.

The Preliminary Phase (Jan-April, 2008)

This phase was concerned with the identification of teachers who were interested in working with a university researcher on an educational issue that impacted on the learning of the students in their classrooms. Once an expression of interest was made, initial meetings with the principal

and then with the interested staff took place. The teachers who wished to participate in the research project were then invited to participate in a professional development day. The focus of this day was to introduce the research study to teachers, determine the benefits of the research project the school, teachers and students and plan the details of implementation. These details included the classroom periods of teaching time that could be timetabled to implement the differentiated activities. It also provided an opportunity to explore and to determine the degree of the scope required in the differentiated programs of work from the K-6 English syllabus (BOS 1996) and examine the details regarding customizing the tasks to meet the needs of the students in these teachers' classes. During this time the researcher attended a Parents Meeting at the school and spoke to parents about the proposed research project and answered questions related to the students' commitments and the purpose of the study.

The implementation strategies, planning for observation and conferencing were also discussed and plans made for the theme, topic or major focus of the units of work that would be English based, but able to be integrated with other areas of mandatory curriculum. This professional development day also provided an occasion for the teachers to ask questions and gather information related to their own specific settings. Additionally, it allowed the researcher to plan for any additional meetings or support that was required by the staff and principal. The teachers decided that they would not plan any activities for the first matrix of the *Intervention Program (Appendices, p 251)*, but would contribute ideas and collaborate on the subsequent matrices. They preferred that the researcher actually created the task cards and color coded them. Additionally, they preferred that the grading of the cards for intellectual quality remained the responsibility of the researcher.

Phase 1 (Term 2, Weeks 6-10)

The students were invited to participate in the research study and the information and content forms distributed. On return of the consent forms, the participating students came together to complete the *Intrapersonal Intelligence Questionnaire (Appendices, p262)* and the *MICUPS (McGrath & Noble, 2005ab Appendices, p272)* which were administered by the researcher and the participating teachers as pre tests. These questionnaires provided some baseline data relating to the students' current perceptions of their levels of various aspects of intrapersonal intelligence

and their perceptions of their relative strengths and limitations using Gardner's (1983b, 1993aa, 1993ab, 1997a, 1999b) Multiple Intelligences domains. Prior to the commencement of the study the teachers had also been asked to determine the current status of the students' work related skills using the focus areas detailed on the *Student Observation Checklist (Appendices, p 280)*. These teacher assessments, based on their reflections of their students' classroom work habits in the previous months, were utilized as baseline data relating to the students' capacities to demonstrate the skills associated with executive function.

The participating teachers then introduced the *Intervention Program (Appendices, p 251)*, distributed the task cards and explained the *Bloom's Gardner's Matrix (Appendices, p 251)* to the students. In the initial phase, the students were encouraged to investigate a wide variety of tasks before determining their choice of learning tasks. At this stage, the students were only required to select one learning task at any of the three levels available. Other tasks were to be added later to form a learning goal. Teachers had the opportunity to further familiarize themselves with the *Student Observation Checklist (Appendices, p280)* in the context of their own students' skills and informally begin to observe the students' work related skills as they were detailed on the *Student Observation Checklist (Appendices, p 280)*. During this phase the importance of the teachers supporting their students as they were developing their skills in goal setting related to their own learning in English was a major focus of the implementation.

During Phase One the researcher and the teachers assessed the *Intervention Program (Appendices, p 251)* procedures and the content of the learning task cards. The teachers requested that the nature of the learning task cards were altered in three significant ways. The teachers wanted more general tasks and requested that the cards focused on many of the same skills as previously but that they did not have a specific literature focus. This was decided despite the researcher sourcing a suitable text for the Phase Two theme and making arrangements for a class set to be made available. This alteration actually made the tasks more difficult as the students had to initially identify a suitable context within which to explore their self selected learning tasks. The second adjustment also was made at the request of the teachers. They had concerns that the vocabulary used in the task cards themselves and the ways in which the tasks were described and presented were too difficult for the students to engage with independently. This

resulted in some revisions of the original wording and explanation of the tasks on many of the task cards.

However, another of the changes made task selection increasingly difficult for the students and would certainly have complicated the teacher's role of supporting the students and guiding them in their task selection and completion. The teachers decided that the coding of the learning task cards, which indicated both the type of task in terms of difficulty and the stage level of the cross referenced indicators from the K-6 English Syllabus (Board of Studies 1998), was not useful. A colored dot sticker had been attached to each card. Different colors indicated different levels of task difficulty and the origins of the indicators; that is those from both Stage Two and Stage Three of the K-6 English syllabus. In order to facilitate the learning needs of students with diverse learning needs, the learning task cards had been developed in a manner that 'scaffolded' the level of competency that was required for successful completion. This was accomplished by using both Stage Two and Stage Three outcomes and indicators from the K-6 English Syllabus (Board of Studies 1998) and altering the complexity of the learning activities.

Some learning task cards presented activities that were relatively simple examples of tasks that could be undertaken to develop the skills, knowledge and strategies that were identified as the relevant indicators and outcomes from the K-6 English Syllabus (Board of Studies 1998). These activities generally appeared on the planning matrix as activities in the *Remembering* and *Understanding* levels of the Revised Bloom's Taxonomy (Anderson & Krathwohl, 2000) and were identified as easy tasks. Other learning task cards presented more complex activities while still focusing on the knowledge, skills and strategies required to achieve the same indicators and were considered to be consolidating tasks at the *Applying* level and placed appropriately in terms of cognitive complexity on the planning matrix. The remaining groups of learning task cards were more complex, as they were developed from the *Analyzing*, *Evaluating* and *Creating* levels and presented learning tasks that were increasingly multifaceted and were developed as challenge tasks and required that students use higher order thinking skills to complete them successfully.

Another alteration that was made to the learning tasks that comprised the *Intervention Program* (*Appendices, p 251*) was also made at this stage of the project at the request of one of the teachers. One teacher was concerned that there were insufficient task cards dealing with one aspect of the selected outcomes from the K-6 English Syllabus (Board of Studies 1998) that were targeted for use in the differentiated program. She requested that a number of specific cards be developed that required students to engage with cognitive processes such as attribution, complex organization and evaluation for the purpose of debating and the development of exposition texts to be presented as speeches. In her evaluation of the *Intervention Program* (*Appendices, p 251*) she had felt these specific activities were absent and needed to be added. She provided a list of topics for this purpose and the task cards were developed by the researcher as the teacher felt that she had insufficient time to complete the task cards herself.

The final alteration that was made to the task cards that comprised the *Intervention Program* (*Appendices, p 251*) was not related to academic quality, language use or task context. It was a purely practical matter but it had an unexpected impact on the availability of the range of learning task cards that were available for student selection. The original learning task cards had been printed and laminated. They were all available in multiple copies in boxes in each classroom. The teachers felt that it would be better to have tasks on paper, reasoning that the students would be more able to select their tasks efficiently if they were able to look through the tasks in a more organized format. The paper copies were to be organized and stored in an A4 ring folder. The teachers were to organize one of these for their own class use. However, in practice, from Phase Two until the end of the study, two classes shared one of these task card folders. In order to select their learning tasks, the students of one class had to borrow the folder from the other classroom, select tasks and return the folder as soon as possible.

Phase 2 (Term 3, Weeks 1-5)

During this phase the participating students (hereafter simply referred to as the students) continued to participate in tasks as previously. The skills and strategies incorporated into the *Bloom's /Gardner's Matrix* (*Appendices, p251*) and learning task cards were basically covering the same learning outcomes as those planned for Phase One, but the content and context of the learning was intentionally different, reflecting the teachers' scope and sequence for integrated

learning topics. The students began to record their reflections on completion of a learning task using the *Student Reflection Responses (Appendices, p 276)*. Additionally, they commenced the process of formally recording their chosen learning tasks on the *Learning Goal Plan (Appendices, p277)* to develop learning goals of their own design. During this time the teachers began to formally record their observations of the students' learning behaviors using the *Student Observation Checklist (Appendices, p 280)*.

During this phase the teachers had reconsidered their initial decision to plan and teach directly from the K-6 English Syllabus (Board of Studies 1998) outcomes and indicators. This was agreed at the onset of the study to be the most practical means by which the students could be supported and develop the skills that would need to complete their self selected learning tasks successfully. This change of plan was not decided in consultation with the researcher, but by the teachers themselves in discussion with one another. As a result, the students' learning in English was now based on two very different pedagogical approaches. The 'regular' English program involved the teacher and students following commercially produced programs and texts in the prescribed sequence. All the students in the three Stage Three classes worked from the same program, which was not cross referenced with the K-6 English Syllabus (Board of Studies 1998) outcomes and indicators.

It was during Phase Two that the teachers requested that the task cards that comprised the *Intervention Program (Appendices, p 251)* be altered to include more specific instructions and examples. The students were finding increased difficulty interpreting their self selected learning tasks as they did not have the specific information relating to the exact context in which the tasks could be applied and as a result the students were asking for an increased amount of teacher guidance. The cards were altered to include more instruction and suggestions while still leaving enough scope for the students to have choices regarding how they might complete the task. The cards still required the students to assess what skills they needed to complete the task and identify those that they needed to learn or improve.

Phase 3 (Term 3, Weeks 6-10)

The teachers continued to implement the procedures that commenced in Phase Two and, additionally, engaged the students in ongoing one to one discussions (conferences) in order to ascertain the students' progress in the skill that were not easily observed. *The Experience Sampling Records (Appendices, p 275)* were introduced to the students and it was planned that they would be implemented several times randomly during the learning task times. The teachers or students were also invited to photograph, record or digitally save examples of work completed from the learning goals; especially in cases where hard copies were not suitable for storing. It was planned that individual, digital records of these work samples will be provided for the students' own records and digital profiles established to contribute to the data collection. The students continued to set, monitor and complete their own learning goals using the learning task cards designed for this phase.

At the conclusion of this phase, one of the teachers shared some ideas for modifying the *Intervention Program (Appendices, p 251)* to accommodate his own professional preferences for more structure and student accountability and to explore some other program variations while the researcher was available for consultation. One impact of this alteration to the *Intervention Program (Appendices, p 251)* was that the final matrix was 'pared' down. The Bloom's /Gardner's matrix that was used as the planner for the next phase was reduced to having only one task in each 'cell', instead of the multiple tasks that were designed for each cell in the planning for the previous phases. Additionally, several matrix 'cells' remained vacant as a consequence of the researcher being instructed to only include tasks that had an explicit English focus and to limit the degree of differentiation planned.

Phase 4 (Term 4, Weeks 1-5)

The teachers continued to support students and implement the research tools from the previous stages and, additionally, collated their observations and conference records to summarize the current levels of student demonstration of the skills of executive function. They also participated in an individual interview with the researcher to discuss the *Teacher Interview Questions (Appendices, p286)*. This interview became longer and more inclusive than was initially intended as the result of the teachers' implementation of the regular English program during the period of

the project. This was observed to have a significant impact on the degree of certainty with which it could be established that any student changes or improvements recorded were the direct and explicit result of the students' engagement in the *Intervention Program* (Appendices, p 251). Initially the *Teacher Interview Questions* (Appendices, p 286) were designed solely to establish the teachers' views of various aspects of the research study. The students were also invited to evaluate the *Intervention Program* (Appendices, p 251) on the Student Evaluation of the Intervention Program. *The Intrapersonal Intelligence Questionnaire* (Appendices, p262) and the *MICUPS* (McGrath & Noble, 2005b, Appendices, p272) were administered as post tests in conditions that replicated the pre test conditions as far as is possible. The phases of the study are outlined in Table 2 below.

Table 2 Research Plan

Phase	Teacher	Student
Phase one	<ul style="list-style-type: none"> *Administer <i>Intrapersonal Intelligence Questionnaire</i> *Administer <i>MICUPS</i> *Establish current student competencies on selected outcomes and indicators from K-6 English Syllabus *Establish students' current work related behaviors on the <i>Student Observation Checklist</i> * Introduce the <i>Task Cards</i> that comprised the <i>Intervention Program</i> *Support students in task selections *Introduce the <i>Learning Goal Plan</i> *Familiarize themselves with the <i>Student Observation Checklist</i> in the context of own students' behaviors Revision and adjustment of <i>Intervention Program</i> (Appendices, p 240-245).	Complete two surveys Select one task and complete at least one task
Phase two	<ul style="list-style-type: none"> *Introduce the new <i>Task Cards</i> with different content *Introduce the <i>Student Reflection Responses</i> *Begin formally recording students' work related behaviors on the <i>Student Observation Checklist</i> *Ask teachers to complete the <i>PMI questionnaire</i> Revision and adjustment of <i>Intervention Program</i> (Appendices, p 251).	<ul style="list-style-type: none"> *Complete <i>Student Reflection Responses</i> *Select tasks on each of the three categories on the <i>Learning Goal Plan</i> *Continue to work on these tasks * Collect and discuss issues noted by teachers on the <i>PMI Questionnaire</i>
Phase three	<ul style="list-style-type: none"> *Continue Phase two and Phase three procedures *Conference with the students to establish their competencies in the focus areas nor easily observed on the <i>Student Observation Checklist</i> * Photograph or digitally record student work samples from the <i>Task Cards</i> Revision and adjustment of <i>Intervention Program</i> (Appendices, p 251). *Complete <i>Experience Sampling Responses</i>	<ul style="list-style-type: none"> *Continue to set, monitor and complete their own learning goals using the learning task cards designed for this phase *Engage in task related conferences with their teachers *Complete <i>Reflection Responses</i> *Complete <i>Experience Sampling Responses</i>
Phase four	<ul style="list-style-type: none"> *Continue their previous roles *Summarize their data from the <i>Student Observation Checklists</i> *Assess the students' competencies in the skills embedded in the selected indicators *Participate in <i>individual interview with the researcher</i> *Administer the <i>Intrapersonal Intelligence Questionnaire post intervention</i> * Administer the <i>MICUPS post intervention</i> 	<ul style="list-style-type: none"> *Complete <i>Learning Task Plans</i> *Complete <i>Reflection Responses</i> *Complete <i>Experience Sampling Responses</i> *Complete two questionnaires *Evaluate the <i>Intervention Program</i>

Table 2 shows the phases of the research cycle and the sequence of the implementation of the research tools and teacher and student roles.

Research Tools

The Intrapersonal Intelligence Questionnaire

The Intrapersonal Intelligence Questionnaire (Appendices, p 262) was completed by all forty of the participating students both before the commencement of the *Intervention Program (Appendices, p 251)* and at its conclusion. This research tool was developed by the researcher, drawing exclusively on the definition provided of Gardner's most recent conceptualization of intrapersonal intelligence (Moran & Gardner, 2007). Developing the questions from this most current definition allowed for the incorporation of questions relating to self knowledge and executive function that had not been considered in existing questionnaires (Campbell, Campbell & Dickinson, 1993a; Lazear, 1999c; McGrath & Noble, 2005a; Shearer, 1994) that had been developed using Gardner's (1983, 1993a 1999a, 199b) previous definitions.

Together with the Multiple Intelligences Checklist for Primary Students (*MICUPS* Mc Grath & Noble 2005, *Appendices, p 272*) the pre and post intervention responses from the *Intrapersonal Intelligence Questionnaire (Appendices, p262)* served as starting points from which to analyze the information provided by the multiple research tools. This questionnaire was administered by the participating teachers and the researcher as pre and post measures of students' perceptions of their own relative strengths and limitations using their self knowledge as the framework. The questionnaire was developed as a Likert scale and students' responses were compared pre and post the *Intervention Program*. The questionnaires were developed with a different focus each time, although the questions were designed to elicit answers about the same constructs. The pre intervention questionnaire was focused on the students' experiences of their learning in English that was supported by their usual commercially produced programs and textbooks. The post intervention questionnaire was developed to focus students' responses specifically on their learning experiences in English during their self selected tasks from the *Intervention Program (Appendices, p 251)*.

The data gathered from these questionnaires was combined and compared with the data compiled from other research tools. There were no time limits when completing the questionnaires and it was hoped that the *Intrapersonal Intelligence Questionnaire (Appendices, p*

262) was sensitive enough to show any changes or growth in students' awareness of self as learners and also to show the impact this awareness had on their efforts to demonstrate the skills of executive function as appropriate to their developmental and personal characteristics. This questionnaire was also intended to contribute to the baseline data relating to the diverse levels of students' intrapersonal intelligence strengths at the commencement of the intervention program. The questions focused on three major constructs; (i) Awareness of emotions relating to learning in English, (ii) Awareness of own skills and strategies in learning in English and (iii) Knowledge of own skills in self regulation and self monitoring relating to learning in English. The post intervention *Intrapersonal Intelligences Questionnaire* (*Appendices, p259*) was revised to contribute to the summative data collected during and after the *Intervention Program* (*Appendices, p 251*). The A-E ratings on the Likert scale have been replaced by numerical values as indicated in Table 3 (p 127). This indicates that questions requiring a positive answer values E=five points and A=one point. The questions that purposefully elicited negative answers have not been calculated using this scale. They been calculated using reverse values, so that E= one point and A=five points.

Table 3 Numerical values Attributed to Positive Answers on the Likert Scale

A	B	C	D	E
1	2	3	4	5

Table 3 shows the scores attributed to the students' answers on the *Intrapersonal Intelligence questionnaire* (*Appendices, p262*).

Establishing Validity

In order to establish content validity of the *Intrapersonal Intelligence Questionnaire* (*Appendices, p262*), an expert panel of four academics evaluated the questionnaire for content or logical validity (Best & Kahn, 2006; Gay et al., 2006). Three verbatim responses can be found in *Appendices, p 261-265*. The fourth did not recommend any changes. Their comments relating the clarity of the questions and the overall structure of the questionnaire have been considered carefully and the following recommendations attended to. One panel member did not advise any changes. The remaining three members of the panel suggested changes to the sentence structures. They advised that it would be good to clarify and simplify them so that the students answering the questions could access them more easily. One panel member suggested a change to the Likert scale and another suggested simplifying it and adding the visual support of the 'smiley faces' as had been done in some of the other research tools. As the result of these valuable comments many of the questions were revised, although the intent of the questions remained the same and

the answers still provided information on the same content, the questions became more specific. The answer options were also more clearly organized, although the Likert scale remained.

Some of the suggested variations to the *Intrapersonal Intelligence Questionnaire* (Appendices, p262) were not so easily incorporated. The visual support; the 'smiley faces' were certainly considered to be easily accessed by children, however, they were not an option for use in this questionnaire as the questions had been designed to prompt both negative and positive responses. Additionally, it may have been too tempting for some students to interpret the inclusion of a 'smiley face' as an indication of the 'best' or most acceptable answer for each question. There were a number of comments from one panel member regarding the relevance of some of the questions. These questions have remained as they link directly to Moran and Gardner's (2007) definition of intrapersonal intelligence and to omit them would raise concerns regarding the construct validity. However, the questions also were structurally revised as suggested and now show the intent of the question more clearly in the post intervention questionnaire.

Whilst the possibility that the tone, vocabulary and question structure also have the capacity to subtly alter the focus and meaning of the questions does not go unheeded, the three panel members did not appear to dispute the content validity of the questionnaire. The remaining member did question the construct validity (Gronlund & Linn, 1990), challenging the differences between intrapersonal intelligence and metacognition. This panel member commented,

However I think the other questions are not tapping into feelings of self as Gardner sees it. I think that these questions are much more directly related to the concept of metacognition (thinking about thinking), first introduced by Flavell "ones knowledge concerning one's cognitive processes and products ... (and) ... refers to the active monitoring and consequent regulation of these processes in to some concrete goal or objective" or from Palincsar & Brown "the stable and stable knowledge one possesses about his or her cognitive processes." Metacognition refers to both the knowledge about one's own cognitive processes (i.e. metacognitive knowledge and the regulation of these processes (i.e. metacognitive skills) (Panel member A Appendices, p 261).

This panel member differentiated between metacognition and intrapersonal intelligence without acknowledging that one can be subsumed by the other, as discussed in previous chapters.

The ‘awareness of one’s mental processes’ i.e. self knowledge, associated with metacognition appears to be purely knowledge about an individual’s capacity to evaluate, monitor and regulate his/her relative strengths and limitations in terms of cognition. These capacities are related to task, strategic and self knowledge in relation to the completion of specific learning tasks. Metacognitive skills and strategies are vital components of intrapersonal intelligence and, as previously stated, may be critical in the development of the ‘*master stage*’ of executive function, specifically in relation to the meta – skill known as interpolation (Gardner & Moran 2007 p 30). It is because of the recognition that metacognition is an aspect of intrapersonal intelligence that the inclusion of questions that relate to ‘knowledge of self as learner’ are particularly important to the construct validity of the instrument (Gay et al., 2006). However, that did not indicate that the *Intrapersonal Intelligence Questionnaire* (Appendices, p 262) was designed to explicitly focus on this single component or that metacognition and intrapersonal intelligence are synonymous constructs.

Despite these changes, and the coefficient of reliability, Cronbach’s Alpha, indicating that that the *Intrapersonal Intelligence Questionnaire* (Appendices, p 262) was reliable with a score of 0.88, the use of the *Intrapersonal Intelligence Questionnaire* (Appendices, p 262) as a research tool remained problematic. There were two reasons for the decision not to include the data from the *Intrapersonal Intelligence Questionnaire* (Appendices, p 262) in the results. The two versions of the *Intrapersonal Intelligence Questionnaire* (Appendices, p 262) were differently focused and this impacted negatively on its use as a pre and post test measure. The most appropriate version would be the revised version, referring explicitly as it does, to the learning task cards that comprise the *Intervention Program* (Appendices, p 251). Ideally, the students should also have been familiar with the challenges and demands of the *Intervention Program* (Appendices, p 251) by the time it was initially implemented, for example in the first three or four weeks of the intervention, instead of prior to the commencement when they really could only comment on their usual English work in general. The implementation of the *Intrapersonal Intelligence Questionnaire* (Appendices, p 262) at this later point in the study and again at the conclusion of the *Intervention Program* (Appendices, p 251) may have provided some more reliable data. The data from the original *Intrapersonal Intelligence Questionnaire* (Appendices, p 262) and the

revised *Intrapersonal Intelligence Questionnaire* (Appendices, p 262), when subjected to a paired t test, could not be triangulated with the data from the other research tools.

Multiple Intelligences Checklist for Upper Primary Students

The *MICUPS* (Multiple Intelligences Questionnaire, McGrath & Noble 2003, *Appendices, p272*) was administered at the commencement of the study and again at the completion of the study. It was completed by all the forty participating students. This general questionnaire contained questions pertaining to all eight intelligence domains. With the exception of the intrapersonal domain, there appeared to be some commonly accepted questions (Armstrong, 1994; Berman, 1995; Bourke, 2001; Campbell et al., 1993a; Lazear, 1999a, 2000; McGrath & Noble, 2005a; Teele, 1992; Vialle & Perry, 1995) that focused on identifying the characteristics of Gardner's (1983, 1993a, 1999a, 1999b) remaining seven intelligence domains. The *MICUPS* (McGrath & Noble 2005; *Appendices, p272*) questionnaire was selected for use as the means of identifying students' perceptions of their MI learning strengths because the questions relating to the intrapersonal domain, were, as previously noted, the most congruent with Gardner's (1999b) explanation of the nature of intrapersonal intelligence. This definition, in turn, most closely anticipates the definition provided by Moran and Gardner (2007).

Establishing Validity

This questionnaire was not submitted to a panel of experts for appraisal. As mentioned above, the questions relating to seven of the intelligence domains, intrapersonal intelligence being the exception, were commonly asked questions in the published work of the authors referenced. These authors may be considered to be the expert panel in this case as their published work on Multiple Intelligences is widely recognized. Any questions relating to the item and sampling validity of the particular questions relating to intrapersonal intelligence may be answered by referring to the publication dates of the texts referenced and the publication dates of Gardner's series of definitions of his conceptualization of the nature of intrapersonal intelligence. The definition of intrapersonal intelligence contained in Mc Grath and Noble's (2003) was developed, at the time of publication using the most recent of Gardner's thinking about this intelligence domain. Additionally, in 1999 both McGrath and Noble were listed as Australian contacts for readers of Gardner's *Multiple Intelligences Reframed*. It was argued, therefore that

the authors themselves constituted the expert panel and the commonalities in the way they perceive seven of the Multiple Intelligences establishes validity. The conceptual understandings underlying the remaining questions relating to intrapersonal intelligence have been utilized and validated by an expert panel as part of *The Intrapersonal Intelligence Questionnaire* (*Appendices, p 262*).

The four questions in the *MICUPS* (McGrath & Noble 2005; *Appendices, p 272*) questionnaire pertaining to intrapersonal intelligence reflected the perceptions the students have of their self knowledge in a context that is non – specific. They provided information relating to students’ perceptions of self knowledge for means of triangulation, in addition to that gathered from the *Intrapersonal Intelligence Questionnaire* (*Appendices, p 262*) which is context specific. For this reason, it was important that the tool used to establish students’ perceptions of own strengths did not contain questions that contradicted Gardner’s most recent (Moran & Gardner, 2007) conceptualization of this construct. The information gained from all the students responses to this questionnaire was used as an indication of the extent of the diversity of students’ MI learning preferences and, as such, informed the planning of the distribution of the tasks on the *Bloom’s /Gardner’s Matrices* (*Appendix 251*) that comprised the *Intervention Program* (*Appendices, p 251*).

This data also provided an insight into students’ self knowledge as it served as an indicator of the students’ perceptions of their relative strength in the intrapersonal and linguistic intelligence domains at the commencement and completion of the *Intervention Program*. Additionally, the strengths that the students had nominated in the *MICUPS* (McGrath & Noble, 2005) in any of the intelligence domains allowed the researcher to establish if the students had selected learning tasks that utilized their relative strengths as nominated on this questionnaire or not. The results also informed the interpretation of the reasons that the students gave for their learning task selection. Information from another research tool was analyzed to strengthen the findings. This information was gathered from the results recorded on *The Learning Goal Plan* (*Appendices, p 277*).

The Student Reflection Responses

The *Student Reflection Responses* (Appendices, p 276) were designed to be completed at the end of a learning task or at the end of a significant section of the learning task. The number of response sheets contributed by each student depended on how many goals or tasks they had each completed. The total number of *Student Reflection Responses* (Appendices, p 276) submitted for the purpose of this study was ninety nine. Class A (n=19) submitted fifty two, Class B (n=11) submitted thirty five and Class C (n=10) submitted twelve. These responses provided evidence of the students' feelings and assessments of their work. They also provided information relating to skills that indicated the students' capacities to demonstrate the cognitive capacities that are embedded in intrapersonal intelligence. As Gardner (2000c-b) has indicated, reflective writing was a means by which those gifted in intrapersonal intelligence were originally identified. Student reflection is also considered to be a valuable component of successful learning (Dewar, 1997; Hine, 2000; Masui & De Corte, 2005; Murray, 2000; Whitton, Sinclair, Barker, Nanlohy & Nosworthy, 2004) as it links conceptually to metacognitive strategies and self assessment. Students were simply instructed to circle any comments they felt were true about their learning experiences. Again, the students were prompted to justify what they had chosen as their self assessment and reflective comments. They could also add comments if they wished.

The information that was gathered pertaining to the degree of student satisfaction, quality of effort and commitment and the reasons for nominating the comments chosen was useful in determining if students were able to demonstrate various skills that reflected the cognitive capacity of intrapersonal intelligence and any distinct characteristics of the '*apprentice stage*' of executive function. They provided information relating to the students' abilities to select tasks at an appropriate level of difficulty for their skills and knowledge. This information, in turn, also contributed to the triangulation of data regarding the accuracy of students' perceptions relating to their relative strengths and limitations. The justifications the students gave of their reflective responses contributed to the information regarding why students made their particular choices and indicated if they chose to use their relative strengths to help them complete tasks successfully. As some students included more samples of their reflections than others, the frequency of the response selection was used as the summative evaluation of the student's

overall sense of satisfaction with the tasks they had chosen. A response was identified as any single statement in any of the three categories.

Experience Sampling Records (adapted from Shernoff, Csikszentmihalyi, Schneider, & Shernoff, 2003)

The Experience Sampling Records (Appendices, p 275) were completed and submitted by each class. The total number available was fifty eight. Class A (n=19) submitted twenty six entries, Class B (n=11) submitted nine entries and Class C (n=10) submitted twenty three entries. This activity attempted to capture ‘life as it is lived’ (Bolger, Davis & Rafaeli, 2003) by interrupting the tasks undertaken by students in order to have them record details of what they are doing, how they were feeling about their task and the degree to which they were engaged in the task. Adapted considerably from the original sampling method designed by Csikszentmihalyi, (Bolger et al., 2003; Csikszentmihalyi, 1988; Shernoff et al., 2003), this research tool was a simplified version. Participating teachers controlled the signal for the students to all stop and report. This was executed at random times during the English teaching time at intervals during *The Intervention Program (Appendices, p 251)*. Upon hearing the signal, the students would quickly complete a short survey form. They recorded the date, activity in which they are engaged, the degree of engagement, how they felt about completing the task and the degree of challenge incorporated in the task onto a Likert scale. This tool was important for several reasons. The ‘in task’ reflection added considerably to the information provided by the *Student Reflection Responses (Appendices, p276)*, which were made after task completion. It also provided information about the types of activities that were engaging, yet challenging for each student.

This research tool provided important information in the context of this study. Not only was it predicted, in the literature, to be an important factor in the intrinsic motivation development of adolescents (McIntosh, Schmidt & Chang, 2001), but it provided information that related to the students’ abilities to remain interested in their self selected learning tasks and their degree of positive engagement with these tasks. In addition, it justified (or not) the reasoning the students had recorded in the *Justification of Tasks Component of the Learning Goal Plan* and *The Student Reflection Responses (Appendices, p276)*. It also provided support for the anecdotal records that comprised *The Researcher Field Journal (Excerpt in Appendices, p 278)*. The

responses informed both the research questions. The responses were summarized as the frequency with which each of the responses was chosen.

The Learning Goal Plan

The Learning Goal Plan (Appendices, p 277) required students to complete a record of each of their tasks and to validate their choices. Two of the three classes completed this research tool. Fifty one *Learning Goal Plans (Appendices, p 277)* were submitted. Forty seven of these came from the Class A students and four came from the Class B students. Class C did not complete any *Learning Goal Plans (Appendices, p 277)*. The benefits of students developing learning goals have been extensively researched (Kaplan & Maehr, 1999; Pintrich & Schunk, 1995; Urdan, 2004), with ‘achievement’ or ‘mastery’ goals believed to be the most beneficial in terms of student self regulation (Boekaerts & Niemivirta, 2000; Eccles & Wigfield, 2002; Ellison, 1992; Ng, 2002; Schunk, 2001; Zimmerman & Schunk, 2001) and academic achievement. The students were each given a completed *Bloom’s/Gardner’s Matrix (Appendices, p 251)* for each of the cycles. From this they selected their tasks in each of the categories listed; *Easy, Consolidating and Challenge*; and maintained a record of their learning goals on this research tool. The differentiated programs of work contained task details and a code for each task. This facilitated easy notation of the required information onto *The Learning Goal Plan (Appendices, p 277)*. This record of tasks undertaken afforded another opportunity for students to reflect on their choices and allowed the researcher some insight into the considerations that influenced individuals’ choices; for example, social reasons, their perceived competence, the degree of challenge of the task. It also provided information pertaining to the perceptions that students have of what constitutes an ‘Easy’ task, a ‘Consolidating’ task and a ‘Challenge’ task. The students’ choices in each of these categories could be authenticated (or not) by an assessment of the task product if recorded, photographed or made available to the researcher. However, the most vital evidence that this research tool could contribute was information regarding individual student’s capacities to set and achieve learning goals of their own choice.

Student Observation Checklist

Student Observation Checklist (Appendices, p 280) detailed the types of skills that may be exhibited by students at the ‘*apprentice stage*’ of executive function in the context of a formal

learning environment such as a classroom (Moran & Gardner, 2007) and indicated many of the skills that comprise executive function in general. Borich (2008) discusses the differences between ‘looking’ and observing. He notes that ‘looking is an informal process’ whereas observing is a ‘systematic process’ (Borich, 2008 p 21). This ‘systematic process’ is most informative and accurate when the observation is given some structure. Borich (2008) nominates checklists as one of the simplest and practical means by which to document behaviors which are either present or not. As a result, the *Student Observation Checklist (Appendices, p 280)* was designed as a tool to help teachers to direct their observations and as a means of easily recording the students’ degrees of competency in each of the key skills during the implementation of the *Bloom’s /Gardner’s Matrix* learning tasks (*Appendices, p 251*).

In order to ensure that the teachers had a common understanding of the criteria, it was necessary to make a video recording of students interacting in a learning situation in a classroom. The participating teachers and researcher watched the video together and discussed various aspects of the video so a common understanding of the criteria and the students’ demonstrations of the key skills could be developed and related to the details on the *Student Observation Checklist (Appendices, p280)*. Following this moderating activity, the teachers and researcher revisited their understandings of the constructs listed on the *Student Observation Checklist (Appendices, p280)* during the Professional Development Day that was part of the Preliminary Phase of the *Implementation Program (Appendices, p 251)*. Further discussion of the video examples and ways in which the teachers may effectively utilize their conferencing time to determine the different students’ levels of competency in each of the executive function skills also occurred during this time. These activities served to ensure that the teachers were able to demonstrate a common understanding of the characteristics of the constructs they were to observe in their students’ behaviors and the questions and responses that may be considered typical of the skills that were best assessed by talking to the students individually about their work during the completion of their self selected tasks. The teachers were confident that they had developed a common understanding from which to complete the *Student Observation Checklist (Appendices, p280)* with regard to their students’ current demonstration of the nominated skills. This particular assessment contributed to the baseline data as it was completed prior to the implementation of the *Intervention Program (Appendices, p251)* for the students. After this initial use, the *Student*

Observation Checklist (Appendices, p 280) was intended for the recording of the formative assessments of these skills only during the lessons in which the students were engaged with their self selected learning tasks.

The skills that comprised the *Student Observation Checklist (Appendices, p 280)* included aspects of the cognitive capacity of the executive function of intrapersonal intelligence that were not easily able to be observed, despite the title of the checklist. These skills pertained to students' effective use of their working memory, the flexibility of thinking and to their capacities to follow through and complete their goals, despite other attractions and variations. Some of these cognitive processes, expressed as skills, were able to be assessed from the students' products, but equally important was the documentation of the usual one – to - one interaction, referred to as conferencing, in which a student and their teacher engaged as part of their working together in classrooms. Consequently, these aspects were investigated by the teachers engaging in individual discussion (conferencing) with their participating students about the thinking processes, strategies and skills that the student was using for problem solving and their task choices.

The teachers' evaluations of the students' skills using both observation and conferencing assessment methods were supplemented by the notes compiled by the researcher during classroom observation visits in the *Researcher Field Diary (excerpt in Appendices, p 278)*. This data was also used to triangulate the evidence provided from other sources regarding the accuracy of the students' perceptions of their own skills and strategies in learning in English, including the self reporting measures. Information from this checklist also contributed significantly to determining the accuracy of students' self reports relating to their knowledge of their skills in planning, implementing and self monitoring in relation to learning in English.

In order to record the information efficiently and effectively as both formative and summative evaluation of the students' observable behaviors and capacities to articulate their thinking skills, the teachers used a simple coding to indicate degrees of frequency for each focus area. No ticks indicated that students did not exhibit these skills consistently enough to be considered at a beginning stage or did not exhibit these strengths at all and this could be summarized as *not evident*. One tick indicated that the skills were positively demonstrated but not consistently; this

was summarized as *developing skills*. Two ticks indicated that the skills were demonstrated with some consistence during the self selected tasks in English; this was recorded as *consolidating skills*. Four ticks indicated that the students were very consistently exhibiting the skills and these were summarized as *strong skills*. The teachers also noted students whose skills had improved exceptionally in any of the skills areas.

The observation criteria utilized in the *Student Observation Checklist (Appendices, p 280)* for use by teachers were adapted from the behaviors and cognitive processes identified by Dawson and Guare (2004) as those that were developmentally appropriate executive function skills for children and adolescents. As previously discussed, this model of executive function was considered to be conceptually consistent with the common characteristics of most models of executive function (Meltzer, 2007) and aligned with both the distinct characteristics of the “*apprentice stage*” of the executive function as discussed by Moran and Gardner (2007) and the aspect of intrapersonal intelligence that is itself identified as the executive function of intrapersonal intelligence.

Researcher Field Diary

A researcher field diary was considered to be of particular importance by Guba (in Mills, 2000). He recommended that researchers spend extended time in the research environment in order to develop a more holistic understanding of the students. The researcher, in negotiation with the participating teachers had arranged to make weekly visits, when possible, to the classrooms to observe the students in the study, to discuss any concerns and develop a collaborative relationship with the teachers and students. Some visits were totally non participatory observation periods, whilst on other occasions the researcher had opportunities to interact with the students, discuss their tasks informally with them and endeavor to blend into the teaching and learning routines and environment in each class.

The Teacher Interview

The Teacher Interview (Appendices, p 286) was a formal individual interview (Gay et al., 2006) comprising ten questions. Many of these were open ended to solicit an assessment of various aspects of the *Intervention Program (Appendices, p251)* from each of the teachers. These teacher

responses were recorded by hand during the interview and checked with each teacher for gaps or omissions later the same day. Each of the participating teachers was interviewed individually and the *Guidelines for Interviewing* (Gay & Airasian, 2003 p 213) were observed. Included in the interview questions was a checklist upon which the teachers were invited to indicate any benefits of the research study for individual, participating students. The teachers were asked to indicate, on the *Student Benefits Grid* (*Appendices, p 286*), the particular type of advantage they felt was experienced by the students nominated and to what degree the learning tasks and practices of the research study were considered to be the sole catalyst. Any benefits were to recorded as ‘S’ if the teachers were confident that the specific benefit they had nominated for any student could be strongly attributed to the student’s participation in the study or ‘A’ indicating that the teachers felt the benefits were the result of the student’s participation in the study; but in addition to other factors such as maturation or the impact of the more traditional English teaching and learning program that was implemented as a parallel program. Included in the ‘other’ factors were personal and external considerations.

The Student Evaluation Sheet

The Student Evaluation Sheet was student made at the conclusion of the project. The students made these response sheets themselves on scrap paper and wrote in the three columns using the headings written on the whiteboard. They were given examples of ‘smiley faces’ that corresponded to (i) good (ii) okay (iii) oh dear (iv) drove me crazy! They also had the option of creating their own face and expression. The three columns required students to record (i) anything that they really enjoyed learning about while completing task card activities, (ii) any new skills or strategies that they had learnt during the process of completing task card activities and (iii) draw a face to show how they each felt about learning in English using the task cards. The face selected was justified by students giving a reason for their choice. As it was important that the students did not feel any pressure and felt able to indicate honestly, this research tool was very informal, completed in class groups and shared with the other class members if students wished to do so.

Criteria for Validity of Qualitative Research

Mills (2000) discussed validity in terms of whether or not the intervention has had the desired result, solved the problem for which it was designed and if it would withstand scrutiny by other researchers. There were several sets of criteria that are appropriate for qualitative research (Burns, 2000; Gay, 1992, 2003; Gay et al., 2006; Mills, 2000). One of these models was that developed by Guba (in Mills 2000). Mills (2000) discusses the development of a new vocabulary that reflects the characteristics of action research more appropriately, yet retains the essence of the term 'validity'. Levin (Levin & Fox, 2000) argues that as action researchers do not explore problems in context free settings, they do not claim to produce context free findings or knowledge. As a result, he comments that issues of credibility, reliability and validity are best measured by the impact the results of the action research project has on the practices and beliefs of other professionals and the degree to which the research findings solve the problem or answer the questions being studied.

Mills (2000) examines several systems of ensuring the quality of qualitative research that address this problem of terminology. Amongst these is the model developed by Guba that discusses validity in terms of 'trustworthiness'. Also available were Wolcott's perspective and Maxwell's model (Mills 2000), both focused on establishing validity as 'understanding'. The model that appears to be the 'best fit' for action research such as this study is that of Guba (in Mills 2000). Guba (in Mills 2000) established validity as the 'trustworthiness' of qualitative research and argued that this can be assessed by ensuring that four aspects of any qualitative research study were thoroughly addressed. These were identified as (i) credibility, (ii) transferability, (iii) dependability and (iv) confirmability.

Firstly, *credibility* deals with all the complexity of factors that occur in a study and the researcher's capacity to consider these in the interpretation of the findings. Guba (Mills, 2000) suggest that a number of steps can be taken to establish credibility. Several activities were incorporated into the planning of the implementation of the *Intervention Program (Appendices p 250)* that reflected an awareness of Guba's (in Mills, 2000) suggestions and allowed the researcher to engage in the three primary fieldwork strategies of observing, experiencing and enquiring. The researcher regularly spent time in the environment of the study, engaging in the

role of participant observer. This time allowed for the researcher to engage in various activities in the classrooms. It provided an opportunity for the researcher to observe in all three classrooms, work collaboratively with the teachers during the intervention, have informal discussions regarding the adjustments that could be made to the program to ensure the learning needs of the students were met and talk to the students regularly about their tasks. In this way the researcher became a familiar figure in the classroom, staffroom and playground. This time spent at the school also allowed the researcher to talk to the other staff who interacted with the students but who were not directly involved with the study, namely the teacher librarian, the special needs support teacher, the teacher's aide for Stage Three, the entire school principal, the Middle School principal and staff members from other stages throughout the school.

Meetings that were more formally planned usually occurred outside teaching time with the exception of those that happening during breaks in teaching or during release from teaching time. These meetings presented opportunities to discuss emerging issues, insights and interpretations of events. They also provided a forum for discussion of the teachers' individual interpretations of what was required from them in the implementation of the *Intervention Program (Appendices, 249)* and the research data gathering tools in the context of the routines that they preferred in their individual classrooms. The development and implementation of data gathering tools and the differing perspectives from which they were gathered; i.e. the participating students, teachers and the researcher allowed for triangulation of data and indicates any internal contradictions that may appear. *The Researcher Field Journal (Appendices, p 278)* *The Experience Sampling Records (Appendices, p 275)* provided the raw data against which to compare analyses and interpretation of the findings and establish referential adequacy.

An important aspect of the study's credibility was provided by the participants. *The Teacher Interview Questions (Appendices, p286)* were undertaken to record the teachers' perceptions and feelings about the research study. Similarly, the students were asked, in their class groups, to respond to the study by answering the three questions related to the study on *The Student Evaluation Sheet* This activity was deliberately low key and informal as it was important for the students to feel unpressured and confident enough to give honest responses.

Secondly, *transferability* in action research is always limited as action researchers do not have the intention of establishing findings that able to be generalized for large populations. However, attention to detail can facilitate the possibility of sharing action research findings and interventions with other interested professionals. Detailed descriptions of the school contexts, ethos and organization and details of the classroom environments have been provided to inform interested parties who may be seeking to investigate similar problems. The provision of participant details that did not compromise the integrity of the study and its confidentiality were also included and can help others identify with the study settings and perhaps determine if the study may be useful or applicable to other contexts in which they are involved.

Thirdly, *dependability* refers to the stability of the data collected during the study. Guba (in Mills, 2000) suggests that overlapping methods of data collection increases dependability as does keeping detailed, explicit records and raw data for examination by a ‘critical friend’. Both of these suggestions have been incorporated into the research project. An ‘external, critical friend’ who was familiar with the intervention and the research tools had agreed to critically examine the audit trail, scrutinize the analysis and evaluate the findings. This opportunity to access another perspective strengthened the dependability of the data in ways that those directly involved with the research project itself were unable to do simply because of their involvement in the study. The research instruments themselves had been developed to provide both a variety of ways in which to collect evidence and to investigate the same issues as the content and constructs they examine overlap. The data obtained from the *MICUPS* (McGrath & Noble 2005; *Appendices, p 272*) provided information related to students’ perceptions of their own Multiple Intelligences (Gardner 1983, 1993a, 1999a, 1999b) strengths and, in turn the accuracy of their self knowledge in selecting these intelligence domains as their relative strengths, was able to be cross referenced with the students’ *Justification of Task* statements from the *Learning Goal Plan*, the *Learning Goal Plan (Appendices, p 277)* itself with the actual records of chosen tasks and the information gather from *The Experience Sampling Records (Appendix A, p 275)* and *The Student Reflection Responses (Appendices, p276)*.

The questions related to self knowledge and to skills in executive function could also find answers in diverse sources of evidence. This information can be found in *The Student*

Observation Checklist (Appendices, p280), The Intrapersonal Intelligence Questionnaire (Appendices, p262), The Student Benefits Details (Appendices, p 286), and The Researcher Field Diary (Excerpt in Appendices, p 278) In this manner, two of the foci of the study, any change or growth in students' knowledge of self as learners and their capacities to regulate their learning behaviors and demonstrate the skills associated the cognitive capacity of the executive function of intrapersonal intelligence (Moran & Gardner, 2007) have more than one data source. In this way, the limitations of one data source may be strengthened by the contribution of data from another.

Lastly, *confirmability* is the final step in the validation process (Guba, in Mills, 2000). Triangulation contributes considerably to the confirmability of the findings, however, researcher beliefs, bias or assumptions must also be intentionally examined. In this study, it was vital to establish that any growth or change in students' self knowledge skills and skills in executive function in the English learning context was due to the impact of the students' participation in the *Intervention Program (Appendices, p 251)* and that this was established by the triangulation of the results from several research tools. Evidence for change or growth may be established by examining the data from the *Intrapersonal Intelligence Questionnaire (Appendices, p 262)* administered at the commencement of the study and the results of the *Intrapersonal Intelligence Questionnaire (Appendices, p 262)* administered at the end of the study. It was important to comment on the revisions made to this questionnaire as a result of the suggestions provided by the expert panel. The other research tools that provided evidence that was useful in establishing the confirmability of the study were the Student Evaluation Sheet and the responses to the *Teacher Interview Questions (Appendices, 286)*

The information supplied by *The Teacher Interview Questions (Appendices, p 286)*, was also an important component in establishing *confirmability*, especially the opinions of the teachers relating to the advantages and disadvantages of implementing *The Intervention Program (Appendices, p 251)*. The *Student Benefits Lists (Appendices, p 286)*, was also compiled independently by the teachers. *The Student Evaluation Sheets* and the reasons the students offered for their evaluations also need consideration. However, the most important contribution is made by the researcher's efforts to explain two aspects of the study in ways that acknowledge

and explain the researcher's personal assumptions or bias. Firstly, it is important to fully explain the development of the research tools and *The Intervention Program (Appendices, p 251)*. Secondly, it is important to acknowledge that the findings may be presented in various ways and the chosen means of presentation must be validated clearly. By engaging in these processes, the *confirmability* of the study is strengthened.

Reliability

Reliability usually refers to the extent to which any research findings can be duplicated (Merriam, 1998). However, as this is a qualitative research project, the traditional understanding of reliability becomes understood as a concern for the dependability of the results that are obtained from the data. Reliability is one of the two key criteria that are used to assess qualitative research, the other being validity (Silverman, 2000) Silverman (2000 p 90) defines reliability in qualitative research in this way;

Reliability refers to the degree of consistency with which instances assigned to the same category by different observers or by the same observer on different occasions. For reliability to be calculated, it is incumbent on the scientific researcher to document his or her procedures and to demonstrate that categories have been used consistently.

As a result, the following measures were taken to ensure the scorer/rater reliability and instrument reliability of the results in this study.

The issue of teacher variation is particularly important for this study as three teachers were involved and their student cohorts had been determined by the school's policy of using some unusual criteria that includes their identification of particular teacher strengths. Although moderation exercises were undertaken to ensure that the criteria on *The Student Observation Checklist (Appendices, p280)* could be interpreted by in the same manner by all the teachers and that a high degree of consensus or common understanding was established, there was always the threat of personal beliefs and bias influencing what had been interpreted during the observations, described by Gay and Airasion (2003 p 213) as 'observer bias'.

This, in turn, could raise concerns about the rater reliability, specifically the 'interjudge reliability' (Gay & Airasian, 2003 p 145). This threat to reliability was not limited to participant observations. Teacher expectations are recognized to have a significant impact on student

performance and expectations, and, in this study, teacher expectations impacted in two ways. Firstly, it influenced what the teachers expected from their students when they were engaged in their roles of supporting students' efforts to complete the *Easy, Consolidate* and *Challenge* components of the *Learning Goal Plan* (*Appendices, p 277*). Secondly, it influenced the quality and quantity of the students' work in English which may have impacted on the abilities of the students to develop the cognitive capacity and demonstrate the associated skills of accurate intrapersonal intelligence in this learning domain.

As it became apparent that the teachers had decided not to replace the regular English program with an outcomes based skills program designed from the K-6 English syllabus (Board of Studies 1998), it became obvious that additional information would be required to ascertain the impact of the *Intervention Program* (*Appendices, p 251*). As previously explained, additional components were added to the *Teacher Interview Questions* (*Appendices, p 286*) in order to establish the extent of the impact from an additional source. In order to investigate the teachers' evaluations of the intervention and their current plans for incorporating it into their planning for the future, *The Teacher Interview Questions* (*Appendices, p 286*) were developed and the teachers interviewed individually. The answers to the open ended questions provide additional information relating to the teachers' own pedagogical perspectives and to the degree to which *The Intervention Program* (*Appendices, p 251*) procedures and practices challenged or complemented their own classroom practices. As these responses are recognized as being subject to 'observer bias' the data from each class cohort was analyzed separately and the results examined for any lack of consistency or irregular characteristics that are peculiar to one group. In this way it was possible to examine the 'interjudge reliability'. The regular communication between the researcher and each of the three teachers also supported the development of interjudge reliability over the considerable duration of the study, as did the *Teacher Guidelines for the Student Observation Checklist* (*Appendices, p 284*).

The second issue of reliability related to the two versions of the *Intrapersonal Intelligence Questionnaire* (*Appendices, p 262*). Gay, Mills and Airasian (2006 p139) state that 'reliability is the degree to which a test consistently measures what it is measuring'. Although this instrument had been established as possessing content validity by an expert panel and the alternative

questionnaires were both designed to examine the same construct, have the same number of questions, similar degrees of difficulty and the same instructions for administration, scoring and interpretation, the version that was administered to the students post intervention was more specific. Because of this, it was considered important to view the results in terms of the reliability of the instrument implemented on both occasions. The pre intervention equivalent tool asks questions about English tasks in general, the post intervention version asked specifically about the students' English tasks from the intervention task cards. It was not possible to discuss the many aspects of learning in English post intervention as the traditional use of commercial spelling, comprehension and reading texts, tests and procedures were maintained as part of the English teaching and learning activities that the students engaged with on a daily basis. There was not a standard test to measure intrapersonal intelligence at the time of this study and Gardner's (2000, 2000, 2000c-a) perspectives on 'one size fits all' standardized tests of any of the Multiple Intelligences domains remained a clear indication of the lack of regard that he had for the findings of measures such as this.

The reliability of this study was concerned with the reliability of the techniques for gathering data and if these research tools and procedures would consistently return reliable data over a period of time (Gay et al., 2006 p 407). The considerable time frame during which this study was conducted allowed the reliability of the data gathering techniques to be established without the participating students being unduly influenced by their roles as participants in a study (Hawthorne effect, in Gay et al., 2006 p 246). Measures were put into place to ensure that the issues of reliability identified do not comprise a threat to the descriptive validity, or any other validity, of this research project.

Conclusion

This chapter detailed the research design that was implemented to investigate two research questions. The context of the study and the student participants have been described in detail to facilitate a thorough understanding of the particular characteristics of both these aspects of the study and to allow comparison with other, similar groups of student participants. The selection of action research as an appropriate means by which to investigate these hypotheses was discussed and the development and implementation of the research tools were explored. These research

tools were then validated as relevant, useful means of collecting the data required to respond to the research questions. The planned triangulation of the evidence gathered as a result of the implementation of *The Intervention Program (Appendices, p 251)* and the variety of information sources was outlined and details were provided of the methods used to compare and collate the evidence. Using Guba's criteria (in Mills, 2000) for establishing the validity of qualitative research designs, the research design, the methodology and the research tools were examined in depth and issues of validity and reliability were explored.

Chapter Seven Analysis of the Findings Part One

Introduction

This chapter focuses on the findings of the study. Data in relation to each of the research questions are analyzed initially with reference to the entire group of student participants. The cognitive capacity of intrapersonal intelligence was identified as the specific, demonstrable skills in self knowledge and specific, demonstrable skills in executive function. These are detailed on Fig. 2 (p 150). The responses obtained from the teachers and students and recorded on the various research tools were analyzed to establish if any evidence existed that could be used to establish that the students had developed or changed their skills in the intrapersonal intelligence domain. By examining the data in this manner, the responses of the teachers and students were used to directly establish answers to the research questions. Examples of the class results were used to extrapolate the findings of the whole cohort (n=40) of students where appropriate.

Evidence from all of the research tools were used in order to establish conclusive answers to the first research question. Evidence to formulate an answer to the second research question was found in selected research tools. The two research questions are:

Question one: *Will the implementation of a differentiated program of work in English improve or change the intrapersonal intelligence skills of Stage Three students?*

Question two: *Do Stage Three students who have participated in the differentiated program of work in English reflect the distinct characteristics of the 'apprentice stage' of the executive function of intrapersonal intelligence?*

The three classes have been labeled as Class A (n=19), Class B (n=11) and Class C (n=10). The findings of all three cohorts (n = 40) are collated and then analyzed in relation to the first research question.

In order to analyze the evidence provided by the data sources, operational definitions of key terms that are employed in the Multiple Intelligences (Moran & Gardner, 2007) definition of intrapersonal intelligence have been developed. These definitions reflect the conceptual perspectives of Moran and Gardner (2007) relating to intrapersonal intelligence; with specific reference to the competencies that comprise the executive function of intrapersonal intelligence; that have been customized to reflect the context of the study. For the purposes of this analysis,

cognitive capacities are understood to be the thinking skills in which the students engage in order to process self relevant information. Self relevant information is that information which the students identify as having personal relevance: that is, the information that is identified by the students' use of the personal pronoun in the context of 'I want or need' or the 'for me' information. The term 'self related representations' is identified as both the students' personal sense of self that differentiates 'self' from others while remaining part of the larger community and their awareness and abilities to reflect on themselves, their actions and products. This term also includes the students' capacities to understand that they have an understanding of themselves that may be different to the ways in which they are perceived by others. The term 'orchestration of self within situations' (Moran & Gardner , 2007 p 21), which is identified as executive function itself, is defined in this analysis as a degree of competency in a complex cognitive capacity that controls and regulates behaviors and explicit skills that are necessary for learning goal completion.

This cognitive capacity is expressed as understandings, knowledge and skills and include:

Hill: which comprises the following planning competencies;

- (i)The ability to plan actions and procedures; particularly when faced with difficult or unfamiliar situations
- (ii)The capacity to make decisions related to personal learning needs and desires
- (iii)The self knowledge to select personally relevant sensory information, strategies and procedures

Will: which is defined in this '*apprentice stage*' as the following;

- (i) The capability to initiate appropriate goal-directed actions

Skill: which is comprised of the following self monitoring capacities;

- (i) An aptitude for flexible thinking and the effective use of the working memory
- (ii)The capacity to monitor and change learning behaviors in order to achieve learning goals and monitor inappropriate behavioral responses
- (iii)The discipline and interest to sustain attention and concentrate on goal appropriate activities
- (iv)The compulsion to persevere when faced with goal- related difficulties.

The data sources are analyzed to establish if there is any evidence to support these aspects of intrapersonal intelligence. In response to the question *Will the implementation of a differentiated program of work in English improve or change the intrapersonal intelligence skills of Stage Three students?* the research tools are examined to assess (i) evidence of the students' knowledge of self as learner and (ii) how the students demonstrated that they had used this self knowledge in the learning context to achieve their self selected learning goals. The particular skills associated with of each of the two aspects are discussed in relation to the findings and are detailed in Fig.2 (p 150)

Students' Skills in Executive Function

The response to Question one, *Will the implementation of a differentiated program of work in English improve or change the intrapersonal intelligence skills of Stage Three students?* that is indicated by the data collected is a positive one. The students' improvement in the skills, understandings and knowledge associated with the executive function of intrapersonal intelligence is the most significant of the many positive results. An analysis of the student responses on their Reflection Records (*Table 4 Summary of Frequency of Students' (n=40) Responses to the Reflection Records p 151*) has shown that the students had been able to make decisions regarding the learning tasks they worked on and the composition of the learning goals that they set for themselves during the *Intervention Program (Appendices, p 251)*. The students had almost exclusively been able to use their self relevant knowledge to ensure that they had selected goals that were interesting and appropriate for each of them as learners. The students had completed sixty eight learning goals, had almost completed seven additional goals and only one student had completed no work on one of his self selected learning goals. The completion of these self selected learning goals indicates that the students were able to use existing strategies and procedures or learn new skills, strategies and procedures to achieve their learning goals.

Fig. 2 Gardner's Intrapersonal Intelligence Domain

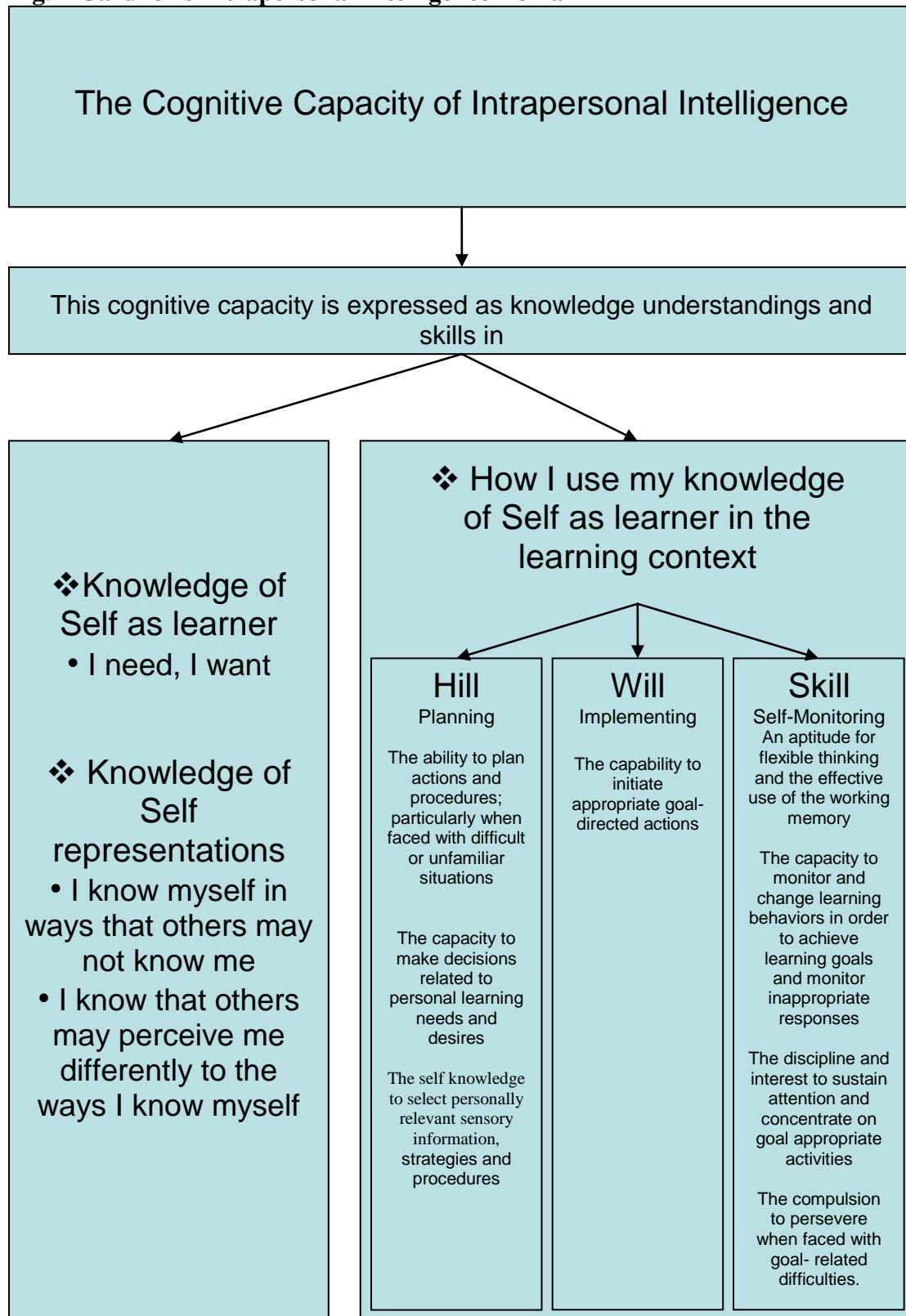


Table 4 Summary of Frequency of Students' (n=40) Responses to the Reflection Records

Extremely successful because	Moderately successful because	Not very successful because (numbers indicate number of responses)
I completed my goal or part of my goal 68	I almost completed my goal or part of my goal 7	I did not complete any of my goal 1
I worked hard 69	I could have spent more time working 13	I could have worked harder 3
*I persisted when it was difficult for me 30	*I tried to keep working when it was difficult for me 22	*I gave up easily when it got difficult 0
I gave it my best effort 52	I made a good effort 35	I didn't put much effort into it 0
I did the best I am capable of 57	I got close to my best 28	It wasn't my best 5
I am proud of the final product 52	I am pleased with the work I did 20	I am disappointed with my work 0
I am excited 36	I feel okay 34	I am not happy 0

Table 4. Summary of the response frequencies that were recorded by the students (n=40). The * denotes the responses of Class A and Class B students only (n=30).

The degree of pride and enjoyment that the students recorded on completion of their learning goals was also recorded on the Reflection Records (*Table 4 Summary of Frequency of Students' (n=40) Responses to the Reflection Records p 151*) and provides additional evidence that the students were able to competently select or gain new, appropriate, useful strategies with which to complete and present their learning tasks. These statements are further supported by the data that was recorded on each of the teachers' *Student Observation Checklists (Appendices, p 280)*.

The data provided was the summative assessment of the teachers' observations and conferencing records that were compiled during the duration of the *Intervention Program (Appendices, p 251)*. These teachers' observations and conferencing records were summarized prior to the implementation of the study and again at the conclusion of the study were compared, using the numbers of students that were demonstrating any skills in each of the areas that were the focus of the *Student Observation Checklist (Appendices, p 280)*. These skills relate primarily to how the students used their self knowledge in the learning context. The results are presented in Fig. 3 (p 153). The number of students who were able to get themselves organized in the learning context rose from twenty three students in May to thirty eight students in November. This is significant because, at the commencement of the project, the teachers' assessments indicated that none of the students were able to organize themselves competently. The data collected prior to the

commencement was assessed in the context of the regular English program. The *Intervention Program* (Appendices, p 251) involved the students making decisions about their learning in a totally new learning context; that of the *Intervention Program* procedures and practices. In the context of the *Intervention Program*, (Appendices, p 251) 'getting organized' required the students to make decisions about their learning tasks, identify the strategies and procedures that they could use to complete the task and determine the mode of presentation of the completed product. All of these skills are part of the goal setting process of executive function; 'the hill' (Fig. 2 p150).

The second component of this process; 'the will', required the students to plan how to use the strategies and procedures they had identified and to independently initiate tasks. The explicitly articulated planning of the two students previously discussed as examples (*Table 10 Details of Sample Students' Task Justifications that Reflect Understandings of Self: Class A and Class B p169*), provides an indication of the most consciously articulated planning process available, however the degree of success evidenced in the goal completion (*Summary of Frequency of Students' (n=40) Responses to the Reflection Records p 151*) strongly indicates the development in the students' capacities to plan and initiate goal related actions. The number of students who were able to demonstrate these skills in May was thirty; again the learning context in which this was established was different; but in November the number had risen to thirty six. However, the third component of the goal setting process; 'the skill', was the area in which the most outstanding improvement occurred. The number of students who were demonstrating skills in self monitoring were recorded in the areas of *seek feedback, inhibit response, manage emotions, flexible thinking skills, working memory skills and the capacity to follow through and persevere with learning tasks despite distractions and difficulties*. By November, ten additional students were seeking appropriate feedback during tasks, two additional students were able to inhibit their responses and think things through before making a response and twenty eight additional students were able to demonstrate working memory skills. As no students were able to exhibit any skills in the areas of 'working memory' or 'flexible thinking' in May, the November assessments in these two areas showed significant improvement, with thirty four students demonstrating skills in each of these areas. These results are shown as Fig. 3 (p153).

Fig 3 Student Competencies in Skills relating to the Executive Function of Intrapersonal Intelligence (n=40)

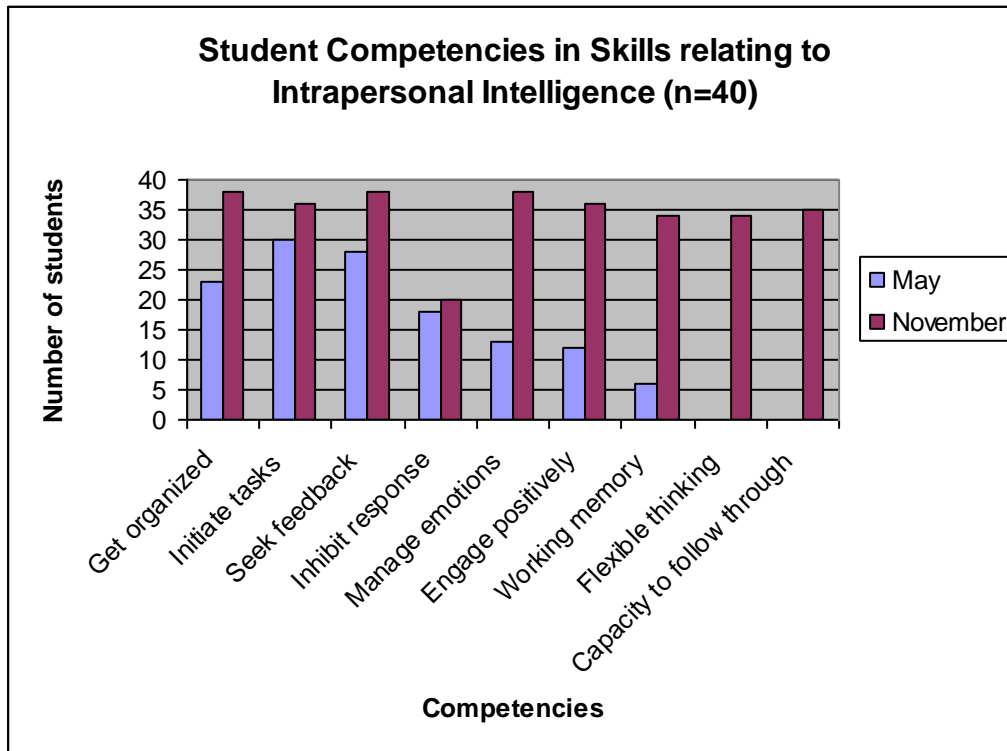


Fig.3 indicates the number of students whose capacities in the focus areas had improved during the time of the *Intervention Program* (Appendices, p 251).

The students were not all demonstrating the same level of competency in each of the areas of skills. The students’ progress is described in three stages in Table 5 (p154). However, these results, combined with the students’ evaluation of their concentration levels as recorded on the *Experience Sampling* (Summary of the Frequency of the Responses Selected by the Students (n=40) on the *Experience Sampling Records* p 154) indicate that the students had developed the capacity to monitor and change their learning behaviors in order to achieve completion of their learning goals. Included in these behaviors was the predisposition to persevere and follow through with their learning goals in the face of difficulty.

Table 5 Number of Students Demonstrating Skills from the Student Observation Checklist at Various Levels in November

	Get organized	Initiate tasks	Seek feedback	Inhibit response	Manage emotions	Engage positively	Working memory	Flexible thinking	Capacity to follow through
Developing skills	14	13	15	13	16	11	13	18	14
Consolidating skills	10	10	12	8	14	13	12	14	15
Has strong skills	16	17	13	1	10	16	13	8	11

Table 5 presents the number of students at each of the three levels of competency determined by their class teachers using the summative data from the *Student Observation Checklist (Appendices, p280)* in November.

The teachers initially assessed, in May, that none of the students had any capacity to demonstrate this skill of persevering by demonstrating the capacity to follow through to complete tasks. The summative assessments in November show that many of the students had developed skills in this aspect of learning behavior. Thirty five students were able to demonstrate levels of perseverance in November. Eleven students were demonstrating strong persevering skills, fifteen were consolidating their skills in this area and fourteen students were developing this skills, having already demonstrated it one several separate occasions.

Table 6 Summary of the Frequency of the Responses Selected by the Students (n=40) on the Experience Sampling Records

I am	I am finding this task	I am	I am
Very interested 25	Very interesting 15	Concentrating all the time 21	Really enjoying this learning task 23
Interested 23	Interesting 35	Concentrating most of the time 29	Enjoying this learning task 24
Somewhat interested 10	Somewhat interesting 6	Concentrating some of the time 6	Feeling okay about this learning task 8
Not very interested 0	Not very interesting 0	Concentrating a little 2	Unhappy about this learning task 0
Bored 0	Boring 0	Not concentrating 0	Very unhappy about this learning task 0

Table 6 presents the frequency with which the responses were selected on the *Experience Sampling Records (Appendices, p 275)* by the participating students (n=40).

The responses on the *Reflection Records (Table 4 Summary of Frequency of Students' (n=40) Responses to the Reflection Records p151)* indicate that students in Class A and Class B were reluctant to give up when things relating to their learning task became difficult. The responses to

the question regarding persistence are particularly interesting as monitoring and changing this particular aspect of learning behavior may be considered to be one of the most complex aspects of learner characteristics. None of the Class C students responded to that statement on their *Reflection Records (Appendices, p 276)* at any time during the intervention.

The responses on Table 4 (p151) represent the responses from Class A and Class B only. The data indicates that on thirty occasions the students felt that they had persisted when the tasks got difficult and on twenty two occasions the students indicated that they tried to persist when faced with learning tasks problems. None of the students felt that they had given up easily. The teachers nominated that a total of eighteen students had particularly benefitted from the *Intervention Program (Appendices, p 251)* in that they had demonstrated a capacity to monitor and change their learning behaviors and persevere whilst engaging with their self selected tasks, a skill they had not formerly demonstrated. The Class B results detailed in Fig. 3 (*Student Competencies in Skills Relating to Intrapersonal intelligence; Class B (n=11) p 153*) provide a good example of the development of this skill and other self monitoring skills within a specific group of learners.

The change in these performance capacities of the Class B students during the duration of the *Intervention Program (Appendices, p 251)* appeared to be considerable. The difference in the results from May and November were assessed by comparing the means in a paired t test. The results of this t test are shown in Table 7 (p156). The t score (10.465) indicated that the difference in the May and the November assessments were significant. The level of significance is 0.000. This indicated that the probability of these scores occurring by chance was practically none. This probability level was below the customary levels of significance which were 0.01 or 0.05.

Table 7 Paired t Test: Summative Results of Student Competencies in Skills relating to Intrapersonal Intelligence: Class B

	Paired Differences							
	Mean	Std. Deviation	Std. Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pa ir 1 Class B student observations May – Class B student observations November	-7.88889	2.26078	.75359	-9.62668	-6.15110	-10.468	8	.000

Table 7 shows the paired *t* test results of the *Student Observation Checklist* (*Appendices, p280*) summaries for May and November, Class B; (n=11)

The detail provided by Fig. 4 (p157) provides evidence that all the students had begun to monitor their learning behaviors and consistently seek appropriate feedback at the conclusion of the study, compared with five students who regularly did this at the commencement of the study. The students’ capacities to inhibit their immediate responses and think about their ideas and suggestions and those of others in relation to the learning tasks is recorded as demonstrated by only one student at the commencement of the study and by ten of the eleven students at the end of the study.

This indicates a considerable improvement in the students’ self monitoring skills, especially when combined with the same results in the students’ skills in managing their emotional responses during task completion. These emotions refer most specifically to non productive or negative emotional responses that impair students’ capacities to develop the skills of persistence, patience and perseverance. The students’ increased capacity to complete their self selected learning tasks, despite difficulties and distractions support the other, related teacher assessments and nine students demonstrated this skill in November, compared to no student in May. The tasks and procedures of the *Intervention Program* (*Appendices, p251*) appear to have allowed the students opportunities to be become self regulated learners than had the original English program that was implemented prior to the commencement of the project.

The cognitive skills associated with accessing and effectively utilizing *working memory* and *flexible thinking* strategies were consistent with the results of the entire group. No students demonstrated these skills in these areas of competency in May, compared to ten students who were demonstrating *working memory* skills and nine students who were exhibiting the cognitive

capacity to effectively use the skills of *flexible thinking* in November. The trend of these results was consistent across the three class groups with one exception. The results of Class A are problematic in one area and have made a substantial impact on the results of the entire group in that particular skill area.

Fig. 4 Student Competencies in Skills Relating to Intrapersonal Intelligence; Class B (n=11)

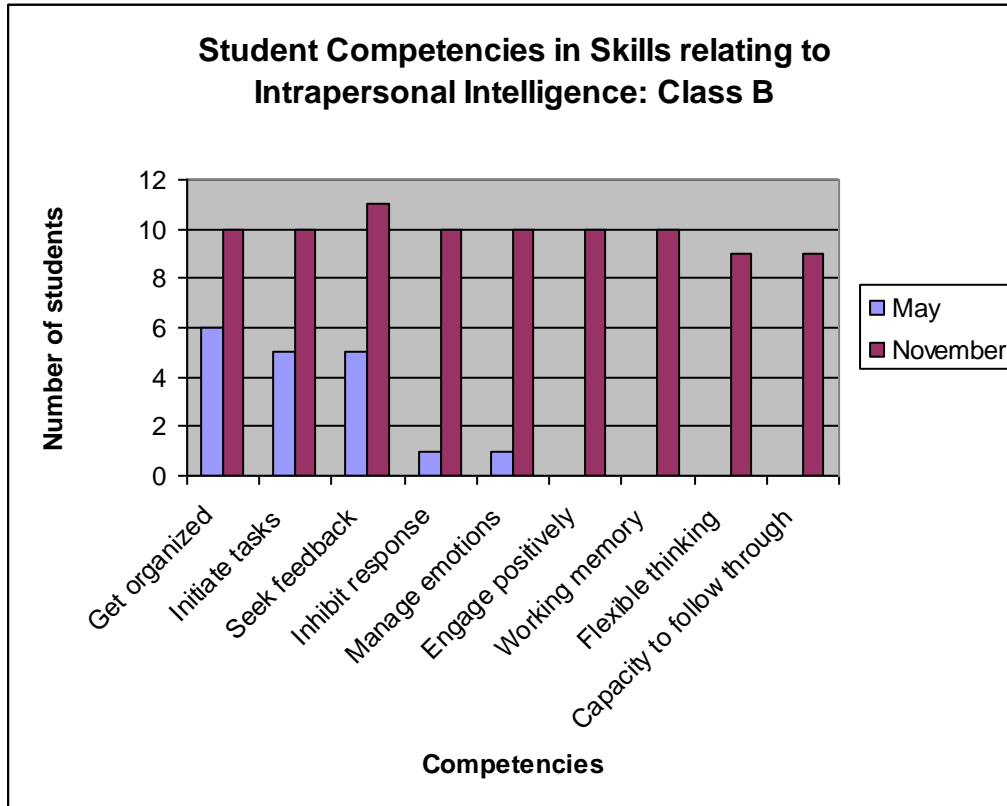


Fig. 4 shows the Class B students' competencies relating to intrapersonal skills in May and November.

Fig.5 indicates that the single area in which these students had not improved was that of *inhibit response*. The number of students who were able to monitor their behaviors in this area in May was thirteen. However, by November, there was only one student recorded on the *Student Observation Checklist (Appendices, p 280)* summative results as having demonstrated skills in this area and he was nominated to have a very strong capacity to monitor his learning behaviors in this way. This result appears incongruous when analyzed in the context of the other data provided by this research tool. The other self monitoring skills of *seeking feedback (19)*, *managing non productive emotions (19)*, *effectively using working memory(19)* and *flexible thinking(19)* and *capacity to follow tasks through (19) to completion despite distraction and difficulties* are all recorded as being demonstrated by the entire class group at one or another

level of competency. These self monitoring skills are all cognitive capacities that are conceptually related.

Fig. 5 Student Competencies in Skills relating to Intrapersonal Intelligence: Class A; n=19

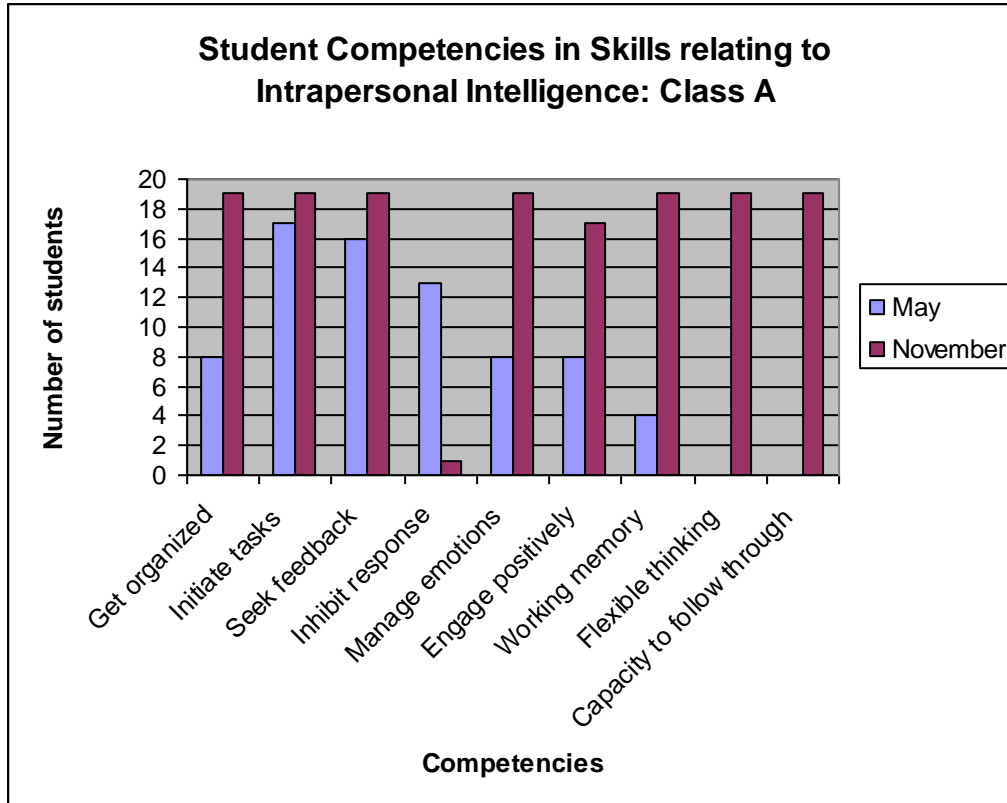


Fig. 5 shows the Class A students’ competencies in skills relating to intrapersonal intelligence in May and November.

The unusual data received in the inhibit response component impacted on the overall result that was obtained from a paired *t* test, Table 8 (p 159). The *t* test indicates that the students’ skills in this aspect of intrapersonal intelligence have improved significantly. The *t* score of 2.619 and the degree of significance at 0.031 indicate that the change is statistically important, however, the impact of the assessment of the students’ skills (or lack thereof) in inhibit response can easily be seen in the results presented in Table 8 (*Paired t Test: Summative Results of Student Competencies in Skills relating to Intrapersonal Intelligence: Class A, p 159*).

Table 8 Paired t Test: Summative Results of Student Competencies in Skills relating to Intrapersonal Intelligence: Class A

	Paired Differences							
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Paired Sample 1: Class A student observations and conferencing May - Class A student observations and conferencing November	-8.55556	9.79938	3.26646	-16.08802	-1.02309	-2.619	8	.031

Table 8 shows the paired t test results of the *Student Observation Checklist* (Appendices, p 280) summaries for May and November.

Evidence from the Teachers

At the conclusion of the study, (*Teacher Interview Appendices, p 286*) the teachers independently indicated that they were keen to continue with the *Intervention Program* (*Appendices, p 251*), despite the difficulties that they acknowledged were confronting when the study was in its initial phase. The implementation of the *Intervention Program* (*Appendix A, p 251*) had been perceived to have an overall positive impact on the students and on particular aspects of their work in English. They each nominated the particular tools or strategies that had suited their classroom practice and had proved to be beneficial for their group of students. All three of the teachers felt that the implementation of the *Intervention Program* (*Appendices, p251*) had brought them closer to each other as professionals and promoted increased collegiality as they worked to support their students and overcome the problems that the students had initially experienced as a result of their engagement with the specific strategies and procedures of the *Intervention Program* (*Appendices, p 251*).

Despite their difficulties, however, the teachers recorded that only one of the participating students (n=40) was reluctant to continue, indicating that he preferred learning tasks that were literature based, as they had been in the initial phase of the implementation. Entries in the *Researcher Field Journal* (*Excerpt in Appendices, p 278*) based on student observations and discussions, support the teachers' views regarding the students' enthusiasm for the *Intervention*

Program (Appendices, p 251). At the conclusion of the *Intervention Program (Appendices, p 251)*, the Class C students requested that the researcher come back to collect their documentation and records a week later because they were still busy (*Researcher Field Journal, excerpt in Appendices, p 278*). The teachers were also asked to nominate any perceived students benefits that were a direct result of the *Intervention Program (Appendices, p 251)*. These are collated in Table 9.

Table 9 Teachers’ Evaluations of Student Benefits (n=40)

Social skills	Learning strategies	Participation in discussion	Presentation skills	Enjoyment of English tasks	Progress in reading	Progress in writing	Progress in talking and	Capacity to set own	Knowledge of learning	Awareness of limitations	Ability to preserve in
26	21	18	27	29	11	18	23	26	24	21	18

Table 9 This table indicates the number of students who benefitted from the *Intervention Program (Appendices, p 251)* as assessed by the class teachers. Total number of students is forty.

On completion of the *PMI(Appendices, p 250)* in September, the Class A teacher was positive about various aspects of the project. He noted that the students were able to apply knowledge and skills in different contexts, the students were engaged and having fun and the learning was ‘more real’ in nature than the disparate activities that were usually implemented as English. He also noted that the input of the researcher was useful. This was not because there was more input in this Class than in the others, but because he followed up and experimented with the ideas suggested and customized them to suit his purpose and his students. At this stage, in September, he remarked that the task cards were heavily reliant on skills but they were not designed with such specific instructions that the students could learn basic reading and writing skills from them. He correctly observed that it was important for the teacher to have a program of work that included basic literacy skill development and that was designed specifically to support the students’ development of English skills and strategies required for task completion. He organized time from the ‘regular’ English program to facilitate a skills based literacy program for his students.

This teacher’s responses to the *Teacher Questionnaire (Appendices, p 286)* at the conclusion of the project indicated a very positive response. He felt that it was important that the activities covered several indicators from the K-6 English syllabus simultaneously; that the students mainly ‘loved’ the choice of task and that the degree of engagement during the implementation

of the *Intervention Program (Appendices, p 251)* was very good. He felt the project was ‘*excellent.*’ He felt very strongly that the project had helped him ‘*look outside the square.*’ He felt this was important for him as he had no experience working in other schools and he was aware that the culture of his present school was ‘very traditional’. He felt that the experiences that he had, as part of the research activities, were very valuable and helped him become a ‘*better teacher*’. He felt that the project was personally beneficial for him because it made him more ‘*academically alert and made me reexamine my pedagogy*’. He felt it was something different and beneficial for all his students and for all the Stage Three teachers.

As a result of his experiences with the *Intervention Program (Appendices, p 251)* the Class A teacher initiated a pupil free day during which all of the Stage Three teachers and the researcher met to plan for the following year. The Class A teacher discussed his ideas relating to a ‘training plan’ that he wanted to introduce to the students to prepare them for a program based on the *Intervention Program (Appendices, p 251)* that was implemented in this study with the other two teachers. They were keen to join him the following year when he introduced his introductory plan and a variation of the *Intervention Program (Appendices, p 251)* to his new students. The teachers were all planning to work directly from the syllabus outcomes and indicators, cross referencing these with the task cards as they had been designed originally for the purpose of the project, but with fewer indicators to assess for each task until they became more familiar with the syllabus content and more adept at this type of assessment. The Class A teacher was also negotiating a new format for reporting to parents, one that more closely matched the classroom practices and the outcome based assessment based on the English syllabus.

Students’ Skills in Knowledge of Self as Learners

The findings indicate that the answer to the first research question *Will the implementation of a differentiated program of work in English improve or change the intrapersonal intelligence skills of Stage Three students?* in relation to the entire cohort of student participants (n=40) is positive. There is substantial evidence in various research tools that indicated the students were initially challenged by the demands of the *Intervention Program (Appendices, p 251)*. The *Researcher Field Journal (excerpt in Appendices, p 278)*, the *PMI (Appendices, p 250)* completed by the teachers during the *Intervention Program (Appendices, p 251)* and the *Student Evaluation of the*

Intervention Program, responses collected at the conclusion of the study provide information regarding the students' interaction with the *Intervention Program* (*Appendices, p 251*) during the initial five weeks of the program. These data sources all contain information about the same three themes that dominated the students' interaction with the *Intervention Program* (*Appendices, p 251*) at the commencement of the study; (i), the students were enthusiastic and selected their tasks independently of the teacher, with three exceptions,,(ii) without exception, the students were unable to commence their tasks independently and were very dependent on their teachers to explain to them what they were required to do. Even the students who were usually independent workers and high achieving students in English relied heavily on the teacher for reassurance and confirmation that they were proceeding correctly. Additionally, because the students were not required to present their work product in any particular format (iii) the students found it very difficult to plan how they might their complete their tasks and what skills and information they would need to present their work in different ways. Many of the suggestions relating to mode of presentation were unrealistic because the students did not have the skills to plan and complete their tasks in the suggested formats. The students were highly motivated and enthusiastic, but they simply did not have the skills at the beginning of the *Intervention Program* to work within the demands of a program (*Appendices, p251*).

In contrast, at the conclusion of the study, the three teachers nominated twenty four students that had improved their degree of awareness and accuracy relating to their own learning strengths and twenty one students who were more aware of their relative learning limitations when working with the tasks that comprised the *Intervention Program* (*Appendices, p 251*). These nominations represent a considerable improvement in the students' degree of self knowledge when compared to their self knowledge in these areas at the commencement of the study.

At the commencement of the study, thirty six of the forty participating students were able to select tasks that matched their relative strengths as indicated on the Multiple Intelligences Checklist for Upper Primary Students (McGrath & Noble, 2003, p83-85) thereafter referred as the *MICUPS* (*Appendices, p272*) profiles. Three of the four students who did not match their selection of tasks to the profiles engaged and enjoyed their tasks. The degree to which the students were able to sustain and develop their capacity to select personally relevant learning tasks throughout the duration of the study is evident in their responses on the *Experience*

Sampling Records (Appendices, p 275), that were collected randomly during the task time. The responses are collated and presented as Table 4 (p 151). They indicate that on forty eight occasions the students reported that they were very interested (25 responses) or interested (23 responses). They indicated that they found their self selected learning tasks very interesting (15 responses) or interesting (35 responses) on fifty occasions. They also indicated that they found these self selected learning tasks really enjoyable (23 responses) or enjoyable (24 responses). There were no occasions on which the students recorded feeling bored or unhappy or thought the tasks they had selected to complete were boring.

These data was supported by the students in the reasons they gave for selecting the tasks. A selection of these reasons are detailed in Table 10 (p165). The students were asked to justify their task selection as part of their *Goal Plans (Appendices, p 277)*. Class A submitted forty seven *Goal Plans (Appendices, p277)* and Class B submitted four *Goal Plans (Appendices, p 277)*. The four *Goal Plans (Appendices, p 277)* that were available from Class B were submitted by two students. They had two *Goal Plans (Appendices, p 277)* each. Only the students from these two classes are represented in this data. Class C did not undertake this aspect of the *Intervention Program (Appendices, p 251)*. The Class C teacher assessed that the activity was too difficult for her students. Of the one hundred and fifty five reasons recorded on the fifty one *Goal Plans (Appendices, p 277)* analyzed, ninety four responses indicated that the students had chosen those tasks because they thought they would be fun or because they thought that they would like or love them. These students were able to engage in new learning in the context of what interested them, engaged them and allowed them to respond positively to their self selected learning tasks. Seven tasks were selected because the students wanted to work with a friend or a team and twelve other tasks were chosen because the students had identified that they already had the skills to complete the tasks competently and they felt confident and comfortable that they would succeed in the competent completion of the tasks. All these comments are valid and insightful reasons for task selection and reflect the students' increasing knowledge of themselves as learners.

A sample of the forty two comments is detailed in Table 10 (p 165). All of the forty two comments indicated that the students had been able to select what they wanted or needed in the

same way as the responses already discussed. However, these comments also referred to perceived challenges, specific intentions related to learning or to taking some calculated risks in their choices of learning tasks. These reasons were more reflective and indicated a growing awareness of the skills associated with accurate self representations, including the comment from one student regarding his compulsion to engage in a particular activity in which he excelled (Student 4B, comment on the Easy tasks he self selected).

Student 8B's comments illustrate that she had her own way of recording the tasks she had selected to make up her learning goals. The reasons or justifications for the students' task choices were intended to be completed at the time of selection. This student has obviously completed her comments after she had finished the tasks, as a type of additional reflection on her selections. However, her retrospective comments provide both her pre task and post task assessments of both the tasks requirements and her own perceived competencies and give a unique insight into her thinking regarding task selection. She has used her knowledge of self to identify an easy task correctly. She has then done the same for her consolidate and challenge tasks. In identifying the degree of difficulty *for her personally* and isolating the task components that may prove to be problematic, she has provided an interesting example of her skills related to her planning and assessment strategies in the context of her selection of her learning tasks.

Table 10 Details of Sample Students' Task Justifications that Reflect Understandings of Self: Class A and Class B

Student code	Level of task on Goal Plan	Reason
15A	Consolidate Consolidate Challenge Challenge	Drawing is moderately hard <i>for me</i> Rapping will be a bit challenging Sculpting is more of a challenge <i>for me</i> Powerpoints are not as easy as other activities
18A	Challenge	It is a challenge
5A	Consolidate Consolidate Challenge Challenge	It has to rhyme It is hard to draw It is a challenge about nature It is hard to go on the internet and find pictures
14A	Challenge	It is harder and different
1A	Challenge	I wanted to set some goals
12A	Challenge	It's lots of work
Student 8B	Easy Consolidate Consolidate Consolidate Consolidate Challenge Challenge	I knew what to write and all the information and how I wanted to set it out I thought I did good and I really enjoyed this activity. I had fun with this activity and it was also a bit of a challenge It was fun but it still included hard work I knew what I wanted to make and the materials, it was just the problem of putting it together I had to work as a team to complete every activity and work every step out It was challenging and took time
Student 4B	Easy Consolidate Challenge Challenge	I just had to draw I had to get the right positions on the map I had to research I had to look it up

Table 10 shows some examples of the reasons that the students gave for selecting their learning tasks that reflect an understanding of self as learner.

The reasons that are detailed for selecting learning tasks in Table 10 indicated that the students were aware that the particular learning tasks that they had selected required skills, strategies or knowledge that the students themselves did not possess at the time of selection. This is a significant indicator that these students were being increasingly reflective about their own learning and more discerning regarding the degree of challenge that was embedded in their self selected tasks. This also suggested that the students were becoming adept at using their relative strengths to overcome their relative limitations as they consistently selected tasks that were challenging but still within the intelligence domains that the students had perceived to be their relative strengths when they completed their *MICUPS (Appendices, p 272)* profiles in May. Only two students had deliberately selected challenge tasks that did not rely on their relative

strengths for successful completion. Some of the statements, for example, '*It has to rhyme*' suggest that the student is not just selecting a challenging activity, but has identified the particular challenge and is thinking about strategies that may be productive. The personal nature of the comments and the students' awareness of themselves as individual learners is highlighted by comparing the reason given for selecting a learning task by Student 15A '*drawing is moderately hard for me*' with that of Student 4B '*I just had to draw*'.

The Reflection Records (Appendices, p273) provided data relating to how the students evaluated themselves in several aspects of their work on completion of their tasks and provide evidence of the students' abilities to reflect on themselves, their actions and their products. The students' evaluations of their work products and their actions in relation to their selected learning tasks. In contrast to the *Experience Sampling Records (Appendices, p 275)* these responses were designed to be completed at the conclusion of a self selected learning task or an individually created learning goal using the *Goal Plan (Appendices, p277)*. The students' responses were collated and presented in Table 4 (p 151). The students' responses (68) regarding task or goal completion are overwhelmingly positive compared with the occasions that students had almost completed (7) their tasks or goals and the occasion that a student did not complete any of his task or goal. These results indicate that the students had the capacities to make decisions about their personal learning needs and desires, the abilities to plan appropriate goal-directed actions and the predispositions to monitor their behaviors in order to achieve their learning goals or tasks.

The responses indicate that the students expended considerable personal energies in their goal or task completion. On sixty nine occasions students reported that they had worked hard compared with only thirteen occasions when students felt they could have spent more time working and three occasions when they felt they could have worked harder. Irrespective of how hard the students believed they had worked, all these comments reflect the students' awareness of 'self' and their capacity to reflect on and evaluate their personal actions in relation to their self selected goal or task completion. The information presented in Table 4 (*Summary of Frequency of Students' (n=40) Responses to the Reflection Records p 151*) also suggests that the students had developed the capacities to evaluate their work in terms of effort. The students indicated that

they were able to reflect on their abilities when they completed the self assessments relating to their capacities to produce work that reflected their personal best.

On fifty seven occasions the students recorded that they believed they produced their best work. On twenty eight additional occasions the students felt that they had produced close to their personal best work products and on five occasions the students evaluated their personal products as not their best work. The entire process of engaging with *The Reflection Responses* (Appendices, p 276) was a highly personal experience and one which required self knowledge and self evaluation. Even the students who had responded that their products were not their best work had recognized that they were not making their best efforts. None of the students responded that they had not made any effort. On the five occasions that students acknowledged that their products were not their personal best, they still indicated that they had made a good effort (total responses = 35) or that they had produced their personal optimal performances (total responses = 52). Interestingly, there were also exactly fifty two responses to 'I am proud of the final product' and twenty responses to the comment 'I am pleased with what I did.'

These findings also indicate that the students were able to identify positive emotions related to their personal satisfaction with their work on their goals or tasks. They were also able to indicate how they felt about the completion of their tasks or goals. The large number of responses indicating that students had completed their goals or tasks (68) and the numbers of students' responses that indicated they were proud of their work (36) or they felt 'okay' about their work strongly supports the notion that the students had improved or changed their skills related to intrapersonal intelligence.

The Class B (n=11) responses on their *Reflection Responses* (Appendices, p 276) provide a useful example of how one group of students regularly reflected in this way. The Class B responses are collated and presented in Table 11 (p 168). This summary of the students' responses from the *Reflection Responses* (Appendices, p 276) provides positive data regarding improved or changed intrapersonal intelligence. Thirty five records were submitted for analysis. The data recorded on this source strongly suggests that the students were able to identify and communicate self relevant information. Many of them indicated that they were proud of their work. The comment

'I am proud of the final product' attracted twenty five responses. They were able to reflect on themselves (in the categories relating to optimal personal performance and that relating to degrees of effort), products (the components relating to personal feelings about the product of the task) and actions (the questions relating to perseverance and working hard). These responses indicated that the students understood the importance of task and goal completion and were able to then link this achievement with feelings of personal pride (25 responses) and excitement about their work (19 responses).

Table 11 Summary of the Students Responses to the Reflection Records: Class B

Extremely successful because	Number of times selected	Moderately successful because	Number of times selected	Not very successful because	Number of times selected
I completed my goal or part of my goal	26	I almost completed my goal or part of my goal	7	I did not complete any of my goal	1
I work hard	24	I could have spent more time working	10	I could have worked harder	1
I persisted when it was difficult for me	20	I tried to keep working when it was difficult for me	13	I gave up easily when it got difficult	1
I gave it my best effort	19	I made a good effort	8	I didn't put much effort into it	1
I did the best I am capable of	15	I got close to my best	11	It wasn't my best	2
I am proud of the final product	25	I am pleased with the work I did	11	I am disappointed with my work	1
I am excited	19	I feel okay	10	I am not happy	2

Table 11 Details the frequency of responses from Class B students (n=11) to *The Reflection Responses* (Appendices, p 276).

The data indicates that many (10) of the students in Class B were able to make decisions related to personal learning needs and desires and were competently sustaining interest and completing their goals. There are twenty six responses that indicate that students completed all or part of their goals and another seven responses that indicate most of the task or goal was completed. Only one student recorded that he did not complete any of his goal. The data also suggests that they were all able to assess their personal competencies and efforts. On fifteen occasions students indicated they produced their best efforts. Eleven other responses suggested that students had felt they were close to their best on these occasions and two responses were

acknowledgements of times when students were aware that what they had done was not their personal best. One of these was the student who remained discontent. The other was a student whose planning did not work effectively for one task, but she was able to rectify her working after that occasion by identifying where her planning did not work successfully. Twenty four responses indicated that the students felt they had worked hard, ten more responses indicated that the students thought they could have spent more time working and one student assessed that he could have worked harder.

They were also aware of their individual emotional responses. The comments suggest that they were frequently excited (19 responses) or feeling okay about their work (10 responses). On one occasion a student was disappointed. The majority of the comments revealed that students were proud of their product (25) or were pleased with it (11) and on two other occasions students were unhappy with their products but this does still indicate that they were able to reflect on their feelings and acknowledge them. The opportunities that the *Intervention Program (Appendices, p 251)* gave students to make choices about their learning and strategies allowed the students to reflect on themselves as learners and to become more aware of what was required for each of them to become successful learners. The process of engaging in the *Reflective Responses (Appendices, p 276)* where the comments were developed with an explicit focus on 'self' by the use of 'for me' necessitates an exclusively personal response and an evaluation of self. In turn, this process of self assessment may increasingly inform the intrapersonal intelligence skills of the students. The responses from the entire group (n =40) suggest that the students were able to understand the role of personal effort in task and goal completion and that they were, by the successful completion of personally selected learning tasks and goals, increasingly bringing together and integrating the parameters of executive function that are identified as the 'hill', the 'will' and the 'skill'. This suggestion is further supported by the data that was collected from various other data sources.

Conclusion

The findings of this study strongly indicate that the students (n=40) benefitted from the time spent working on the task cards designed as the *Intervention Program (Appendices, p 251)* in a number of ways. The opportunity to select their own tasks gave the students opportunities to

make decisions related to personal learning needs and interests and to use their ‘self’ knowledge to inform their choices. The chance to evaluate their self selected learning tasks in terms of their own relative strengths and limitations provided students with opportunities to evaluate their own competencies in various areas and isolate problematic or difficult components of their learning. It provided numerous occasions and activities for reflection on themselves as learners, their work products and their actions in relation to achieving their learning goals. The formal reflection activities were completed both during learning tasks and after the completion of learning tasks and goals, providing a supportive structure to assist students in the development of self monitoring skills.

The benefits of having the choice of not only the task itself, but equally importantly, of how to present the product that was the result of their work, gave students a greater degree of ownership and enjoyment. It also gave them all important opportunities to engage in planning and procedures relating to aspects of their tasks which would usually have been prescriptive parts of the given tasks. At the conclusion of the project, thirty nine of the participating students were regularly identifying and using self relevant information that promoted improved learning outcomes. Others used their relative strengths to support learning in areas of relative limitation. The changed student – teacher dynamic facilitated a greater degree of one- to - one interaction and gave students opportunities to discuss their thinking and their strategies with their teachers in the specific context of the learning task they had selected for themselves. The students provided evidence that they enjoyed their tasks, worked hard and had a positive learning experience.

The students became more focused on learning and practising the skills that they valued for their personal learning. They increasingly articulated their preferences and evidence from their teachers indicated that they supported each others’ learning as part of the class community. Overall, the data sources indicated that these students gradually had improved their capacities to regulate their behaviors in order to achieve their learning goals. They were consistently positive or proud of their results and persevered with their self selected learning tasks and demonstrated this persistence in a way that the teachers had not observed happening with other learning tasks. With one exception, all the skills associated with effective executive function had improved.

The most significant result was that by using their own knowledge of self, students showed remarkable improvement in the thinking skills associated with the effective use of working memory skills and the capacity to think flexibly in regards to their self selected learning tasks. Overall, the teachers themselves accorded value to the project and evaluated what they felt were the most beneficial components for their different cohorts of students. As a result, the Stage Three team of teachers were determined to customize the project and continue it the next year with a new cohort of students in order to support improved learning outcomes for all of the students. These included the significant development of students' mutual respect and support for each other, which, though certainly of value and important for the development of class culture, is outside the focus of this study.

The focus of this study was to establish the impact of an *Intervention Program (Appendices, p 251)* on Stage Three students' intrapersonal intelligence skills. The data presented strongly suggests that the students underwent some significant changes to the levels of their competencies in the skills identified as being the expression of the cognitive capacity of intrapersonal intelligence. These changes were not only significant; they were positive developments that gave the students the opportunities to have ownership and a degree of control in their learning in one area of the curriculum. The full extent of the positive impact of the *Intervention Program (Appendices, p 251)* on the students' intrapersonal intelligence can only be established by analyzing the data relating specifically to the second research question. This can be found in the next chapter.

Chapter Eight Analysis of the Findings Part Two

Introduction

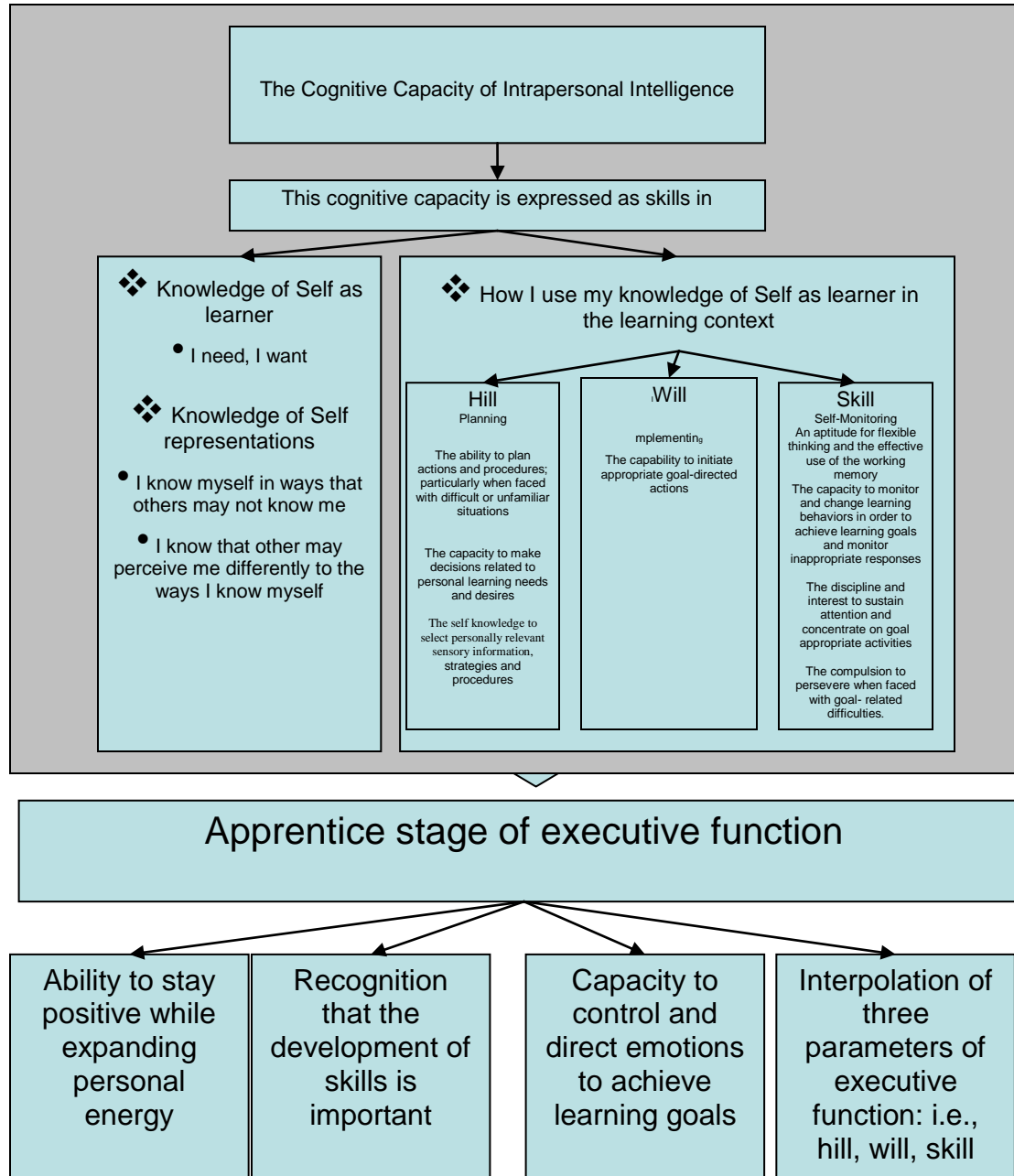
This chapter analyzes the data relating to the second research question in a similar manner to the previous chapter. The same operational definitions are employed and, once again, class group findings are used to illustrate the conclusions drawn from the data. The second research question *To what extent do Stage Three students who have participated in the differentiated program of work in English reflect the distinct characteristics of the ‘apprentice stage’ of the executive function of intrapersonal intelligence?* is answered to some degree by the data presented in the previous chapter, as some areas of the findings are common to both questions. Having established, in the previous chapter, that the students experienced changes to their intrapersonal intelligence skills as a result of their participation in the differentiated program of work in English, this chapter focuses on establishing if the students also demonstrated the distinct characteristics of the ‘*apprentice stage*’ of executive function (Moran & Gardner, 2007) that are specifically related to learning in a classroom setting.

These distinct characteristics are competencies which relate to the individual students’ observable behaviors and communicable skills, in this case, within the learning context. They also refer to the degree to which the students are able to ‘orchestrate’ or bring their skills together to successfully achieve their goals. As both the cultivation and interpolation of these competencies have a developmental component, any evidence of these skills indicate that the students have successfully begun this process and can be identified as being at the beginning stage; the ‘*apprentice stage*’. The characteristics of students who are in the ‘*apprentice stage*’ of the executive function of intrapersonal intelligence appropriate to a formal learning context are identified as the following:

- (i) a highly developed sense of ‘self’ different to, but part of, a wider class community
- (ii) the capacity to control and direct emotions in order to achieve personal goals
- (iii) the ability to express eagerness and pleasure whilst expending personal energy acquiring new skills and improving existing ones,
- (iv) an awareness of the importance of their skill development and
- (v) an aptitude at bringing together and integrating the parameters of executive function; ‘*the hill*’, the ‘*skill*’ and the ‘*will*’ to improve their learning outcomes. Fig. 6 details the Multiple

Intelligences perspective of the ‘*apprentice stage*’ of executive function as described by Moran and Gardner (2007).

Fig. 6 details the Multiple Intelligences perspective of the ‘*apprentice stage*’ of executive function.



Two of the demonstrable characteristics of the ‘*apprentice stage*’ of executive function have been explored in the context of the first research question. They are (i) knowledge of self as learner; that is the students’ capacities related to their skills in identifying self relevant information and (ii) the students’ skills in controlling and directing emotions in order to achieve

learning goals. Three other characteristics of this stage of executive function remain to be explored.

Ability to Remain Positive while Expanding Personal Energy

This characteristic comprised one component of the *Student Observation Checklist (Appendices, p 280)* and was also nominated by the teachers as an area of benefit for the students (*Teacher Evaluation of Student Benefits Appendices, p 286*) in their evaluations of the specific impact of the *Intervention Program (Appendices, p 251)*. At the commencement of the study, only twelve students were consistently engaging positively with their learning tasks in English (Fig.3 *Student Competencies in Skills relating to the Executive Function of Intrapersonal Intelligence (n=40) p 153*). By the conclusion of the study, all forty participants were engaging positively with their self selected English learning tasks from the *Intervention Program (Appendices, p 251)*. Class B (n=11) students, for example, had no students engaging positively with their English tasks at the commencement of the study, but by November, ten of the eleven participants from that class were doing so regularly.

The three teachers attributed the increased enjoyment of twenty six of the students who had previously not participated positively in English tasks, to their participation in the *Intervention Program (Table 9, p 160)*. The Class A (n=19) teacher indicated that seventeen of his students had increased their enjoyment of the English tasks as a direct result of their participation in the *Intervention Program (Appendices, p 251)*. This data is positively supported by the students' own responses to the *Experience Sampling Records (Appendices, p 275)* questions that asked them to indicate their degree of interest in their self selected learning tasks and their degree of concentration on the task at that particular moment (*Summary of the Frequency of the Responses Selected by the Students (n=40) on the Experience Sampling Records p 275*). The students' responses on their *Reflection Responses (Appendices, p 276)* also provide positive support that the students were expending their energies positively in their self selected learning tasks in English.

On sixty occasions the students felt they worked hard on their tasks Table 4 (*Summary of Frequency of Students' (n=40) Responses to the Reflection Records, p 151*). They also felt on

fifty two occasions that they had made their best effort, with another thirty five responses indicating that the students felt they had made a good effort. On fifty seven occasions the students felt that they had done the best they were capable of, with an additional twenty eight responses indicating that the students felt they had done close to their best on these occasions. These data, combined with the students' responses that they were proud of their product on fifty two occasions and pleased with their work on a further twenty occasions, strongly suggest that the students were able to stay positive whilst engaging in their learning tasks. The data relating to the students' increased capacities to persevere with their tasks (*Fig.5 Student Competencies in Skills relating to Intrapersonal Intelligence: Class A; n=19, p 158*) also suggest that the students were able to remain positive while working on their learning tasks.

The *Student Evaluation of the Intervention Program (Appendices, p 251)* provided another opportunity for the students to record how they felt about the opportunities to self select tasks and determine their own learning goals in English. As this was a free response, the students were able to indicate to what degree they enjoyed the project. They were also asked to write a sentence to justify their responses. Table 12 (p176) details the students' responses. Two students were not available to complete the evaluation. It is interesting that in the justifications from one class (Class B) students included comments about lack of choice and the need to plan more art and other interesting activities. One of the students who found it frustrating indicated that she was annoyed because there was not enough time to spend on the tasks; the other frustrated student indicated that he felt it was too hard to follow. The student who was driven mad wanted more drawing and art tasks and the two unhappy students felt there was not enough choice. One student who indicated that he was stressed found decision making too difficult as there was too much choice. The student who was scared did not give any reason. *The Student Evaluation of the Intervention Program (Appendices, p 251)* was completed at the conclusion of the *Intervention Program (Appendices, p 251)* when the students had most recently been engaged with the tasks that comprised the Phase Four Bloom's / Gardner's unit of work (*Appendices, p 256*).

Recognition of the Importance of Skill Development

The students' themselves made a significant contribution to the evidence relating to the importance they placed on the development of skills. On their *Student Evaluation of the*

Intervention Program, they were also asked to nominate what they had learned *to do* as a result of their participation in the *Intervention Program (Appendices, p 251)*. Some students listed more than one skill. The responses indicated that the students had been able to nominate different types of skills. Some were task specific, for example ‘*I learned to use chopsticks properly*’ and ‘*I learnt how to make a Bio poem*’. Other comments referred to more ‘generic’ skills that would prove to be useful in different learning contexts, for example, ‘*I learned to make good models and how to evaluate the tasks after they were done*’ and ‘*to organize my work and be a bit neater*’. Some students commented on existing skills that they had improved as a result of working with the task cards that comprised the *Intervention Program (Appendices, p 251)*, for example ‘*I learned how to make more interesting stories*’. Some students had learned skills that they had not previously been required to know in the classroom context, for example ‘*I learned to assess my work*’. Table 12 (page 176) details the responses to all three questions that were given by Class A.

The students were asked to nominate in three categories; (i) What I have learned about.. (ii) What I have learned to... (iii) How I feel about ...the *Intervention Program*. The comments that are marked with * in Table 12 are those made by three students who are part of a larger class group who were withdrawn for extra literacy support. The Support Teacher had asked the Class A teacher to let the researcher know that these students had made remarkable progress during the second half of the year. Their attitudes towards participating in the English Support program and the skills that they had developed to successfully complete their tasks from this program had both improved greatly (*Researcher Field Journal, excerpt in Appendices, 278*). Although this evidence was anecdotal and there were no assessment results offered to substantiate this, it was supported by the comments that were made by these students, which were very positive.

Table 12 Students’ Evaluative Responses to the Intervention program: Class A

I learnt about	I learnt to	Evaluative comment
I learnt about the way ads use women and products to win people over	To assess my work, how to do interesting stories, organize my work, make it as neat as possible. It was interesting to find out that I learnt how to share the work between two people,	Happy because we got to choose the things we like to do

*I learnt about proper work	I learnt how to have fun	It was fun and I got to say what I wanted on a piece of paper
	How to work with others better	I like the change and the choice
I learnt about how friends can help heaps, about computer technology and respect	To take and give knowledge, computer programs	Frustrating because I hate freedom of choice. I have to do most of the work.
China and its culture	Do better power points	Good. I can do better than I have before and I can do it over and over again
To put powerpoints together better, put info into my own words China and its animal, culture, landmarks and more	I learned how to work with others better	Happy, I like this way of working because I like the change and we can choose for once
A lot of things about respect and the actual subjects	To be quiet when I am supposed to	Happy, I like freedom of choice and not a task given to me
How organized I can be	To talk in front of the class	Too stressful to get all my work done on time
China and very cool helpful stuff	Write my poems proper Build stuff and sort through animals	Okay, I don't really like the complicated cards
Beijing , adventures and the Olympics	To make things like a presentation, which helped a lot How to make sculpture (the physical and the writing)	Unhappy, it is too hard choosing from 50 tasks
What yin and yang stand for	To plan a presentation, write a speech properly, be responsible	Quite happy but not completely satisfied
China's animals that live there	To work with others and listen to what they think	Happy, I enjoyed the task cards because you get to work with others
What yin and yang meant How to draw better Put info into my own words	To do powerpoints better To work well with people Draw yin yang	Happy because it was great that we got to choose our own tasks
I understand more about powerpoints and how to present my info more now	To work neater, how to find other things. I learned to create, like instead of a powerpoint I know how to write better stories	I liked it , it was Okay, but there wasn't enough of what I like so I had to choose some things that I didn't like as much but I liked it
*I learned about China more	How to get more points and learn	Happy because I liked last term was

from last term. It was easy and it was a bit hard in some stages but I liked it	about Beijing and China and finish my tasks on time	the best and I loved it. It was easy
*I learned how to write stuff without copying and put things in my own words, stuff about China	I learned how to work with friends better and how to do powerpoints	Great
I learned about the Olympics and about a lot of different interesting stuff	How to put powerpoints together and to prepare stuff better	Happy. I love to do posters and to do interesting stuff
	I learned that it is harder than copying things off the board (it is harder than normal learning)	Okay
NRL	How to make a house	It was okay but it could be more fun. It is okay now I am choosing for myself

Table 12 shows the Class A (n=19) students' responses to the three questions that comprised the Student Evaluation of Intervention sheet. The student responses are recorded verbatim.

The students each had 'self relevant' information that provided evidence that they had developed increasingly complex understandings about themselves as learners in English. As one student indicated, it was certainly more personally demanding to work in the *Intervention Program* (Appendices, p 251) than it was to copy off the whiteboard. The comments (5) related to the giving, taking and evaluation of knowledge from others and the listening to what others think is a strong indication that these students were aware of the capacity of their peers to think differently from them. The focus on skill development, whether it was reflected in a comment related to improving an existing skill or developing a new skill, is apparent. The final comments (19) relating to how the students felt about the project suggested that the students were able to reflect, identify and justify their feelings about the project in terms of their own, personal emotional responses during their learning experiences whilst engaged in the tasks that comprised the *Intervention Program* (Appendices, p 251) and developing the skills that they needed to complete these tasks successfully. One of the most important developments was the improvement of the students' skills in decision making which has been discussed in the previous chapter.

The students demonstrated an awareness that they had improved some of their skills (9 comments), for example *'Write my poems proper,'* and *'To do powerpoints better'* in addition to learning some new ones (28 comments) for example *'To plan a presentation, write a speech properly, be responsible'* and *'To work with others and listen to what they think.'* The clarity and ease with which the students articulated these differences in their learning is a strong indicator that this skill development and the acquisition of new skills had a high degree of personal meaning and contributed to the students' changing or improving their capacities to know about themselves as learners and to use this self knowledge effectively in the learning context. Several comments (11) conveyed a sense that the tasks themselves were enjoyable for the students. One very measured assessment of the project came from the student who indicated that she was *'quite happy but not completely satisfied'*.

Evidence from the Teachers

Additionally, many students were able to demonstrate their progress in these skills and strategies in the results they achieved in the sample English indicators from the K-6 English Syllabus (Board of Studies 1997). The assessment records of the students (n=40) were converted to actual scores using the guidelines explained on page 102. These scores in the three target areas of literacy; specific foundational skills in reading, writing and talking and listening; were then subjected to paired *t* tests to establish if the changes had any statistical significance. The results are displayed as Table 13 (p180). The results indicated a substantial overall difference with a *t* score of 4.048 and a significance level of 0.000. This suggests that the students had been able to apply their increased competencies in their existing skills and their newly acquired skills in English in addition to their increasingly developing skills in both dimensions of intrapersonal intelligence; (that is, self knowledge as learners and executive function) to their tasks in learning in the English discipline domain. However, it is important to note that the regular literacy program was implemented independently of the *Intervention Program* (Appendices, p 251) and simultaneously. The teachers' evaluations of the direct impact that the *Intervention Program* (Appendices, p 251) had on the students' competencies in English provides some indication of the results that were not perceived by the teachers to be the results of the students' participation in the regular English program.

Table 13 Results of Paired t Test of Students’ Progress in Selected Literacy Indicators (n=40)

	Paired Differences							
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pair 1 Student literacy assessments May – Student literacy assessments November	-3.80000	5.93642	.93863	-5.69856	-1.90144	-4.048	39	.000

Table 13 presents the results of a paired t test that was conducted on the students’ scores (n=40) from May to November in the three literacy indicators that were selected as the sample indicators from the K-6 English Syllabus (BOS 1997) for the purpose of this study

As part of the *Teacher Interview (Appendices, p 286)* the teacher were asked to nominate any benefits that the students had received solely as the result of their participation in the *Intervention Program (Appendices, p 251)*. These results are shown in Table 9 (p160).

The data presented in Table 9 (*Teachers’ Evaluations of Student Benefits n=40, p 160*) indicates that the teachers felt that a number of students had improved their literacy skills in each of the three main areas detailed in these three sample indicators as a direct result of the students’ engagement with the *Intervention Program (Appendices, p 251)*. They assessed that eleven students had improved their reading skills, eighteen students had improved their writing skills and twenty three students had improved their skills in talking and listening as a result of their introduction to the tasks and procedures that comprised the *Intervention Program (Appendices, p 251)*. They also noted that some students had improved their capabilities in other areas, the majority of which are able to be identified as intrapersonal intelligence skills. Twenty one students were assessed as having improved learning strategies. This indicates that these students had an awareness of the importance of skill development, a characteristic of the ‘*apprentice stage*’ of executive function.

Table 14 Assessment of Student Achievement in Selected K-6 English Indicators: Class A

May	Not evident		Working towards Outcome Competencies		Working at outcome competencies		Working beyond outcome Competencies	
	May	Nov	May	Nov	May	Nov	May	Nov
Reads independently An extensive range of texts	3	0	4	4	8	5	4	10
Communicates effectively using a wide range of vocabulary	2	0	3	4	9	7	5	8
Spells accurately and uses a range of proofreading techniques	3	0	3	4	7	5	6	10

Table 14 illustrates the number of students assessed as performing in each of the levels of competency in the three sample indicators selected from the K-6 English Syllabus (BOS 1997). The results are shown for May and November for Class A.

The Class A teacher provided pre and post intervention detailed assessments of the students' demonstrated capacities in the three sample indicators from the K-6 English Syllabus (BOS 1997). The results are detailed on Table 14 (p181). The data shows that the small number of students (2 or 3 in each of the three areas of literacy) who had not demonstrated any competencies in the three indicators in May were demonstrating some degree of competency in all three indicators by November. While a similar number of students were *Working Towards* becoming competent in each of the indicators in May and November (3 or 4), more students were *Working At* the competency level in each of the indicators in May than in November. More students appear to have sufficiently developed their skills in each of the indicators to progress from *Working At* competency level to *Working Beyond* the level of competency required by the indicators. The number of students at the *Working Beyond* level of the reading indicators increased from four in May to ten in November. A similar increase was observed in the spelling and proofreading indicator. The number of students demonstrating the capacities for *Working Beyond* in this indicator in May was six, in November it was ten. The number of students *Working Beyond* in the talking and listening indicator also rose, from five in May, to eight in November. These data provides evidence of student progress in the skills embedded in the three sample English indicators and provides significant support for the degree of awareness that the students had developed regarding the importance of skill development.

The Class A teacher had also indicated that he felt that the students' participation in the *Intervention Program (Appendices, p 251)* was responsible for a considerable degree of the students' progress. He indicated that fifteen of his nineteen students had developed improved or new learning strategies. He also indicated that eleven students had improved in reading skills, sixteen had improved writing skills and all the participating students had improved in their talking and listening skills. These findings illustrate the students' focus on their skill development in English and indicate that the students were demonstrating this characteristic of the ' *apprentice stage*' executive function as described by Moran and Gardner (2007).

He also offered anecdotal evidence to support his evaluations. He routinely asked the students about their learning and what they were enjoying the most prior to writing the students' twice yearly reports. He offered the following information to substantiate his evaluations of the benefits of the study for his students. The students who struggle with literacy wrote that they really enjoyed working from the task cards as did the top literacy students in his class. One of the students who had always struggled in all academic areas '*has produced amazing work. She has been focused and on task, motivated and keen. Such a success.*'

The Class B teacher noted that the cooperative work that had resulted from the *Intervention Program (Appendices, p251)* was a positive aspect of the study (*PMI Appendices, p250*). She indicated that the students were engaged and were cooperative in helping each other solve problems. In the *Teacher Interview (Appendices, p 286)*, she also mentioned the students working cooperatively and sharing skills as a positive aspect of the study. She also felt that the students benefitted from having to make decisions and choices and having to differentiate what works for each of them, as this capacity is directly related to the students' abilities to identify self relevant information. She particularly enjoyed the conferencing with students and having them articulate what they knew. She felt that much of this confirmed her insights about the students' learning and that these times were enjoyable and valuable for teacher and students. The Class B teachers' perceptions that the conferencing sessions were '*valuable*' could be interpreted as an indication that she was able to gather evidence during these times of the students' improvement in their competency levels with regard to monitoring and changing learning behaviors in order to achieve their goals. This is supported by her comments later in the interview.

The specific benefits of these conferencing times with the students that the teacher nominated were that she could negotiate at least one aspect of each task with the students individually, that she did not have to tell the students the next step – she could ask ‘*What do you think?*’ and the students could talk about their tasks. She realized that the students had developed competencies in specific literacy skills such as considerable improvement in their comprehension skills and a much improved understanding of writing a task for a specific audience. They also had become adept at talking about their strategies for problem solving. She felt that there were considerable benefits for the students, specifically in planning their strategies, taking the ownership of their work, their abilities to think independently, their capacities to make choices, the ability to participate in discussions and their plans for how to showcase their work.

Her feedback indicated that the students improved their capacities to make decisions related to learning choices. Her feedback also indicated that her students were engaging more effectively and demonstrating the cognitive capacities and skills associated with improved working memory and flexible thinking. She had observed that they could plan actions and procedures when faced with unfamiliar tasks and situations.

The comments made by the Class C teacher on the *PMI (Appendices p 250)* assessment also was very positive about the implementation of the *Intervention Program (Appendices, p251)*. She felt the task cards contained a wide variety of activities which offered the students opportunities to present work in both written and oral modes. She commented on the degree of student engagement, in the *Intervention Program (Appendices, p 251)*. She also considered that the chances it provided for students not only to choose a task but also to work out how it was to be completed was an important aspect of the project.

The Teacher Interview (Appendices, p 286), conducted at the conclusion of the study, provided another opportunity for the Class C teacher to assess the program. On this occasion she suggested that one of the most important outcomes had been the increase in students’ positive attitudes to their learning. Again, she commented positively on the diverse nature of the tasks and the opportunities they afforded students to be creative. She discussed the chances the

students had been offered to share their work with others and to develop respect for each others' gifts and strengths, indicating that the students had opportunities to develop a heightened sense of 'self' while remaining members of the class community. The multi dimensional components of the tasks were considered valuable and the teacher felt that this '*added value to the kids' own desire to learn*'.

Once again the Class C teacher made positive comments about student engagement and nominated a number of students for whom working on the task cards in the *Intervention Program (Appendices, p 251)* had made '*a major contribution*' to their self confidence, positive attitudes to learning and enjoyment of English activities. This evidence suggested that the students had expressed an eagerness to engage in the *Intervention Program (Appendices, p 251)* learning tasks while expending their personal energies in the development of the learning skills.

Interpolation of the Three Parameters of Executive Function

Evidence that the students were beginning to understand the complex relationship between the three parameters of the '*hill*', the '*will*' and the '*skill*' is most simply evidenced in the students' capacities to complete their self selected learning tasks and goals. These tasks required the students to improve their existing skills and develop new expertise. They also required students to persevere when faced with difficulties, maintain interest in their undertakings, work hard and use their knowledge of 'self' as learners to support their learning in English during the *Intervention Program (Appendices, p 251)* and the successful completion of their goals. Much of the evidence relating to the students' completion and degrees of enjoyment and engagement has already been discussed in the specific context of the students' capacities to set their own learning goals. As indicated by Table 9 (*Teachers' Evaluations of Student Benefits n=40 p 160*), the teachers had assessed that twenty six students had improved their skills in setting their own learning goals as a result of working with the English tasks that comprised the *Intervention Program (Appendices, p 251)*.

They had completed sixty eight self selected learning goals in English and had only seven incomplete and one on which no progress had been achieved, indicating that they were able to remain motivated and interested in their selected tasks. The students had illustrated, through their

comments on the Student Evaluation of the *Intervention Program* (*Appendices, p 251*) that they were aware of their skills that had improved and the new skills they had developed as a result of the processes and procedures they engaged in as part of their learning using the *Intervention Program* (*Appendices, p 251*). This evidence suggests that the students were developing the concept that is represented in the ‘blending’ of the three components of executive function, the ‘*hill*’, the ‘*will*’ and the ‘*skill*’.

One other set of results also suggests that the students may have felt that they were increasingly competent in their attempts to combine the three parameters of goal setting (Moran & Gardner, 2007) in English. The results of the *MICUPS* (McGrath & Noble 2005, *Appendices, p 272*) questionnaires in November indicated that there was a shift in some of the students’ perceptions regarding their relative strengths in the linguistic intelligence domain. Nineteen students (total n=40) indicated that they believed that they had increased strength in the linguistic intelligence domain. Nine of these students nominated this intelligence domain as one of their top three areas of strength in November, compared to their responses in May when the linguistic intelligence domain was not perceived as a relative strength. However this increase in confidence relating to linguistic intelligence skills cannot explicitly be related to the *Intervention Program* (*Appendices, p 251*) as the regular program in English was also implemented during this period of time and the questions in the linguistics intelligence domain were not considered to be synonymous with, or as explicit as, the sample outcomes and indicators taken from the K-6 English Syllabus (Board of Studies 1998) that were used in this study.

Table 15 Students' Scores in the Linguistic Intelligence Domain of the MICUPS (n=40)

Student	MICUPS scores in Linguistic intelligence domain in May	MICUPS scores in Linguistic intelligence domain in November	Changes recorded
1A	8	10	Plus
2A	8	9	Plus
3A	6	10	Plus
4A	9	8	Minus
5A	11	10	Minus
6A	11	9	Minus
7A	9	10	Plus
8A	11	7	Minus
9A	10	9	Minus
10A	8	11	Plus
11A	11	10	Minus
12A	11	9	Minus
13A	9	11	Plus
14A	8	7	Minus
15A	7	8	Plus
16A	8	10	Plus
17A	10	10	Same
18A	9	10	Plus
19A	11	7	Minus
1B	12	12	Same
2B	9	8	Minus
3B	11	12	Plus
4B	7	9	Plus
5B	8	11	Plus
6B	8	12	Plus
7B	7	11	Plus
8B	10	11	Plus
9B	10	10	Same
10B	6	5	Minus
11B	7	6	Minus
1C	9	11	Plus
2C	9	10	Plus
3C	9	10	Plus
4C	8	7	Minus
5C	11	11	Same
6C	11	11	Same
7C	8	7	Minus
8C	6	9	Plus
9C	9	9	Same
10C	6	5	Minus

Table 15 illustrates the scores that the students awarded themselves in the Linguistic intelligence domain of the MICUPS in May and November (n=40).

The Class A results to the *MICUPS* (McGrath & Noble 2005, *Appendices, p 272*) provide an example of the change experienced in one class with regards to the students' assessments of the relative strengths in the linguistic intelligence domain. Nine students indicated that they believed they had improved their relative strengths in November, compared to their assessments of this intelligence domain in May. Of these nine students, three indicated a newly developed relative

strength in the linguistic intelligence domain that was significant enough to record this intelligence as one of their three strongest intelligence domains in the *MICUPS* (McGrath & Noble 2005, *Appendices*, p 272).

Conclusion

The findings suggest that the students were exhibiting the characteristics of the ‘*apprentice stage*’ of executive function. They demonstrated increased enthusiasm and the ability to stay positive while spending their time and energies working on their self selected learning goals in English. They acknowledged that they were aware of the nature and purpose of skill development, both in terms of improving their existing skills and learning new ones. They were able to bring the three parameters of executive function; the ‘*hill*’, the ‘*will*’ and the ‘*skill*’, together in a meaningful way in their learning context. In this case, they were able to improve aspects of their learning in English. The evidence suggests that the students were able to demonstrate each of these characteristics and that they had begun to develop the skills that are collectively known as executive function.

Chapter Nine Discussion of the Findings

Introduction

This chapter focuses on discussing the findings of the study. It elucidates the research findings and their implications. The variety of research tools allowed for the findings to be triangulated. They also provided a great deal of information that could not be presented in every detail. However, any significant findings that are not examined thoroughly in previous chapters are made available in the Appendices and referenced as required. This examination of the findings is conducted with reference to the literature relevant to the research questions and seeks to explain these results in the context of this literature. The highlights and relative limitations of the study are investigated in order to establish a clear understanding of the data, its strengths and limitations.

The study focused on Stage Three students and their capacities to develop the skills associated with intrapersonal intelligence and, in particular, the executive function of intrapersonal intelligence as defined by Moran and Gardner (2007). The findings indicate that the cohort of forty students from whom data was collected did benefit as a whole from the interaction with the *Intervention Program (Appendices, p 251)* and were able to improve or develop the skills that are associated with Moran and Gardner's (2007) definition of intrapersonal intelligence. The results indicate that the responses to both research questions are positive. By their responses to various research tools the students demonstrated that they were aware of their relative strengths and limitations as learners and could utilize this knowledge in practical ways to select, monitor, enjoy and achieve their self selected learning goals at various levels of personal difficulty. However, as not all students demonstrated the same degrees of competence, either in intrapersonal intelligence as self knowledge or in their demonstrations of the characteristics associated with the executive function of intrapersonal intelligence, the specific results of the project are examined in some detail. The findings also suggest considerable variations in the degree to which the different students could demonstrate the distinct characteristics of the ' *apprentice stage*' of executive function as described by Moran and Gardner (2007). The variations may be explained in several ways. The most commonly addressed of these explanations relate to student differences in their development of intrapersonal intelligence and executive functioning.

Unfortunately, school structures are age based and although developmental milestones can often be associated with a range of chronological age, the development of intrapersonal intelligence and the skills that define it are not. The stage based classes provided a wider age range than single year classes would have done, however, it was the students' capabilities from a developmental perspective (Moran & Gardner, 2007) that was more important than the chronological ages of the students. This was especially so in relation to the students' capacities to engage in the skills and characteristic approaches to learning that are identified as the '*apprentice stage*' of executive function. These skills and capacities are most likely to be observed to emerge in the later stages of primary school and the early stages of secondary school. However, consideration of the students' precise developmental stage does not entirely explain the differences in the results obtained from the different classes of students who participated, simply because all the classes contained a mixture of Year Five and Year Six students. The discussion of the findings relating to all the students (n=40) is first presented and then is followed by discussions of differences in the findings from the three classes.

Virtually all the students had enough self knowledge to select learning tasks that appealed to their personal interests and relative strengths. They struggled initially with the 'open' nature of the self selected learning tasks as they were accustomed to completing worksheets and highly structured 'closed', 'one size fits all' tasks in their 'regular' English lessons. However, they demonstrated that they were able to sustain their interest in their self selected learning tasks in the manner that is described by Csikszentmihalyi (1998, 1991b). They were able to nominate their preferred Multiple Intelligences domain, and were able to develop their own learning goals. They were able to distinguish themselves as individuals who formed part of the larger class learning community; and reflect on their own skills in various aspects of their knowledge of 'self' and their capacity to use this self knowledge to inform their decisions related to their learning in English. The students developed the skills of executive function and became increasingly skilful in making purposeful choices related to the selection of their self selected learning tasks and identifying the skills, strategies and procedures that were required to complete the tasks successfully. The Class A and Class B students overcame the initial challenges of selecting learning tasks and developing their own learning goals. The students also began to display the planning and organizational skills that they needed to commence their self selected

learning tasks and began to initiate task commencement independently, which are components of the 'will' aspect of executive function and relate directly to the theories of motivation, volition and conation presented by Corno (in Zimmerman & Schunk, 2001).

The evidence indicated that the students strived to improve their skills for their own satisfaction (Paris, Byrnes & Paris in Zimmerman & Schunk, 2001) and in order to successfully complete their learning goals. This augured well for the students' potential to develop their self monitoring skills and strategies. As a result of these capacities, the students were able to understand strategies as any deliberate actions in which they engage, in order to achieve their learning goals. Their skills in self monitoring allowed them to redirect any behaviors that did not support their effective learning. A significant element of their capacity to self monitor was reflected in the increased student competencies in using and improving their working memory skills and in their improved capacities to think flexibly, to solve hitherto unseen problems and to review and revise their learning strategies in order to achieve their learning goals. The self monitoring skills that were demonstrated by the students of Class A and Class B included the development of a willingness to persevere and to be increasingly persistent when they were faced with difficulties in the completion of their self selected learning tasks and goals. However, although these self monitoring skills are all skills that are indicative of the cognitive capacity of intrapersonal intelligence, the students also developed skills in time management strategies and increased attention to the quality and presentation of their task- related products.

Paris et al (In Zimmerman & Schunk, 2001) believe that demonstrations of self monitoring behaviors are governed by the students' perceptions of their own capacities to self regulate and their understandings of what constitutes success and failure and various aspects of the task. These aspects include the degree of relevance the task offers, the amount of choice they have in task selection and the extent to which the task challenges the students' perceived competencies in English. The self reported relative strengths of the students (*MICUPS, Appendices, p 272 and Intrapersonal Intelligence Questionnaire, Appendices, p 262*) and the associated degree of readiness for the demands of the tasks and implementation strategies that comprised the *Intervention Program (Appendices, p 251)* would suggest that these students were appropriate student participants for this study. However, the limited student diversity and high degree of

common student characteristics across the three classes would also imply that the results of the study would be similar. However, as the findings indicate, this was not the case and therefore each of the cohorts and their classroom learning environments must be examined individually for characteristics that may explain the differences, beginning with an obviously important variable, the teachers and the ways in which they individually implemented the *Intervention Program* (*Appendices, p 251*). This was also considered to be the issue that merited attention in terms of the reliability of the study, specifically the ‘interjudge reliability’ (Gay & Airasian, 2003 p 145).

Lovat (2003) suggested that teacher quality was the single most important factor in student learning. Whilst this may be regarded as somewhat of an overstatement in certain circumstances, it appears to be pertinent in explaining the results of this study, as the participating teachers proved to be a major influence on the outcomes. Their perceptions of the aims of the study, their roles in the planning, implementation and collaborative process and their understandings of a differentiated program of work for their students all impacted strongly on the results.

The teachers’ perceptions of the aims of the study were demonstrated in the revisions and alterations that they made to the learning task cards. Although they were comfortable and felt confident that they understood the principles of the *Intervention Program* (*Appendices, p 251*), the changes they made to the learning task cards actually eliminated some of the support strategies that were purposefully incorporated into the activities and procedures of the project. It is possible that the conceptual and practical foundations of the study were so different from their traditional practices that the teachers found the implementation of the study more pedagogically challenging in many respects than they had originally anticipated. This degree and type of challenge may also have contributed to the second problem that appears to have had a significant impact on the implementation of the project; that is the role of the teachers in the planning and the collaborative processes in developing the learning task cards. There were several indications that the ‘ownership’ of the study remained, to some extent, with the researcher.

The development of the differentiated programs of work did not proceed exactly as planned. Although the planning of the Bloom’s /Gardner’s units of work in English was intended to be a collaborative task, it became apparent during the course of the Professional Development Day

that the teachers were not comfortable about the time and effort that joint planning would require. They decided that it would be best if the first unit of work was planned and developed by the researcher, with the intention that subsequent planning would be a more collaborative effort. It was proposed that all the activities be developed around the class novel that all classes would be studying for the remainder of the term. The first unit of work was implemented during Phase One. The disadvantage of this arrangement was that the researcher did not know anything about the students' interests, skills or strategies. It was planned to address this problem by providing a very wide range of tasks that would comprise the initial *Intervention Program* (*Appendices, p 251*). At the conclusion of Phase One, however, the teachers felt that there were many of the task cards that had not been explored by any of the students. They requested that the skills, strategies and tasks in the first unit of work be duplicated, with some changes. Unfortunately, the teachers themselves did not feel that they had any time to spend on these changes, so once again it became the responsibility of the researcher to develop the unit of tasks for the next phases and execute the requested changes.

The change for the final phase did not exactly reflect the conceptual underpinnings of the planning tool. At that time the teachers decided that they would like a different type of program for the following reasons; (i) the next phase of the intervention was the final term of the year (ii) they wanted to change the nature of the choices some of the students were making (iii) they were sensitive to the difficulty in decision making that was still being experienced by a small number of students and (iv) they wanted to reduce the number of options that did not present as obvious literacy tasks. Again, the teachers did not have time to work to plan collaboratively, although the Class A teacher volunteered to develop a differentiated program for his own class. Despite concerns regarding the overall integrity of developing such a narrowly focused program of work for implementation in this project, the researcher decided to continue. However, this rather narrow interpretation of what constituted a differentiated program of work was not the only difficulty that was encountered during the implementation of the *Intervention Program* (*Appendices, p 251*).

One of the most significant concerns related to the actual implementation of the *Intervention Program* (*Appendices, p 251*). Although the *Intervention Program* (*Appendices, p 251*) was

interpreted differently by each of the teachers, they had one thing in common. All the teachers appeared to regard the *Intervention Program (Appendices, p 251)* as an ‘added extra’ and continued to spend the first half of the morning’s literacy time completing unrelated English exercises from disparate commercial texts which focused on spelling, a phonemic awareness approach to reading, comprehension, exercises in various aspects of English practice and grammar. The completion of these texts formed the bulk of the English program along with lessons related to learning about text types. It is of interest that the teachers chose to continue teaching their English program with these texts, despite the school principal indicating at the commencement of the study that the teachers were free to discontinue the use of these texts for the duration of the study if they wished.

The fact that all of the three teachers continued with their usual workbook lessons in English time after initially agreeing to use that time to teach the skills that students would need to complete the self selected learning tasks, sent a strong signal to the students and to the researcher that the learning task cards were not considered to constitute any part of the English program itself. The most obvious expression of this was in Class B. The Class B teacher and her students consistently described the project as ‘*The Maura Cards*,’ indicating that they were extra to, and external to, what students would normally be asked to work with in classrooms. One student from this class actually referred to the learning task cards that comprised the *Intervention Program (Appendices, p 251)* as ‘the Maura cards’ in his *Student Evaluation of the Program* comment.

Class Discussions

Class A

The results from Class A (n=19) were the most positive in terms of the development of the skills of the cognitive capacity of intrapersonal intelligence and the demonstration of the distinct characteristics of the ‘*apprentice stage*’ of executive function. The results were able to be triangulated and the data recorded by the range of research tools were mutually supportive. The Class A teacher had made a sustained effort to support and mentor his students during the implementation of the *Intervention Program (Appendices, p 251)*. This included facilitating the ‘showcasing’ of the students’ products from their self selected learning tasks. The class room

was in a temporary building. It was very small for the number of students in the class. It was not in close proximity to the other Stage Three classrooms. There was very little display area, but what was available was used effectively. The small bank of computers for student use was in constant use during the observation visits (*Researcher Field Journal, excerpt in Appendices, p 278*). The classroom was fitted with an overhead projector and the tiny windows had blinds. The teacher's notebook computer and the overhead projector were in frequent use. The students were permitted to bring their thumb drives and organize their presentations from the teacher's computer. An appointment schedule was available and the students made their own appointments in the available times. This classroom was always very busy and the students were frequently doing a variety of activities (*Researcher Field Journal, excerpt in Appendices, p 278*).

The Class A teacher was very interested and positive about the project. He was the school contact person for the researcher and was responsible for ensuring that changes to scheduled visits; programs of work and other important aspects of the *Intervention Program (Appendices, p 251)* were made known to the teachers, school executive and the researcher. He assumed this role independently and it was a very critical aspect of the overall implementation of the project. He also was very responsive to any of the researcher's suggestions that were made in response to his questions regarding strategies for improving student performance and encouraging on task behaviors, demonstrating the insights and flexibility that Hattie (2009) indicated was supportive of increased student learning outcomes.

One example of this was in regard to the degree of student attention that was being paid to presentations by other class members. Many were listening but continuing their own work, others were not attending to the presentation at all. In order to maximize the learning opportunities for all the students, he agreed to a suggestion that required the student audience and the presenter to evaluate the presentation in terms of Content, Conventions and Comments (the three Cs). This peer evaluation process was then implemented before the next visit from the researcher. He had also sensibly collected the peer evaluations and checked for suitability before passing to the student presenter. The comments from the Class A student audience were all positive, helpful and encouraging, reflecting the socially supportive learning environment that was considered by Hattie (2009) as encouraging risk taking and exploration in student learning.

In these ways the Class A teacher involved himself to a greater degree than the other two teachers in the project. He was newer to the teaching profession and had been introduced formally to the concept of differentiation and meeting the learning needs of all his students as part of his professional preparation. His pedagogy was fundamentally different to that of his colleagues and he was the only teacher to comment on the very traditional culture of teaching and learning in the school (*Teacher Interview Appendices, p286*). His reflective practices and commitment to the project led him to customize the research tools and plan for the future using the foundational principles of the study. He addressed his difficulties by collaborating with the researcher, not necessarily reaching an agreement, but exploring the suggestions and then customizing the effective strategies to suit his own teaching practice and the learning needs of his students.

He began to teach in a ‘deliberate and visible manner’ (Hattie, 2009 p 22). In this way, he was more able to become the ‘courageous teacher’ that was described by Latham et al. (2006 p 135) and to assume the role of an appropriate mentor (Moran & Gardner, 2007; Latham et al., 2006). He was very flexible and developed considerable creativity in his problem solving strategies and he was academically optimistic (Woolfolk 2004; Woolfolk & Margetts 2007) about all his students. He worked from a different pedagogical perspective from his colleagues, not referring to the top group or the bottom group in his class, but observing their needs as individuals and as a class. He had some distinct advantages as he was introduced to several strategies during his more recent teacher preparation courses and was able to be more discriminative about the matrices of learning tasks that had been implemented earlier in the year. He also had another advantage over his colleagues.

The Middle School policy of arranging students into distinct groups may well have proved to be disadvantageous for the students and teacher of the other two classes, but it appeared to be quite advantageous for the Class A teacher. His students were accustomed to training, working hard and persisting in order to achieve their goals in sporting contexts. They were all involved in competitive activities; in and out of the school environment. As a result, they were sensitive to the need to develop skills and strategies, practice them and become competent, work together on

occasions and expend considerable personal energies. *The Researcher Field Journal (Excerpt Appendices, p278)* indicated a noticeable trait demonstrated by this class consistently during the observation times was that they were keen to learn to do better and improve their work. They actively sought advice and opinions from the researcher. On occasions when the researcher was giving examples to a small group or pair of students, other students would just ‘tune on’ and become involved of their volition.

Class A was particularly enthused about being given choices and the opportunities to present their work to others. This may also be a result of their focus on skills and training. They had a ‘mastery’ based focus. This gave the students’ efforts and work products specific purpose. They were the most consistent group to invite (and insist) that the researcher extend her stay to watch their presentations. The assessments of the sample indicators showed that these students demonstrated a wide diversity of literacy skills, much as would be found in a regular classroom. The Class A teacher recognized the need to provide a socially supportive and intellectually challenging learning environment (Stipek 2002; Stefanou, Perencevich, diCinto, & Turner 2004) for all his students and this was a very positive component of his classroom practice and allowed him to assume the role of the ‘artificial prosthesis’ to which Moran and Gardner (2007) referred. In this role he was able to provide additional support for students with low executive function by anticipating consequences and providing guidelines for them.

The Class A teacher’s capacity to develop the socially supportive classroom environment also made his mentoring role more manageable. The comments from the students on the *Students Evaluation Form* clearly indicated that they had recognized and appreciated what they had learned from their peers in terms of both the feedback they have received on their own activities and the degree of new information they have learned from the other students’ presentations of their products from the diverse learning task card activities. They also indicated that they had learned some very useful (and ‘cool’) strategies. This group appeared to have developed a very positive attitude to the *Intervention Program (Appendices, p 251)*, with some students actually using their relative strengths to support their learning in other, less comfortable areas (*Student Task Justifications on the Goal Plan*) and others identifying tasks that contained challenges for them as individuals. The students’ predispositions to be self regulating and positively motivated

in other contexts where they followed personal interests was reflected in their capacities to select tasks that interested, challenged and provided opportunities to showcase the products. Their responses on the research tools for which they were responsible, provided evidence of this. These data also complemented the teacher assessments and observations of their learning.

All these factors combined to create a very productive learning environment where The Class A students demonstrated improved academic results in the sample English indicators when assessed at the conclusion of the *Intervention Program (Appendices, p 251)*. This would undoubtedly be related to the increase in the demonstration of the skills, strategies and knowledge that comprised the *Student Observation Checklist (Appendices, p 280)*. There are indications, however that the positive attributes that the students explained in their *Student Evaluation Sheet* impacted significantly on the students' academic achievements. Fredrickson's (2000, 2001) 'broaden and build' model of positive emotions provides a clear indication of how positive emotions facilitate a wider array of thought – action responses, providing more flexible thinking skills, more options for problem solving and more intrinsic motivation. It cannot be discounted that the positive attitudes the Class A students brought to their tasks actually improved their cognitive capacities.

In the same manner, many of the *Experience Sampling Responses (Appendices, p 275)* indicated that the students were 'very interested', were 'concentrating all the time' and were 'extremely happy' during the completion of their tasks (Csikszentmihalyi 1988, 1991a, 1991b). These 'flow' experiences may easily have motivated the students to seek out and pursue tasks that produced a similar sense of personal satisfaction during their experience of completing the task. In this way, these students may easily have begun to develop a new sense of 'self' based around the new skills and competencies that they are forced to acquire to achieve their goals. The range of skills and competencies that came to mind when the Class A students were asked to complete the *Student Evaluation Sheet* does indicate that many of these students had engaged in such experiences. In order to do this, the students must have had accurate self knowledge, because if the skills required and the challenge in the task are not balanced (Csikszentmihalyi 1988, 1991a, 1991b), then potential opportunities for 'flow' experiences deteriorate into frustrating, stressful or boring tasks.

It was in guiding his students towards tasks that were interesting and balanced, yet still acknowledging their freedom to choose, that the Class A teacher made a substantial difference to his students' results in the various dimensions of the study. He was confident enough in his understanding of the study, the intrinsic value of differentiated units of work and his knowledge of the students in his class to advise and mentor his students without impacting on their sense of ownership and responsibility for their own learning. He was organized and supported his students in their attempts to monitor their own progress by keeping the checklists, scheduling his students' presentation times and facilitating diversity in the modes of presentation. In this way, the experience of the Class A students appeared to be very different to the experiences of the other students in the project. The 'striving' that is described by Corno (in Zimmerman & Schunk, 2001) as 'conation;' deliberate, intentional, planned actions appeared to be a characteristic of this cohort of students. They were aware of their opportunities to change or modify aspects of their self selected task requirements to support their attempts to be successful and were encouraged to use volitional controls (Corno in Zimmerman & Schunk, 2001) to improve their concentration, degree of task satisfaction and self regulation.

However, the observations that the Class A teacher made on the *PMI (Appendices, p 250)* regarding the actual implementation of the *Intervention Program (Appendix A, p 251)* earlier in the program were not all positive. In addition to the observations already discussed, he indicated the same concerns as the other teachers; there was not enough scaffolding for many of his students, the language was too difficult on occasions and there were too many choices for some students to deal with. To these he added his own concerns regarding a lack of structure. However, the perspectives of the Class A teacher were captured in the response he gave to one question and illustrated his understanding of teachers as learners (Hattie 2009). When asked about the impact of the implementation of the *Intervention Program (Appendices, p 251)*, which he had embraced so positively, had on his usual role as the teacher he replied '*It was a mess. I needed to restructure my classroom management strategies. But after some reflection I have a need to suit the class needs and now I have.....*' The Class A teacher had taken some ownership of the *Intervention Program (Appendices, p 251)*, and for the final three weeks of the study had

redesigned the templates, designed a flow chart for the students to follow and explicitly taught the students about organization and planning; a skill he described as ‘*an ongoing benefit*’.

By the time of the *Teacher Interview (Appendices, p 286)*, he had begun to implement this customized, more structured version of the project, using the same task cards, but adding another dimension to student accountability; a timesheet. He was very excited about his plans for his project and about the quality of the work that the students had produced during the *Intervention Program (Appendices, p 251)*. He was anticipating even better results. The students were required to complete the timesheet at the conclusion of each session to indicate how they had spent their time. As part of his own implementation plan the Class A teacher took one task from the final Bloom’s/Gardner’s unit of work and guided the students through its completion as a whole class. He then invited them to select, from the unit, one of three nominated tasks to complete. When these were completed, then the students were permitted to select freely from the remaining tasks to complete their *Goal Plans (Appendices, p 277)*. The Class A teacher had created structure he was more comfortable with. All these modified and new items are reproduced, with his permission, in *Appendices, (p 311-316)*.

Class B

There were several difficulties with the Class B data and related information. The Class B classroom was separated from the Class C classroom by a set of bi fold doors that formed a wall when closed. The doors were covered with thick carpeting that both absorbed sound and provided a wealth of display area. The Class B classroom was visually stimulating with displays of student work on all available surfaces. These were organized and labeled. Additional materials not suitable for display on the flat surfaces were suspended from the ceiling by use of pegs and string lines which ran diagonally across the classroom. All the three dimensional work that was in progress, was stored on one set of shelves and very large projects were placed on top of the cupboards. Even the windows were used as display areas. There was a very large decorated poster of the current work theme on display in a prominent place. This poster and all the information, illustrations and integrated work that surrounded it left no doubt about the focus of the literacy and integrated learning in that classroom. This was evident for each of the different Bloom’s/ Gardner’s units of work in English.

The desks were arranged in extended rows, facing the whiteboard and the teacher's desk, with a centre aisle. It remained in this format for most of the observations (*Researcher Field Journal, excerpt in Appendices, p 278*), but the students were not always seated at their desks. They frequently worked on the floor, on one or two desks with the chairs turned around or in groups when the desks were reorganized. It appeared to be a very rich, flexible, working area. During observation visits there were always students working on the small group of computers. However, despite the wealth of information and visual stimuli provided by the displays of student work and the apparent flexibility of the classroom organization, the Class B teacher remained adamant that there was simply not enough time for her students to join the other two classes of Stage Three students to present and 'showcase' their work. The other two class teachers were keen to do this as they felt it enriched the students' learning, gave additional purpose to their work and gave them opportunities to develop the skills that are required to present effectively to an audience. The Class B students submitted a total of four *Goal Plans* (*Appendices, p 277*), nine *Experience Sampling Records* (*Appendices, p 275*) and thirty five *Reflection Records* (*Appendices, p 275*).

The Class B teacher's reluctance to commit to a time for sharing student work across the Stage Three classes may have been the result of her lack of 'ownership' of the *Intervention Program* (*Appendices, p 251*). Initially the Class B teacher appeared positive and interested, but she was still committed to the differentiated programs of work planned on the Bloom's /Gardner's matrices that she had brought from her previous school. The Stage Three teachers had used these to plan their teaching and learning programs prior to those that comprised the *Intervention Program* (*Appendices, p 251*). However, these matrices were developed by an unknown author and the collection of tasks did not have the intellectual quality of the 'rich tasks' that were used as the basis of the tasks that comprised the *Intervention Program* (*Appendices, p 251*). The collections of tasks on the Class B teacher's matrices were designed to be implemented in Human Society and Its Environment only. They were of limited quality in terms of supporting students' learning in the cognitive processes that were associated with 'Flexible Thinking' and 'Working Memory.'

As a result, the Class B teacher appeared to be overwhelmed by the matrices and tasks prepared for the *Intervention Program* (*Appendices, p 251*) and appeared unable to integrate the matrices into her thinking regarding teaching and learning in English. It could be that this lack of ownership impacted negatively on the results of the project and, importantly, impaired this teacher's capacities to authentically explore the different perspectives that Beare (2003), Lepani (2002) and Marshall (1999; 2002) have indicated may more effectively support the learning needs of students in the twenty first century. It may even be that these prior beliefs and understandings prompted a degree of 'interference' (Reese 1998) and the Class B teacher experienced some difficulties in fully integrating the conceptual and pedagogical differences in the matrices of differentiated learning tasks with which she had experienced and those designed specifically to investigate the research questions.

This may also contribute to the reasons why the Class B (n=11) results that were gathered from the research tools were not conclusive. The responses from the *Experience Sampling Records* (*Appendices, p 275*) were interesting when compared to the comments that the students selected in the post task records; which were *The Reflection Records* (*Appendices, p 276*). Whilst the *Experience Sampling Records* (*Appendices, p273*) suggested that the students were not particularly enthusiastic or engrossed in their tasks, *The Reflection Records* (*Appendices, p 276*) strongly suggested that the students had the capacities to complete their tasks and that many of them were proud of their work or very pleased with it. The *Student Evaluation Sheet* provided additional information about the project and its impact on the students' attitudes to learning in this context. The students were able to indicate that they had learned some useful skills during the *Intervention Program* (*Appendices, p 251*); however, the evaluative comments indicated that it was not an enjoyable experience. Seven of the nine students who completed this evaluation were not positive, describing the learning task cards in terms such as '*boring, annoying, frustrating and time consuming*' They also complained that it needed more '*hands on things*', '*more drawing and making*' that there was no '*drama or art*' and that they '*didn't get to do it very much*'. These comments are puzzling unless they are all referring to the Phase Four matrix, which was not really a differentiated program of work as the other matrices all contained a huge variety of tasks. One explanation for the comments could be that the Class B students, as a result of one of the practical changes to the learning task cards, did not have access to the matrix task

cards in their classroom. The folder of learning task cards was held in the next door classroom and the students had to borrow the folder and return it to the other class as soon as possible.

While this does not appear to be a significant problem, it may explain the students' comments. The students may not have had access to the full range of activities. The comment indicating that there was very little time to spend on the learning task cards suggests that the Class B teacher did not make a folder of learning task cards for her class because they used them so rarely. The hour a day that was the agreed implementation time for the *Intervention Program* (Appendices, p 251) was not always spent on the project. Details from the *Researcher Field Journal* (Excerpt in Appendices, p 278) indicate that the students were engaged in other activities during the agreed researcher observation time. The small number of *Goal Plans* (Appendices, p 277) that were available from this group may be the result of not having a folder of learning tasks for any prolonged time, limiting the students' opportunities to browse and make decisions about what to select for their learning goals.

These assessments from the Class B teacher recorded as the *Benefits for Students* (Appendices, p 286) indicated that the students benefited very little from the time spent learning from the task cards. There was some benefit in increasing students' enjoyment of learning tasks, but overall the advantages of participating in the project for this cohort of students appeared to be minimal from the Class B teacher's perspective. Once again, however, the attempt to triangulate the results was not successful. The summative assessments from the *Student Observation Checklist* (Appendices, p 280) that were submitted by the Class B teacher indicated that each of the demonstrable characteristics and cognitive capacities had been demonstrated by an increased number of students during the duration of the *Intervention Program* (Appendices, p 251). All but one of the eleven students was represented in six of the nine categories of skills. The increased competencies that the students were demonstrating proved to be statistically significant when subjected to a paired t test ($t=10.468$, Sig [two tailed] =0.000). However, this improvement in the skills that represent the cognitive capacities of intrapersonal intelligence (Moran & Gardner, 2007) was not attributed to the students' participation in the *Intervention Program* (Appendices, p 251).

This could be the case if the students spent very little time working on the learning task cards. However, if this is so, it raises the question of ‘*What was Class B doing during the period of time that the Intervention Program (Appendices, p 251) was supposed to be implemented that was so different from what they had been doing in the first half of the year prior to the introduction of the Intervention Program (Appendices, p 251)?*’ The results of the students’ assessments of the three sample indicators from the K-6 English Syllabus did not indicate any significant progress. Whatever the students were engaging with that created such an impact on their organizational abilities and thinking skills had seemingly not improved their skills in these areas of literacy.

The Class B teacher indicated that she was familiar with, and pedagogically comfortable with the principles of the program. She commented that it was not unfamiliar to the ways in which she liked to work with her students. One of the disadvantages that she noted on the *PMI (Appendices, p 250)* was that she had to change the ways in which she implemented other areas of the curriculum and the homework tasks because it was all too similar to the procedures that were involved in the implementation of the *Intervention Program (Appendices, p 251)*. She indicated on the *PMI (Appendices, p 250)* that the students were engaged and were cooperative in helping each other solve problems. In the *Teacher Interview (Appendices, p 286)*, she also mentioned that the students cooperative work practices and the sharing skills were positive aspects of the study. She also felt that the students benefitted from having to make decisions and choices and having to differentiate what works for each of them.

She felt that her ‘top’ group of students was not inspired, her ‘middle group’ benefitted the most and her ‘bottom’ group of students, who were predominately year five students, was enthusiastic and wanted to participate but got a bit ‘lost’. She particularly enjoyed the conferencing with students and having them articulate what they knew. She felt that much of this confirmed her insights about the students’ learning. She also found that the students could confirm what they knew during conferencing time. The conferencing times were organized and programmed into the class timetable and the teacher felt that it helped make the conferencing ‘*really nice and valuable*’. It appears both teacher and students looked forward to the conferencing times. It appears the class discussions about learning also became more purposeful.

The specific benefits of these conferencing times with the students that the teacher nominated were that she could negotiate at least one aspect of each task with the students individually, that she did not have to tell the students the next step – she could ask ‘*What do you think?*’ and the students could talk about their tasks. As a result of these conferences, she realized that the students had developed some competencies in specific skills. They had considerably improved their comprehension skills and were really very competent at looking for the clues. They had a much improved understanding of the task of writing for a specific audience and they became adept at talking about their strategies for problem solving. She felt that there were considerable benefits for the students, specifically in planning their strategies, taking the ownership of their work, their abilities to think independently, their capacities to make choices, the ability to participate in discussions and their plans for how to showcase their work. All of this information was contrary to the assessments that she had made on the *Student Benefit Form (Appendices, p 286)* and the assessment of the sample indicators from the K-6 English Syllabus (Board of Studies 1998).

However, these circumstances still did not explain exactly why the ‘top group’ was not willing to engage with the task cards after the initial phase of intervention. It was possible that, as the most senior students, they were entering a stage of adolescent development when the two locations of the brain that relate to the development of the cognitive skills of executive function are constantly undergoing change and development (Blakemore & Choudhury 2006). This can result in difficulties to improve aspects of executive function; namely selective attention, working memory and problem solving; some of the skills required to interact effectively with tasks such as those planned as the *Intervention Program (Appendices, p 251)*. The most significant impact may be on the adolescent’s ability to cognitively process self relevant information, the ultimate consequence of which is that the student’s capacities to engage in, and relate to optimal experience are impaired. As a result, students become discontent with whatever is offered in the way of educational experiences and this can be expressed as constant boredom. This may explain some of the rather indifferent responses the students recorded on the *Experience Sampling Responses (Appendices, p 275)*, but not the responses on the Reflection Responses (*Appendices, p 276*). The most frustrating factor in this case is that three of the most capable students who were disgruntled with the *Intervention Program (Appendices, p 251)* did articulate what they

would find more interesting. Unfortunately, this was not known to the researcher until after the project's conclusion.

Another explanation for the disinterest of these students may be found in another theory entirely. As these students are described as the 'top' group of a cohort who are generally very competent in literacy skills, it may also be possible that they find the differentiated tasks rather an effort. Accustomed to the English activities that offer no challenge and are within easy grasp, these students may equate competencies in these fundamental skills to being 'clever' or being intelligent. Dweck (2000) explains that students who hold an 'entity theory' of intelligence feel that any tasks that challenge them also challenges their self esteem. They associate effort with low intelligence, working from the perception that 'smart' students always find things easy. These students are more likely to simply not engage with challenging tasks that appear to be having difficulties or to be observed as having to persevere and invest a great deal of personal energy in the task. This explanation may account for the Class B teacher's assessments on the *Student Benefits Form (Appendices, p 286)*, but not for the statistically significant improvement in the number of students exhibiting improved skills in the competencies that were the focus of the *Student Observation Checklist (Appendices, p 280)*.

However, to add to the contradictions found in the various data sources that have already been discussed, the Class B teacher felt that there had been substantial advantages for particular students and named the students for whom the *Intervention Program (Appendices, p 251)* had met a 'real need'. She nominated students who had gained in confidence and one who had taken the opportunity to 'just shine' and another for whom the program had created a 'wow' factor to her work. She was 'very confident' that these students would not have gained the skills that they were demonstrating from other lessons or classroom interactions, especially not in the traditional directed English lessons. She felt that the *Intervention Program (Appendices, p 251)* had benefits for her also. She commented that it made her fit in more conferencing; more one-to-one talking to students and that was very profitable. She had to organize herself 'smarter' so that she could fit everything in, and she was pleased that all the observation and formal talking about the students' work made the evaluation process more formalized and insightful.

She felt very strongly that participation in the study had created a strong collegial bond amongst the Stage Three teachers and that there was more professional dialogue and collaborative effort. Her attitude to the project was very professional. She felt that anything of this nature that teachers were asked to do or examine was professional development and that they should participate. She also intended to continue the program '*in the same vein*'. She particularly wanted to continue with the goal setting, lots of conferencing with students, the student reflection records and the evaluative research tools and checklists. She had observed that as she became involved in the study, the actual products that the students presented had ceased to become the single most important factor. This teacher acknowledged that it was the learning process, the way in which the students '*attach to their learning*' that had become the primary focus for her. The professional situation that the Class B teacher found herself in may explain, to some degree, the tension that existed between aspects of the research data. She revealed in the *Teacher Interview (Appendices, p 286)* that her professional beliefs and standards were compromised, to a degree, by the other demands of her professional responsibilities.

She indicated that it was very hard for her to manage as a new teacher to the school, especially as she was working in a new role and had added responsibilities; it was all too much. She considered that there were too many task card choices. Initially the students were very confused and this made a lot of work for both the students and the teacher. Some students did not see '*the point of the program or like it very much*'. Other students had difficulties in making choices about what they were going to do. It took some time to establish the program and get it running more smoothly. She believed that the management of the sheets that the students could file away was a better organization strategy for her. She had indicated in the *PMI (Appendices, p 250)* which was completed prior to the *Teacher Interview (Appendices, p 286)* that she was concerned about the tasks being very time consuming and that there were English outcomes that she had not covered with the class. She acknowledged that the time issues were the reason she had noted on the *PMI (Appendices A, p250)* that she preferred to confine programs such as the *Intervention Program (Appendices, p 251)* to the time allocated to the subject area of Human Society and Its Environment.

Another reason for this teacher to confine the implementation of the *Intervention Program* (*Appendices, p 251*) to another curriculum learning area may have been the degree of support the students needed, especially in the initial stages. She commented that the students with poorer literacy skills had some problems ‘*unpacking*’ the task effectively and required high levels of support. However, she also observed that it was ‘*interesting*’ that her students who had high levels of literacy skills still needed reassurance. They constantly checked that they were on the right track, even when they had initiated the task independently. This continued well into the initial tasks with all the students constantly ‘*checking in*’ to ensure that they were going about the tasks correctly. She had observed that, irrespective of their literacy levels, they really needed this support.

The literacy components of the tasks did not appear to be an issue for Class B teacher by the conclusion of the *Intervention Program* (*Appendices, p 251*) as she did not mention this at all in the *Teacher Interview* (*Appendices, p 286*). This may have been because the Class B teacher had realized, through her conferencing routine, that the skills the students were demonstrating, with increasing competency, were actually literacy skills. The ten week interval between the completion of the *PMI* (*Appendices, p 250*) and the *Teacher Interview* (*Appendices, p 286*) appears to have allowed both the teacher and the students the time to reflect and for the teacher to gain insight in to the benefits for students that were not instantly available as work products. This time had allowed the teacher to fully assess the learning and the students the time to demonstrate what they had gained from the *Intervention Program* (*Appendices, p 251*). However, the amount of time that was consumed by the implementation of the *Intervention Program* (*Appendices, p 251*) was mentioned again in the *Teacher Interview* (*Appendices, p 286*). The final comment made by the Class B teacher at the conclusion of the study was that she was privileged to have worked with such clever students and she would probably never have such a gifted class again (*Researcher Field Journal, excerpt in Appendices, p 278*).

Class C

The Class C classroom setting changed during the implementation of the *Intervention Program* (*Appendices, p 251*) from tables in group formation to tables in rows facing the whiteboard. The

teacher's desk was at the back of the room. The walls displayed some commercial posters of text types and their characteristics. Some examples of creative work were displayed on some of surface suitable for display purposes. There were no labels, headings, examples of students' literacy work or organized displays, despite the existence of an abundance of display space in the room. There was a small group of computers for student use. These were not always in use during the implementation of the *Intervention Program (Appendices, p 251)*. The students' presentations of the products of their self selected tasks were impromptu and disorganized.

The Class C teacher gave strong indications that she felt the project was not her responsibility. She simply did not provide the supporting strategies that her students required to complete their tasks more successfully. *The Student Evaluation Sheet* indicated that very few 'generic' strategies were recalled by the students when asked what they had learned during the *Intervention Program (Appendices, p 251)* in comparison to the comments from the other two classes. The strategies they nominated were mainly context specific, although students did mention they had learned to organize themselves better and commented that they had learned other practical skills; such as to write more neatly; that are associated with successful endeavor in a variety of contexts. This teacher also abdicated from any responsibility related to maintaining or improving the students' literacy standards. This was evident in her statements recorded as the *Teacher Interview (Appendices, p 286)*, which reflected her concerns that the students' literacy standards may not have been maintained. Unfortunately, this lack of involvement or ownership of the project also impacted on the teacher's capacity to act as the students' mentor and advisor as described by Moran and Gardner (2007).

As a result, the students who did not have sufficient skills to engage with the *Intervention Program (Appendices, p 251)* independently; those who had not reached the stage where they could operate at the 'apprentice stage' of executive function without outside help; were observed by this teacher as not benefitting from the *Intervention Program (Appendices, p 251)*. The students who were described as being 'best suited' to the *Intervention Program (Appendices, p 251)* were those whom she described as 'capable, naturally engaged students', but none of these 'best suited' students appeared to have improved their literacy competencies significantly, despite working with both the regular English program and the intervention program.

The overall results from the students in Class C suggest that they were not challenged to change their beliefs regarding their literacy competencies or their learning behaviors in order to become more academically successful. They did not appear to have the encouragement to take appropriate educational risks (Latham et al., 2006). The findings strongly indicate that a significant factor in determining the Class C results was that the Class C teacher did not appear to have any expectations of her students. Weis and Fine (2003) and Hattie (2009) found that teachers with low expectations regarding their students' capacities to learn effectively had a powerful, negative result on student achievement, as did learning environments that were focused on social aspects of interaction and neglected to address dimensions of academic challenge. This lack of teacher expectation became more evident in the teacher's avoidance of completing anything that may be problematic. The *Goal Plans (Appendices, p 277)*, for example, were not completed because she felt '*they were too difficult for her students*'. The suggestions of strategies to overcome this and other problems were not investigated by this teacher and the problems remained unsolved.

Even more alarming, however, was the students' conscientious avoidance of the comment in *The Reflection Records (Appendices, p 275)* relating to persistence in the face of difficulty. The avoidance of this single aspect of self regulation indicated that the students did not perceive that they had the capacities or competencies to continue when things became difficult for them (Paris et al in Zimmerman & Schunk, 2001). This severely limited their capacities to feel able to achieve what they really desired in a manner that was meaningful to them (Moran & Gardner, 2007) and, as such, it limited their potential to express their degree of self knowledge; that is, their ability to develop or change their intrapersonal intelligence; specifically in the dimension of executive function. Although the teacher assessed that the students had improved their skills in the focus areas that comprised the *Student Observation Checklist (Appendices, p 280)*, the very small number of students recorded as exhibiting strong skills in any of these competencies also indicated that the students themselves did not have sufficient motivation to excel or to develop their skills past the level that received intense, encouraging comment in the class community (Woolfolk & Margetts 2007). The students appeared to believe that to simply attempt and

complete a task was acceptable and constituted successful learning (*Reflection Responses Appendices, p 276*).

Despite this evidence of limited student growth in the skills associated with intrapersonal intelligence, the Class C students did appear, for the most part, to enjoy their tasks and the challenges that they did attempt. They were motivated by their interests and goals, even if they did not demonstrate the volition (Corno in Zimmerman & Schunk, 2001) to endure in the face of difficulty. This motivational interest facilitated the urge to explore, to improve thinking skills and to follow up on tasks that were personally relevant (Fredrickson 2001). *The Experience Sampling Responses (Appendices, p275)* indicated that the students were interested and positive about their selected tasks. These positive feelings contributed to and supported the students' personal volition (Munn 2004) and facilitated their continued engagement with the activities that comprised the *Intervention Program (Appendices, p 251)*. Although there was evidence to suggest that there was a possibility that the learning environment in which these students interacted was actually limiting the students' capacities to engage in the optimal experience described as 'flow' (Csikszentmihalyi 1988), the students did have opportunities to participate in educational encounters that were empowering. These included the choice of task, the means by which the tasks could be achieved and the format or form in which the learning could be presented. These choices themselves have the capacity to inform students about their relative strengths and limitations and enrich their knowledge of self.

In order to understand all the factors that may have impacted on the results of the study and explore why the students and teacher of Class C did not focus on striving to challenge the assumptions that limited the students' thinking (Gardner 2006b) which was an integral component of the *Intervention Program (Appendices, p 251)*, it was again important to consider the wider school context in which this classroom was situated. The Middle School's rather unusual practice of dividing students into classes which reportedly matched the students' relative learning strengths, may have contributed to the existing classroom culture. The class description for Class C (the CAPA track) that was provided for parents and prospective pupils did not indicate that the school had any specific expectations of the students in this class. This was unusual because the other two Stage Three class descriptions were very explicit about what was

required from the students in the areas of discipline, performance and school representation and this was evident in the teacher expectations of their students. An inspection of the literacy competencies as assessed by the Class C teacher prior to the commencement of the *Intervention Program* (*Appendices, p 251*) reveals that the students' literacy levels were not assessed as being as high as many of the students in the other two Stage Three classes.

In fact, it would appear that Class C lacked the diversity of student literacy competencies that would usually be associated with any regular cohort of students in a normal class group. It must be considered that it was possible that this system had unsuspectingly set this class up for failure, or at best, for limited success by indicating that there were no expectations of these students, not even at a superficial level. This is rather curious considering that the whole school musical performance was a highlight every two years and these were reportedly the most creative student performers in Stage Three. It does, however, provide an additional insight into the findings of the study and a possible response to the question of why the students did not even consider persisting if the task got too difficult. This could be the result of there being simply no indication that persistence could be an expectation of them.

Other Considerations

There were a number of other factors to be considered when interpreting the results. Two of these were related to the teachers' pedagogical practices in the area of English. All the teachers were very disadvantaged by their limited familiarity with the details of the K-6 English syllabus. The task cards (example in *Appendices, p 258*) were all cross referenced, by the researcher, with indicators from a variety of Stage Two and Stage Three outcomes from this document. This made the mentoring process particularly stressful for these teachers, as it was very difficult, without sound knowledge of the detail and structures of the syllabus, to assess at a glance whether or not their students' level of skills and the challenges of the task were balanced. As a result, the mentoring process was, at least initially, overly stressful for the teachers and took up more time than was anticipated. It also made the teachers' assessment of the students' learning products onerous as it was too difficult to navigate the indicators without their intimate knowledge of the syllabus detail, even though the assessment booklet containing checklists for all these indicators in both stages for this very purpose. These circumstances, mentioned as

problematic by each of the three participating teachers, was not anticipated as the use of the K-6 English Syllabus (Board of Studies 1998) comprises the mandatory content for teaching and learning in schools that enroll Early Stage One to Stage Three students.

The nature of the regular English activities that comprised the teachers' usual teaching and learning program in English had another impact on the results of the study. Specifically, it impacted on the usefulness of the results of the *Intrapersonal Intelligence Questionnaire* (Appendices, p 262). The students' prior learning in English was not structured or presented in the same way as the tasks that were to comprise the *Intervention Program* (Appendices, p 251). The instrument that was implemented prior to the commencement of the project indicated the students' responses that related to their current capacities regarding the English experiences they undertaken as Stage Three students. These experiences were disparate lessons in comprehension, spelling and reading activities. Some of these were 'one size fits all' activities, others, like the spelling lists focused on one aspect of spelling but graded the list to be learned by rote into three lists of varying complexity. One of the disadvantages of this type of learning is that it does not easily lend itself to transfer; what is learned in one context is not easily transferred into another. These approaches may result in a lack of flexible thinking.

When the students indicated that they had significant levels of intrapersonal intelligence in learning in English, they were actually indicating that they knew how to respond effectively to a traditional approach to teaching and learning in English. However, when the *Intrapersonal Intelligence Questionnaire* (Appendices, p 262) was administered again at the conclusion of the study, the students answered the same questions, but this time in the context of the task cards and rich learning experiences. The English learning 'goalposts' had been conceptually moved. The students were able, on this occasion to answer by reflecting on the experiences they had undertaken in English lesson time whilst engaging with their self selected learning tasks from the *Intervention Program* (Appendices, p 251). As the results indicated no statistically significant change in the students' *Intrapersonal Intelligence Questionnaire* (Appendices, p 262), this could be interpreted as a positive result. It could suggest that the students believed, at the conclusion of the study, that they had developed a similar degree of self knowledge with regard to the self selected learning tasks as they had with regard to the more simplistic English program that was

exclusively implemented in all three classes prior to the commencement of the *Intervention Program* (Appendices, p 251).

Support for this interpretation may be found in the teachers' initial assessments of the students' skills in the focus areas of the *Student Observation Checklist* (Appendices, p 280). The students were assessed as demonstrating rather poor skills and strategies on this initial assessment because the current English program did not particularly require students to develop any of these skills, and if they did, they were not able to be developed as robust knowledge able to be utilized in other learning contexts. They remained context specific (Woolfolk & Margetts 2007). Another explanation may be that the students had responded with the overestimation typically evidenced in younger students (Mc Combs in Zimmerman & Schunk, 2001). However, on reflection, the questions at the commencement and conclusion of the study are focused on two different theoretical learning experiences; competencies which are not able to be compared. As a result, the responses from the administration of this research tool do not indicate any lack of development in the students' intrapersonal intelligence or any flaws in the validity of the research tool. What the results do indicate is that, for the most part, the students are indicating that they are now as aware of their own skills, strategies and knowledge in an authentic learning context as they were in a context that did not foster skills and cognition that were robust, flexible and meaningful. This is therefore considered to be a positive result, supported as it is, by the other research tools.

Value of the Study

The study undertaken was designed in response to the need for educators to investigate strategies and practices that may support students' learning in the twenty first century. The most pressing educational demand was identified as being the need to support the learning of all students in school classrooms. The specific areas of this general requirement that emerged as educational priorities in these teaching and learning contexts were related to engaging students in decision making, promoting learning for the diversity of learners that are found in classrooms all over Australia, the promotion of strategies and programs that would encourage students to take increasingly more responsibility for their own learning and the development of students' capacities to develop more complex cognitive skills and to use them effectively. Integral to the

possibility of all this coming to fruition is the capacity of teachers to reconceptualize their work and bring a new perspective to their teaching and learning.

The literature suggested that, of all the means by which these educational transformations might be achieved, theories that include aspects of students' self knowledge may be the most effective (Bandura, 1994; Pajeres, 2001; Zimmerman et al., 1996; Zimmerman & Schunk, 2001). However, many of these theories focus on a single aspect of self knowledge and may not encompass important aspects of self and other factors that relate to motivation. In this respect, Gardner's (1983a, 1993aa, 1999a, 1999b) conceptual notion of intrapersonal intelligence that was developed as part of his theory of Multiple Intelligences makes a considerable contribution. Not only did his theoretical perception of self knowledge subsume aspects of self which other theorists had pursued as independent constructs (Bandura, 1994; Bar On & Parker, 2000; Mayer & Salovey, 1997; NG, 2000); the duality of its nature also demanded the implementation of this knowledge of self as demonstrations of self regulation, (Boekaerts & Corno, 2005; Boekaerts & Niemivirta, 2000; Corno, 2004; Zimmerman et al., 1996; Zimmerman & Schunk, 2001) motivation and other cognitive and practical skills related to the achievement of learning goals (Pintrich, 2000; Woolfolk & Margetts, 2007).

This complexity is explored in the most recent definition of intrapersonal intelligence (Moran & Gardner, 2007). Intrapersonal intelligence is described as the capacity to have strong, accurate self knowledge and the increasing ability to demonstrate this as the skills and strategies of executive function. This 'executive function' of intrapersonal intelligence complements and is conceptually linked to other theories that support successful learning (Csikszentmihalyi, 1988; Dweck, 2000, 2006; Fredrickson, 2000) and students' abilities to extend their cognitive skills and develop more extensive, complex problem solving strategies. As a result, an *Intervention Program (Appendices, p 251)* was developed to explore the possibilities of promoting stronger intrapersonal intelligence for students in the final years of their primary schooling and in order to establish if these students then demonstrated the distinct characteristics of the '*apprentice stage*' of the executive function of intrapersonal intelligence; the stage of executive function for which they were developmentally suited.

The value of this study was therefore established in three major areas. It provided an opportunity to contribute to the limited amount of research into intrapersonal intelligence from the perspective of cognition and other educational research fields. The study also investigated the potential of Moran and Gardner's (2007) Multiple Intelligences perspective of executive function to support improved learning outcomes in English for Stage Three students. The notion of applying theory in a practical, educational context and then monitoring the outcomes of the project is a critical aspect of renewing pedagogical procedures and practices and supporting the learning potential of each student in a diverse classroom. This process promoted a deeper understanding for the teaching practitioners and revealed hidden assumptions about their understandings of teaching and learning, the role that they undertake in the educational process and the challenges that need to be faced in the process of translating educational theory into real classroom contexts populated with ordinary students.

This study also allowed the term 'executive function' to be explored in terms of a holistic theory of 'self' (Gardner 1983, 1993a, 1999a, 1999b). The skills that are embedded in the term have been explored as individual constructs for some time. Studies related to self monitoring strategies, self regulation of emotion and behaviors, motivation, conation and volition, engagement and on task behaviors, optimal experience and students' capacities to plan, organize and develop deeper levels of cognition in relation to classroom learning tasks have traditionally been the focus of much of the educational research undertaken and the development of theories of teaching and learning. This study highlights the very intricate interrelatedness of human nature which is demonstrated by students in classroom contexts and showcases the difficulties of separating the skills embedded in executive function in real learning contexts for the purposes of academic study. Additionally, it demonstrated the capacity of Stage Three students to develop skills that were formerly believed to be the domain of much older students and introduces the notion of an '*apprentice stage*' of the cognitive capacity that is demonstrated by the skills associated with executive function.

In terms of the outcomes and measures of success that can be applied to an Action Research study (Kennedy in Gay, Mills et al 2006); the five characteristics that can establish the value of this study have been met. The data that was analyzed was pertinent to the research questions and

provided much insight into the problem being investigated and its possible solutions and difficulties. The issues of supporting diverse student learning was a real and pertinent issue, not the least because of the legal responsibilities that mandated that this support was a component of all teachers' work. The results of the research project have impacted on the practice of the participating teachers, causing them to reevaluate their presumptions, both about their own pedagogies and the capacities of the school system to undergo change and renewal. The expression of these characteristics was found in the fifth component: the teachers' capacities to reflect on their practice, to assess it in terms of student outcomes, to identify strategies for problem solving and to make plans to incorporate these into their everyday work. The participating teachers in this study did exactly that when they took time out to collaborate with each other and consult with the researcher to plan for the forthcoming year. These plans included the principles that underpinned the *Intervention Program* (*Appendices, p 251*) and the provision of a program of work that was differentiated in content and cognitive process to be implemented in the English teaching and learning times.

The details of the procedures and strategies that comprised the *Intervention Program* (*Appendices, p 251*) provided a practical example of exactly how students' capacities in developing their intrapersonal intelligence may be achieved in the formal learning contexts. It provided comments from teachers regarding the difficulties and challenges that may be experienced by other interested teachers attempting to encourage their students to take more responsibility for their own learning and engage in a thoughtful process of understanding themselves as learners. This study provided a framework for other educators to use in similar projects with their own students. It highlighted the major components of a program such as this and demonstrated exactly how strength in the intrapersonal intelligence domain (Gardner 1983, 1993a, 1999a, 1999b) could support students in their efforts to become increasingly more self aware and self monitoring in all aspects of their learning experiences.

The second benefit related to the impact the study had on the teachers. One teacher (Class A teacher) was able to take up the challenges that the implementation of this study presented. He began to question his own pedagogical practices and, as a result, developed into a teacher who was also a learner (Hattie, 2009). He sought and trialed new strategies and began to take

ownership of the *Intervention Program* (Appendices, p 251). He was influential in encouraging the other two teachers to share his customized version of the differentiated program of work (Appendices p) and undertook a new leadership role in the context of the Stage Three teaching team. One other of the teachers (Class B teacher) did benefit significantly from the study, its procedures and practices. She was able to concede, after a difficult start to the project that she was able to see considerable advantages for herself and her students. She was more confident about assessing her students' learning and found that she really enjoyed the aspect of the study that necessitated her interacting with the students on a one-to-one basis.

Class B teacher admitted that she was very curriculum driven at the onset and this was recorded on her early assessment of the project (*PMI, Appendices p 250*). By the conclusion of the study, however she was more interested in the learning processes in which her students engaged and their obvious 'ownership' of their learning than in the product alone. This teacher was beginning to seriously consider how she could work with her students and improve their learning outcomes, in a more effective manner. She was a very active participant in the 2009 professional development day, after the conclusion of the study, which was organized by the first teacher for the purpose of sharing his customized program and planning the use of it in the English and the Human Society and its Environment curriculum areas.

All this activity and interest from her colleagues may have had a positive impact on the third teacher (Class C teacher) as she indicated that she also would like to be part of the implementation of the customized program in 2009 and volunteered to work on simplifying some of the vocabulary of the existing learning task cards from the *Intervention Program* (Appendices, p 251). The main reason that she gave for her interest was that her students showed so much enjoyment in the learning that they did whilst engaged with their self selected learning tasks. She remained very preoccupied with the syllabus requirements however.

The third, but probably most important aspect of value related to the implementation of the study was the degree of interest and enjoyment with which the students engaged with their self selected learning tasks. This initial enthusiasm led to many benefits for the students. It gave them opportunities to make decisions related to their own learning. They were able to use their relative

strengths to attempt the successful completion of their self selected learning tasks. They developed skills and strategies in the contexts in which they needed to use them. They developed more purposeful attitudes to these tasks and improved their capacities to understand the needs of their audiences in their presentations. They contributed to a socially supportive and challenging learning environment (Lovat & Toomey, 2007) and exhibited an increased sense of agency in their work and a genuine appreciation of the work of others. They had the opportunities to both belong to the class community and develop an understanding of themselves as individuals with different relative strengths and limitations, interests and competencies.

The students, during the intervention program, took risks in their learning, in their planning and in their organizing of their learning. They were able to understand the importance of skill development and exhibited many of the skills related to executive function. One group of students (Class A students) benefitted most from their experiences related to the *Intervention Program (Appendices, p 251)* in that the data revealed the students had progressed in all areas of the *Student Observation Checklist (Appendices, p 280)* and had demonstrated their progress in terms of improved learning outcomes. As a result, the major significance of this study is that it provided evidence that students can improve their intrapersonal intelligence and develop improved cognitive skills relating to executive function. It also indicated that differentiated programs of work that allow students to take more responsibility for their own learning can be powerful tools to support the learning of all students in that they provide the opportunities for students to determine their learning goals (*the hill*), offer sufficient challenges for students to seek out new skills and strategies that have purpose and personal meaning (*the skill*) and encourage students to be motivated (*the will*). The data indicated that there were positive outcomes for all the students and this is an extremely important aspect of the study. The data indicates that all the students gained increased knowledge of themselves as learners in the formal learning context and this knowledge, in turn, provided each of them with an increased likelihood of successfully completing their learning goals.

Limitations of the Study

As an Action Research project, the limitations on the general application of the results are evident. This study was context specific, as were the results. The limitations were mediated,

however, by the provision of the detailed methodology, the examples of the tasks cards and the *Intervention Program (Appendices, p 251)* that were included and the thorough exploration of the theoretical foundations of the study. The research tools are also well documented, although the *Intrapersonal Intelligence Questionnaire (Appendices, p 262)* was developed specifically for this cohort of students in this teaching and learning context. The students' responses only specify their degree of intrapersonal intelligence in relation to their learning in English, in a specific learning context and during their interaction with a differentiated program of work designed especially for this study. However, the research tool was developed with particular reference to all components of Gardner's most recent definition of intrapersonal intelligence (Moran & Gardner, 2007).

The inclusion of all the students who expressed a desire to participate in the study was not eventually realized and this also is considered to be a limiting factor, even though no attempt was made to include or exclude participants other than on the criteria that sufficient data was unavailable. The final data only included the information relating to forty of the sixty four students with permission (i.e. the valid participants) to be part of the study and this impacts on the wider discussion relating to the findings. The teachers' characteristics make the transferability of any action research very limited. Combined with the Middle School's policy of student allocation to classes, the teacher and school characteristics present a considerable limitation of this particular study. The teachers' pedagogical practices in the teaching of English are also somewhat difficult to duplicate as most schools are sensitive to the mandatory nature of assessing and reporting in terms of the K-6 English syllabus outcomes and indicators (Board of Studies 1998). The teachers' lack of familiarity with this document impacted considerably on their mentoring, assessing and reporting responsibilities in a manner which would not easily be replicated. It also impacted on their effective use of the assessment booklet that contained all the outcomes and indicators from Stage Two and Stage Three of the K-6 English syllabus document that was supplied as a means by which to record formative assessments of the students' progress. Instead, it was only able to be used as a tool to record baseline data and summative assessment at the conclusion of the study.

The continued implementation of the traditional English program and its disparate components made assessment of various aspects of the impact of the *Implementation Program (Appendices, p 240-245)* more difficult as both programs were in use simultaneously, separated only by the bell that indicated the end of a school period.

The school context itself may also be considered as rather limiting. The school's identity as a non denominational Christian school is not considered to be excessively restrictive, but the nature of the participants excludes some areas of diversity that would be commonly found in most school populations. The student participants in this study did not include any indigenous students or students who were identified as having indigenous heritage. There were no students with identified disabilities, with the exception of the one student who was diagnosed with Aspergers Syndrome. There were no students who spoke English as an additional language or who regularly spoke a second language at home or with members of the extended family. These factors limit the range of diversity that was accommodated by the *Intervention Program (Appendices, p249)* and its implementation guidelines.

The actual implementation of the research project differed in some aspects from the planned methodology. These variations did not invalidate the study, but were significant enough to be discussed prior to examining the findings from each group of students. This project was planned as an Action Research project. Some of the research tools were intended to be administered solely prior to the commencement of the *Intervention Program (Appendices, p 251)* and at its conclusion. However, other sources of data were designed to be formative, ongoing assessments that are typically associated with Action Research designs. The *Student Observation Checklist (Appendices, p 280)* was intended to be one of these ongoing records and it was proposed that the observations and student- teacher conferencing evaluations were supported by Teacher Anecdotal Records and notes from the conference in which teachers engaged with their students. Additionally, it was anticipated that the assessment records relating to student progress in English that were compiled during the duration of the implementation of the *Intervention Program (Appendices, p 251)* would also be available for the purpose of the study. However, the teachers had not been working directly from the K-6 English syllabus (BOS 1997) but had, instead been basing their reporting and evaluations on the results students achieved in the tests

and assessments from a disparate group of English texts. As this caused some difficulty for the teachers, another strategy was put in place. The assessments were confined to three areas of literacy competency. Summative assessments of the students' competencies and characteristics from the *Student Observations Checklist (Appendices, p280)* and English assessments relating to three indicators from the K-6 English syllabus (BOS 1997) were made available at the conclusion of the project. The three sample indicators were reflective of skills that would be important basics for any Stage Three literacy program.

Conclusion

The data indicated that all the students experienced change or improvement to their skills associated with intrapersonal intelligence, with evidence suggesting that the students were able to demonstrate the skills associated with self knowledge and the capacities to use this knowledge to inform their choices and decisions related to the self selected learning tasks. The evidence indicated they were able to select tasks that required them to utilize their relative strengths and limitations for successful completion. The data suggested that the students had more enjoyable learning experiences and were able to demonstrate a statistically significant increase in the skills related to the executive function of intrapersonal intelligence, The students also demonstrated the distinct characteristics of the '*apprentice stage*' of executive function, although they were not all able to demonstrate these skills at the same level of competency. The data also indicated that the participating students (n=40) had made significant increases in the three sample indicators that were selected from the K-6 English Syllabus (Board of Studies 1998), bearing in mind that the regular English program was also implemented at the same time as the *Intervention Program (Appendices, p 251)*.

This discussion of the findings indicated that, apart from the students' development stages and the capabilities that were characteristics of them, teacher variations and the impact these had on the implementation of the program were significantly related to the findings of the study. The understandings that the teachers brought to the *Intervention Program (Appendices, p 251)* were reflected in their attitudes, commitment and levels of participation; most especially in their mentoring role with the students. These proved to be influential determinants in the degree to which the students were able to develop and demonstrate the skills, capacities and knowledge

that comprise the executive function of intrapersonal intelligence at a level of competency appropriate to the students' developmental stage and academic competencies.

A significant area of concern centered on Teacher C, whose beliefs and pedagogies limited her students' capacities to develop the distinct characteristics of executive function and use these skills, knowledge and competencies to inform their academic learning in the literacy strands. The findings indicated that systematic avoidance of difficulties in the learning process, lack of high expectations and minimal mentoring resulted in the students developing unrealistic perceptions of their own task quality and skewed their understandings of what constituted successful learning. Limitations of another type, in this case convenient access to the full range of tasks, raised a concern for another class, Class B, as this clearly defined the boundaries regarding the status of the project and the amount of time that could be devoted to exploring its potential. It also served to place a threshold on the benefits the students may experience if exposed to more sensitive implementation.

Other issues that impacted on the results of the study included some teachers' lack of ownership of the program of work, the pedagogical beliefs and perspectives of the teachers that resulted in the grouping of the students, albeit in oral discussion only, in terms of their likelihood to benefit from the intervention and the degrees of sensitivity that they demonstrated towards the individual characteristics of their students. As a result, in two of the classes, the program was evaluated as being more appropriate for some 'types' of students rather than as offering opportunities for all students to improve their strengths in the intrapersonal intelligence domain and developing the skills, strategies and knowledge that may have an important impact on the students' capacities to develop their skills as effective learners. Students were also permitted to disengage with the learning tasks without further investigation or the development of another plan of action, more demanding tasks or even the requirement that the students developed their own tasks.

The data also suggests that the students were also affected by the middle school policy that implemented a rather unusual strategy for allocating students to classes and then attaching labels to the classes that reportedly indicated the students' relative strengths. One class that was not obviously disadvantaged by this system of student allocation appeared to gain significant

benefits from the *Intervention Program (Appendices, p 251)*. These students appeared to be familiar with the all important component of skill development as a means by learning outcomes could be improved. These students had the added advantage of experiencing consistent, sensitive, teacher advice and mentoring. They engaged regularly with the task cards and were supported in their attempts to monitor their progress and showcase their achievements by their teacher. This teacher also customized many of the tasks and implementations so that his students received the support they required to engage effectively with the task cards. This teacher facilitated his students' learning in the tasks that comprised the *Intervention Program (Appendices, p 251)* in the same manner in which he supported learning in other content domains. The results from this group of students were the most positive and provided the most effectively integrated results.

Other considerations that impacted n the findings of the study included the teachers' initial lack of familiarity with the K-6 English Syllabus details, some preconceptions relating to what differentiated units of work should comprise as tasks and how these should be conceived and supported. The intellectual quality and pedagogical foundations of the regular English program of work impacted on the successful implementation of one of the research tools specifically developed for the implementation of this study and may also have handicapped the students' initial attempts to engage effectively with the *Intervention Program (Appendices, p 251)* as the conceptual differences between the *Intervention Program (Appendix A, p 251)* and the regular English program also appeared to be an additional challenge for the students.

In summary, although subjected to the usual limitation of transferability of the results of action research projects, this study proved beneficial and valuable in three major ways. It offered a practical example of translating theory into practice. It illustrated a practical means by which teachers and other educational professionals could develop a program of work within the mandatory syllabus content and implement it effectively in their classrooms. It offered a framework from which other programs may be developed and implemented. It also benefitted the teachers by allowing another perspective from which to support, mentor and assess their students' thinking and learning. It challenged the teachers to renew their practices and management strategies, in addition to their pedagogical preferences, in order to support improved

student learning outcomes. The study also allowed the students opportunities that are frequently only available to those at the '*master stage*' of executive function. They experienced the freedom to select their learning tasks and set their own learning goals. They had the opportunity to take initiative and plan to use their individual learning strengths and preferred strategies to complete their selected learning tasks. They developed stronger intrapersonal intelligence and used this cognitive capacity to impact positively on their learning. They developed stronger knowledge of themselves as learners and used this knowledge to determine their own '*hills*', focus their own '*wills*' and assess and develop their individual '*skills*' in order to plan, initiate and monitor their personal learning goals in English.

Chapter Ten Recommendations for Future Studies

Introduction

This chapter discusses recommendations for future studies of the intrapersonal intelligence domain of Gardner's (1983, 1993a, 1999a, 1999b) Multiple Intelligences theory and the concluding comments related to the study. The results of this study suggest that further investigation of intrapersonal intelligence and additional studies of a similar nature may have a significant, positive impact on students' academic learning outcomes. The evidence that has been provided by this study has some clear implications for teachers who wish to support their students in their efforts to take more responsibility for their own learning, to make decisions and choices based on their relative strengths and learning needs and remain motivated and enthusiastic about their self selected learning goals. However, some of the factors that have been discussed as the limitations of this study may be able to be minimized in future investigations. As a result, some recommendations and suggestions are made relating to future studies in intrapersonal intelligence and executive function.

Recommendations

Supporting the Teachers

It may be useful in the future to plan more comprehensive professional development for participating teachers and to find ways in which the teachers could be more supported by the researcher. In addition to the preparation that was provided for the teachers participating in this study, which was mainly focused on developing common understandings of the research tools, interpretations of the terms used and the actual implementation of the study, a greater emphasis could be placed on examining the role of the teacher as their students' mentors and guides. Although this may usually be considered as part of teachers' work, the specific work of the teacher in intervention programs such as the one implemented in this study, is of a particular nature and it would be more reasonable for the teachers to have more collaborative discussion focusing on strategies that could make this role more easily managed and effective in the teachers' specific teaching and learning contexts. As a result of the data that has been collated in this study, the role of the teacher does appear to be a crucial factor in the students' chances of developing or improving their cognitive capacities of intrapersonal intelligence in such a way that the intervention has a sustained, meaningful impact on students' skills in this area.

It would also be beneficial to design a program of skills to accompany the intervention tasks that the students are going to work from. Some of the task cards could easily be used to teach skills; for example *Thirty Word Summary* or *Concept Mapping* (McGrath & Noble, 2005). In this manner the didactic teaching component discussed by Hattie (2009) would be an integral part of the program. This would provide more support for the teachers and students as they commenced their tasks, support the current constructivist approach to teaching and learning (Abbot & Ryan, 1999; Hacker, Dunlosky & Graesser, 1998; Hein, 1991) and would present a clearer interpretation of the data if all the teaching and learning in the target discipline area was focused on the intervention tasks. It would also allay any concerns that teachers may have regarding the system and school requirements and their responsibilities to ensure that they were being met.

The only authentic means by which this may be achieved is for the *Intervention Program* and the supporting program of skill development to be designed and developed by all the teachers in a collaborative manner. In that way, the ‘ownership’ of the planned intervention programs will be shared amongst the teachers and the researcher. In addition, this ‘sharing’ of the responsibilities associated with program development would provide individual teachers with the autonomy to alter and adapt the program to suit the needs of the students in their particular classes. As a further support for the teachers, it may be useful to include the cross referenced outcomes and indicators from the relevant syllabus document, as was done for each task in this study, and, in addition, develop a student friendly rubric so that the students themselves can more accurately determine if they have the required skills to complete their self selected learning tasks successfully.

A collaboratively developed intervention program would have minimized some of the problems that the teachers indicated were the ‘minuses’ on their *PMI (Appendices, p250)* comments. The teachers would have had the opportunity to have more control over the types of vocabulary that were used on the tasks cards themselves and also the opportunity to indicate the degree of specific instruction that was included on the task cards. The design could then have gradually included more ‘metalinguage’, technical terms, and fewer explicit instructions in each phase of planning after the students’ initial attempts.

Supporting the students

Some small changes in the implementation of a program of differentiated tasks may support the students, especially if the pedagogy that underpins programs such as the *Intervention Program* (Appendices, p 251) is vastly different to that of their usual learning in the target discipline domain. The study posed some initial problems for the students in this project as they were not always confident regarding the interpretation of their chosen tasks or comfortable with their newly granted freedom relating to their learning in English. Future studies may be designed to account for this variable and additional procedural steps may be easily incorporated. These may include a list of important skills and concepts for each task that are required for successful task completion. The students could access these lists and indicate the degree of competency they felt they already had in each of the required skills, the skills they needed to learn and the concepts they may need to discuss with their teachers prior to commencement.

This will not only support students in their initial decision making, but will provide an opportunity to strengthen their self knowledge regarding their competencies. It will also provide a significant focus on the aspect of executive function related to skill development for both teachers and students. This self assessment may afford students increased opportunities to assess their own work independently and realistically. However, this study did provide evidence that the students had significantly strong coping strategies and their initial difficulties did not deter them or lessen their enjoyment or enthusiasm.

Revising the methodology

The *Intrapersonal Intelligence Questionnaire* (Appendices, p 262) was implemented at commencement and the conclusion of the study. However, the English learning contexts that the students were familiar with were different on each occasion. This led to some difficulty with the interpretation of the results of this research tool. In order to increase the reliability of this questionnaire, a change in the timing of the implementation is recommended. The questionnaire was specifically developed for use in this study and was not intended to be generalized. However, it could be useful in future studies of students' intrapersonal intelligence development, so it may be useful to consider implementing the *Intrapersonal Intelligence Questionnaire*

(*Appendices, p 262*) at the end of Phase One of the *Intervention Program (Appendices, p 251)* instead of prior to the introduction of this program.

In this way, one version of the *Intrapersonal Intelligence Questionnaire (Appendices, p 262)* would suffice. The most appropriate version would be the revised version, referring explicitly as it does, to the learning task cards that comprise the *Intervention Program (Appendices, p 251)*. The students would be familiar with the challenges and demands of the *Intervention Program (Appendices, p 251)* by this stage. The implementation of the *Intrapersonal Intelligence Questionnaire (Appendices, p 262)* at this point and again at the conclusion of the *Intervention Program (Appendices, p 251)* may provide some more easily analyzed data.

The same process may be useful for the Students' Evaluations of the Intervention Program. An opportunity to collect this data at the conclusion of Phase One of the *Intervention Program (Appendices, p 251)* and at the conclusion of the project may provide some useful data that can contribute to developing responses to research questions similar to those posed in this study.

Summative comments

This study was developed in an attempt to explore two areas of interest. One area revolved around the constant quest of teachers to support their students' learning outcomes, positive interaction with learning tasks and cognitive development. The other area of interest was focused on investigating the cognitive capacity of Gardner's (1983, 1993a, 1999a; 1999b; Moran & Gardner, 2007) intrapersonal intelligence. The former was a response to a real need experienced by practitioners. The latter required a more theoretical investigation into the nature of intrapersonal intelligence and its potential to support student learning. The two areas of interest were combined in this study when a framework was developed to translate the theory into practice and investigate Moran and Gardner's (2007) understandings of intrapersonal intelligence and the emergence of students' skills in executive functioning.

The resultant *Intervention Program (Appendices, p 251)* was implemented as an action research project with three teachers in three Stage Three classrooms. The responses obtained from forty student participants and their teachers were collected from the variety of research tools utilized in

the study and analyzed. These results strongly suggest that the students were able to change or improve both dimensions; their knowledge of self and their executive function skills; of their intrapersonal intelligence during their engagement with their self selected learning tasks and self determined learning goals in English and were able to improve their skills associated with the executive function of intrapersonal intelligence (Gardner 1983, 1993a, 1999a, 1999b; Moran & Gardner 2007), despite teacher differences. Additionally, the students were able to exhibit the distinct characteristics of the '*apprentice stage*' of the executive function of intrapersonal intelligence; appropriate to school contexts; as indicated by Moran and Gardner (2007). Whilst all the students did not demonstrate these skills at the same degree of competency, each of the students (n=40) was able to exhibit increased levels of competency in the skills associated with the cognitive capacity of this aspect of intrapersonal intelligence.

Conclusion

Several recommendations have been suggested in an attempt to counteract some of the limitations of this study. These recommendations focus on three areas. These were supporting the teachers, the transition of students from more traditional approaches to teaching and learning in English to the challenges and demands of self determined learning tasks and adjustments to the timeline that was developed for the gradual inclusion and administration. The importance of future studies that focus on the intrapersonal intelligence domain is considerable. Two major advantages of future studies can be identified from the results of this study.

Firstly, the study provides a framework for productive classroom practice that is focused on meeting the demands of education in the twenty first century, namely that students are given opportunities to use their relative strengths to improve their thinking skills, to develop an improved capacity to make decisions and take responsibility for their own learning and an increased tendency to become motivated, self monitoring students. A program that incorporates regular chances for students to develop skills in decision making, planning and self monitoring could contribute considerably to the students' potential to develop into increasingly effective learners who engage fully in the learning process and become increasingly responsible for their own learning. The inclusive nature of this productive classroom practice provides an appropriately differentiated learning context in which all students may become stakeholders. The

study provides evidence that, with appropriate teacher support, all students in everyday classrooms are capable of improved educational outcomes by engaging in the process of knowing themselves as learners and using this knowledge to inform their own, individual learning needs and choices. In this way, the study provides a means by which students become ‘empowered’ learners, equipped with knowledge, skills and understanding that reflect the demands of learning for the future.

Secondly, this study provides a pedagogical model in which teachers can ‘shift’ their perceptions of what constitutes ‘teachers’ work’ and develop the characteristics and attributes that they will need to embrace the current demands of education. It highlights the impact that teacher quality has on student performance whilst allowing teachers to customize and adapt aspects of the implementation to the specific needs of their students. This study, in providing an example of how theory can be translated into practice, has provided teachers with a pedagogical approach that both challenges and enriches the ways in which teachers aim to satisfy the demands of the system and school in which they work. It provides opportunities for teachers to develop their understandings of *Productive Pedagogies* (The State of Queensland Department of Education, 2002) and the *Quality Teaching Model* (Department of Education and Training, 2003), both of which were designed to meet the educational policies and declarations made by the Australian government. The importance of this study lies with the data that indicates that the theoretical framework that underpins this study has the potential to be developed into ‘transformative’ pedagogy: pedagogy that reflects the needs of twenty first century learners and redefines the traditional roles of students and teachers.

Bibliography

- Abbott, J., & Ryan, T. (1999). Constructing knowledge, reconstructing schooling. *Educational Leadership*, 57(3), 66-68.
- Abu El-Haj, T. (2006). *Elusive Justice: Wrestling with difference and educational equity in everyday practice*. New York: Routledge
- Anderson, J., & Lux, W. (2004). Knowing your own strength: Accurate self assessment as a requirement for personal autonomy. *Philosophy, Psychiatry, Psychology*, 11(4), 309-312
- Anderson, L., & Krathwohl, D. (2000). *Taxonomy of teaching and learning: a revision of Bloom's Taxonomy of educational objectives*. New York: Longman.
- Armstrong, T. (1994). *Multiple intelligences in the classroom*. Alexandria: Association for Supervision and Curriculum Development.
- Armstrong, T. (2003). *The multiple intelligences of reading and writing: Making words come alive*. Alexandria: Association for Supervision and Curriculum Development.
- Armstrong, T. (2006). *The best schools*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Arnold, E. (1999). *The MI strategy bank*. Tucson: Zephyr Press.
- Arthur-Kelly, M., Lyons, G., Butterfield, N., & Gordon, C. (2007). *Classroom Management: Creating positive learning environments*. South Melbourne, Victoria: Thomson.
- Australian Government: Department of Education, S. a. T. (2003). *Values Education Study: Commonwealth Government: Australia*.
- Australian Government: Department of Education, S. a. T. (2005). *National Framework for Values Education in Australian Schools: Commonwealth of Australia*.
- Bandura, A. (1986). Self efficacy beliefs in human functioning. Retrieved June, 2002, from <http://www.emory.edu/EDUCATION/mfp/effpassages.html>
- Bandura, A. (1994). Self Efficacy. In V. S. Ramachaudran (Ed.), *Encyclopaedia of human behaviour* (Vol. 4, pp 71-81). New York: Academic Press.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman and Company.
- Bar-On, R., Tranel, D., Denburg, N., & Bechara, A. (2003). Exploring the neurological substrate of emotional and social intelligence. *Brain*, 126, 1790-1800.

- Bar On, R. (1997). *Bar-On Emotional Quotient Inventory: Technical manual*. Toronto, Canada: Multi-Health Systems.
- Bar On, R., & Parker, J. (Eds.). (2000). *The Handbook of Emotional Intelligence*. San Francisco: Jossey-Bass.
- Barker, K., McInerney, D., & Dowson, M. (2002). Performance approach, performance avoidance and depth of information processing: A fresh look at relations between students' academic motivation and cognition. *Experimental Educational Psychology*, 22(5), 571-589.
- Beare, H. (2003). The future school. *Prime Focus* (32), 2-6.
- Bereiter, C. (2000). Keeping the brain in mind. *Australian Journal of Education*, 44(3), 226.
- Berman, S. (1995). *A multiple intelligences road to a quality classroom*: Hawker Brownlow Education.
- Bernstein, J., & Waber, D. (2007). Executive capacities from a developmental perspective. In L. Meltzer (Ed.), *Executive Function in Education: From Theory to Practice*. New York: The Guildford Press.
- Best, J., & Kahn, J. (2006). *Research in education*. New York: Pearson Education Inc.
- Blakemore, S., & Choudhury, S. (2006). Development of the adolescent brain: Implications for executive function and social cognition. *Journal of Child Psychology and Psychiatry*, 47(3/4), 296-342.
- Bloom, B., & Krathwohl, D. (1964). *Taxonomy of educational objectives: The classification of educational goals*. London: Longman.
- Board of Studies. (1998). *English K-6 Syllabus*. Sydney: Board of studies NSW.
- Boekaerts, M., & Corno, L. (2005). Self regulation in the classroom: A perspective on assessment and intervention. *Applied Psychology: An International Review*, 54(2), 199-231.
- Boekaerts, M., & Niemivirta, M. (2000). Self regulated learning: Finding a balance between learning goals and ego protective goals. In M. Boekaerts (Ed.), *A handbook of self regulation*: Academic Press.
- Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology*, 54, 579-616.

- Borich, G. (2008). *Observation skills for effective teaching* (Fifth ed.). Upper Saddle River, New Jersey: Pearson Education Inc.
- Bourke, J. (2001). *The M.I. series: using multiple intelligences in the classroom: Countries of the world*. Greenwood: Ready-Ed Publications.
- Boyatzis, R., Goleman, D., & Rhee, K. (2000). Clustering competence in emotional intelligence. In R. Bar On & J. Parker (Eds.). *The handbook of emotional intelligence*: Jossey-Bass.
- Brady, L., & Scully, A. (2005). *Engagement: Inclusive classroom management*. Frenchs Forest: Pearson Education Australia.
- Bryan, S. (2006). Emotional intelligence and intrapersonal conversations. *e-Journal Issues and Recent Developments in Emotional Intelligence*. Retrieved 27/03, 2007, from http://www.eiconsortium.org/e_journal/e_journal.html
- Burchsted, S. (2003). Future studies: Preparing learners for success in the 21st century. *New Horizons* (February, 2003).
- Burke, K. (2000). *What to do with the kid who: developing co-operation, self-discipline and responsibility in the classroom*. Arlington Heights: Skylight Professional Development.
- Burns, R. B. (2000). *Introduction to research methods (Fourth Ed)*. Australia: Pearson Education Australia Pty Ltd.
- Campbell, L. (1997). How teachers interpret MI theory. *Educational Leadership*, 4(1), 14-19.
- Campbell, L., Campbell, B., & Dickinson, D. (1993a). *Teaching and learning through Multiple Intelligences*. Cheltenham, Victoria: Hawker Brownlow.
- Case, J., & Gunstone, R. (2002). Metacognitive development as a shift in approach to learning: An in depth study. *Studies in Higher Education*, 27(4).
- Chen, J.-Q. (2004). Theory of multiple Intelligences: Is it a scientific theory? Retrieved 3/08, 2005, from <http://www.tcrecord.org/PrintContent.asp?ContentID=11505>
- Cohen, L., Manion, L., & Morrison, K. (2004). *A guide to teaching practice*. Bury St Edmunds, Suffolk: Routledge.
- Cope, B. (2005). *How to make a classroom management plan*. Frenchs Forest: Pearson Education Australia.
- Corno, L. (2004). Forward for special issue of TCR on multiple intelligences. *Teachers College Record*, 106(1), 1.

- Corno, L. (2001). Volitional aspects of self regulated learning. In B. Zimmerman & D. Schunk (Eds.), *Self regulated learning and academic achievement: Theoretical perspectives* (second ed.). New Jersey: Lawrence Erlbaum Associates Inc.
- Cost, P A., & Turley, J. M. (2000). Teaching the food pyramid using multiple intelligence learning centers. *Journal of Health Education*, 31(2), 111-112.
- Cronbach, L. (1960). *Essentials of Psychological Testing* (2nd ed.). New York: Harper and Row.
- Csikszentmihalyi, M. (1988). The flow experience and its significance for human psychology. In M. Csikszentmihalyi & S. Csikszentmihalyi (Eds.), *Optimal experience: psychological studies of flow in consciousness*. Cambridge: Cambridge University Press.
- Csikszentmihalyi, M. (1991a). Consciousness for the twenty first century. *Zygon*, 26(1).
- Csikszentmihalyi, M. (1991b). Work as Flow. In *Flow: The psychology of optimal experience* (pp 143-163).
- Davidson, J. (2005). Multiple intelligences. Retrieved 29/04, 2005, from http://www.childdevelopmentinfo.com/learning/multiple_intelligences.htm
- Dawson, P, & Guare, R. (2004). *Executive skills in children and adolescents*. New York: Guildford Press.
- deCharms, R., & Muir, M. (1978). Motivation: School approaches. *Annual Review. Psychology*. 29, 91-113.
- Dempsey, I., & Arthur-Kelly, M. (2007). *Maximising learning outcomes in diverse classrooms*. South Melbourne: Thomson.
- Denckla, M. (2007). Executive function: Binding together the definitions of attention-deficit/hyperactivity disorder and learning disabilities. In L. Meltzer (Ed.), *Executive Function in Education: From Theory to Practice*. New York: The Guildford Press.
- Dendy, C. (2002). Executive function. *Chadd's Attention Magazine* Retrieved 12/7, 2006, from <http://www.chrisdendy.com/executive.htm>
- Department of Education and Training New South Wales. (2003). Quality teaching model [Electronic Version]. Retrieved 12/10/08 from <http://www.curriculumsupport.education.nsw.gov.au/qualityteach/index.htm>.
- Dermitzaki, T., & Leondari, A. (2004, 4-7th July). *Pre and primary students self concept and its relationship to their self regulatory skills*. Paper presented at the Third Annual

- International Biennial SELF Research Conference: Self Concept Motivation and Identity. Berlin.
- Dewar, T. (1997). Learning to learn. Retrieved August, 2002, from www.telusplanet.net/public/tddewar/rru/Itol.html
- Diaz-Lefebvre, R. (2004). Multiple intelligences, learning for understanding, and creative assessment: Some pieces to the puzzle of learning. *Teachers College Record*, 106(1), 49-57.
- Dickenson, D. (2000). Learning society of the future. *New Horizons for Learning* Retrieved 24/7, 2006, from <http://www.newhorizons.org>
- Dickinson, D. (2002). Positive trends in learning: Meeting the needs of a rapidly changing world. *New Horizons*.11-13
- Dweck, C. (2000). *Self theories: Their role in motivation, personality and development*. Lillington, NC: Taylor & Francis.
- Dweck, C. (2006). *Mindset*. New York: Random House.
- Eccles, J., & Wigfield, A. (2002). Motivational beliefs, Values and goals. *Annual Review Psychology*, 53, 109-132.
- Elliott, A., & Dweck, C. (Eds.). (2005). *Handbook of competence and motivation*. New York: The Guildford Press.
- Ellison, L. (1992). Using multiple intelligences to set goals. *Educational Leadership*, 50(2), 69-72.
- Ellison, L. (2001). *The personal intelligences: Promoting social and emotional learning*. New York: Corwin Press.
- Flavell, J. (1977). *Cognitive development*. Englewood Cliffs NJ: Prentice Hall.
- Foreman, P (Ed.). (2005). *Inclusion in action*. Southbank, Vic.: Thomson Learning Australia.
- Fredrickson, B. (2000). Cultivating positive emotions to optimize health and well being. *Prevention and treatment*, 3, Article 1. Retrieved 27/3, 2007 from <http://journals.apa.org/prevention/volume3/pre0030001a.html>.
- Fredrickson, B. (2001). The Role of positive emotions in positive psychology. *American Psychologist (March)* 56(3), 218-226.
- Freedman, J. (undated). Have the originators of EI missed the point of their own research? Part 1: The Problem. Retrieved 15/12, 2005, from

http://www.unh.edu/emotional_intelligence/ei%20Controversies/eicontroversy%20mised..

- Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York: Basic Books.
- Gardner, H. (1993a). *Frames of mind. Tenth Anniversary Edition*. New York: Basic Books
- Gardner, H. (1993b). *Multiple intelligences. The theory in practice*. New York: Basic Books.
- Gardner, H. (1997a). Multiple intelligences as a partner in school improvement. *Educational Leadership*, 9, 20-21.
- Gardner, H. (1997b). Time to talk turkey. *EQ Australia*, 3, 20-23.
- Gardner, H. (1999a). *The disciplined mind. What all students should understand*. New York: Simon and Shuster.
- Gardner, H. (1999b). *Intelligence reframed: Multiple intelligences for the 21st century*. New York: Basic Books.
- Gardner, H. (2000a). Howard Gardner on making the most of young minds. *The Education Digest*, 65(2), 4-6.
- Gardner, H. (2000b). Technology remakes the schools. *The Futurist*, 34(2), 30-32.
- Gardner, H. (2000c). *The disciplined mind: Beyond facts and standardized tests, the K-12 education every child deserves*. New York: Penguin Books.
- Gardner, H. (2003). MI after 20 years. *Teachers College Record*.3-8
- Gardner, H. (2006a). *Five minds for the future*. United States of America: Harvard Business School press.
- Gardner, H. (2006b). *Changing minds*: Harvard Business Press.
- Gay, L. (1992). *Educational research; Competencies for analysis and application* (Fourth ed.). New York: Merrill.
- Gay, L. (2003). *Action Research; A guide for the teacher researcher* (Second ed.). Upper Saddle River, New Jersey: Pearson Education Inc.
- Gay, L., & Airasian, P (2003). *Educational research: Competencies for analysis and applications* (Seventh ed.). Upper Saddle River New Jersey: Pearson Education Inc.,
- Gay, L., Mills, G. E., & Airasian, P (2006). *Educational research: Competencies for analysis and applications* Upper Saddle River, N. J.: Pearson Education Inc.

- Gibbs, C. (2003). Explaining effective teaching: Self efficacy and thought control of action. *Journal of Educational Inquiry*, 4(2), 1-14
- Glasgow, J. N. (1999). Recognizing students multiple intelligences in cross age buddy journals. *English Journal*, 1, 88-96.
- Goleman, D. (1995a). *Emotional intelligence: Why it can matter more than IQ*. New York: Bantam Books.
- Gronlund, N., & Linn, R. (1990). *Measurement and evaluation in teaching* (Sixth ed.). New York: Macmillan.
- Groundwater-Smith, S., Ewing, R., & Le Cornu, R. (2003). *Teaching challenges and dilemmas* (Second ed.). Southbank: Thomson Learning Australia.
- Gruber, H., & Voneche, J. (1977). *The essential Piaget*. London: Basic Books.
- Hacker, Dunlosky, J., & Graesser, A. (1998). *Metacognition in education: Theory and practice*. New Jersey: Lawrence Erlbaum Associates.
- Hacker, D., & Dunlosky, J. (2003). Not all metacognition is created equal. In D. Sharp & D. Knowlton (Eds.) *New Directions in Teaching and Learning Series*.
- Hall, K., Myers, J., & Bowman, H. (1999). Tasks, texts and contexts: A study of reading and metacognition in English and Irish primary classrooms. *Educational Studies*, 25(3), 311-325.
- Harter, S. (1999). *The construction of self: A developmental perspective*. New York: NY: Guildford Press.
- Hartman, H. (2001). *Metacognition in learning and instruction* (Vol. 19). Norwell, MA: Kluwer Academic Publishers.
- Hattie, J. (2009). *Visible Learning: A synthesis of over 800 meta-analysis relating to achievement*. Albington: Routledge.
- Healy, A. (2008a). Expanding student capacities: Learning by design pedagogy. In A. Healy (Ed.), *Multiliteracies and Diversity in Education*. South Melbourne: Oxford University Press.
- Healy, A. (Ed.). (2008b). *Multiliteracies and diversity in education*. South Melbourne: Oxford University Press.

- Hein, G. (1991). *Constructivist learning theory*. Paper presented at the International Committee of Museum Educators Conference, Jerusalem, Israel.
- Henderson, H. (2002, April). *Education for the third millennium*. Paper presented at the Education for the Third Millennium, Catamarca, Argentina.
- Hine, A. (2000). *Mirroring effective education through mentoring, metacognition and self-reflection*. Paper presented at the Australian Association for Research in Education Conference.
- Hine, C. (2002). Developing multiple intelligences in young learners. Retrieved November, 2002, from www.earlychildhood.com/articles
- Hoerr, T. (2004). How MI informs teaching at a New City school. *Teachers College Record*, 106(1), 40-48.
- Isquith, P., Crawford, J., Espy, K., & Gioia, G. (2005). Assessment of executive function in preschool- aged children. *Mental Retardation and Developmental Disabilities Research Reviews*, 11, 209-215.
- Jarvis, P., & Parker, S. (2005). *Human learning: A holistic approach*. Milton Park: Routledge.
- Jasmine, J. (1995). *Multiple intelligence activities*. Melbourne: Hawker Brownlow Education.
- Kaplan, A., & Maehr, M. L. (1999). Enhancing the motivation of African American students: An achievement goal theory perspective. *The Journal of Negro Education*. 68(1), 23-41.
- Kornhaber, M. (1999). Enhancing equality in gifted education: A framework for examining assessments drawing on the theory of multiple intelligences. *High ability Studies*, 10(2), 143-163.
- Kuhn, D. (2000). Metacognitive development. *New Direction for Teaching and Learning*, 9(5).
- Latham, G., Blaise, M., Dole, S., Faulkner, J., Lang, J., & Malone, K. (2006). *Learning to teach: New times, new practices*. South Melbourne: Oxford University Press.
- Lazear, D. (1999a). *Eight ways of knowing: teaching for multiple intelligences* (Third ed.). Arlington Heights: Skylight Professional Development.
- Lazear, D. (1999b). *Eight ways of teaching: the artistry of teaching with multiple intelligences* (Third ed.): Hawker Brownlow Education.
- Lazear, D. (2000). *The intelligent curriculum: Using multiple intelligences to develop your students' full potential*. Tucson, Ariz.: Zephyr Press.

- Lepani, B. (1995). *Implications for change in a learning culture: Meeting the challenges of the knowledge economy*. Paper presented at The International Confederation of Principals Second World Convention, Sydney.
- Levin, J., & Fox, J. A. (2000). *Elementary statistics in social research*. New York: Allyn and Bacon.
- Livingston, J. A. (1997). *Metacognition: An overview*. Unpublished manuscript, Buffalo.
- Loori, A. (2005). Multiple Intelligences: A comparative study between the preferences of males and females. *Social Behaviour and Personality*, 33(1), 77-88.
- Lovat, T. (2003). *The role of 'teacher' coming of age?* Paper presented at the ADCE.
- Lovat, T., & Toomey. (2007). *Values education and quality teaching: The double helix effect* Terrigal; NSW: David Barlow Publishing.
- Marshall, P (1999). Principles for a new story of learning. *New Horizons*.25-28
- Marzano, R. (1992). *A different kind of classroom: Teaching with dimensions of learning*. Alexandria, V.A.: Association for Supervision and Curriculum Development.
- Masui, C., & De Corte, E. (2005). Learning to reflect and to attribute constructively as basic components of self regulated learning. *British Journal of Educational Psychology*, 75, 351-372.
- Mayer, J. (undated a). How does this model compare to other approaches to emotional intelligence? Retrieved 10/01, 2006, from http://www.unh.edu/emotional_intelligence/ei%20Waht%20is%20EI/ei%20model%20co
- ∴
- Mayer, J. (undated b). Critical thinking about emotional intelligence (EI): Addressing the Gee-Whiz Argument. Retrieved 15/12, 2005, from http://www.unh.edu/emotional_intelligence/ei%20Controversies/ei%20critical%20thinki
[ng.](http://www.unh.edu/emotional_intelligence/ei%20Controversies/ei%20critical%20thinki)
- Mayer, J., Carrochi, J., & J, M. (undated b). Can self report measures contribute to the measurement of emotional intelligence? Retrieved 15/12, 2005, from http://www.unh.edu/emotional_intelligence/ei%20Controversies/eicontrovery%20why%.
- Mayer, J., Carrochi, J., & Michela, J. (undated). Can self report measures contribute to the measurement of emotional intelligence? Retrieved 15/12, 2005, from http://www.unh.edu/emotional_intelligence/ei%20Controversies/eicontrovery%20why%.

- Mayer, J., & Landy, F. (undated c). Is emotional intelligence old wine in new bottles? Retrieved 15/12, 2005, from http://www.unh.edu/emotional_intelligence/ei%20Controversies/eicontrovery%20new..
- Mayer, J., & Salovey, P (1997). What is emotional intelligence? In P Salovey & D. Sluyter (Eds.), *Emotional development and emotional intelligence*. New York: Basic Books
- Mayer, J., Salovey, P, & Caruso, D. (2000). Emotional intelligence as zeitgeist, as personality, and as a mental ability. In R. Bar On & J. Parker (Eds.), *The Handbook of Emotional Intelligence*. San Francisco: Jossey- Bass.
- Mayer, J., Savoley, P, & Caruso, D. (2004). A further consideration of the issues of emotional intelligence. *Psychological Inquiry*, 15(3), 249-255.
- Mayer, J., Savoley, P, & Caruso, D. (2004a). Emotional intelligence: theory, findings and implications. *Psychological Inquiry*, 15(3), 197-215.
- Mayer, R. (1996). Learners as information processors: Legacies and limitations of educational psychology's second metaphor. *Educational Psychologist*, 31(3/4), 151 - 161.
- Mc Combs, B. (2001). Self regulated learning and academic achievement: A phenomenological view. In B. Zimmerman & D. Schunk (Eds.), *Self regulated learning and academic achievement: Theoretical perspectives* (second ed.). New Jersey: Lawrence Erlbaum Associates, Inc.
- McGrath, H., & Noble, T. (1995a). *Seven ways at once. Classroom strategies based on the seven intelligences*. (Book 1). Melbourne: Longman Australia.
- McGrath, H., & Noble, T. (1995b). *Seven ways at once. Units of work based on the seven intelligences* (Book 2). Melbourne: Longman Australia.
- McGrath, H., & Noble, T. (1998). *Seven ways at once. More classroom strategies and units of work based on the seven intelligences*. (Book 3). Melbourne: Longman Australia.
- McGrath, H., & Noble, T. (2005). *Eight ways at once: Multiple intelligences + revised bloom's taxonomy; 200 differentiated classroom strategies* (Book 1). Frenchs Forest: Pearson Education Australia.
- McIntosh, H., Schmidt, J., & Chang, F. (2001). Predictors of positive cooperative behaviour in youth. In *New Directions in Child and Adolescent development* (Vol. 93): John Wiley & Sons Inc.

- McKenzie, W. (2002). *Multiple intelligences and instructional technology: A manual for every mind*. Eugene: International Society for Technology in Education.
- Meltzer, L. (Ed.). (2007). *Executive Function in Education: From Theory to Practice*. New York: Guilford.
- Meltzer, L. (2007). Executive function: Theoretical and conceptual frameworks. In L. Meltzer (Ed.), *Executive function in education: From theory to practice*. New York: The Guilford Press.
- Meltzer, L., Pollica, L., & Barzillai, M. (2007). Executive function in the classroom: Embedding strategy into everyday teaching practices. In L. Meltzer (Ed.), *Executive function in education: From theory to practice* (pp 165-193). New York: The Guilford Press.
- Merriam, S. (1998). *Qualitative research and case study applications in education*. San Francisco: Jossey-Boss Publishers.
- Midgley, C., Feldlaufer, H., & Eccles, J. (1989). Change in teacher efficacy and student self-and task-related beliefs in mathematics during the transition to junior high school. *Journal of Educational Psychology*, 81(2), 247-258.
- Mills, G. E. (2000). *Action research: A guide for the teacher researcher*. New Jersey: Pearson Education
- Miltiadou, M. (1999). Motivational constructs as predictors of success in the online classroom. Retrieved 19/08, 2005, from <http://seamonkey.ed.asu.edu/~mcisaac/emc703/mariosf.html>
- Ministerial Council on Education, Training and Youth Affairs. (1999). *The Adelaide Declaration on National Goals for Schooling in the Twenty First Century*. Adelaide. Retrieved 27/3, 2007 from www.dest.gov.au/.../national_goals_for_schooling_in_the_twenty_first_century.htm
- Ministerial Council on Education, Training and Youth Affairs. (2008). *Melbourne Declaration on Educational Goals for Young Australians*. Retrieved from. Retrieved 27/3, 2009, from http://www.mceetya.edu.au/mceetya/melbourne_declaration,25979.html
- Moran, S., & Gardner, H. (2007). "Hill, skill and will": Executive function from a multiple intelligences perspective. In L. Meltzer (Ed.), *Understanding Executive Function*: Guilford.
- Morris, C., & le Blanc, R. (1996). Multiple intelligences: Profiling dominant intelligences of grade eight students. *McGill Journal of Education*, 31(2), 119-141.

- Munns, G. (2004, 4 - 7 July). *You say motivation, I say engagement: Can we work this whole thing out?* Paper presented at the Self Concept, Motivation and Identity: Where to from here?, Berlin.
- Murray, b. (2000). Teaching students how to learn. Retrieved 19/08, 2005, from <http://www.apa.org/monitor/jun00/howtoleran.html>
- Ng, C.-h. (1998). *I'm motivated because of who I am: The effects of domain specific self-schemas in students' learning engagement patterns.* Paper presented at the Annual Conference of Australian Association for Research in Education, Adelaide. Australia.
- NG, C.-h. (2000). *A cross cultural comparison of the effects of self schema on learning engagement.* Paper presented at the Annual Conference of Australian Association for Research in Education.
- Ng, C.-h. (2002). *Relations between motivational goals, beliefs, strategy use and learning outcomes among university students in a distance learning mode: A longitudinal study.* Paper presented at the AARE, Brisbane, Australia.
- Nicolaou, A., & Philippou, G. (2004, 4th -7th July). *Efficacy beliefs, ability in problem posing and mathematical achievement.* Paper presented at the Third International Biennial SELF Research Conference: Self Concept, Motivation and Identity: Where to from here?, Berlin.
- Noble, T. (2002). Blooming with multiple intelligences. A planning tool for curriculum differentiation. *Learning Matters*, 7(3).
- Noble, T., & Grant, M. (1997). An interview with Howard Gardner. *EQ Australia*, 5(1), 24-26.
- Noble, T., & McGrath, H. (2008a). The positive educational practices framework: A tool for facilitating the work of educational psychologists in promoting pupil wellbeing. *Journal of Educational and Child Psychology, British Psychological Society*.119-134
- New South Wales Institute of Teachers. (2005). Professional Teaching Standards. Retrieved 27/03, 2009 from www.nswteachers.nsw.edu.au/Main-Professional-Teaching-Standards.html
- O'Brien, K., & White, D. (2001). *The Thinking Platform.* Marayong: K. D. Publications.
- Paris, S., Byrnes, J., & Paris, A. (2001). Constructing theories, identities and actions of self regulated learners. In B. Zimmerman & D. Schunk (Eds.), *Self regulated learning and*

- academic achievement: theoretical perspectives* (second ed.). New Jersey: Lawrence Erlbaum Associates Inc.
- Pajeres, F. Current directions in self efficacy research. In M. Maehr & P Pintrich (Eds.), *Advances in motivation and Achievement* (Vol. 10, pp 1-49). Greenwich, CT: JAI Press.
- Pajeres, F. (1996a). *Assessing Self Efficacy Beliefs and Academic Outcomes: The case for specificity and correspondence*. Paper presented at the American Educational Research Association, New York.
- Pajeres, F. (1996b). Self efficacy beliefs in academic settings. *Review of Educational Research*, 66(4), 543-578.
- Pajeres, F. (2001). Self beliefs and schools success: self efficacy, self concept and school achievement. In R. Riding & S. Raynor (Eds.), *Perception* (pp 239-266). London: Ablex Publishing.
- Pajeres, F., Miller, M., & Johnson, M. (1999). Gender differences in writing self beliefs of elementary school students [Electronic Version]. Retrieved 10/01/2006 from <http://www.des.emory.edu/mfp/PMJ1999JEDP/html>.
- Pajeres, F., & Valiante, G. (1996). *Predictive Utility and Causal Influence of the Writing Self Efficacy Beliefs of Elementary Students*. Paper presented at the Annual Meeting of the American Educational Research Association, New York.
- Pajeres, F. (2000). Seeking a culturally attentive educational psychology. Retrieved 5/08, 2005, from <http://www.des.emory.edu/mgp/AERA2000Discussant.html>
- Petersen, A. (1988). Adolescent development. *Annual Review Psychology*, 39, 583-607.
- Pintrich, P (2000). The role of goal orientation in self regulated learning. In M. Boekaerts (Ed.), *Handbook of Self regulated learning*: Academic Press
- Pintrich, P, & Schunk, D. (1996). *Motivation in Education: Theory, Research and Applications*. Englewood Cliffs, NJ: Prentice-Hall.
- Posner, M. (2004). Neural systems and individual differences. *TC Record* Retrieved 3/08, 2005, from <http://www.tcrecord.org/PrintContent.asp?ContentID=11663>
- Reese, A. (1998). Implications of results from cognitive science research for medical education. *Med Educ Online*, 3(1).
- Richardson, V. (2003). Constructivist pedagogy. *Teachers College Record*, 105(9), 1623-1640.

- Salovey, P, & Sluyter, D. (Eds.). (1997). *Emotional development and emotional Intelligence*. New York: Basic Books.
- Salovey, P, & Mayer, J. (1990). *Emotional Intelligence*: Baywood Publishing Co. Ltd.
- Scheepers, D. (2000). Learning theories: Individual learning. Retrieved 24/08, 2005, from http://hagar.upac.za/catts/learner/2000/scheepers_md/projects/lo/theory/individ.html
- Schunk, D. (2001). Self regulation through goal setting. *ERIC/CASS Digest*, ED462671. Retrieved 15/12,2005 from http://www.eric.ed.gov/ERICWebPortal/custom/portlets/recordDetails/detailmini.jsp?_nfpb=true&_ERICExtSearch_SearchValue_0=ED462671&ERICExtSearch_SearchType_0=no&accno=ED462671
- Schunk, D. (2001). Social cognitive theory and self regulated learning. In B. Zimmerman & D. Schunk (Eds.), *Self regulated learning and academic achievement: Theoretical perspectives* (Second ed.). New Jersey: Lawrence Erlbaum Associates Inc.
- Schunk, D., & Pajeres, F. (2001). Development of academic self efficacy. In A. Wigfield & J. Eccles (Eds.), *Development of Achievement Motivation*. San Diego: Academic Press.
- Sewell, A., & St. George, A. (2000). Developing efficacy beliefs in the classroom. *Journal of Educational Inquiry*, 1(2), 58-71.
- Shearer, B. (1994). *The MIDAS: Professional manual*. Kent, Ohio: MI Research and Consulting.
- Shepard, P (2001). *Brainworks: Whole brain thinking and learning*. Sendirian Berhad (B/R 47760-X): Brain Dominance Technologies.
- Shepherd, R., Fasko, J. D., & Osborne, F. (1999). Intrapersonal intelligence: Affective factors in thinking. *Education*, 119(4), 633-642.
- Sherhoff, D., Csikszentmihalyi, M., Schneider, B., & Shernoff, E. (2003). Student engagement in high school classrooms from the perspective of flow theory. *School Psychology Quarterly*.
- Silverman, D. (2000). *Doing qualitative research: A practical guide*. London: Sage Publications.
- Smith, M. (2002, January 28, 2005). Howard Gardner and multiple intelligences. *The encyclopedia of informal education* Retrieved 28/08, 2005, from <http://www.infed.org/thinkers/gardner.htm>
- Smyre, R. (2000). Transforming the 20th century mind. *New Horizons*, 103,1-8.

- St. Julien, J. (2000). Changing conceptions of human intelligence and reasoning: Implications for the classroom. *Australian Journal of Education*, 44(3), 254.
- States and Territories. (2007). *Federalist Paper 2: The future of schooling in Australia*.
- Stefanou, C., Perencevich, K., DiCintio, M., & Turner, J. (2004). Supporting autonomy in the classroom: Ways teachers encourage student decision making and ownership *Educational Psychologist*, 39(2), 97-110.
- Sternberg, R. (2004). Culture and intelligence. *American Psychologist*, 59(5), 325-338.
- Sternberg, R., Forsythe, G., Hedlund, J., Horvath, J., Wagner, R., Williams, W., et al. (2000). *Practical intelligence in everyday life*. Cambridge: Cambridge University Press.
- Sternberg, R., & Williams, W. (1998). *Intelligence, instruction and assessment*. Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Stipek, D. (2002). *Motivation to learn: Integrating theory and practice*. Boston: Allyn and Bacon.
- Student Learning and Support Services Taskforce. (2002). *National Safe Schools Framework*.
- Stuss, D., & Levine, B. (2002). Adult clinical neuropsychology: lessons from studies of the frontal lobes. *Annual Review. Psychology.*, 53, 401-433.
- Teele, S. (1992). *Teele inventory for multiple intelligences*. Redlands: Sue Teele and Associates.
- Teo, C., Quah, M., Rahim, R., & Rasanayagam, L. (2001, December 2-6th). *Self-knowledge Education: Educating gifted children in Singapore on their hemispheric functioning*. Paper presented at the AARE: International Research Conference: Crossing Borders: New Frontiers for Educational Research, Fremantle.
- The State of Queensland (Department of Education). (2002). Productive pedagogies: Classroom reflection manual [Electronic Version]. Retrieved 4/09/09 from http://education.qld.gov.au/public_media/reportscurriculum-framework/productive-pedagogies/.
- Thorndike, E. (1920). Intelligence and its uses. *Harpers Magazine*, 140, 227-235.
- Thorndike, E., & Stein, S. (1937). An evaluation of the attempts to measure social intelligence. *Psychological Bulletin*, 34, 275-284.
- Thurstone, L. (1938). *Primary mental abilities*. Chicago: University of Chicago Press.
- Tomlinson, C. A. (1999). Mapping a route towards differentiated instruction. *Educational Leadership*, 57(1).12-16

- Tomlinson, C. A. (2000a). Differentiation of instruction in the elementary grades. ERIC Digest. Retrieved 29/04, 2005, from www.eric.ed.gov
- Tomlinson, C. A. (2000b). Reconcilable differences? *Educational Leadership*, 58(1).6-11
- Torff, B., & Sternberg, R. (2001). *Understanding and teaching the intuitive mind: Student and teacher learning*. Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Unauthored. (2004a). *Thinking strategies for the successful classroom: Lower primary*. Glebe: Blake Education.
- Unauthored. (2004b). *Thinking strategies for the successful classroom: Middle Primary*. Glebe: Blake Education.
- Unauthored. (2004c). *Thinking Strategies for the successful classroom: Upper Primary*. Glebe: Blake Education.
- Unauthored. (2004d). *Multiple intelligences: a thematic approach*: RIC Publications.
- Unknown. (2004). Changing Minds: The art and science of changing our own and other people's minds. An interview with Hobbs Professor Howard Gardner [Electronic Version]. *HGSE News, June*. Retrieved 13/11/08 from <http://www.gse.harvard.edu/news/features/gardner06012004.html>.
- Urdan, T. (2004). Predictors of academic self handicapping and achievement: examining achievement goals, classroom goal structures and culture. *Journal of Educational Psychology*, 96(2), 251-264.
- Van Damme, J., Opendakker, M., De Fraine, B., & Mertens, W. (2004, 4th -7th July). *Academic self concept and academic achievement: Cause and effect*. Paper presented at the Third International Biennial SELF Research Conference: Self Concept, Motivation and Identity: Where to from here? , Berlin.
- Vialle, W., & Perry, J. (1995). *Nurturing multiple intelligences in the Australian classroom*: Hawker Brownlow Education.
- Wahl, M. (2002). Multiple intelligences power up math teaching. Retrieved 29/4, 2005, from <http://www.reourcefulhomeschooler.com/files/MarkWahlMathArticle.html>
- Wechsler, D. (1958). *The measurement and appraisal of adult intelligence*. Baltimore: Williams & Wilkins.

- Weiner, B. (2005). Motivation from an attribution perspective and the social psychology of perceived competence. In A. Elliott & C. Dweck (Eds.), *Handbook of competence and motivation*. New York: The Guildford Press.
- Weiner, B. (2000). Interpersonal and intrapersonal theories of motivation from an attributional perspective. *Educational Psychology Review*, 12, 1-14.
- Weis, L., & Fine, M. (2003). *Silenced voices and extraordinary conversations: Re imaging schools*. New York: N.Y.: Teachers College Press.
- Whitton, D., Sinclair, C., Barker, K., Nanlohy, P., & Nosworthy, M. (2004). *Learning for teaching: Teaching for learning*. Southbank: Thomson/Social Sciences Press.
- Woolfolk, A. (2004). *Educational psychology*. Boston: Pearson Education Inc.
- Woolfolk, A., & Margetts, K. (2007). *Educational psychology*. Frenchs Forest: Pearson Education.
- Ylvisaker, M., & Debonis, D. (2000). Executive function impairment in adolescents: TBI and ADHD. *Topics in Language Disorders*, 20(2), 29-47.
- Zimmerman, B. (2001). Theories of self regulated learning and academic achievement: An overview and analysis. In B. Zimmerman & D. Schunk (Eds.), *Self regulated learning and academic achievement: Theoretical perspectives* (Second ed.). New Jersey: Lawrence Erlbaum Associates Inc.
- Zimmerman, B., Bonner, S., & Kovach, R. (1996). *Developing self regulated learners: Beyond achievement to self efficacy*: American Psychological Association.
- Zimmerman, B., & Schunk, D. (2001). *Self regulated learning and academic achievement: Theoretical perspectives.*, NJ: Lawrence Erlbaum Associates.
- Zimmerman, B., & Schunk, D. (2001a). Reflections on theories of self regulated learning and academic achievement. In B. Zimmerman & D. Schunk (Eds.), *Self Regulated learning and academic achievement: Theoretical perspectives* (Second ed.). New Jersey: Lawrence Erlbaum Associates Inc.

Appendices

Positives, Minuses and Interesting Things (For Teachers to complete)

About the research study in which I am participating
Name

Positives

Minuses

Interesting things

Positives, Minuses and Interesting Things (Sample comments)

Sample Comments

About the research study in which I am participating

Name

Positives

- Children engaged with activities
- Helping each other to solve problems; cooperative learning
- Variety of activities
- Opportunities for students to present work in both written and oral format
- Assessment register was provided
- The learning is more 'Real life'
- Students get a chance to express their knowledge and apply their skills through different products

Minuses

- The tasks are not really a 'tool' to teach specific Reading/Writing skills
- With limited resources the large class size places extra demand on the teacher
- Many student do not take the time to thoroughly read the task cards
- Would prefer to relate this only to HSIE as we need to cover foundational English areas

Interesting things

- Very similar to how I do homework and general teaching
- Development of presentation skills
- Watching students develop confidence in themselves as learners responsible for their own learning

The Intervention Programs

Phase One Journey Theme

(Task titles and short descriptions)

	Verbal/Linguistic	Logical/ Mathematical	Visual/Spatial	Bodily/ Kinaesthetic	Musical/ Rhythmical	Interpersonal	Intrapersonal	Naturalist
Remembering	<p>V1 Bundling.. What does the word journey mean? Write your info on the strips and then join with others</p>	<p>M1 Recall starting journeys..... Ending journeys Record approximately how much time they took</p> <p>Number Cruncher How long to takes to drive to..... Fly to</p>	<p>S1 Draw what you know Recall maps you have seen or used Draw what you recall as being the most memorable features</p>	<p>B1 Walk it Physically make a small journey in the classroom..note where you went and why you took that route</p>	<p>R1 Recall any songs about journeys, even children's songs. What do you recall about them? Sing what you know Decide on one to suing to he class and determine relevance</p>	<p>ER1 Recall When have you taken a journey with friends or family? Record what you did together</p>	<p>RA1 Autobiographer Write about the journey that has the most personal significance for you</p>	<p>N1 Record the features of the natural world that you might see on a journey</p>
Understanding	<p>V2 Write a paragraph using the combined knowledge</p> <p>Careers Research the training and skills of the explorers and match with your own interests and skills</p> <p>Cross off Develop puzzles that contain words of various categories and when crossed off leave a message</p> <p>Developing Definitions</p>	<p>M2 Elapsed time</p> <p>Curiosity Students compile a list of questions about the topic, novel or other theme</p> <p>If that's the answer, what's the question</p>	<p>S2 Cube it.... On the sides of the cubes students answer questions about a topic with their personal responses</p> <p>Visual fun and games Basic board game but with some twists. Correct answers to questions on the topic allow the players to progress</p>	<p>B2 Movers and shakers</p>	<p>R2 Musical fun and Games Students write a short story about the explorers in groups. They must use every type of punctuation in the story. One then reads while the others act out the punctuation noises and movements</p> <p>Song Hunter Students collect songs around a theme/ Make a poster and present some to the class</p>	<p>ER2 A-Z about Journeys</p> <p>Beat the panel: choose an Australian explorer and become an expert team.</p> <p>Choose an text type and become an expert team</p> <p>Circuit brainstorm Use Bloom's cubes to generate questions about the theme of journeys, topic of explorers or Other aspect of learning</p>	<p>RA2 Listening triangles Topic related to Christian living</p> <p>Recommendation Students list their one best recommendation about taking a journey Under The Microscope Analyze the topic by responding to the questions</p>	<p>N2 Flora and Fauna focus What sort of landscape and climate did the explorers experience Draw/write</p> <p>Flora and Fauna focus What sort of landscape and climate is the setting For Prince Caspian</p>

	<p>Grizzles/groems Write a poem about something that is really annoying</p> <p>Proverbs and quotes Students find quotes or proverbs that are appropriate for their topic</p>							
Applying	<p>V3 Bio Poem Explorers , Prince Caspian or biblical figures</p>	<p>M3 Itinerary Students must plan a trip to follow the route of an explorer They must consult timetables, costs and specific areas to stop or visit</p> <p>Timelines Students make a time line (can be scaled) of the exploration of Australia</p>	<p>S3 Brain Walk Recall visually the minute details of a journey you have made</p> <p>Calligrapher Make posters, brochures, pamphlets etc electronically or otherwise about the journey of choice</p> <p>Graphic organizers Story Pyramid</p>	<p>B3 Body Flow chart Mime or dance to illustrate a specific episode or encounter of a specific journey</p> <p>Hand Hopper Draw symbols to suit their topic Number 1-8 questions Provide answers to the questions</p> <p>Wall quilt Students make quilt from paper of the same size, join together Pieces may have quotes, pictures keywords poetry etc all from the theme or topic</p>	<p>R3 Music maker Play, make or find music that reflects the cultural and social lives of the explorers and their families</p>	<p>ER3 Tops and bottoms Students have a set of cards that</p>	<p>RA3</p>	<p>N3 Then and Now Students use their current understanding of travel, geography and Australian conditions and that of the conditions etc in explorers' times to create items in the then and now chart</p>

<p>Analysing</p>	<p>V4 Acronyms Places you have been, places explorers went, places on biblical journeys</p> <p>BALD Journaling For planning</p> <p>Thirty Word Summary</p>	<p>M4 Class statistics Students develop questionnaires relating to Prince Caspian Chapters and survey class, displaying the results graphically (can be done for each or any chapter of Prince Caspian)</p> <p>Concept mapping Identify the various conditions and circumstances of an explorer's journey and then develop concept map showing relationships</p> <p>PACE Predict, argue and check what might happen next in Prince Caspian (can be done more than once)</p> <p>What If... The explorers had an esky? (How would they replenish it etc) Had a mobile phone? (what would they do if there was no signal> nowhere to recharge it)</p>	<p>S4 Fortune lines Can be developed for the explorer of choice, Prince Caspian or other character</p>	<p>B4</p>	<p>R4</p>	<p>ER4 Gender perspective Students examine the gender statistics of explorers and research what would have made this so</p> <p>Hot Seat Students research and prepare to 'be' a famous explorer in front of the class</p> <p>Multi View Draw up the three columns and give the perspectives of each character on a topic or incident</p> <p>What's it like to be... What would it be like to be one of successful explorers? One of the unsuccessful explorers></p> <p>Why did they do that?</p> <p>Select one of the decisions made by an explorer or by a character in Prince Caspian and analyze possible motivations for the behavior or decision</p>	<p>RA4 Memorizer Students are asked to record or create some good strategies for sharing about Remembering facts related to the themes, spelling, dates names routes</p> <p>Then and now Students write down their knowledge attitudes and feelings about a topic before the start of the unit and then at the end . A grid can be used</p>	<p>N4 Nature Detective Students research and assess the numbers of specific native animals and plants that the explorers may have seen, but that have since become extinct</p>
------------------	--	---	--	-----------	-----------	--	---	--

Evaluating	V5 Report Card Matrix evaluation of an explorer/Prince Caspian	M5	S5	B5	R5	ER5 Road Tester A website, book resource or any product can evaluated by students using a matrix they design Ten Thinking Tracks An analysis and evaluation activity focusing on an idea	RA5 Goal setting Set some learning goals for this term List what you would have to do to achieve these Self assessor Determine the criteria and give assessment of self performance on tasks	N5

<p>Creating</p>	<p>V6 Advertiser Plan present and implement an advertising campaign for joining an exploration into the Australian unknown</p> <p>Newspaper Design and write in groups for the 'Explorers Express'</p>	<p>M6 Advertiser</p> <p>How many Ways Could the explorers have gone</p>	<p>S6 Advertiser</p> <p>How many Ways Draw the different routes on the maps</p>	<p>B6 Sculptor Students design and make a complex sculpture related to the topic</p>	<p>R6 Advertiser</p> <p>Rapper Students make a rap in groups of three or four about the topic</p>	<p>ER6 Groups of four Make a powerpoint presentation on a topic including geographical, climatic , cultural and other details</p> <p>Social researcher Students create questions about human behavior around a topic such as the explorers. Plan carry out and analyze a selected survey</p> <p>This is your life</p>	<p>RA6 Big picture Knowledge of Explorers to create a newspaper with illustrations showing the progress of the explorers</p>	<p>N6 Theme Park Students use their knowledge of the conditions endured by the explorers to design a theme park around the topic This could also be a Prince Caspian theme</p>
-----------------	---	--	--	---	--	--	---	---

Phase Four

That's Entertainment with a heavy focus on Media (Might be really useful to list media types with students before task selection)

	Verbal/Linguistic	Logical/ Mathematical	Visual/Spatial	Bodily/ Kinesthetic	Musical/ Rhythmical	Interpersonal	Intrapersonal	Naturalist
Remembering	V1 Bundling.. What does the word media mean? Write your info on the strips and then join with others	M1 Recall The time it took to read a book.. Watch a movie or your favourite television show	S1 Draw what you know Recall maps you have seen or used Draw what you recall as being the most memorable features	B1 Walk it Physically make a small journey in the classroom..note where you went and why you took that route	R1 Recall Recall any song about entertainment. Discuss it with others.	ER1 Recall When have you been to an entertaining outing with friends or family? Record what you did together	RA1 Autobiographer Write about the media type that has the most personal significance for you	N1 Record Record how the media has made the features of the natural world more entertaining
Understanding	V2 Careers Research the training and skills of the entertainers and match with your own interests and skills	M2 Curiosity Students compile a list of questions about the novel, show or film that is their favourite now.	S2 Visual fun and games Basic board game but with some twists. Correct answers to questions on the media allow the players to progress	B2	R2 Musical fun and Games Students write a short story about entertainment in groups. They must use every type of punctuation in the story. One then reads while the others act out the punctuation noises and movements	ER2 Beat the panel: Choose a text type and become an expert team	RA2 Recommendation Students list their one best recommendation about their choice of entertainment	N2 Flora and Fauna focus What sort of cameras and equipment allowed the media to explore flora and fauna more closely?
Applying	V3 Bio Poem Develop a poem about a famous entertainer.	M3 Itinerary Students must plan a trip to follow the career of a famous entertainer	S3 Brain Walk Recall visually the minute details of an advertisement you have seen and record them	B3 Body Flow chart Mime or dance to illustrate a specific advertisement that sells items to children	R3 Music maker Play, make or find music that reflects the cultural and social lives of young Australians	ER3	RA3	N3 Then and Now Students use their current understanding of travel, geography and Australian conditions and find entertainment that shows how we have changed

Analysing	Thirty Word Summary In 30 words, describe how the way the media item you have chosen tries to influence the views of others	M4 Class statistics Students develop questionnaires relating to entertainment and survey class, displaying the results graphically .	S4 Fortune lines Can be developed for the entertainer of your choice	B4	R4	ER4 Multi View Draw up the three columns and give the perspectives of each character in a book or newspaper article	RA4 Then and now Students write down their knowledge attitudes and feelings about examining the media for bias, prejudice before the start of the unit and then at the end . A grid can be used	N4 Nature Detective Students research and assess the numbers media programs and print materials available about Australia. Include advertising. Discuss the good and bad aspects of these.
Evaluating	V5 Report Card Matrix evaluation of any media item	M5	S5	B5	R5	ER5 Ten Thinking Tracks An analysis and evaluation activity focusing on an idea about media	RA5 Goal setting Set some learning goals for this term List what you would have to do to achieve these	N5
Creating	V6 Advertiser Plan present and implement an advertising campaign for a book	M6 How many Ways Could the entertainer of your choice have gone into a different media?	S6 Advertiser How many Ways Draw the different routes on the maps	B6 Sculptor Students design and make a complex sculpture related to the topic	R6 Advertiser Rapper Students make a rap in groups of three or four about the topic	ER6 Social researcher Students create questions about human behavior around advertising	RA6 Big picture Knowledge of an author. Create a magazine about an author	

Sample Task Card Phase One (as seen by teacher and students)

Acronyms

An acronym, is a word formed by the first letters of the things that you are trying to remember

For Example. ROY G BIV are the first letters of the colours of the rainbow.

Each letter prompts us to remember the rest of the information and in correct sequence (red, orange, yellow, green, blue, indigo, violet).

An acronym makes the information easier to remember.

You can make your own acronyms

Think of something you always try to remember, like the explorers who went into space together or the explorers who traveled together to find out about Australia.

Write their names down, take the first letters of each name and then rearrange the letters to make a word

These are known as acronyms

WS2.9 Drafts, revises, proofreads and publishes well-structured texts that are more demanding in terms of topic, audience and written language features.

Joint and Independent Writing

- *uses other texts as models for aspects of writing such as text organisation, grouping of information under headings*

Very well done	Well done	Could be better	Needs revision
Has competently selected topics from which to develop antonyms	Has selected topics from which to develop antonyms reasonably well	Has occasionally selected topics from which to develop antonyms	Has not competently selected topics from which to develop antonyms

Sample Task Card Phase Two (With context clue removed) (as seen by teacher and students)

Acronyms

An acronym, is a word formed by the first letters of the things that you are trying to remember.

For Example: 'ROY G BIV' are the first letters of the colours of the rainbow.

Each letter prompts us to remember the rest of the information and in correct sequence (red, orange, yellow, green, blue, indigo, violet).

An acronym makes the information easier to remember.

You can make your own acronyms.

Think of something you always try to remember.

Write their names down, take the first letters of each name and then rearrange the letters to make a word.

These are known as acronyms.

WS2.9 Drafts, revises, proofreads and publishes well-structured texts that are more demanding in terms of topic, audience and written language features.

Joint and Independent Writing

- *uses other texts as models for aspects of writing such as text organisation, grouping of information under headings*

Very well done	Well done	Could be better	Needs revision
Has competently selected topics from which to develop antonyms	Has selected topics from which to develop antonyms reasonably well	Has occasionally selected topics from which to develop antonyms	Has not competently selected topics from which to develop antonyms

Sample Task Card Phase Three (With additional instruction) (as seen by teacher and students)

Social Researcher

You have to ask questions about journeys. The ways that athletes prepare for the Olympics is a type of journey. Use the Blooms Cubes to help you develop good HOT (higher order thinking) questions.

Survey other students using your questions. You might ask about the qualities (the skills or attitudes that a person has, like determination) a person would need to become a good athlete. You might ask about the need to explore different ways of doing things etc. When you have lots of answers, analyze them (look at them carefully to see if there are any answers that you got more than once) to draw some conclusions about your topic.

WS3.9 Produces a wide range of well-structured and well-presented literary and factual texts for a wide variety of purposes and audiences using increasingly challenging topics, ideas, issues and written language features.

Joint and Independent Writing

- *when necessary, records information from a variety of sources before writing*
- *writes more detailed reports with increased technicality*
- *writes sustained arguments and discussions supported by evidence*
- *constructs text in a range of media, eg video, multimedia, audio.*

Audience

- *uses topic sentences to guide readers.*

Subject Matter

- *writes about more complex and detailed subject matter*
- *writes texts that include technical and abstract vocabulary*
- *undertakes research to extend knowledge of subject matter.*

Channel of Communication

- *discusses the similarities and differences between spoken and written language*
- *uses diagrams, charts, maps, graphs, illustrations relevant to text.*

Very well done	Well done	Could be better	Needs revision
Develops HOT questions effectively	Develops HOT questions reasonably well	Develops some HOT questions	Develops no HOT questions
Surveys others and records responses	Surveys some others and records responses	Surveys few others and records responses	Surveys no others and records responses
Analyses well and presents findings	Analyses reasonably well and presents findings	Analyses some aspects and presents findings	Analyses poorly and presents findings

Sample Task Card Phase Three (With additional instruction and instruction on presentation) (as seen by teacher and students)

Social Researcher

You have to ask questions about the chosen topic that you are studying..Use the Blooms Cubes to help you develop good HOT (higher order thinking) questions. Survey other students using your questions. You might ask about the qualities (the skills or attitudes that a person has, like determination) a person would need to become a good athlete. You might ask about the need to explore different techniques. When you have lots of answers, analyze them (look at them carefully to see if there are any answers that you got more than once) to draw some conclusions about your topic.. You will need to present these conclusions to the class. Remember that your oral explanation will need to be accompanied by something that can be read by classmates. Perhaps you could create a powerpoint presentation, or drawings and diagrams to achieve this. Make sure that you proofread any draft written/typed work, or have a peer that is a good speller proofread your work. If you are creating work on the computer (in a powerpoint presentation, or word document), using the ‘spell check’ tool may also be helpful. When using ‘spell check’, look for a red line underneath any misspelled words, which you can then correct.

WS3.9 Produces a wide range of well-structured and well-presented literary and factual texts for a wide variety of purposes and audiences using increasingly challenging topics, ideas, issues and written language features.

Joint and Independent Writing

- *when necessary, records information from a variety of sources before writing*
- *writes more detailed reports with increased technicality*
- *writes sustained arguments and discussions supported by evidence*
- *constructs text in a range of media, eg video, multimedia, audio*

Audience

- *uses topic sentences to guide readers*

Subject Matter

- *writes about more complex and detailed subject matter*
- *writes texts that include technical and abstract vocabulary*
- *undertakes research to extend knowledge of subject matter.*

Channel of Communication

- *discusses the similarities and differences between spoken and written language*
- *uses diagrams, charts, maps, graphs, illustrations relevant to text.*

Very well done	Well done	Could be better	Needs revision
Develops HOT questions effectively	Develops HOT questions reasonably well	Develops some HOT questions	Develops no HOT questions
Surveys others and records responses	Surveys some others and records responses	Surveys few others and records responses	Surveys no others and records responses
Analyses well and presents findings	Analyses reasonably well and presents findings	Analyses some aspects and presents findings	Analyses poorly and presents findings

Sample Task Card Phase Four (With additional instruction and instruction on presentation) (as seen by teacher and students)

Big Picture 1

Version B

You have to work with other students to make a 'big picture' product by integrating many aspects of a theme that you are currently studying.. The task can be a broad one. You have to use a broad theme to plan, research and put together your own product, such as a:

- Research project
- Website
- Presentation
- Newspaper.

Remember that a presentation will need to be accompanied by something that can be read by classmates. Perhaps you could use powerpoint presentation, or drawings and diagrams to achieve this. Make sure that you proofread any draft written/typed work, or have a peer that is a good speller proofread your work. If you are creating work on the computer (in a powerpoint presentation, or word document), using the 'spell check' tool may also be helpful. When using 'spell check', look for a red line underneath any misspelled words, which you can then correct. Some possible themes :

Prizes Courage Optimism Success Continuity Change Talent Survival Showtime Collections Challenge

WS3.9 Produces a wide range of well-structured and well-presented literary and factual texts for a wide variety of purposes and audiences using increasingly challenging topics, ideas, issues and written language features.

Joint and Independent Writing

- *when necessary, records information from a variety of sources before writing*
- *rereads work during writing to maintain sequence and check meaning, changing words and phrases or checking for errors*
- *uses a variety of drafting techniques*
- *uses a checklist to guide proofreading of own and others' completed texts*
- *plans writing through discussion with others and by making notes, lists or drawing diagrams*
- *writes paragraphs that contain a main idea and elaboration of the main idea*
- *contributes to joint text construction activities • organises written text to suit a multimedia product*
- *writes detailed descriptions*
- *writes researched recounts*
- *writes more detailed procedures*
- *writes more detailed reports with increased technicality*
- *writes more involved literary texts*
- *produces a range of short poems*
- *provides a causal explanation*
- *writes sustained arguments and discussions supported by evidence*
- *composes basic reviews of TV programs, movies, children's novels, performances*
- *writes personal responses to artworks and performances*
- *constructs text in a range of media, eg video, multimedia, audio.*

Audience

- *relates to audience using humour*
- *uses topic sentences to guide readers.*

Subject Matter

- *writes about more complex and detailed subject matter*
- *writes texts that include technical and abstract vocabulary*
- *undertakes research to extend knowledge of subject matter.*

Channel of Communication

- *works with different text types using different channels of communication, eg poetry, dramatic performance*
- *uses diagrams, charts, maps, graphs, illustrations relevant to text.*

Depending on the product that the students create, some of these indicators will be relevant in assessment. Assess using the usual four criteria.

The Intrapersonal Intelligence Questionnaire (Commencement)

Intrapersonal Intelligence, Executive Function and Stage Three Students

Intrapersonal Questionnaire for Students (*Original copy*)

Name _____

Date _____

Please answer the questions below about yourself. Circle the answer that best describes you. There are no right or wrong answers.

Never	Rarely	Sometimes	Often	Always
A	B	C	D	E
1. I know which tasks I am good at in English and those I find difficult				A B C D E
2. I know why some learning tasks are difficult for me in English and why others are easy				A B C D E
3. I know which tasks I would chose in English if I was asked				A B C D E
4. I can decide to learn something in English and keep trying until I learn it				A B C D E
5. I have my own ways of learning in English that work for me				A B C D E
6. I plan my answers instead of writing or saying the first thing I think of in English				A B C D E
7. I love English				A B C D E
8. I never choose to start a task until I am told to do so				A B C D E
9. I know when I feel ready to concentrate in class				A B C D E
10. I find it hard to get organized in English lessons				A B C D E
11. I know what to do if I make mistakes or things are not working out in English tasks				A B C D E
12. I can judge whether my English work is good or not				A B C D E
13. I can set a learning goal in English and achieve it				A B C D E

- | | |
|---|-----------|
| 14. I know when I am feeling bored, intimidated or scared
in English lessons | A B C D E |
| 15. I know what it takes for me to learn successfully | A B C D E |
| 16. I think about what works for me when I try a new English
task | A B C D E |
| 17. I know when to ask for help | A B C D E |
| 18. I keep trying at English tasks, even if I am getting fed up with
them | A B C D E |
| 19. I am disappointed when I get my work marked in English | A B C D E |
| 20. I notice that the way other people organize their English tasks
does not work for me | A B C D E |
| 21. I can often find my own mistakes | A B C D E |
| 22. I think back about my learning when I have finished a task | A B C D E |
| 23. I am good at looking over my work and assessing how good
it is for me | A B C D E |
| 24. I know why I feel as I do about learning in English | A B C D E |
| 25. I think about how I could do a task better , even if it is
done well | A B C D E |
| 26. I know when I make my best effort in English tasks | A B C D E |
| 27. I am aware of my body sensations when something different
or exciting is happening to me | A B C D E |
| 28. I can change my mind and try different things to become
successful in English tasks | A B C D E |
| 29. I like to try things that challenge me in English | A B C D E |

When I am older I would like to become a_____.

I have an (excellent, very good, good, fair, little, poor) chance of becoming this
because.....

Comment from Expert Panel Member A

One of the challenges in trying to isolate concepts such as intrapersonal intelligence is that it so closely relates to others concepts.

I think there are some good questions that appear to relate directly to Gardner's idea of intrapersonal intelligence ie "one's access to one's own feeling life" - "an individual's examination and knowledge of (his) own feelings". Q 7, 9, 14, 18, 24, 27,

However I think the other questions are not tapping into feelings of self as Gardner sees it. I think that these questions are much more directly related to the concept of metacognition (thinking about thinking) , first introduced by Flavell "ones knowledge concerning one's cognitive processes and products ... (and) ... refers to the active monitoring and consequent regulation of these processes in relation to some concrete goal or objective" or from Palincsar & Brown " the stateable and stable knowledge one possesses about his or her cognitive processes."

Metacognition refers to both the knowledge about one's own cognitive processes (i.e. metacognitive knowledge and the regulation of these processes (i.e. metacognitive skills).

Metacognitive knowledge does concern knowledge about the interplay between personal characteristics, task characteristics, and the available strategies in a learning situation so there is a strong connection and this would need to be clearly argued in order to support these metacognitive questions in the questionnaire (but also with a rebalancing of the personal characteristics and the metacognitive knowledge)

There has been some research discussing the relationship between metacognition and intrapersonal intelligence by Gardner and others. Gardner in Changing Minds (2004) and see

Hall & Myers `That's just the way I am': metacognition, personal intelligence and reading
Reading, Volume 32, Number 2, 1 July 1998 , pp 8-13(6)

and

www.learnalberta.ca/content-teacher/kes/pdf/or_ws_tea_elem_04_metacog.pdf

Some typo's Q3, 18

There may be some confusion in interpretation in the use of the term 'English' - e.g. Q1,2 - 'English learning tasks ' is clear as I read that as a the subject of English but Q 4,5 'learning in English' could be read as meaning the language e.g. as opposed to learning in French.

Hope that helps

Comment from Expert Panel Member B

Intrapersonal Intelligence, Executive Function and Stage Three Students
Maura Sellars 880180M

Intrapersonal Questionnaire for Students
Name _____

Date _____

Please answer the questions below about yourself. Circle the answer that best describes you. There are no right or wrong answers.

Never	Rarely	Sometimes	Often	Always
A	B	C	D	E

I doubt whether students of this age could make these 5 distinctions. I suggest using only three such as (YES! Sometimes, No) with smiley faces

I suggest naming specific types of English tasks (e.g. spelling, story writing) instead of just using the term 'English' each time. I couldn't answer most of these questions just about 'English'

1. I know which English tasks I am good at and those I find difficult A B C D E
2. I know why some English learning tasks are difficult for me and why others are easy **Unclear and very hard to answer** A B C D E
3. I know which English tasks **(such as –give them a list) I would prefer if I was asked to choose)** chose if I was asked A B C D E
4. I can decide to learn something in English **(egs)** and keep trying until I learn it A B C D E
5. I have my own ways of learning in English that work for me **Unclear** A B C D E
6. I plan my answers instead of writing or saying the first thing I think of in English **(what type of task?)** A B C D E
7. I love English A B C D E

8. I never choose to start a task **(unclear what this means PLUS what type of task?? I can't see the usefulness of this Q)** until I am told to do so
A B C D E
9. I know when I feel ready to concentrate in class **Unclear**
A B C D E
10. I find it hard to get organized in English lessons
A B C D E
11. I know what to do if I make mistakes or things are not working out in English tasks **(name them)**
A B C D E
12. I can judge whether my English work is good or not .
A B C D E
13. I can set a learning goal **(I doubt that they will understand what is meant by this –set independently?)** in English **(eg)** and achieve it
A B C D E
14. I know when I am feeling bored, intimidated **(not child-friendly word)** or scared **(Perhaps 'nervous?')** in English lessons
A B C D E
15. I know what it takes for me to learn successfully **(too general to be answerable or useful)**
A B C D E
16. I think about what works for me **(in what way? I couldn't answer this)** when I try a new English task **(ADD such as....)**
A B C D E
17. I know when to ask for help **(in what context??)**
A B C D E
18. I keep trying at English tasks, even I am getting fed up with them
A B C D E
19. I **feel** disappointed when I get my English work marked **(Does this mean 'when I get it back after it has been marked?')**
A B C D E
20. I notice that the way other people organize **(what does this mean? Can you spell it out more)** their English tasks **(eg?)** does not work for me **(I can't see the purpose of the question however)**
A B C D E
21. I can often find my own mistakes **(when I check my work?)**
A B C D E
22. I think back about my learning when I have finished a task
A B C D E
23. I am good at looking over my work **(what kind?)** and assessing how good it is for me **(‘for me’ or ‘how good I think it is’?)**
A B C D E
24. I know why I feel as I do about learning in English **(too general and unclear. I couldn't answer it)**
A B C D E

25. I think about **(after I have handed it in? When I try to improve it?)** how I could do a task **(what kind?)** better , even if it is **(already)** done **(quite)** well
A B C D E
26. I know when I **(‘have made’ is better)** make my best effort in English tasks **(give eg)**
A B C D E
27. I am aware of my body sensations when something different or exciting is happening to me **(I can’t see the relevance of this Q unless you are trying to identify general capacity for self-awareness)**
A B C D E
28. I can change my mind and try different things to become successful in **(an?)** English tasks **(I predict that all of them will agree with this because they CAN. Whether they do or not is a different response)** A B C D E
29. I like to try things that challenge me **(in what way? More difficult? Problem-based?)** in English **(Add examples of kinds of tasks)** A B C D E

When I am older I would like to become a_____.

I have an (excellent, very good, good, fair, little, poor) **(this format will confuse them. Use the same format as above with three options VERY GOOD, OK, NOT VERY GOOD)** chance of becoming this because.....

Comment from Expert Panel Member C

Intrapersonal Intelligence, Executive Function and Stage Three Students

Intrapersonal Questionnaire for Students

Name _____

Date _____

Please answer the questions below about yourself. Circle the answer that best describes you. There are no right or wrong answers.

Never	Rarely	Sometimes	Often	Always
A	B	C	D	E
1. I know which English tasks I am good at and those I find difficult				A B C D E
2. I know why some English learning tasks are difficult for me and why others are easy				A B C D E
3. I know which English tasks would chose if I was asked				A B C D E
4. I can decide to learn something in English and keep trying until I learn it				A B C D E
5. I have my own ways of learning in English that work for me				A B C D E
6. I plan my answers instead of writing or saying the first thing I think of in English				A B C D E
7. I love English				A B C D E
8. I never choose to start a task until I am told to do so				A B C D E
9. I know when I feel ready to concentrate in class				A B C D E
10. I find it hard to get organized in English lessons				A B C D E
11. I know what to do if I make mistakes or things are not working out in English tasks				A B C D E
12. I can judge whether my English work is good or not .				A B C D E
13. I can set a learning goal in English and achieve it				A B C D E
14. I know when I am feeling bored, intimidated or scared				

- | | |
|--|-----------|
| in English lessons | A B C D E |
| 15. I know what it takes for me to learn successfully | A B C D E |
| 16. I think about what works for me when I try a new English task | A B C D E |
| 17. I know when to ask for help | A B C D E |
| 18. I keep trying at English tasks, even I am getting fed up with them | A B C D E |
| 19. I am disappointed when I get my English work marked | A B C D E |
| 20. I notice that the way other people organize their English tasks does not work for me | A B C D E |
| 21. I can often find my own mistakes | A B C D E |
| 22. I think back about my learning when I have finished a task | A B C D E |
| 23. I am good at looking over my work and assessing how good it is for me | A B C D E |
| 24. I know why I feel as I do about learning in English | A B C D E |
| 25. I think about how I could do a task better , even if it is done well | A B C D E |
| 26. I know when I make my best effort in English tasks | A B C D E |
| 27. I am aware of my body sensations when something different or exciting is happening to me | A B C D E |
| 28. I can change my mind and try different things to become successful in English tasks | A B C D E |
| 29. I like to try things that challenge me in English | A B C D E |

When I am older I would like to become a_____.

I have an (excellent, very good, good, fair, little, poor) chance of becoming this because.....

The Intrapersonal Intelligence Questionnaire (Conclusion)

Intrapersonal Intelligence, Executive Function and Stage Three Students
Intrapersonal Questionnaire for Students (*Revised*)

Name _____

Date _____

Please answer the questions below about yourself. Circle the answer that best describes you. There are no right or wrong answers.

- | Always | Often | Sometimes | Rarely | Never |
|--|--------------|------------------|---------------|--------------|
| A | B | C | D | E |
| 1. I know which tasks cards I am good at and those I find difficult | | | | A B C D E |
| 2. I know why some task cards are difficult for me and why others are easy | | | | A B C D E |
| 3. I know which tasks cards I would chose if I was asked to choose again | | | | A B C D E |
| 4. I can decide to learn something from the task cards and keep trying until I learn it | | | | A B C D E |
| 5. I have my own ways of learning that work for me when I am using the task cards | | | | A B C D E |
| 6. I plan my answers instead of writing or saying the first thing I think of when I am doing the task cards | | | | A B C D E |
| 7. I love the task cards | | | | A B C D E |
| 8. I never choose to start a task card activity until I am told to do so | | | | A B C D E |
| 9. I know when I feel ready to concentrate on the task cards | | | | A B C D E |
| 10. I find it hard to get organized during task card times | | | | A B C D E |
| 11. I know what to do if I make mistakes or things are not working out when I am working on task card activities | | | | A B C D E |
| 12. I can judge whether my task card work is good or not | | | | A B C D E |
| 13. I can set a learning goal using the task cards and achieve it | | | | A B C D E |
| 14. I know when I am feeling bored, nervous, worried or scared when I am working on task card activities | | | | A B C D E |
| 15. I know what it takes for me to learn successfully when I am working on task card activities | | | | A B C D E |
| 16. I think about what strategies work for me when I try a new | | | | A B C D E |

- | | |
|--|-----------|
| Task card activity | A B C D E |
| 17. I know when to ask for help during task card activity time | A B C D E |
| 18. I keep trying at the task card activities,, even if I am getting fed up with them | A B C D E |
| 19. I feel disappointed when I get my work from the task cards back after it has been marked | A B C D E |
| 20. I have noticed that the way other people organize their task card activities does not work for me | A B C D E |
| 21. I can often find my own mistakes when I check my work | A B C D E |
| 22. I think back about my learning when I have finished a task | A B C D E |
| 23. I am good at looking over my task card work and assessing how good it is 'for me' | A B C D E |
| 24. I know why I feel as I do about learning using the task cards | A B C D E |
| 25. I think about how I could do a task better after I have handed it in , even if it is already done quite well | A B C D E |
| 26. I know when I have made my best effort working from the task card activities | A B C D E |
| 27. I am aware of my body sensations when something different or exciting is happening to me when I am working on the task cards | A B C D E |
| 28. I change my mind and try different things to become successful when working on the task cards | A B C D E |
| 29. I like to try more difficult things that challenge me when I am working on the task cards | A B C D E |

When I am older I would like to become a_____.

I have an (Very good, good, okay, not very good) chance of becoming this

because_____

The Multiple Intelligences Checklist for Upper Primary Students
(McGrath and Noble 2007)

MICUPS

Multiple Intelligences Checklist for Upper Primary and Secondary (Years 5–10)

		YES	To some degree	NO
1	I am good at word puzzles and word games and I enjoy doing them	3	2	1
2	I can learn most new maths work without too much trouble	3	2	1
3	I am good at many sporting skills such as throwing, kicking, jumping and running	3	2	1
4	I can sing reasonably well and hear when music or singing is not 'right'/out of tune	3	2	1
5	I am good at maths puzzles and strategy games like chess	3	2	1
6	When I have a goal for myself (like saving money), I am good at working out how to do it, then sticking at it till I get there	3	2	1
7	I would like to have a job working with nature (e.g. a ranger, vet) and I would be good at it	3	2	1
8	I am good at artwork, or technical drawing or graphic design	3	2	1
9	I am a fast and confident reader and I read a lot at home	3	2	1
10	I can play a musical instrument quite well	3	2	1
11	I am a good people organiser and people respond well to what I do and my ideas	3	2	1
12	I know more about science than most people my age. I am very curious about how things work and why things happen and so I find out about them outside school	3	2	1
13	I can usually learn a new sport, dance or exercise fairly quickly	3	2	1
14	I am good at finding the right words to say clearly what I mean when I write stories, reports or essays	3	2	1
15	Whenever possible I spend time in bushland or forests and I can often see things (e.g. insects, animals, plants and trees) that others don't notice	3	2	1
16	I am good at thinking of logical arguments for my ideas and I can work out when someone else is making thinking mistakes	3	2	1
17	After something has happened to me I usually spend a lot of time thinking about my reactions to it and why I feel like that	3	2	1

		YES	To some degree	NO
18	I learn songs easily and can usually recognise and name songs and music that I hear, even if they are different versions from what I'm used to	3	2	1
19	I have a good sense of design and can usually work out why some things look better than others (e.g. fashion, decoration, and interior design)	3	2	1
20	I am very sensitive to how other people are feeling and I try to help if they need it	3	2	1
21	Animals usually respond well to me because I have a natural way with them and care strongly about their wellbeing	3	2	1
22	I am a good speller and like learning new and difficult words	3	2	1
23	I am heavily involved in music in my spare time, more so than most people my age	3	2	1
24	I know myself pretty well. I know what I am good at and not good at and can accurately predict how well I will be able to do something	3	2	1
25	A job I would do well is one where I would need to use my body or hands quite a lot	3	2	1
26	I am good at imagining how something will look before I draw it, design it or make it	3	2	1
27	I am good at working out what mood I am in and I know how to cheer myself up if I need to	3	2	1
28	I am good at getting along with many different kinds of people and I feel confident about my social skills	3	2	1
29	I am good at working with my hands to make or fix things that require coordination, e.g. woodwork, machinery, sewing, jewellery, craftwork	3	2	1
30	I have always liked nature more than most people my age and I am good at seeing fine differences between natural things such as animals, insects, shells or trees	3	2	1
31	I am good at seeing small visual details that others miss. I also have a good memory for the visual details of things I have seen	3	2	1
32	I can usually work out why people behave the way they do and what their motives are	3	2	1

The Experience Sampling Record

My Task Response Sheet





Name

Date




Task.....

Please circle the face that best describes how you are working on this task.






Q1. I am

				
Very interested	Interested	Somewhat interested	Not very interested	Bored






Q2. I am finding this task

				
Very interesting	Interesting	Somewhat interesting	Not very interesting	Boring

Q3. I am

				
Concentrating all the time	Concentrating most of the time	Concentrating some of the time	Concentrating a little	NOT Concentrating at all

Q4. I am

				
Really enjoying this learning task	Enjoying this learning task	Feeling okay about this learning task	Unhappy about this learning task	Very unhappy about this task

The Reflection Responses




My Reflection Record

Name _____

Date _____

Task Code _____

Degree of difficulty (Circle One) Easy Consolidate Challenge

 Extremely successful Because.....	 Moderately successful Because.....	 Not very successful Because.....
I completed my goal or part of my goal	I almost completed my goal or part of my goal	I didn't complete any of my goal
I worked hard	I could've spent more time working	I could've worked harder
I persisted when it was difficult for me	I tried to keep working when it was difficult for me	I gave up easily when it got difficult
I gave it my best effort	I made a good effort	I didn't put much effort into it
I did the best I am capable of	I got close to my best	It wasn't my best
I am proud of the final product	I am pleased with the work I did	I am disappointed in my work
I am excited	I feel okay	I am not happy

Colour in the boxes that indicate how successfully you completed this task.




I chose these ratings because _____

Name _____

Date _____

Task Code _____

Degree of difficulty (Circle One) Easy Consolidate Challenge

 Extremely successful Because.....	 Moderately successful Because.....	 Not very successful Because.....
I completed my goal or part of my goal	I almost completed my goal or part of my goal	I didn't complete any of my goal
I worked hard	I could've spent more time working	I could've worked harder
I persisted when it was difficult for me	I tried to keep working when it was difficult for me	I gave up easily when it got difficult
I gave it my best effort	I made a good effort	I didn't put much effort into it
I did the best I am capable of	I got close to my best	It wasn't my best
I am proud of the final product	I am pleased with the work I did	I am disappointed in my work
I am excited	I feel okay	I am not happy

I chose these ratings because _____

The Goal Plan

Record of tasks I have chosen as my English Learning Goal

Name: _____

Easy (These tasks are easy for me to do)

Date Code

because _____

because _____

because _____

because _____

Consolidate (These tasks get me to practise what I know in different ways)

Date Code

because _____

because _____

because _____

because _____

Challenge (These tasks make me think hard, plan and take lots of effort and time)

Date Code

because _____

because _____

because _____

The Researcher Field Journal (Excerpts)

Field Diary Date	Classes visited	Comment	To do
1/4/08	PD day All teachers + x	Teachers appeared to be comfortable and happy with the day, but I doubt that x really understands the amount of work they have to do. He and xx left early. xx had some units of work she wanted to use from her previous school. Decided that there would be no point starting until after the national testing dates in week 3 so the intervention introduction will be week 4. The teachers requested 6, and then 10 weeks worth of differentiated activities	Develop the tasks and activities for the journey theme for term 2 Travel to school with multiple copies of consent forms for students and some for staff Prepare for the parent information night
27/5/08	All classes	Generally the students were not finding the cards as straightforward as the teachers thought they would. xxxx's students not too confused, but two really needed direction, others just wanted to do construction, not the literacy task. xxx complained that the vocabulary on the cards was too difficult for her children. She had started them off by doing sample cards as a class activity and discussing with all the students what needed to be done. xx not really spent a lot of time on the cards so far. None of the teachers wanted to ask the students to set the tasks out on the goal sheet or to complete the reflections until they had got used to the task cards themselves and were coping with the choosing and completion of tasks.	
3/6/08	xxxx's class	Spent the time with this class as xxxx had several questions about the implementation and the students wanted to talk about their projects. I joined in and helped some students organise their ideas and found s1 very difficult to pin down. Called into xx's class but she just said all was working well. xxx requested I visit her first next week	Make additional cards of popular activities Bring in cut cardboard for palm cards and other purposes
10/6/08	xxx's class	xxx's students were all engaged with the exception of s2 s3,s4 and s5. The girls wanted exclusive attention and the boys did not really settle at anything. I attempted to get s2 to organised with a task but he wanted to do the Theme park....in discussion he said he had never been to one so should probably find another card...he had not selected by the time it was recess. Spent an hour and a half with xxx's student teacher so he knew what was going on with the intervention	
17/6/08	xxx's class xxxx's class	Followed up on s2. He had joined a group doing the Theme park activity after all and he was just doing as he was asked by the others. Some students had completed more than one activity. xxxx's class were progressing well but I had to remind xxxx that the students needed to make an appointment to present and share their work and needed written presentations to go with projects. We explained this again to all the students. I suggested that all Stage 3 student s could have a sharing assembly and present to each other. Xxxx and xxx were keen, xx did not think she would have time. The students in her class were completing other tasks when I was there, not the intervention tasks.	
24/6/08	Checked will all the classes	In each room there was a lot of activity but I am still not seeing much in the literacy side of things in some of the activity. The time for sharing has not happened and there does not appear to be a plan to do anything, but I think it would be very supportive for the students and stress the literacy component. Will have another go later in the project. xxxx was really happy with his group, he rewarded them because every single student was able to be on task for several days and he was really impressed. They use their technology really well to support their	Prepare the new set of cards for term 3 Make a list of things for teachers to do and send it to them so there is a list for the 'real' intervention when I am away...

		learning. They have a laptop and a data projector to work with too.	
26/8/08	All classes	Xx students have really taken over their tasks. They are helping each other and demonstrating construction ideas and join in on my talking to students so they don't miss anything!! Xxx students not doing intervention tasks. Xxxx's students presented their work for me but there was no formal presentation and the had no palm cards, no powerpoints or other supports planned. It was all ad lib...	
2/9/08	xxx and xxxx	I have been trying to get an extended period in xxx's class and some students invited me to listen to a song on pollution in Beijing and to help them with ideas for another activity. The students are not all working at their desks, they are all over the floor and wherever. This was excellent but I saw that three of the boys were not engaged at all, just busy doing nothing. Other students asked for help and ideas and I ended up explaining to a group how to make a presentation based on key words. They were very happy with this and went happily back to their tasks Xxxx wants me to work with her class as a whole and explain key words to them and how to develop the presentation from these.	
16/9/08	All classes	Can see why xx is very pleased with his group. I saw beautifully organized and polished powerpoints and other presentations. Xxx's class not doing task cards. Xxxx's class pottering away but not having the focus or buzz that xx's class has.	
14/11/08	All classes	Did not conclude intervention as planned as xxxx's students did not want to finish just yet and begged for another week. Xxx's material was not ready for collection and so let xx's students work until next week also. They were continuing the intervention until the end of term anyway.	
21/11/08	All classes	Xxx commented that she was privileged to have worked with such gifted students. xx wanted to start all over again!! He said the work was just getting better and better quality and the resource teacher had commented on the change in attitude, application and progress of her little group that went from this class to her. He was able to confirm her comments and was delighted for his students. Joined the teachers for their 2009 planning meeting.. All teachers commented that the students really enjoyed the Intervention program although xxx did comment that one of her students in the study did lose interest.	

The Teacher Guidelines for the Student Observation Checklist

Teacher observation and reflection guidelines

	<i>Focus</i>	<i>Assessment tools</i>
<i>Phase One</i>	Identify relative strengths and limitations	<i>MI profiles (scanned and returned)</i> <i>Choice of tasks sheet(scanned and returned)</i>
	Choose suitable tasks on each level	<i>Task validations</i> <i>Responses (journal responses for analysis)and work products (English work for analysis, using indicators)</i> <i>Experience sampling-format</i> <i>Journal entries- grading</i> <i>Choice of tasks</i>
	Justifies task selection	<i>Task response sheet</i>
	Ability to get organized	<i>Observation</i> <i>Teacher journal</i>
	Capacity to initiate commencement of tasks	<i>observation</i> <i>product(use indicators)</i>
	Seeks feedback teacher/peers when needed	<i>Observation</i> <i>Teacher journal</i>
<i>Phase two</i>	Response inhibition, thinking before acting, no calling out, plans all tasks effectively	<i>Observation</i> <i>Teacher journal</i>
	Manage emotions in order to achieve goals, complete tasks, control and direct behaviour <ul style="list-style-type: none"> • Not get angry • Not get stressed • Not get too frustrated • Not get impatient with themselves 	<i>Anecdotal responses (teacher journal) and work products</i> <i>Observation</i> <i>Experience sampling records (format)</i>
	Engage in tasks positively <ul style="list-style-type: none"> • Have fun • Find tasks enjoyable • Thinks tasks are useful • Views tasks as exciting • Undertakes tasks with enthusiasm 	<i>Responses and work products</i> <i>Observation</i> <i>Teacher journal</i> <i>Experience sampling records</i> <i>journal entries</i>
<i>Phase Three</i>		
	Working memory, ability to hold information in mind whilst completing complex tasks, past learning or experiences or project problem solving strategies onto a problem	<i>Responses and work products</i> <i>Observation</i> <i>Teacher journal</i> <i>Choice of tasks</i> <i>Student/teacher discussions</i>
	<i>Making Connections</i> <ul style="list-style-type: none"> • Making meaning of prior learning • Connecting with prior tasks and their outcomes • Investigating what knowledge skills and concepts students bring to the new tasks 	<i>Responses and work products</i> <i>journal entries</i> <i>task validations</i> <i>Choice of tasks</i> <i>Student/teacher discussions</i>
	Describes learning habits that affect learning(negative and positive)	<i>Responses and work products</i> <i>journal entries</i> <i>task validations</i> <i>Student/teacher discussions</i>
<i>Phase Four</i>	Flexibility in thinking. <ul style="list-style-type: none"> • Revising own choice of goals in face of difficulty • Finding another way to complete set task • Persistence • Perseverance 	<i>Responses and work products</i> <i>Observation</i> <i>Teacher journal</i> <i>journal entries</i> <i>Choice of tasks Student/teacher discussions</i>

	<p>Capacity to follow through</p> <ul style="list-style-type: none"> • In face of competing interests • Will I go to play instead of finishing the task? • Will I finish this task so close to the end of term? • Year? • Lunchtime? • End of unit? 	<p><i>Responses and work products</i></p> <p><i>Observation</i></p> <p><i>Teacher journal</i></p> <p><i>journal entries</i></p> <p><i>Student/teacher discussions</i></p>
--	---	---

The Teacher Interview Questionnaire

Teacher Interview questions for 5th November 2009

1. What has worked well for your students in terms of their learning outcomes? Engagement and on tasks behaviours? Interest levels?

EG

2. What has worked well for you in terms of your teaching?

EG

3. In what ways did the implementation of the Bloom's Gardner's units of work impact on your usual teacher role?

4. Having worked through the three units organised in the Bloom's Gardner's matrix, what would you change or improve?

5. Will you continue to program and implement units of work on this way after the study finishes?

Why/why not?

6. What do see as being any advantages or disadvantages of being involved in a study such as this?

- a) Personal benefits
 - b) Benefits for the students
 - c) Benefits for the Stage three team
- Benefits for the school

7. With reference to your participant list only (as I cannot discuss the progress of those students who have no permission) are there any students that you think have particularly benefitted from engaging in these units of work?

Collect details by going through each of the criteria for the student nominated (if any)

8. How confident are you that each of the nominated students has developed these skills as a result of participation in the study and its units of work?

9. Do you think the students would have learnt these skills elsewhere? Perhaps by participating in the regular English lessons?

Teachers' Evaluations of Student Benefits

Social skills	Learning strategies	Participation in discussion	Presentation skills	Enjoyment of English tasks	Progress in reading	Progress in writing	Progress in talking and	Capacity to set own	Knowledge of learning	Awareness of limitations	Ability to perseverer in

Class A Findings

(in text, Table 12 p176)

Students' Evaluative Responses to the *Intervention Program*: Class A

I learnt about	I learnt to	Evaluative comment
I learnt about the way ads use women and products to win people over	To assess my work, how to do interesting stories, organize my work, make it as neat as possible. It was interesting to find out that I learnt how to share the work between two people,	Happy because we got to choose the things we like to do
*I learnt about proper work	I learnt how to have fun	It was fun and I got to say what I wanted on a piece of paper
	How to work with others better	I like the change and the choice
I learnt about how friends can help heaps, about computer technology and respect	To take and give knowledge, computer programs	Frustrating because I hate freedom of choice. I have to do most of the work.
China and its culture	Do better power points	Good. I can do better than I have before and I can do it over and over again
To put powerpoints together better, put info into my own words China and its animal, culture, landmarks and more	I learned how to work with others better	Happy, I like this way of working because I like the change and we can choose for once
A lot of things about respect and the actual subjects	To be quiet when I am supposed to	Happy, I like freedom of choice and not a task given to me
How organized I can be	To talk in front of the class	Too stressful to get all my work done on time
China and very cool helpful stuff	Write my poems proper Build stuff and sort through animals	Okay, I don't really like the complicated cards
Beijing, adventures and the Olympics	To make things like a presentation, which helped a lot How to make sculpture (the physical and the writing)	Unhappy, it is too hard choosing from 50 tasks
What yin and yang stand for	To plan a presentation, write a speech properly, be responsible	Quite happy but not completely satisfied
China's animals that live there	To work with others and listen to what they think	Happy, I enjoyed the task cards because you get to work with others
What yin and yang meant How to draw better Put info into my own words	To do powerpoints better To work well with people Draw yin yang	Happy because it was great that we got to choose our own tasks
I understand more about powerpoints and how to present my info more now	To work neater, how to find other things. I learned to create, like instead of a powerpoint I know how to write better stories	I liked it, it was Okay, but there wasn't enough of what I like so I had to choose some things that I didn't like as much but I liked it
*I learned about China more from last term. It was easy and it was a bit hard in some stages but I liked it	How to get more points and learn about Beijing and China and finish my tasks on time	Happy because I liked last term was the best and I loved it. It was easy
*I learned how to write stuff without copying and put things in my own words, stuff about China	I learned how to work with friends better and how to do powerpoints	Great
I learned about the Olympics and about a lot of different interesting stuff	How to put powerpoints together and to prepare stuff better	Happy. I love to do posters and to do interesting stuff
	I learned that it is harder than copying things off the board (it is harder than normal learning)	Okay
NRL	How to make a house	It was okay but it could be more fun. It is okay now I am choosing for myself

Class A Students' Validations of their Task Selections

Fun	Love/like	Social reason	Challenge	To learn	Easy	Use known skills
34	60	7	12	19	7	5

Details of Students' validations Using More Complex Understandings of Self (in text, Table 7.13 p 165)

Student code	Level of task on Goal Plan	Reason
15A	Consolidate Consolidate Challenge Challenge	Drawing is moderately hard <i>for me</i> Rapping will be a bit challenging Sculpting is more of a challenge <i>for me</i> Powerpoints are not as easy as other activities
18A	Challenge	It is a challenge
5A	Consolidate Consolidate Challenge Challenge	It has to rhyme It is hard to draw It is a challenge about nature It is hard to go on the internet and find pictures
14A	Challenge	It is harder and different
1A	Challenge	I wanted to set some goals
12A	Challenge	It's lots of work

Summary of the Students Responses to the Reflection Records

Extremely successful because	Number of times selected	Moderately successful because	Number of times selected	Not very successful because	Number of times selected
I completed my goal or part of my goal	37	I almost completed my goal or part of my goal	3	I did not complete any of my goal	0
I work hard	41	I could have spent more time working	7	I could have worked harder	2
I persisted when it was difficult for me	22	I tried to keep working when it was difficult for me	7	I gave up easily when it got difficult	0
I gave it my best effort	32	I made a good effort	7	I didn't put much effort into it	0
I did the best I am capable of	20	I got close to my best	13	It wasn't my best	2
I am proud of the final product	32	I am pleased with the work I did	9	I am disappointed with my work	0
I am excited	18	I feel okay	8	I am not happy	0

Summary of the Validations Students gave for Reflection Responses Class A

Evaluative of the product	Reflective of feelings	Evaluative of effort	Easy	Completed the task	Had established skills	It is true
7	12	2	0	0	0	9

Teacher Evaluation of Student Benefits: Number of Students in Class A

	Social skills	Learning strategies	Participation in discussion	Presentation skills	Enjoyment of English tasks	Progress in reading	Progress in writing	Progress in talking and listening	Capacity to set own learning goals	Knowledge of learning strengths	Awareness of limitations	Ability to persevere in difficulties
	16	15	15	18	17	11	16	19	16	16	14	13

Student Competencies in Skills relating to Intrapersonal Intelligence: Class A
(in text Table 8 p 159)

	Get organized	Initiate tasks	Seek feedback	Inhibit response	Manage emotions	Engage positively	Working memory	Flexible thinking	Capacity to follow through
May	8	17	16	13	8	8	4	0	0
November	19	19	19	1	19	17	19	19	19

Paired *t* Test: Summative Results of Student Competencies in Skills relating to Intrapersonal Intelligence: Class A

	Paired Differences							
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pair 1 Class A student observations and conferencing May - Class A student observations and conferencing November	8.55556	9.79938	3.26646	-16.08802	-1.02309	2.619	8	.031

Student Competency Levels in each of the Skills from the Student Observation Checklist: Class A

	Get organized	Initiate tasks	Seek feedback	Inhibit response	Manage emotions	Engage positively	Working memory	Flexible thinking	Capacity to follow through
Developing skills	1	1	2	0	1	1	2	4	1
Consolidating skills	4	2	5	0	8	5	7	8	8
Has strong skills	14	16	12	1	10	13	10	7	10

Summary of the Frequency of Responses to the *Experience Sampling Records*: Class A

I am	Number of responses	I am finding this task	Number of responses	I am	Number of responses	I am	Number of responses
Very interested	13	Very interesting	6	Concentrating all the time	9	Really enjoying this learning task	11
Interested	12	Interesting	18	Concentrating most of the time	12	Enjoying this learning task	12
Somewhat interested	1	Somewhat interesting	2	Concentrating some of the time	3	Feeling okay about this learning task	3
Not very interested	0	Not very interesting	0	Concentrating a little	2	Unhappy about this learning task	0
Bored	0	Boring	0	Not concentrating	0	Very unhappy about this learning task	0

Results of the Paired *t* test Comparing *Intrapersonal Intelligence Questionnaire* Responses in May and November: Class A

	Paired Differences							
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pair 1 Class A Intrapersonal intelligence May – Class A Intrapersonal intelligence November	.63158	16.50323	3.78610	-7.32273	8.58588	.167	18	.869

Assessment of Student Achievement in Selected K-6 English Indicators: Class A
 (in text Table 14 p 181)

May	Not evident	Working towards Outcome competencies	Working at outcome competencies	Working beyond outcome competencies
Reads independently An extensive range of texts	3	4	8	4
Communicates effectively using a wide range of vocabulary	2	3	9	5
Spells accurately and uses a range of proofreading techniques	3	3	7	6
November	Not evident	Working towards Outcome competencies	Working at outcome competencies	Working beyond outcome competencies
Reads independently An extensive range of texts	0	4	5	10
Communicates effectively using a wide range of vocabulary	0	4	7	8
Spells accurately and uses a range of proofreading techniques	0	4	5	10

Results of the Paired *t* test Comparing MICUPS Questionnaire Responses in May and November: Class A

	Paired Differences							
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pair 1 Class A MICUPS scores linguistic intelligence May – Class A MICUPS scores linguistic intelligence November	.00000	2.18581	.50146	-1.05353	1.05353	.000	18	1.000
Pair 2 Class A MICUPS scores intrapersonal intelligence May - Class A MICUPS scores intrapersonal intelligence November	.00000	2.18581	.50146	-1.05353	1.05353	.000	18	1.000

Paired *t* test: Results of the Literacy Indicator Assessment May/Nov Class A

	Paired Differences							
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pair 1 Class A literacy indicators assessment May – Class A literacy indicators assessment November	5.68421	5.70626	1.30911	-8.43454	-2.93388	4.342	18	.000

Class B Findings

Students' Evaluative Responses to the *Intervention Program*: Class B

I learned about.....	I learnt to.....	Evaluative comment
I leant about China	How to make a dragon	It was okay but it got a bit boring.
The things the explorers did. I learned about things they did in the China Olympics	To make things I couldn't make before. I learnt how to make more interesting stories	I liked it a few times with the story but it was really annoying altogether and it was time consuming. It was BORING. Make it funner and more hands on things.
About different ways of entertainment	To assess my work	Because it was something I did not look forward to and I didn't enjoy the activities there wasn't a range of activities. There was no activities to do with art or drama.
To make a bio poem	To make a chatterbox	I got scared
Leant to do a puppet theatre and puppets	To make good models and evaluate the tasks after they were done	It was a bit annoying and frustrating because we didn't get to do very much. Sorry, but thank you for doing that with us anyway
I leant about China	I leant about how big the Watercube is	I was pretty fun and not too boring
I leant about Beijing and the rest of China that I never knew before.	To write neater and I quite enjoyed the Mathematics Maura cards	I liked the maths Maura cards and would have liked more difficult ones, I disliked the drama and sports cards
The early explorers	To make a hand hopper	I think there could be more group and hands on or outside things
How long it took to build China stadium	To make a quality board game	It drove me mad because you need more making and drawing

Students' Task Justifications: Class B

(in text, Table 10 p 165)

Student	Level of difficulty	Comment
Student 8B	Easy	I knew what to write and all the information and how I wanted to set it out
	Consolidate	I thought I did good and I really enjoyed this activity.
	Consolidate	I had fun with this activity and it was also a bit of a challenge It was fun but it still included hard work
	Consolidate	I knew what I wanted to make and the materials, it was just the problem of putting it together
	Consolidate	I had to work as a team to complete every activity and work every step out
	Challenge	It was challenging and took time
	Challenge	
Student 4B	Easy	I just had to draw
	Consolidate	I had to get the right positions on the map
	Challenge	I had to research
	Challenge	I had to look it up

Summary of the Students Responses to the Reflection Records: Class B

(in text, Table 11 p 168)

Extremely successful because	Number of times selected	Moderately successful because	Number of times selected	Not very successful because	Number of times selected
I completed my goal or part of my goal	26	I almost completed my goal or part of my goal	7	I did not complete any of my goal	1
I work hard	24	I could have spent more time working	10	I could have worked harder	1
I persisted when it was difficult for me	20	I tried to keep working when it was difficult for me	13	I gave up easily when it got difficult	1
I gave it my best effort	19	I made a good effort	8	I didn't put much effort into it	1
I did the best I am capable of	15	I got close to my best	11	It wasn't my best	2
I am proud of the final product	25	I am pleased with the work I did	11	I am disappointed with my work	1
I am excited	19	I feel okay	10	I am not happy	2

Validations for Student Selection of Reflective Record Comments: Class B

Evaluative of the product	Reflective of feelings	Evaluative of effort	Easy	Completed the task	Had established skills
8	4	4	1	2	2

Students' Responses to the Experience Sampling Comments: Class B

I am	Number of responses	I am finding this task	Number of responses	I am	Number of responses	I am	Number of responses
Very interested	2	Very interesting	1	Concentrating all the time	2	Really enjoying this learning task	4
Interested	3	Interesting	6	Concentrating most of the time	5	Enjoying this learning task	4
Somewhat interested	4	Somewhat interesting	2	Concentrating some of the time	3	Feeling okay about this learning task	1
Not very interested	0	Not very interesting	0	Concentrating a little	0	Unhappy about this learning task	0
Bored	0	Boring	0	Not concentrating	0	Very unhappy about this learning task	0

Teacher Evaluation of Student Benefits: Number of Students in Class B

	Social skills	Learning strategies	Participation in discussion	Presentation skills	Enjoyment of English tasks	Progress in reading	Progress in writing	Progress in talking and listening	Capacity to set own learning goals	Knowledge of learning strengths	Awareness of limitations	Ability to persevere in difficulties
	3	1	0	0	5	0	0	1	3	0	0	0

Student Competencies in Skills relating to Intrapersonal Intelligence: Class B

	Get organized	Initiate tasks	Seek feedback	Inhibit response	Manage emotions	Engage positively	Working memory	Flexible thinking	Capacity to follow through
May	6	5	5	1	1	0	0	0	0
November	10	10	11	10	10	10	10	9	9

Summative Results of Student Competencies in Skills relating to Intrapersonal Intelligence: Class B

	Paired Differences							
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pair 1 Class B student observations May – Class B student observations November	7.88889	2.26078	.75359	-9.62668	-6.15110	10.468	8	.000

Student Competency Levels in each of the Skills from the Student Observation Checklist: Class B

	Get organized	Initiate tasks	Seek feedback	Inhibit response	Manage emotions	Engage positively	Working memory	Flexible thinking	Capacity to follow through
Developing skills	3	5	5	5	5	2	2	7	6
Consolidating skills	6	5	5	6	6	6	6	4	5
Has strong skills	2	1	1	0	0	3	3	0	0

Assessment of Student Achievement in Selected K-6 English Indicators: Class B

May	Not Evident	Working towards indicator competencies	Working at the level of the indicator competencies	Working beyond the indicator competencies
Reads independently an extensive range of texts		2	6	3
Communicates effectively using a wide range of vocabulary		3	2	6
Spells accurately and uses a wide range of proofreading techniques		4	6	1
November	Not Evident	Working towards indicator competencies	Working at the level of the indicator competencies	Working beyond the indicator competencies
Reads independently an extensive range of texts	1	1	5	4
Communicates effectively using a wide range of vocabulary	1	1	6	3
Spells accurately and uses a wide range of proofreading techniques	1	5	5	0

Results of the Paired *t* test Comparing *Intrapersonal Intelligence Questionnaire* Responses in May and November: Class B

	Paired Differences							
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pair 1 Class B intrapersonal intelligence May – Class B intrapersonal intelligence November	-.54545	8.79049	2.65043	-6.45099	5.36008	-.206	10	.841

Results of the Paired *t* test Comparing MICUPS Questionnaire Responses in May and November: Class B

	Paired Differences							Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	
				Lower	Upper			
Pair 1 Class B MICUPS scores Linguistic intelligence November – Class B MICUPS scores Linguistic intelligence May	1.18182	1.83402	.55298	-.05029	2.41393	2.137	10	.058
Pair 2 Class B MICUPS scores Intrapersonal intelligence May – Class B MICUPS scores Intrapersonal intelligence November	-.27273	1.10371	.33278	-1.01421	.46876	-.820	10	.432

Paired *t* test: Results of the Literacy Indicator Assessment May/Nov Class B

	Paired Differences							Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	
				Lower	Upper			
Pair 1 Class B literacy indicator assessment May – Class B literacy indicator assessment November	1.45455	3.69767	1.11489	-1.02958	3.93867	1.305	10	.221

Class C findings

Students' Evaluative Responses to the *Intervention Program*: Class C

I learnt about	I learnt how to.....	Evaluative comment
China		It was frustrating and hard to follow
Explorers Entertainment Olympic games I learned a lot about explorers entertainment and the Olympic games and it was fun.	To organize my work and be neater	It is fun and very different
China-Olympics Explorers Entertainment	That it is easier to do work by yourself and a bit harder to work with someone else. If you work by yourself you get it done quicker	Good because I have made a sculpture of a computer, iPod, book and phone. I got it done quicker than with a partner
Explorers China-Olympics Entertainment	Explorers- we learned how explorers explored and how they got to their destination and how they did it China –Olympics we learned how Olympic athletes train and how hard they work Entertainment – we learned about entertainers and how they become famous	It was fun a lot of the time because we got to pick what we wanted to do..it was okay and sometimes boring and hard
How to make things and not be scared up in front of the class	Make fun things and learn things	Fun and exciting
Explorers Olympics China	Organize. To work by myself and to work better with others	I liked to do it normally it was sometimes fun but I liked it normal
Explorers Olympic/China entertainment	Journeys and discoveries origami Use chopsticks, sculpture an iPod make a magazine	Happy because I love doing the activities. They are really fun
sports	To make good things	Happy because they were easy to do
So much about china and Chinese culture I also learned about the Olympics	Organize my work better....I learnt that work can be a lot more fun than I thought it would be	Good. I think these activities are good because there were a lot of activities that I liked
Explorers Olympics Media/entertainment	How to be an explorer About sports and GREese Olympics How to design electronics	I find it fun

Results of the Paired *t* test Comparing MICUPS Questionnaire Responses in May and November: Class C

	Paired Differences							
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pair 1 Class C MICUPS scores Linguistic Intelligence May – Class C MICUPS scores linguistic intelligence November	-.20000	1.39841	.44222	-1.20036	.80036	-.452	9	.662
Pair 2 Class C MICUPS scores intrapersonal intelligence May – Class C MICUPS scores intrapersonal intelligence November	.40000	1.17379	.37118	-.43968	1.23968	1.078	9	.309

Summary of the Frequency of Responses to the *Experience Sampling Records*: Class C

I am	Number of responses	I am finding this task	Number of responses	I am	Number of responses	I am	Number of responses
Very interested	11	Very interesting	9	Concentrating all the time	11	Really enjoying this learning task	12
Interested	8	Interesting	13	Concentrating most of the time	8	Enjoying this learning task	8
Somewhat interested	5	Somewhat interesting	2	Concentrating some of the time	3	Feeling okay about this learning task	4
Not very interested	0	Not very interesting	0	Concentrating a little	2	Unhappy about this learning task	0
Bored	0	Boring	0	Not concentrating	0	Very unhappy about this learning task	0

Summary of the Students Responses to the Reflection Records: Class C

Extremely successful because	Number of times selected	Moderately successful because	Number of times selected	Not very successful because	Number of times selected
I completed my goal or part of my goal	10	I almost completed my goal or part of my goal	0	I did not complete any of my goal	1
I work hard	12	I could have spent more time working	0	I could have worked harder	1
I persisted when it was difficult for me	0	I tried to keep working when it was difficult for me	0	I gave up easily when it got difficult	0
I gave it my best effort	11	I made a good effort	3	I didn't put much effort into it	0
I did the best I am capable of	10	I got close to my best	1	It wasn't my best	2
I am proud of the final product	14	I am pleased with the work I did	3	I am disappointed with my work	0
I am excited	8	I feel okay	4	I am not happy	0

Summary of the Validations Students gave for Reflection Responses Class C

Evaluative of the product	Reflective of feelings	Evaluative of effort	Easy	Completed the task	Had established skills
2	1	2	2	2	0

Teacher Evaluation of Student Benefits: Number of Students in Class C

	Social skills	Learning strategies	Participation in discussion	Presentation skills	Enjoyment of English tasks	Progress in reading	Progress in writing	Progress in talking and listening	Capacity to set own learning goals	Knowledge of learning strengths	Awareness of limitations	Ability to persevere in difficulties
	7	5	3	9	7	0	2	3	7	8	7	5

Student Competencies in Skills relating to Intrapersonal Intelligence: Class C

	Get organized	Initiate tasks	Seek feedback	Inhibit response	Manage emotions	Engage positively	Working memory	Flexible thinking	Capacity to follow through
May	9	8	7	4	4	4	2	0	0
November	9	7	8	9	9	9	5	6	7

Paired t Test Student Competencies in Skills relating to Intrapersonal Intelligence:

Class C

	Paired Differences							
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pair 1 Class C student observation summary May – Class C student summary observations November	3.44444	2.83333	.94444	-5.62234	-1.26655	3.647	8	.007

Student Competency Levels in each of the Skills from the Student Observation Checklist:

Class C

	Get organized	Initiate tasks	Seek feedback	Inhibit response	Manage emotions	Engage positively	Working memory	Flexible thinking	Capacity to follow through
Developing skills	10	7	8	8	10	8	9	7	7
Consolidating skills	0	3	2	2	0	2	1	2	2
Has strong skills	0	0	0	0	0	0	0	1	1

Assessment of Student Achievement in Selected K-6 English Indicators: Class C

May	Not Evident	Working towards indicator competencies	Working at the level of the indicator competencies	Working beyond the indicator competencies
Reads independently an extensive range of texts	2	4	4	0
Communicates effectively using a wide range of vocabulary	2	6	2	0
Spells accurately and uses a wide range of proofreading techniques	0	7	3	0
November	Not Evident	Working towards indicator competencies	Working at the level of the indicator competencies	Working beyond the indicator competencies
Reads independently an extensive range of texts	0	3	7	0
Communicates effectively using a wide range of vocabulary	0	4	6	0
Spells accurately and uses a wide range of proofreading techniques	0	3	7	0

Paired t test: Results of the Literacy Indicator Assessment May/Nov Class C

	Paired Differences							
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pair 1 Class C literacy indicator assessment May – Class C literacy indicator assessment November	6.00000	5.07718	1.60555	-9.63200	-2.36800	3.737	9	.005

Paired t Test of Class C Student (n=10) Results in The *Intrapersonal Intelligence Questionnaire*

	Paired Differences							
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pair 1 Class A Intrapersonal Intelligence scores may – Class A Intrapersonal intelligence scores November	2.90000	11.57056	3.65893	-5.37708	11.17708	.793	9	.448

T Tests using MICUPS responses

Paired Samples Test

	Paired Differences							
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pair 1 April linguistic MICUPS – November linguistic MICUPS	-.75000	1.95789	.30957	-1.37616	-.12384	2.423	39	.020
Pair 2 April maths MICUPS – November maths MICUPS	-.25000	1.97094	.31163	-.88034	.38034	-.802	39	.427
Pair 3 April space and vision MICUPS – November Space and vision MICUPS	-.32500	1.71550	.27124	-.87364	.22364	1.198	39	.238
Pair 4 April body MICUPS – November body MICUPS	-.02500	1.62493	.25692	-.49468	.54468	.097	39	.923
Pair 5 April music MICUPS – November music MICUPS	-.20000	2.15073	.34006	-.88784	.48784	-.588	39	.560
Pair 6 April nature MICUPS – November nature MICUPS	-.75000	2.44687	.38688	-.03255	1.53255	1.939	39	.060
Pair 7 April people MICUPS – November people MICUPS	-.25000	1.89128	.29904	-.85486	.35486	-.836	39	.408
Pair 8 April self MICUPS – November self MICUPS	-.02500	1.56053	.24674	-.52408	.47408	-.101	39	.920

Customized Reflection Record

My Reflection Record

Name _____ Date _____

Task name _____

Task Code _____ how long it took me: _____




Degree of difficulty (Circle One)

Easy

hard

medium

Colour in the boxes that indicate how successfully you completed this task.

 Extremely successful because	 Moderately successful Because	 Not very successful because
I completed the whole task	I almost completed the whole task	I didn't complete any of the task
I worked hard	I could've spent more time working	I could've worked harder
I persisted when it was difficult for me	I tried to keep working when it was difficult for me	I gave up easily when it got difficult
I gave it my best effort	I made a good effort	I didn't put much effort into it
I did the best I am capable of	I got close to my best	It wasn't my best
I am proud of the final product	I am pleased with the work I did	I am disappointed in my work
I am excited	I feel okay	I am not happy

I chose these ratings because

Maura.Sellars@newcastle.edu.au

Learning Contract

PROGRESS CHART

NAME: _____

STEP	EXPLANATION	
I have chosen my TASK	<i>TITLE OF THE TASK:</i>	
I understand what I am asked to do	<i>THIS IS WHAT I HAVE TO DO (USE OWN WORDS)</i>	
WEEK	DATE	WHAT I DID

***** VERY IMPORTANT : THIS FORM HAS TO BE COMPLETED EVERYDAY WE DO LEARNING CONTRACT**

Customized Matrix of Learning Tasks Term 4 - Learning Contract – Entertainment / Media

Multiple Intelligence	Remember	Understand	Apply	Analyse	Evaluate	Create
I enjoy reading, writing & speaking.	V1 - Bundling What does the word media mean? Write your info on the strips and then join with another 3 students (groups of 4)	V2 - Careers Research the training and skills of the entertainers and match with your own interests and skills	V3 - Bio Poem Develop a poem about a famous entertainer.	V4 - Thirty Word Summary In 30 words, describe how the way the media item you have chosen tries to influence the views of others	V5 - Report Card Matrix evaluation of any media item	V6 - Advertiser Plan present and implement an advertising campaign for a book
I enjoy maths & science.	M1 - Recall The time it took to read a book. Watch a movie or your favourite television show	M2 - Curiosity Students compile a list of questions about the novel, show or film that is their favourite now.	M3 - Itinerary Students must plan a trip to follow the career of a famous entertainer	M4 - Class statistics Students develop questionnaires relating to entertainment and survey class, displaying the results graphically.	M5	M6 - How many Ways Could the entertainer of your choice have gone into a different media?
I enjoy painting, drawing & visualising.	S1 - Draw what you know Recall maps you have seen or used Draw what you recall as being the most memorable features	S2 - Visual fun and games Basic board game but with some twists. Correct answers to questions on the media allow the players to progress	S3 - Brain Walk Recall visually the minute details of an advertisement you have seen and record them	S4 - Fortune lines Fortune lines can be developed for the entertainer of your choice	S5	S60 - Advertiser S61 - How many Ways Draw the different routes on the maps
I enjoy doing hands on activities.	B1 - Walk it Physically make a small journey in the classroom. Note where you went and why you took that route	B2	B3 - Body Flow chart Mime or dance to illustrate a specific advertisement that sells items to children	B4	B5	B6 - Sculptor Students design and make a complex sculpture related to the topic
I enjoy music.	R1 - Recall Recall any song about entertainment and discuss it with others.	R2 - Musical fun and Games Students write a short story about entertainment in groups. They must use every type of punctuation in the story. One then reads while the others act out the punctuation noises and movements	R3 - Music maker Play, make or find music that reflects the cultural and social lives of young Australians	R4	R5	R60 - Advertiser R61 - Rapper Students make a rap in groups of three or four about the topic
I enjoy nature and animals.	N1 - Record Record how the media has made the features of the natural world more entertaining	N2 - Flora and Fauna What sort of cameras and equipment allowed the media to explore flora and fauna more closely?	N3 - Then and Now Students use their current understanding of travel, geography and Australian conditions and find entertainment that shows how we have changed	N4 - Nature Detective Students research and assess the numbers media programs and print materials available about Australia. Include advertising. Discuss the good and bad aspects of these.	N5	N6
I enjoy working with others.	ER1 - Recall Recall when have you been to an entertaining outing with friends or family? Record what you did together	ER2 - Beat the panel Choose a text type and become an expert team	ER3	ER4 - Multi View Draw up the three columns and give the perspectives of each character in a book or newspaper article	ER5 - Ten Thinking Tracks An analysis and evaluation activity focusing on an idea about media	ER6 - Social researcher Students create questions about human behaviour around advertising
I enjoy working by myself.	RA1 - Autobiographer Write about the media type that has the most personal significance for you	RA2 - Recommendation Students list their one best recommendation about their choice of entertainment	RA3	RA4 - Then and now Students write down their knowledge attitudes and feelings about examining the media for bias, prejudice before the start of the unit and then at the end. A grid can be used	RA5 - Goal setting Set some learning goals for this term. List what you would have to do to achieve these	RA6 - Big picture Knowledge of an author. Create a magazine / powerpoint about an author

Peer Assessment Form

Name

Name of presenter(s)

Date

Topic

Type of presentation

Content	Conventions (Spelling, punctuation and Grammar)	Comments
It was very interesting for me because.....	Spelling	I particularly liked
It was interesting for me because.....	Punctuation	I thinkmight improve the presentation by
It was not especially interesting for me because.....	Grammar	Other helpful comments

Signed.....

Human Research Ethics Committee

Committee Approval Form

Principal Investigator/Supervisor: Dr Toni Noble Sydney Campus
Co-Investigators: Dr Shukri Sanber Sydney Campus
Student Researcher: Ms Maura Sellars Sydney Campus

Ethics approval has been granted for the following project:
Intrapersonal intelligence, executive function and stage three students

for the period: 4 May 2007 to 31 December 2007
Human Research Ethics Committee (HREC) Register Number: N200607 67

The following standard conditions as stipulated in the *National Statement on Ethical Conduct in Research Involving Humans (1999)* apply:

- (i) that Principal Investigators / Supervisors provide, on the form supplied by the Human Research Ethics Committee, annual reports on matters such as:
 - security of records
 - compliance with approved consent procedures and documentation
 - compliance with special conditions, and
- (ii) that researchers report to the HREC immediately any matter that might affect the ethical acceptability of the protocol, such as:
 - proposed changes to the protocol
 - unforeseen circumstances or events
 - adverse effects on participants

The HREC will conduct an audit each year of all projects deemed to be of more than minimum risk. There will also be random audits of a sample of projects considered to be of minimum risk on all campuses each year.

Within one month of the conclusion of the project, researchers are required to complete a *Final Report Form* and submit it to the local Research Services Officer.

If the project continues for more than one year, researchers are required to complete an *Annual Progress Report Form* and submit it to the local Research Services Officer within one month of the anniversary date of the ethics approval.



Signed: _____ Date: 4 May 2007
(Research Services Officer, McAuley Campus)

Maura.Sellars@newcastle.edu.au

