

**COGNITIVE STRATEGIES AND SCHOOL PARTICIPATION
FOR STUDENTS WITH LEARNING DIFFICULTIES**

by

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ABSTRACT

Students with learning difficulties comprise one of the main groups of children referred for assessment to Australian occupational therapists. Teachers and parents typically express concern regarding difficulty with participation during school occupations. In particular, teachers and parents describe the cognitive aspects of participation as being a challenge. While much research has focused on the concept of participation for students with physical disabilities, little is known about the impact of cognitive dimensions of a learning difficulty on school participation. There are few ecological assessments which document difficulties with the cognitive aspects of school participation relative to the expectations of task performance. Specifically, there is a lack of standardised assessments which utilise the perspectives of teachers and parents.

The initial purpose of this study was to explore the concept of participation and how students with learning difficulties used cognitive strategies to participate successfully in school occupations. The second purpose of the study was to develop a teacher and parent questionnaire that might assist in the occupational therapy assessment of the cognitive aspects of a student's school participation.

A review of the literature was motivated by the need to better understand the construct of participation and to determine how best to measure cognitive strategy use as a component of school participation. The subsequent research was then carried out in three phases. Phase One explored difficulties in school participation using a longitudinal retrospective case study of one student with a learning difficulty over 13 years. In addition, 50 teachers and 44 parents were surveyed regarding participation. Data collected from this phase formed the basis of Phase Two in which a teacher and

parent questionnaire was constructed following principles of questionnaire construction. An instrument, PRPP@SCHOOL-Version 1 (Teacher Questionnaire and Parent Questionnaire), was developed which reflected theoretical and empirical descriptions of cognitive strategies and descriptors used in an existing instrument, the Perceive, Recall, Plan, and Perform (PRPP) System of Task Analysis. These questionnaires, designed to form a companion instrument to the PRPP System of Task Analysis, were trialled on 355 children, referred to a private occupational therapy clinic in Greater Western Sydney. Data were analysed to determine measurement viability. Phase Three of the study comprised reliability and validity testing on the PRPP@SCHOOL-1 (TQ & PQ). Intraclass correlations indicated excellent test-retest reliability with a high level of agreement for the PQ. Content validity was determined through consumer review, peer review, and an expert panel review. Discriminant validity testing confirmed that the PRPP@SCHOOL-1 (TQ & PQ) was able to differentiate between typically developing students and students with learning difficulties. Construct validity was assessed. Five factors emerged from the analysis which also demonstrated that the PRPP@SCHOOL-1 (TQ & PQ) was functioning as a multidimensional measure.

Findings indicated that for children in this study, participation in school occupations was undermined by challenges with inefficient cognitive strategy use. Teachers and parents were able to observe and clearly identify these difficulties using the PRPP@SCHOOL-1 (TQ & PQ). This research adds a companion instrument to the PRPP System of Task Analysis in the form of teacher and parent questionnaires to be used with students who experience school participation difficulties. In so doing, the research contributes to the expansion of occupation-focused, criterion-referenced ecological instruments recommended by the profession as best practice assessment.

DECLARATION

I, **SUSAN LOWE**, hereby declare that the work contained within this thesis is my own and has not been submitted to any other university or institution as a part or a whole requirement for any higher degree.

I, **SUSAN LOWE**, hereby declare that I was the principal researcher of all work included in this thesis, including work published with multiple authors.

Name SUSAN LOWE

Signed _____

Date _____

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND AND NEED

The main purpose of this research was to examine how difficulty with using cognition strategically may be related to the school participation of students who experience a problem with learning, and how cognitive aspects of participation might be assessed. The research was prompted by my experiences working as an occupational therapist with primary school students who experienced difficulties with learning and also, difficulties with participation in academic and social activities at school. It became increasingly apparent that when students had difficulty learning individual school activities, such as handwriting, drawing and copying, they also appeared to have difficulties when they tried to participate with others in shared learning and social activities at school. Moreover, the difficulties demonstrated by these students appeared to be largely cognitive. These experiences and observations led to the first part of this research which aimed to discover which cognitive strategies were needed for successful participation. Subsequent research involved development of a teacher and parent questionnaire that might contribute to occupational therapy assessment of the cognitive dimensions of students' school participation.

In 2009, 97,000 students with special needs, defined as students with a behaviour disorder and/or learning difficulties, were enrolled in mainstream classes across NSW government, Catholic and independent schools (NSW Legislative Council, 2010). This number was more than twice the number of students with physical disabilities (46,298). Students with learning difficulties form the largest group of students with special needs enrolled in Australian mainstream schools

(Westwood, 2008). Estimates place the prevalence of general learning difficulties in this school population at 16 to 20% (Louden, Chan, Elkins, Greaves, House, et al, 2000) and of specific learning disability at 3 to 5% (Graham & Bailey, 2007; Westwood & Graham, 2000). It is not surprising therefore that the second highest client group referred to paediatric occupational therapists in this country is students with learning difficulties (Rodger, Brown, & Brown, 2005).

Participation has been defined as both a process (personal capacity) and an outcome [performance] (Law, Petrenchik, Ziviani, & King, 2006; WHO, 2001), which involves interactions with something (materials) and someone that matters [others] (Bauminger & Kimhi-Kind, 2008; Carman, 2007; Kavale & Forness, 1996; Lavoie, 2005). It is purposeful, deliberate, and highly contextualised (Rodger & Ziviani, 2006), resulting in people being able to share with others through a common understanding of an outcome (Simpson & Weiner, 2002). Students with learning difficulties appear to experience difficulty in both domains of participation: coping with the work that teachers allocate to them in the classroom [materials] (Twomey, 2006; Westwood, 2008) and managing social interactions in the classroom and the playground with others (Bauminger & Kimhi-Kind, 2008; Carman, 2007; Kavale & Forness, 1996; Lavoie, 2005). Participation is a significant variable that accounts for differences in learning outcomes between typical students and those students with either physical or learning difficulties (Kavale & Forness, 1996), and has been found to result in more effective social relationships with peers (Masten & Coatsworth, 1998), and decreased incidence of emotional and behavioural difficulties (Rutter, 1990; Stewart, Reid, & Mangham, 1997; Stiffman, Jung, & Feldman, 1986). Therefore, participation is considered integral to student's successful performance in

the occupations and roles expected of them in the classroom and playground (Mandich, Polatajko, & Rodger, 2003).

Essential characteristics of participation include satisfaction and meaning (Law, 2002b). Meaningful participation implies a perception of choice and control (a desire to participate), the presence of a supportive environment (opportunity to participate), and a set of physical, cognitive, social and emotional skills (the capacity to participate). Although it has been recognised that balancing the desire, opportunity and skill dimensions of activity participation is crucial (Moneta & Csikszentmihalyi, 1996), information about the cognitive skills that characterise school participation and the cognitive capacity of students who experience participation difficulties is scarce (Almqvist & Granlund, 2005). Just as students learn to process academic information needed to perform increasingly complex school activities over time, so too, do they learn to process information needed for participating in increasingly sophisticated social learning that enables participation in life at school.

Cognition, particularly social cognition, is thought to be critical to successful participation (American Occupational Therapy Association, 2002). Cognition has been defined as an interaction of mental processes that include attention, perception, problem solving, monitoring, and memory (VandenBos, 2007). Learning is dependent upon cognition (Ashcraft, 2002; Woolfolk & Margetts, 2007). Learning at school, incorporating learning to participate, is further described as strategic learning (Weinstein, Husman, & Dierking, 2000) and is thought to be the core of successful learning (NSW Department of Education and Training, 2005). Strategic learning is not only dependent upon a student's capacity to develop a vast array of cognitive strategies, but also the capacity to apply individual strategies to participation during school tasks in ways that are appropriate (Vanden Bos, 2007). Students with learning

difficulties tend to be learners who adopt strategies that are both inefficient and ineffective (Page-Voth & Graham, 1999). The result is difficulty knowing how to organise and regulate the attention, thinking, and monitoring strategies that support purposeful participation (Katz, Parish, & Traub Bar-Ilan, 2005; Lerner, 2000).

While there are many models of cognition that describe a student's cognitive capacities (Leighton & Gierl, 2007; National Research Council, 2001), information processing is the cognitive model used in the current research to explicate the type of thinking strategies that underpin school participation, because of its focus on the use of cognitive strategies rather than the conceptualisation of elements of cognition per se (Missiuna, Mandich, Polatajko, & Malloy-Miller, 2001). Information processing is conceptualised as the flow of information through the human nervous system and making use of sequential feedback systems during the learning process (Huit, 2003; Schmidt & Wrisberg, 2004). It involves strategic perception (Kavale & Forness, 1996) and attention to information from the surrounding sensory environment, recall and retrieval of information from memory stores, executive functioning, and processes for monitoring and adjusting performance (Lerner, 2000). Research based on this theory is providing evidence that effective learning occurs through the application of information processing strategies (Chalk, Hagan-Burke, & Burke, 2005; Chan & van Kraayenoord, 1998; Swanson, 2000). An information processing view of students with learning difficulties suggests that there is a disruption in the ability to receive, process, store and respond to information (Chan & van Kraayenoord, 1998; Karande, Sawant, Kulkarni, Kanchan, & Sholapurwala, 2005). Information processing is one explanatory model of cognitive behaviour that has been used to guide educational programming for students with learning disabilities (Chapparo, 2010; Lerner, 2000; Singer-Harris, Weiler, Bellinger, & Waber, 2001; Swanson, 2001).

Most assessments developed to identify the relationship between information processing and atypical learning in school students are not available for use by occupational therapists (Gioia, Isquith, Guy, & Kenworthy, 2000; Kaufman, Lichtenberger, Fletcher-Janzen, & Kaufman, 2005; Manly, Robertson, Anderson, & Nimmo-Smith, 1999; Wechsler, 2003). Traditional paediatric occupational therapy assessments have been useful in establishing a role for occupational therapists in schools, specifically in the area of motor skills needed for classroom participation (Summers, Marian, & Korn, 1998; Wallen, Bonney, & Lennox, 1996). Emerging paediatric assessments from North America in the form of direct observation tools have expanded the range of behaviours targeted by established assessments to focus on participation in both motor and process skills across a range of areas both in the classroom and in the playground (Coster, Deeney, Haltiwanger, & Haley, 1998; Fisher, Bryze, Hume, & Griswold, 2007). However, these assessments provide limited support to Australian occupational therapists requiring assessment procedures that suit the Australian context. The challenge for Australian occupational therapists is to use assessment methods which evaluate school participation in a way that is relevant and meaningful, which accommodate school culture, which are flexible to the changing and dynamic needs of the student, teacher and environment, which gather information from key participation stakeholders, and which have the capacity to guide inclusive programming. This problem is echoed by Australian teachers who have identified a need for increased collaboration with therapists to enhance the educational outcomes of students (Vincent, Stewart, & Harrison, 2008).

Along with information processing theory, The Occupational Performance Model (Australia), OPM[A], (Chapparo & Ranka, 1997), has been used in this research to explain the link between occupational performance, participation, and

cognitive capacity. Cognition which is a central construct in this research, is identified as a performance component in the OPM(A). Links between cognition and other constructs within this model have been explored through a recently developed OPM(A) assessment tool named the Perceive, Recall, Plan, and Perform (PRPP) System of Task Analysis (Chapparo & Ranka, 2005). It is this assessment tool that formed the structural basis for the development of a companion teacher and parent assessment tool, PRPP@SCHOOL-Version 1 Teacher Questionnaire and Parent Questionnaire, which is the focus of this research. The questionnaires are referred to in the thesis as PRPP@SCHOOL-1(TQ & PQ).

1.2 RESEARCH AIM

This research aimed to explore how students with learning difficulties applied cognitive strategies to their participation in school activities. Specifically, the research explored how a teacher and parent questionnaire based on both the PRPP System of Task Analysis and the expectations of teachers and parents, may contribute to occupational therapy assessment of student participation.

1.3 RESEARCH QUESTIONS

The overall research question guiding this study was:

How can cognitive aspects of student participation during school occupations be assessed?

The following research sub-questions guided specific phases of the study:

- 1. Which cognitive strategies support the participation of school students with and without learning difficulties in classroom and playground occupations from the perspectives of teachers, parents and students?*

- 2. What inefficiencies in students' use of cognitive strategies during participation in school occupations are identified by teachers and parents using the PRPP@SCHOOL-1 Teacher and Parent Questionnaire?*

- 3. How reliable and valid is the PRPP@SCHOOL-1 Teacher and Parent Questionnaire when measuring cognitive strategy use by students during participation in school occupations?*

The current research addresses the stated research questions by (a) generating a description of difficulty with school participation as experienced by one student with a learning difficulty over 13 years of schooling, (b) identifying elements critical to the participation of students by listening to the perspectives of teachers and parents of students who have difficulties with school work, and (c) by applying these exploratory findings to the construction of a teacher and parent questionnaire as an observation tool to partner the PRPP System of Task Analysis. Question 1 is therefore addressed in the research by (a) and (b), while Questions 2 and 3 are addressed by (c).

1.4 DEFINITION OF TERMS

1.4.1 School occupations

Occupations have been defined as the routine, ordinary and everyday things that people do including actions, tasks, routines, thinking and being (Christiansen,

Clark, Keilhofner, & Rogers, 1995; Law, Baum & Dunn, 2005). They are goal directed or purposeful, are influenced by the contexts in which they are performed and are meaningful to a person (Christiansen & Baum, 2005). Occupational performance is characterised by “the ability to perceive, desire, recall, plan and carry out occupations in response to demands of the internal and/or external environments” (Chapparo & Ranka, 1997, p. 4). Occupations are entrenched in occupational roles defined as a “set of behaviours that have a socially agreed upon function and for which there is an accepted code of norms” and as such have expected responsibilities and privileges (Christiansen & Baum, 1997, p. 56).

In this research, school occupations include all the activities expected of the student role and which are embedded in the routines and rhythms of both the school and home context. School occupations include, but are not restricted to work activities (e.g., copying from the board, doing a maths works sheet, presenting a speech), play activities (e.g., joining in a handball game, reading for pleasure, chatting to a friend), self-care activities (e.g., putting on a sweater, blowing one’s nose, lining up at the canteen), thinking activities (e.g., understanding and remembering instructions, problem solving an argument, generating an idea for narrative writing), school community activities (e.g., being lunch monitor, handing out the spelling books, taking a message to the front office), and friendship role activities (e.g., sharing a bag of popcorn, keeping a secret, staying with a classmate in sick bay).

School occupations also comprise home-based school activities which include activities such as getting ready for school, organising sport clothes, catching the school bus, unpacking a school bag, doing homework, or researching on the internet. While both school-based and home-based school activities carry task expectations for

performance, home-based school activities often create a high level of time involvement and stress for families (Cameron & Bartel, 2009).

In the remainder of this research, the terms school occupations or school activities will refer to activities performed within the school context and home-based school activities carried out in either the home context or on the journey to and from school.

1.4.2 Participation

Participation is a deliberate process with a meaningful outcome involving contextualised engagement with materials and others (Lawlor, 2003; Rodger & Ziviani, 2006). Participation at school is a core construct impacting on the social and academic learning outcomes of all students (Craven & Hogan, 2001; Wight & Chapparo, 2008). Successful participation in school life is dependent upon multiple internal and external factors, one of which is cognition (American Occupational Therapy Association, 2002).

In this research, the working definition of successful participation is purposeful engagement with school curriculum materials (e.g., book, pencil, soccer ball, computer program, whiteboard) within a shared learning context (e.g. maths group work, class library project, circle time, rubbish patrol) with others who comprise the participation relationship (e.g., teacher, class mate, peer support buddy, groundsman) to the expectations of those within that relationship.

1.4.3 Learning difficulties

Learning difficulties, learning disorder and learning disability are all terms which have been used to describe atypical learning. Use of these terms varies widely

depending on geographical location, the theoretical perspectives of the involved profession and whether services are based in medical or education systems. In the Australian education system, and since the Cadman Report (1976), all states except Queensland use the term *students with learning difficulties* to refer to a diverse group of students who demonstrate difficulties with learning resulting in low academic achievement for any reason (Graham & Bailey, 2007; Westwood, 2008). Terms used elsewhere are general learning difficulties and specific learning disability. The term *general learning difficulties* is applied to students whose learning difficulties are not associated with any physical, sensory or language impairment but may be due to external factors such as socio-cultural hardship, minimal opportunities to learn, inappropriate curriculum or insufficient teaching (Badian, 1996). This population of students contains a smaller group of students who are referred to as students with a *specific learning disability*. These students have substantial and persistent low achievement in reading, writing or mathematical skills in spite of age, traditional instruction, intact senses, normal intelligence, typical motivation and sufficient socio-cultural opportunity (APA, 2000; National Center for Learning Disabilities (US), 2001). Students with learning difficulties are heterogeneous in their learning strengths and weaknesses (Starr, Foy, Cramer, & Singh, 2006).

In this research, learning difficulty is defined as any difficulty with learning across academic and social domains in school or home-based school activities carried out in typical or mainstream school settings.

1.4.4 Cognition

Cognition has been defined as an interaction of processes which involve all forms of awareness and knowing such as perceiving, conceiving, insight,

remembering, questioning, reasoning, judging, problem solving and decision-making (VandenBos, 2007). In the school context, cognition relates to a student's capacity to acquire and use information in order to carry out desired or needed academic and social skills. The capacity to successfully manipulate information is required to match the expectations of activities and routines across a wide range of curriculum and extra-curriculum domains. Cognition subsumes metacognition (thinking about one's own thinking) enabling a student to "orchestrate multiple tasks and parts of tasks into a seamless whole" (Chapparo & Lowe, in press-b).

In this research, the perspective of cognition used is information processing. The aspect of cognition targeted is use of cognitive strategies as defined below.

1.4.5 Cognitive strategies

Strategies are tactics or task approach methods selected and applied to guide cognition (Kirby, 1984; Toggia, 1991). Strategic learning focuses on the major components of strategy use which appear essential for learning including efficiency, flexibility and automaticity (Meltzer, 1994).

In this research, cognitive strategies are defined as internally generated mental techniques which students use in order to function effectively when faced with the need to (a) identify important, unfamiliar or difficult information, (b) understand and retain information, (c) retrieve information from memory stores, (d) manipulate and apply information, (e) plan and modify responses using information, and (f) simultaneously cope with internal and external distractions during participation in academic or social activities within classroom and playground contexts. For example, *"Before I write, I plan my ideas using mind-mapping, when I do a maths worksheet, I*

ask myself if my answers make sense, or during handball, I feel the squish ball in my pocket to remind me to be calm if I am called out”.

1.4.6 Cognitive strategy use

Cognitive strategy use implies salience or use of known cognitive strategies in the ‘here and now’. It is the ability to choose and apply the ‘best’ strategy to fit a particular situation. In this research, teachers and parents were asked to identify the extent to which students were able to use cognitive strategies in a variety of school participation activities. Effective cognitive strategy use is defined as the simplest and most efficient means of processing information relative to a situation.

1.4.7 Inefficient cognitive strategies

Inefficient use of cognitive strategies can occur during the performance of any activity (Chapparo & Ranka, 1992). Successful outcomes in learning are linked with students being able to identify inefficient strategy use and adjust their actions accordingly (Mithaug, Martin, & Agran, 1987).

In this research, inefficient cognitive strategy use occurs when (a) students do not select a strategy to use during activity, (b) the strategy selected is counterproductive for task performance, (c) the strategy selected is accurate but the way the strategy is applied does not optimise task performance, (d) strategy use is too slow for efficient performance, or (e) strategy use is infrequent.

1.4.8 School

School has been defined as a multidimensional education environment, an ecosystem comprised of cultural, physical, sensory and social contexts that exist in time and space (Chapparo & Ranka, 1997; Ziviani & Rodger, 2006).

The focus of this research is mainstream schools located in Greater Western Sydney drawing from four local government areas of City of Blue Mountains, City of Hawkesbury, City of Blacktown and City of Penrith. These four areas comprise a total population of 577,495, cover an area of 4,862 square kilometres and include 199 schools from the NSW Department of Education and Training, the Catholic Education System and Independent Schools of NSW (<http://www.dlg.nsw.gov.au>). The research sample is comprised of students enrolled in Kindergarten to Year Six, typically aged five to twelve years of age, both male and female.

1.4.9 Student

Throughout this thesis, the term *student* is generally used instead of *child*, reflective of the major occupational role a child adopts at school. Students take on additional overlapping roles at school including learner, worker, player, friend and community member depending on specific areas of occupational performance. In this research, student groups are referred to by several names:

(a) *Students with learning difficulties* are students who demonstrate difficulty with learning for mastery performance across academic and social domains in school activities. Some of the students are diagnosed with one or more labels. For example, Learning Difficulty/Disability, Language Delay/Disorder, Intellectual Impairment, Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder (ADD/ADHD), Autism Spectrum Disorder (ASD), Anxiety Disorder, Dyspraxia, Deficits in Attention,

Motor Control and Perception (DAMP), Post Traumatic Stress Disorder (PTSD), Epilepsy, Brain Injury (BI), and Oppositional Defiant Disorder (ODD). Other students are indentified by teachers as demonstrating a difficulty with learning and do not have a diagnostic label.

(b) Students with school performance difficulties are students who may or may not experience a difficulty with learning yet demonstrate difficulty with performance of skills across academic and social domains in school or home-based school activities.

(c) Students with typically developing skills are students who are perceived by teachers to experience no learning difficulties or school performance difficulties.

The focus of this research is students with learning difficulties and students with school performance difficulties who experience problems with cognitive strategy use during participation in school activities.

1.4.10 Assessment

Assessment, measurement, measure, test, tool and instrument are all terms used within this research. Assessment is defined as the overarching set of tasks involved in the process of gathering information. Assessment includes measurement, a process involving calculation or judgement of the magnitude, quantity or quality of a characteristic or attribute (Law, et al., 2005). Assessment also involves using clinical reasoning to systematically collect, appraise and classify information (Chapparo & Ranka, 2000). A test, tool, or instrument is a specific procedure used within assessment such as a student handwriting task, teacher questionnaire or parent interview (Law, et al., 2005).

In this research, the PRPP@SCHOOL-1(TQ & PQ) is an assessment instrument concerned with evaluating the effectiveness and timely use of cognitive strategies required for performance in school occupations.

1.5 SCOPE OF THE RESEARCH

This research focused on exploration of cognitive strategies that may be critical to successful participation in school occupational performance of students with learning difficulties enrolled in mainstream primary (elementary) schools. It does not address other aspects of participation such as opportunity, context, physical, social, or emotional parameters. This investigation included the initial development of a teacher questionnaire (TQ) and parent questionnaire (PQ), to be used by occupational therapists to gather information about cognitive aspects of school participation. The questionnaires form a companion instrument to the PRPP System of Task Analysis (Chapparo & Ranka, 2005). The questionnaires were not developed for use by students in preschool or secondary settings.

PRPP@SCHOOL-1(TQ & PQ) is comprised of two sections, Section One and Section Two. The purpose of Section One is to collect data about a student's performance at an activity level for fine motor, gross motor, self care and social skills. Section One is not the focus of research in this thesis. The purpose of Section Two is to collect data about the cognitive strategies which students use during participation in these activities. Section Two is the focus of research in this thesis.

The cumulative findings of this research are viewed as the beginning of a line of occupational therapy research that will (a) confirm the place of cognitive strategy use in school participation, (b) further refine the psychometric parameters of the PRPP@SCHOOL(TQ & PQ), and (c) further test its clinical utility.

1.6 DESIGN AND OVERVIEW OF THE RESEARCH

This research was conducted in three sequential but overlapping phases that addressed the research questions posed (Refer to Figure 1.1). The research employed a mixed methods approach in the design and methodology (Greene & Caracelli, 2003; Ivankova, Creswell, & Stick, 2006; Morse, 2003).

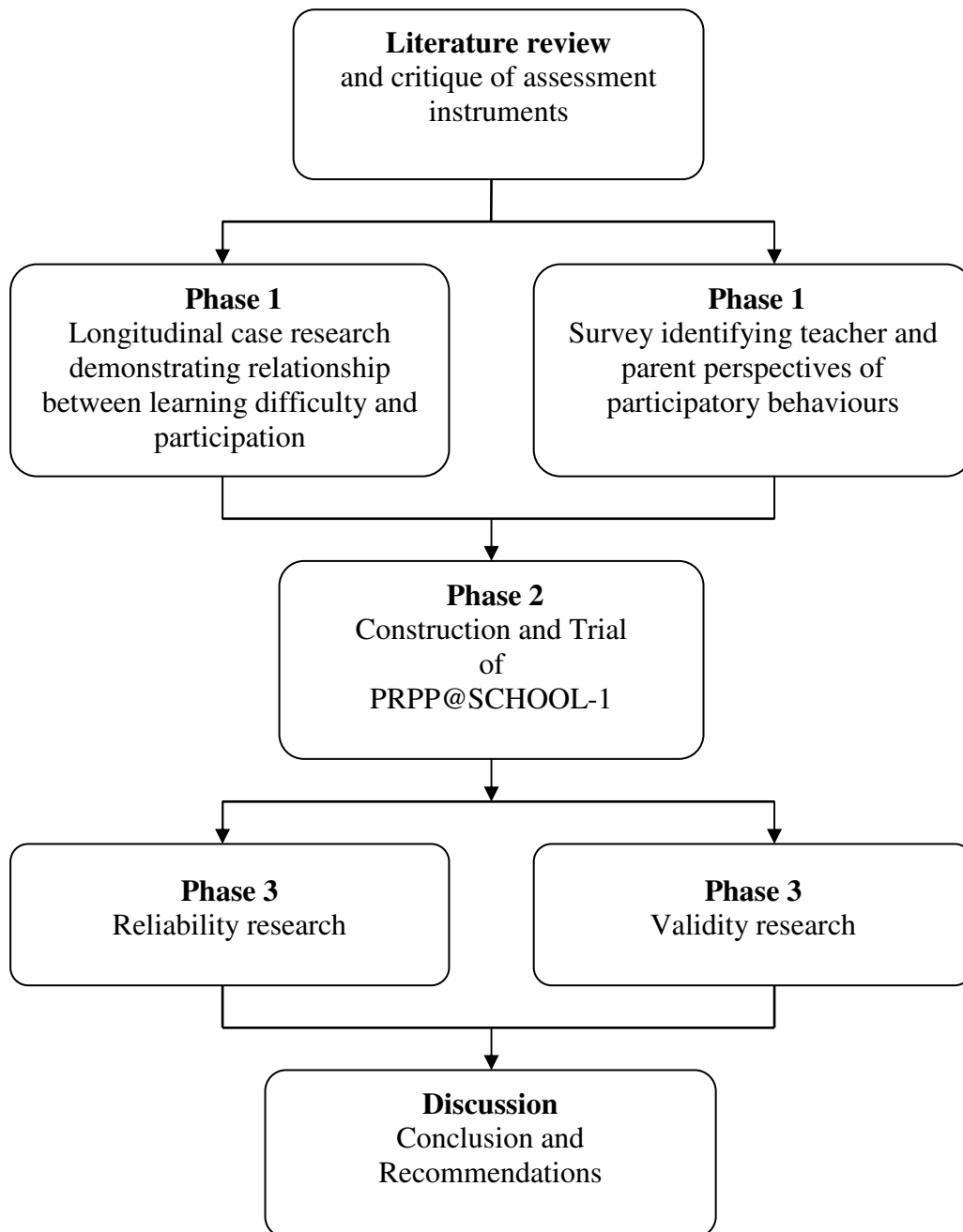


Figure 1.1 Flow chart of phases in the research

1.6.1 Research Phase One: Case study and survey

Phase One adopted a qualitative research design consistent with the axioms of naturalistic inquiry. This phase used two methodologies to collect information about student, teacher and parent perceptions of successful and unsuccessful school participation in the primary school years. First, a longitudinal retrospective critical case study was employed to explore the experience of one student with a learning difficulty who experienced problems with school participation over a period of 13 years. Six data collection methods captured contemporary and historical data. Thematic analysis using open and axial coding was applied to the data to discover aspects of participation that remained difficult for this student over time.

Second, data from the case study was complemented by findings from an open ended written response survey in which 50 teachers and 44 parents of students referred to occupational therapy for problems with learning difficulties or school performance, described aspects of participation at school that they perceived to be critical.

The outcome of this phase of the research was increased awareness of the impact of a learning difficulty on participation and the capacity of teachers and parents to describe cognitive aspects of participation. Furthermore, in describing participation, teachers and parents generated an extensive pool of items describing cognitive strategy use.

1.6.2 Research Phase Two: Construction and trial of the PRPP@SCHOOL-Version 1 Teacher Questionnaire and Parent Questionnaire

The next phase of the research involved initial construction and trial of the instrument, PRPP@SCHOOL-1(TQ & POQ). Item selection, wording and category

labelling were derived from teacher and parent descriptions of participation collected during the previous phase. During Phase Two, data on 108 test items were collected on 355 students using the PRPP@SCHOOL-1(TQ & PQ). Of these students, 269 were paired ratings providing teacher and parent perspectives of the same student. A total of 292 teacher questionnaires and 332 parent questionnaires were collected. Two statistical procedures were conducted to examine the clinical usefulness of the PRPP@SCHOOL-1. Frequency distributions (frequencies and percentages) were used to establish a hierarchy of items hypothesised to reflect inefficient cognitive strategy use by students as observed by teachers and parents. Differences in scale ratings between groups for gender and year (grade) enrolled at school were examined using one way analysis of variance (ANOVA).

1.6.3 Research Phase Three: Reliability and validity of the PRPP@SCHOOL-1(TQ & PQ)

The third and final phase of the research adopted a quantitative research design and focussed on the measurement properties of the PRPP@SCHOOL-1(TQ & PQ). This phase involved two separate studies: a reliability study and a validity study. Test-retest reliability was examined using intra-class correlation coefficients (ICC:2,1) with absolute agreement. Content, discriminant, and internal consistency were utilised to develop a unified view of construct validity. The extent to which items in the questionnaire reflected a representative item sample was determined by member checking comprised of consumer review, peer review and a panel of experts. A series of *t*-tests were conducted to determine differences between students with and without difficulties. Factor analysis was utilised to determine the nature of the factors which explained the pattern of relationships among variables in the questionnaires. Resulting

factors were conceptualised as cognitive constructs of participation and labelled accordingly. Cronbach’s alpha was applied to the data to test internal consistency. The outcome of Phase Three of the research was construction of a refined version of the PRPP@SCHOOL-1(TQ & PQ), named PRPP@SCHOOL-Version 2 Teacher Questionnaire and Parent Questionnaire, in which items were retained, removed, collapsed, moved to a different section of the questionnaire or reworded in readiness for initial use as a clinical tool and for further research.

1.7 OUTLINE AND STRUCTURE OF THE THESIS

The format of the thesis includes two peer-reviewed papers that have been published and accepted for review in journal manuscript format. These papers form parts of individual chapters within the thesis. Following APA 6th edition style guide, references cited in traditional text chapters are located after the final chapter of the thesis, while references cited in each manuscript are located at the end of the relevant chapter. The thesis outline is presented in Table 1.1.

Table 1.1 Thesis outline

<p>Chapter Two The aim of the literature review was to examine how the participation of students with learning difficulties at school is affected by inefficient cognitive strategies. Using the Occupational Performance Model (Australia), and information processing theory as frames of reference, this chapter examines the inter-relationship between constructs of participation, occupation, school context, learning difficulty and cognitive strategy use. The chapter includes an investigation of teacher and parent perspectives relative to the assessment of participation and concludes with a critique of currently available assessment instruments.</p>
<p>Chapter Three This chapter comprises three parts.</p> <p>Part A outlines the methodology for the chapter.</p> <p>Part B presents a retrospective longitudinal case study conducted to explore the relationship between learning difficulty and participation. Data were gathered using</p>

six methods: non participant observation (video recording of performance at school), participant observation (note-taking of school performance), historical chart review, narratives from individuals and semi-structured group conversational interviews with teachers and parents. Thematic analysis using open and axial coding to delineate patterns and themes was followed by visual examination of frequency distributions for units of analysis and hierarchical ratings for conceptual categories. Part A has been submitted for publication as Lowe, S and Chapparo, C. Learning difficulty and school participation: A longitudinal case research of one student's experience. *Australian Occupational Therapy Journal*, (Under review: submitted 26th May, 2010).

Part C examines strategy use difficulties experienced by the subject in the case study and identifies cognition as a critical aspect of school participation.

Chapter Four

This chapter comprises three parts.

Part A outlines the methodology for the research presented in this chapter.

Part B reports a **survey** using open ended written response questions conducted to identify teacher and parent perspectives of behaviours that lead to student's successful participation in work roles at school. Part B has been published as Lowe, S and Chapparo, C. (2010). Work at School: Teacher and Parent Perceptions about Children's Participation. *WORK: A Journal of Prevention Assessment and Rehabilitation*, 36(2), 249-256.

Part C examines the link between teacher and parent descriptions of student's participation in school occupations and descriptors of information processing used by the PRPP System of Task Analysis. The purpose of this examination is to determine whether theoretical alignment exists between the two instruments.

Chapter Five

This chapter comprises two parts.

Part A documents the principles which guided the initial **construction** of the PRPP@SCHOOL-1(TQ & PQ).

Part B reports on the initial **trial** of the PRPP@SCHOOL-1(TQ & PQ) and the measurement viability of the instrument.

Chapter Six

This chapter reports on the findings of a **reliability** study of PRPP@SCHOOL-1(TQ & PQ).

Chapter Seven

This chapter reports on the findings of **validity** studies of PRPP@SCHOOL-1(TQ & PQ).

Chapter Eight

Discussion of research findings from each of the chapters is located in Chapter Eight. Recommendations for application to occupational therapy practice and implications for future research are identified.

CHAPTER TWO

LITERATURE REVIEW

The purpose of this chapter is to present a literature review which aimed to examine the inter-relationship of the constructs under study: participation, school occupations, cognitive strategies, learning difficulty, teacher and parent expectations and perspectives, and assessment (Refer to Figure 2.1).

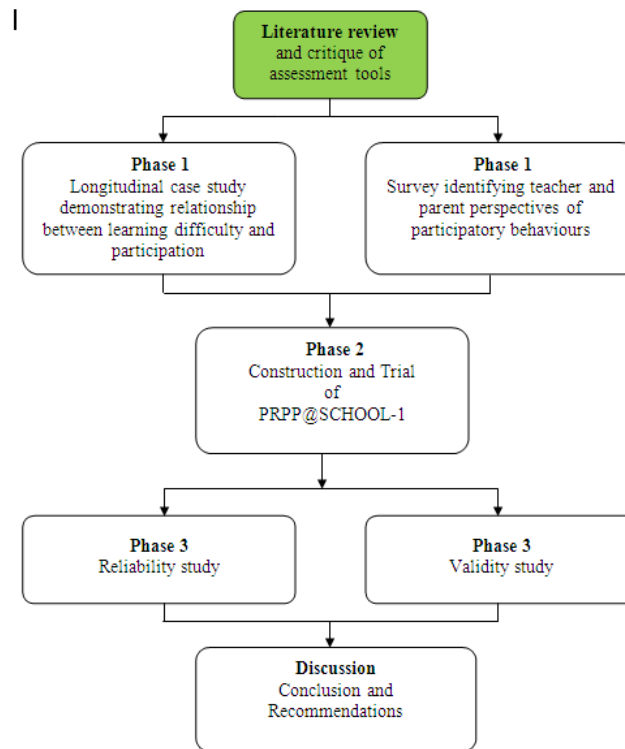


Figure 2.1 Flow chart of phases in the research displaying the relation of this chapter to the thesis as a whole

The chapter is divided into six parts. First, the notion of participation as a multi-faceted phenomenon is discussed. The second part contains a summary of the occupational performance theoretical model used to support this study and a description of student roles, role behaviours and role difficulties. The next part outlines multi-dimensional aspects of the school context which can either support or inhibit the participation of students. This is followed by an exploration of cognition and cognitive strategy use as these terms relate to the capacity of students with learning difficulties to participate in school tasks. The subsequent part addresses participation from the perspectives and expectations of teachers and parents. The final part contains a discussion of the assessment issues relevant to participation and a critical review of currently available assessments accessible to occupational therapists for measuring the research constructs under consideration. The outcome of this part is to identify the clinical utility of these assessments and to highlight any gaps in the measurement of participation in school activities for students with learning difficulties.

2.1 PARTICIPATION

2.1.1 Definition of participation

Participation is defined as the state of being related to a larger whole, taking part, or sharing in common with others (Merriam-Webster Online Dictionary, 2010; Simpson & Weiner, 2002). Participation is both a process and an outcome (Law, Petrenchik, Ziviani, & King, 2006). As a process, participation has been defined as an *experience* involving interaction of people with materials and others in their environment in a way that fits with community and as is appropriate for age, ability and context (McWilliam & Bailey, 1995; Wenger, 1998). As an outcome,

participation has been described on the basis of *performance and capacity* (WHO, 2001). Ultimately, participation involves purposeful and interactive performance, with something and with others that matter, in a highly contextualised way (Rodger & Ziviani, 2006).

The meaning of the term participation in Australian schools has moved beyond theoretical concepts of inclusion and integration (Ministerial Council on Education, 2008). Although these concepts have been met with widespread judicial, legislative, and intellectual support for nearly two decades in this country (McRae, 1996) the implementation of inclusive education in practice has been sporadic, superficial and not well understood (Westwood, 2008). The complexity and demands of inclusion continue to pervade the teaching and learning experience (Shearman, 2003; Slee, 2001). Chapparo (2005) has suggested that in Australian schools inclusion, inserting or adding students with special needs into mainstream schools, and integration, combining or amalgamating these students with typical peers, has fallen short of the vision of participation (Chapparo, 2008). This view has been affirmed by the Melbourne Declaration on Educational Goals for Young Australians (Ministerial Council on Education, 2008) which declared that improving educational outcomes for all students to become successful learners, confident and creative individuals, and active and informed citizens is central to education in Australia. A commitment to action resulting from this declaration is a focus on student engagement, and conversion of this engagement into learning because of the “significant impact of engagement on student outcomes” (p.12). Outcomes of learning are defined by the Education Ministers in terms of “equipping students with the knowledge, understanding, skills and values to take advantage of opportunity and to face the challenges of this era with confidence” (p. 4). Commonwealth and NSW

legislation has enshrined the principle that students with special needs, including those with learning difficulties, need be provided the “same opportunity to participate at school as all other students” (NSW Legislative Council, 2010, p. 10).

2.1.2 Characteristics of participation

Essential characteristics of participation include satisfaction, meaning and balance (Law, 2002b). Experiencing successful engagement in school roles and resilience in the face of failure or reduced accomplishment contributes to students developing feelings of self-satisfaction (Chapparo & Lowe, in press-a). The presence of others in the participation relationship means that a student’s capacity to participate is considered relative to the satisfaction of teachers, parents and peers. For some students, many school activities lack meaning because students do not understand their purpose and usefulness (Vosniadou, 2001). Meaningful participation necessitates a perception of choice/control (*desire* to participate), a supportive environment (*opportunity* to participate), and a sense of mastery of physical, cognitive, social and emotional skills (*capacity* to participate). Balance between the challenge of an activity and the skill of a person is crucial (Moneta & Csikszentmihalyi, 1996). However information regarding characteristics of participation in school activities for students who experience participation difficulties is scarce (Almqvist & Granlund, 2005).

2.1.3 Factors impacting on participation

Multiple factors enable or disable participation (Almqvist & Granlund, 2005; Law, 2002a). Internal factors impacting on participation have been identified as skill acquisition (Law, 2002a), physical (Mancini & Coster, 2004), gender (Frydenberg, Ainley, & Russell, 2005), cognitive (Katz, Parish, & Traub Bar-Ilan, 2005), social

(Wight & Chapparo, 2008) and emotional including self-efficacy (Bandura, 1997), motivation (Frydenberg, et al., 2005), resilience (Strand & Peacock, 2002) and locus of control (Frangenheim, 1998). External factors have been recognised as school context (Bronfenbrenner, 1979; Ziviani, Kopeshke, & Wadley, 2006) including positive expectations, opportunities for participation, availability of time, supportive milieu (King, McDougall, DeWitt, Hong & Miller, 2005), school rules, customs, presence of multi level curriculum, teaching philosophies, peer supports, and specific learning materials (Letts, Rigby, & Stewart, 2003). Variables such as income, parental education, occupational status, ethnicity and nutrition and psychosocial support of family and friends are also relevant (Crowe, 2006; Frydenberg, et al., 2005; Law, 2002a). Furthermore, Foucault (2002) has suggested that power and knowledge are additional external societal variables that have been used to marginalise people, including students, who are different from the *norm* during their attempts to participate in everyday activities.

2.1.4 Importance of participation to occupational performance

The notion of participation has been considered important by many professions since the introduction of the International Classification of Functioning, Disability and Health (World Health Organisation, 2001, p. 12). The occupational therapy profession considers participation a priority, with its unique and overarching outcome stated as engagement in occupation to support participation in context (American Occupational Therapy Association, 2002; Canadian Association of Occupational Therapists, 1997; Occupational Therapy Australia, 2010). Occupational therapists work with people to enable participation in activities within natural contexts

and to develop and maintain occupational roles (Chapparo & Ranka, 1997; Gantschnig & la Cour, 2010; Law & Baum, 2005).

Participation is considered to be important for health, well being, psychological, emotional, and physical and social development in all spheres of life (Fisher & Griswold, 2009; Galvin, Froude, & McAleer, 2010; Larson & Verma, 1999; Law & Baum, 2005). Moreover, it is thought to not only enable students to function but to flourish, to be accepted and to belong, to experience self-efficacy, and to take risks for new learning (Mandich, Polatajko, & Rodger, 2003). It is intrinsic to academic success (Craven & Hogan, 2001; Sirin & Jackson, 2001) and accounts for differences in learning outcomes between typical students and those with either physical or learning difficulties (Kavale & Forness, 1996). In addition, participation has been associated with effective social relationships (Masten & Coatsworth, 1998), and decreased incidence of emotional/behavioural difficulties (Rutter, 1990; Stewart, Reid, & Mangham, 1997; Stiffman, Jung, & Feldman, 1986). Moreover, the quality of student participation is considered to be a significant predictor of successful participation across the lifespan (Van Horn, Atkins-Burnett, Karlin, Landesman Ramey, & Snyder, 2007; Zingerevich & LaVesser, 2009).

2.2 SCHOOL OCCUPATIONS AND PARTICIPATION

Occupations have been defined as the routine, ordinary and everyday things people do including actions, tasks, routines, thinking and being (Christiansen, Clark, Keilhofner, & Rogers, 1995; Law, Baum, & Dunn, 2005a). For students, occupations are activities (tasks and routines) that are goal directed, influenced by their school context and are meaningful to the student's needs or desires (Christiansen & Baum, 2005).

2.2.1 Occupational Performance Model (Australia): An hypothesised view of the role of cognition in participation

The Occupational Performance Model (Australia), OPM[A], (Chapparo & Ranka, 1997) was selected to shape this research for two reasons. First, cognition, central to this research, is identified as a key performance component in the OPM(A), and is linked directly and indirectly by interaction or relationship arrows to every construct within the model. (Refer to Figure 2.2).

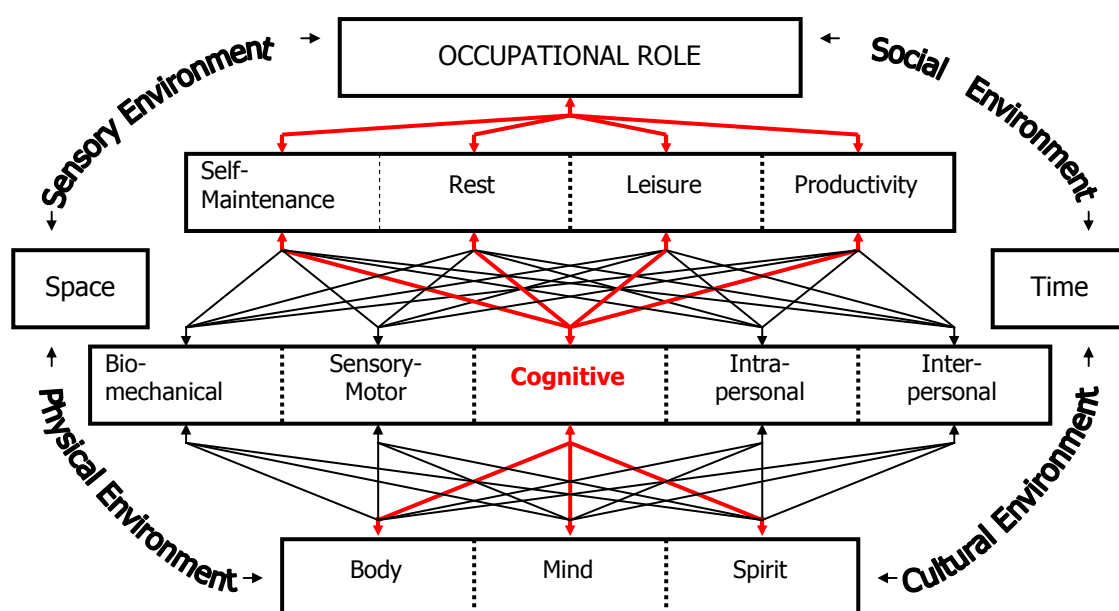


Figure 2.2: Relationship of cognition to other constructs within the Occupational Performance Model [Australia] (Chapparo & Ranka, 1997)

Second, relationships between cognition and other constructs are hypothesised and demonstrated within the OPM(A) via the Perceive, Recall, Plan, and Perform (PRPP) System of Task Analysis (Chapparo & Ranka, 2005). The PRPP System of Task Analysis is an assessment model which is central to the development of the assessment instrument that is the focus of research in this thesis. (Refer to Figure 2.6). The PRPP will be discussed in detail later in this chapter (2.5.4.4 and 2.5.4.5).

In the OPM(A), occupation is defined as “purposeful and meaningful engagement in roles, routines, tasks and subtasks for the purpose of self–maintenance, rest, leisure and productivity” (Chapparo & Ranka, 1997, p. 4). In the early years of school, students participate in occupations that have never before been required of them. They perform self-maintenance occupations such as keeping their desk tub organised, rest occupations such as day dreaming during tasks, leisure or play occupations such as reading a book for pleasure and telling a joke to a friend at recess, and productivity or work occupations such as discussing a topic and completing a comprehension worksheet (Hooper, 2000). These occupations are the focus of this thesis.

Central to the concept of occupational performance for students at school is the relationship between students, the environment of the classroom and playground, and the activation of this relationship through participation in school activities either independently or with others (Baum & Christiansen, 2005). Students and their school occupations are represented in the OPM(A) as the ‘occupational person’ or internal context. It is comprised of constructs labelled in this conceptual model as (a) occupational roles, (b) occupational performance areas of self maintenance, rest, leisure and productivity, (c) occupational performance components of biomechanical, sensory motor, cognitive, intra- and inter-personal, and (d) core elements of occupational performance, body, mind and spirit (Chapparo & Ranka, 1997).

Of these three core elements, the mind is fundamental to the occupational performance of students with learning difficulties. The OPM(A) defines mind as the “core of our conscious and unconscious intellect which forms the basis of our ability to understand and reason” (Chapparo & Ranka, p. 12). The mind is both the anatomical organ and the functions that it processes (VandenBos, 2007). Learning is

described as a brain based behaviour involving complex neural processes which may contribute to the child's capacity to learn throughout school (Bransford, Brown, & Cocking, 2000). Similarly, learning disorder is considered a brain based disorder, the result of a central nervous system whose processes lack synchrony and optimal functioning (Bransford, et al., 2000) in spite of a child's desire and opportunity to learn. There is consensus that the impact of a disordered 'mind' on school participation is complex and profound, although the mechanisms underlying this impact remain unclear.

The environment of the classroom and playground is represented in the OPM(A) as 'outside the person' or the external context. The external context is comprised of cultural, physical, sensory and social surrounds which exist in time and space. During participation in school activities, it is proposed that dynamic relationships between the participation context (for example a classroom) in the form of participation expectations (for example, of the teacher and peers) and other aspects of occupational performance (for example, the activities that have to be done), underpin the belief that aspects of school context are particularly critical elements of participation (Dorsh & Keane, 1994; Maheady & Sainato, 1986). Stewart and Rosenbaum (2003) argue that school based *performance* (what a student actually does in his or her own environment) may be quite different to clinic based *capacity* (a student's ability to perform a task at the highest probable level of functioning). The balance in any relationship between occupational performance and contextual expectations has been defined as *fit* (Rigby & Letts, 2003). The degree of fit between the internal capacity of the student and the demands of the school task that has to be performed, or context in which performance occurs has been identified as crucial when determining a student's successful participation in school roles (Bundy, 1995;

Kellegrew & Allen, 1996). Any discrepancy between performance and capacity might be referred to as a *lack of fit* (Case-Smith, 1997) between relationships within constructs of the OPM(A) rather than difficulties that are inherent within the constructs themselves.

2.2.2 Occupational roles and participation

Participation in school occupations is embedded in roles, a “set of behaviours that have a socially agreed upon function and for which there is an accepted code of norms” and as such have expected responsibilities and privileges (Christiansen & Baum, 1997, p. 56). At school, students learn the behavioural and task expectations associated with a large number of roles. Each role has expectations of the amount and type of participation with materials or people. Associated with these expectations, is the notion that each role has a repertoire of different expected role behaviours, which can range from being directed or negotiated, taught or assumed, explicit or subtle, consistent or variable, teacher driven or student engendered (Chapparo & Lowe, in press-a; Hooper, 2000; Chapparo and Hooper, 2002).

Students may experience difficulty balancing role expectations, adopting specific roles, matching certain roles to particular situations, or transitioning between roles (Chapparo & Ranka, 1997; Pearl & Donohue, 2004; Tur-Kaspa, 2002). School roles may have overt, clearly stated expectations, or covert expectations in which role behaviour is subtly communicated (Chapparo & Lowe, in press-a). Students who have difficulty recognising and understanding facial expressions, tone of voice and body language may not identify these unstated expectations. Lack of success in role participation, whether it be difficulty in the role of learner (e.g. disordered written expression), the role of worker (e.g. incomplete task performance), or the role of self-

maintainer (e.g. frequent loss of belongings), can lead to strong disapproval from teachers, parents and peers (Chapparo & Lowe, in press-a; Rodger & Ziviani, 2006).

One of the hypotheses emanating from this thesis is use of the concepts outlined in the OPM(A) which suggest three dimensions of occupational role performance: *knowing*, *doing* and *being*. Using those concepts, this thesis raises the proposition that participation in expected school roles may be informed by what the student knows about the student role and how well the student understands their role within the school context (*knowing*). 'Knowing' organises student engagement in participation (*doing*), from which students develop a sense of satisfaction and value in *being* a participant (Chapparo, Innes, Ranka, Hillman & Donnelly, 2010). This current study emphasises the *knowing* aspect of participation in expected and needed student roles, specifically through the use of cognitive strategies. For successful participation, it is thought that *knowing* is more than knowing letter formation, shapes or numbers. Rather, students need to know what the expectations are for task performance, when to do/not do something, who to do it with, where to do it, how to carry it out, and why it needs to be done (Winne and Perry, 2000; Rubie-Davies, 2010).

Participation becomes the means by which students, whether they be workers or players, self maintainers or friends, connect with each other in their school community (Law, 2002b). While expectations of participation in school activities is clear, often the student has to glean this knowledge from tacit information that changes from task to task and from situation to situation, depending upon the participating partner (Reifel, 1988). Participation therefore, can be hypothesised as a particular and flexible form of engagement that requires all participants to understand salient situations, negotiate common outcomes, and apply the rules and procedures required for achieving these outcomes.

A group of people who belong together and participate together through a common occupation can be described as a tribe (Merriam-Webster Online Dictionary, 2010). School can be considered a tribal community based around the purpose of learning in which tribal participation demands a unique structure, language, belief system, membership and set of rules, customs and rituals for being and doing in work and play. Tribal qualities such as cooperation, sharing, trust, and loyalty are important for students to know their place in this community and to have a clear concept of their social identity: knowing who they are in relation to other students. The school community adopts distinctive adornments (e.g. uniform code), emblems of allegiance (e.g. motto) and behaviours (e.g. use of time and space in relation to the classroom and playground) to signify community membership. School becomes a place of belonging in which students sense they have more in common with each other than with students from neighbouring schools or even from other classrooms, as each class within a school has its own teaching style, learning expectations, seating arrangements and rules forming a more tightly organised structure. While belonging is important for all students it is crucial for the resilience of many at-risk students (Finn, 1989; Vaz, Passmore & Cocks, 2010) including those with learning difficulties.

The information in this section of the literature review leads to hypothesizing whether *participant* is a meta-role, or whether it is a fundamental component of all roles. Certainly being ‘a participant’ is a common thread in the role literature. ‘Participant’ may well be a generic role term which encapsulates a fundamental tenet of occupational performance. While the notion of student roles at school is established (Rodger & Ziviani, 2006), in-depth information about the place of participation and elements of being a participant at school is notably absent from occupational therapy literature.

The remainder of this section examines the types of school and home based school activities that are expected of students in the school context using the four occupational performance areas within the OPM(A): productivity (work), leisure (play), rest and self-maintenance.

2.2.2.1 Participating in work activities at school

“Sometimes it feels a bit like being a robot....like as if the teacher is in the middle of the room with a great big remote control and you have to be able to do everything she says or you will get into trouble” (Hackett, 2003, p. 311) Year 2 student.

School has been defined as the students’ first workplace where they learn how to work. Parents expect their children to work hard at learning and teachers encourage their students to be competent workers (Chapparo & Hooper, 2002). Students’ work has been described as being useful, teacher-directed, needing simultaneous performance with other students, requiring the use of same materials to construct similar products, and involving a level of difficulty that requires sufficient effort and concentration (Chapparo & Hooper, 2002; Wing, 1995). Students need to learn participatory work behaviours for working independently in whole class instructional groups and for working collaboratively in small focus groups. They need to know the expectations for school work whether it be desk work, group work, class work or home work (Chapparo & Lowe, in press-a).

A critical factor for successful participation in school work is the capacity to engage in work relationships that involve dynamic social processes and sophisticated cognitive processing skills (Helme & Clarke, 2001; Wenger, 1998). While many students indicate they do not always enjoy school work, based on their perceptions of the effort required, they do value their participation in work, particularly when

participation results in mastering challenging tasks (Briggs & Nichols, 2001; Chapparo & Hooper, 2002; Devine, 2002).

Students who fail to keep pace with the growing expectations for producing work, and who exhibit inefficient productivity have been described conceptually as having “working disabilities” or developmental output failure (Levine, Oberklaid, & Meltzer, 1981, p. 18). Difficult performance in school work is a primary contributor to decreased school participation (Hemmingsson & Borell, 2002).

2.2.2.2 Participating in play activities at school

“*You play a game, you play nothing, you just go outside and play*” (Hooper, 2000, p. 76) Year 1 student.

Play occupations at school are those activities which are performed for the purpose of entertainment, creativity, celebration or play (Chapparo and Ranka, 1997). A *player* has been defined as someone who actively participates in a play activity of choice, who is self-directed and intrinsically motivated (Burke, 1993; Parham, 1996). Play, typically an enjoyable spontaneous occupation, is structured at school in terms of definite time and space boundaries, for example, recess for 15 minutes in the top playground (Garvey, 1991). For students, play is dynamically and reciprocally linked with role partners or *friends* (Burk, 1996; Hooper, 2000). Typically, students participate in different levels and types of play which mature as students learn how to develop complex themes and problem solve the often challenging social interactions associated with it (Chapparo & Lowe, in press-a). Friends are intimate role participants, with friendship the most valued prize throughout school life (Chapparo & Lowe-a). For some students making and keeping friends is an enjoyable experience, for other students it is an overwhelmingly challenging experience

(Lavoie, 2005; Webster-Stratton & Reid, 2004). For students who wander the periphery of the playground and who cannot name another student as friend, the role of participant is fragile at best and sometimes non-existent.

2.2.2.3 Participating in self-maintenance activities at school

“Wearing our hats stops us getting sunburnt” (Chapparo & Hooper, 2005, p. 72) Year 1 student.

Self-maintenance or self-carer occupations at school involve participating in activities carried out to preserve health and well-being, and to look after self (Chapparo & Ranka, 1997; Primeau & Ferguson, 1999). For the student in the role of *self-maintainer*, activities have typically included personal hygiene, dressing, eating and toileting (Orr & Schkade, 1997), however Donelan-McCall & Dunn (1997) added self-control and self-organisation as being critical to self-maintenance at school. Students associate self-maintenance with (a) personal safety linked with consequences e.g., not running on the cement because you might get a detention, (b) psychosocial survival e.g., staying away from bullies, (c) following rules e.g., staying within bounds, and (d) feelings of success and self-efficacy following mastery of self-care skills e.g., tying shoelaces (Chapparo & Lowe, in press-a; Chapparo & Hooper, 2005). Students also perceive the self-maintainer role to be a role in which activities are mostly conducted independently, and that when another child participates (e.g. helping another student to pack their bag) it is perceived by either child as either play, fun to help, or work (Chapparo & Lowe, in press-a). Given these findings it is important that consideration be made of the role of participant in self-maintenance activities which may extend beyond the commonplace, examining the impact of

elements such as self-control and self-organisation in occupations over the course of a day, a week, or even a school year.

2.2.2.4 Participating in rest activities at school

“When you daydream you’re lost, you’re lost in your mind” (Hooper, 2000, p. 80)

Year 1 student.

Rest is defined in the OPM(A) as the purposeful pursuit of non-activity, involving activities in which the objective is relaxation. Little research has been done on how typical students, or students with learning difficulties, purposefully organise work/play/rest at school, and to what extent participation of others, such as peers and teachers impact. Students rest when they take time out from busy or difficult work by daydreaming, going to the toilet or sharpening their pencil (Hooper, 2000). The students in Hooper’s study spoke about resting their minds as well as resting their bodies and that this was largely a solitary activity, devoid of role partners. Many students who demonstrate difficulties with the participant role across work, play and self-maintenance activities also experience brain and body ‘overload’ (Akin, 2010; Kirschner, 2002). Further research about the place of purposeful planning of rest during the school day is needed.

2.2.3 Performance capacities and participation

While success in participation at school requires efficient motor, sensory, cognitive, intra- and inter-personal capacities (Chapparo & Ranka, 1997), this review will focus on the link between students’ cognitive capacity and participation in school tasks, as cognition is the focus of this thesis (Refer to Figure 2.2). The cognitive component in the OPM(A) refers to both the cognitive processes of the person (e.g.,

recognising, remembering, problem solving) and the cognitive dimensions of the task (e.g., task complexity), and is linked to *knowing* dimensions of participation as outlined above. The cognitive component will be explored further in Section 2.3 below.

2.2.4 Socio-cultural context of school participation

Participation in learning at school is recognized as a situated event (Cobb, 2001; Lave & Wenger, 1991; Siegler, 1996; Slee & Shute, 2003; Wenger, 1998) or *situated occupation* (Law, 2002b). School is thought to be an ecosystem, within which learning emerges from the reciprocal influence of the learner actively participating with things and people in context (Lawson, Askill-Williams & Murray-Harvey, 2006). Context is therefore a critical facilitator or inhibitor of student participation at school (Almqvist & Granlund, 2005; Gray & Salorio, 2010; Rogers, 1983). While it is acknowledged that the sensory and physical dimensions of the school context contribute to successful participation, this review addresses the socio-cultural context of school as the major contributor to successful participation.

Students learn through and from their social participation with other students and teachers (Bandura, 2001; Schunk & Zimmerman, 1997; Vosniadou, 2001). Learning, a dynamic interpersonal event, is therefore significantly effected by the socio-cultural context in which it occurs (Lerner, 2000; Vygotsky, 1978). Vygotsky suggests that students learn by internalising the activities, habits, vocabulary, and beliefs of the community in which they participate. Social context is created by patterns of relationships between people who function in a particular group (Chapparo & Ranka, 1997). Within each school, groups of students and teachers establish similar

but uniquely different behavioural norms, expectations and boundaries (Chapparo & Ranka, 1997; Feuerstein, 1980; Ziviani & Rodger, 2006).

Social skills are considered important for school success with the underlying assumption being that social skill competence increases amenability to learning (Gresham & Elliott, 2008; McClelland & Scalzo, 2006). Learning in the 21st century classroom is no longer considered something that students do individually. Rather learning is considered a shared learning experience involving small student groups participating in activities such as sharing knowledge to solve a maths problem, cooperating to conduct a science experiment and taking turns to listen and read a story with each other (Wenger, 1998). In the classroom, students are required to be perceptive to understanding social nuances, be aware of how one's actions affect others and how one's behaviour may be interpreted (Lerner, 2000).

While social abilities are a significant factor for participation, the nature of this relationship has been widely debated (Cone, Fulton, & Van Nieuwenhuysse, 2000; McLellan & Katz, 2001; Wight & Chapparo, 2008). Differentiation has been made between interpersonal social skills and learning-related social skills (Lim, 2010). Interpersonal social skills requiring emotion regulation and shared understanding are required for maintaining friendships and engaging in play (Guralnick, 2003; Lim, Rodger, & Brown, 2010). Learning-related social skills including self-regulation, responsibility, independence and cooperation are required for positive classroom behaviours and group work (McClelland & Morrison, 2003; McClelland & Scalzo, 2006).

Deficits in situated social skills have been described as one of the most crippling problems that students can experience with researchers suggesting that students with learning difficulties are more vulnerable to deficits in social competence

than their typical peers (Lerner, 2000). While difficulties with social skills are reported to be experienced by 15% of typical primary school students, 75% of students with a learning difficulty are reported to have difficulties with social skills (French & Tyne, 1982; Kavale & Forness, 1996). Although children with physical limitations frequently need adjustments it has been identified that accommodating their needs is met to a more satisfactory extent than that of students with psychosocial limitations (Egilson & Hemmingsson, 2010).

2.2.5 Space and time

Participation, when viewed as intrinsic to roles at school is embedded in space and time which can constrain or enable success (Zemke, 2004). The OPM(A) refers to the notion of physical space as well as ‘felt space’. This felt space is concerned with the “meaning people attribute to space, the way they use it and their interactions within it” (Chapparo & Ranka, 1997, p. 16). Similarly, time is experienced as physical time, the sequential or simultaneous occurrence of events, and by ‘felt’ time which is a “person’s understanding of time based on the meaning attributed to it” (Chapparo & Ranka, 1997, p. 18). Role participation is thought to be modified over time, resulting in behavioural expectations of performance changing from time to time (time), and from situation to situation [space] (Ziviani & Muhlenhaupt, 2006). Personal time management and knowing about time (time of day, time to go, how long things take) is an expectation of successful participation in the many school activities that have rhythm, tempo, synchronisation, duration and sequencing components (Larson & Zemke, 2004). Aspects of time impact on schedules resulting in lessons and days which can be either routine, flexible or unpredictable, requiring children to adapt by changing their thinking (Galvin, Froude, & McAleer, 2010; Ziviani & Muhlenhaupt,

2006). Understanding and using time is critical to be ‘in sync’ with other participation partners. These elements can be challenging for students with learning difficulties who experience problems in time perception, orientation and management (Janeslatt, Granlund, Kottorp, & Almqvist, 2010).

In summary, participation at school can be viewed through an occupational lens in terms of children being able to engage in school roles by learning what they have to do (school occupations), knowing when and where they have to do things (situating their roles in the space and time of the school day), and attributing meaning to why they do things (Chapparo & Lowe, in press-a). Students participate in activities that occur in specific contexts (Lawson, et al., 2006). The ecology of school is a critical element of participation (Dorsh & Keane, 1994; Maheady & Sainato, 1986) with Stewart and Rosenbaum (2003) reinforcing the notion that school based *performance* (what a student actually does in his or her own environment) may be quite different to clinic based *capacity* (a student’s ability to perform a task at the highest probable level of functioning). For this reason an ecological approach to assessment with focus on the discordance between student and context, as well as factors within the student has been urged (Chapparo, 2005; Dean & Burns, 2002). Educational outcomes of participating in learning at school is that students are able to “extend or abstract”, their knowledge beyond the context in which that knowledge was first acquired (Lawson, et al., 2006, p. 20), implicating the role of cognition in this participation process.

The next part of this chapter explores cognitive strategies, as one such factor within the student, and their relationship with school participation for students with learning difficulties.

2.3 COGNITIVE STRATEGIES

As described above the link between the ability to use cognition for participation in roles, tasks and contexts is illustrated in the OPM(A) by the arrows connecting the cognitive performance component with productivity and leisure performance areas, occupational role and mind constructs (Refer to Figure 2.2). In this part of the chapter the notion of cognitive strategies was explored and the impact of inefficient cognitive strategy use on the participation of students with learning difficulties across academic and social domains was outlined.

2.3.1 Cognition and learning

Learners have the capacity to acquire and utilise relatively enduring information, abilities, or behaviour patterns in order to adapt to environmental expectations and to carry out desired or expected outcomes (Anderson, 2005; Bruer, 1996; Lidz, 1987; VandenBos, 2007). From the early 1970's, theorists have proposed that information processing models of cognition are a feasible way of conceptualising how cognitive information is processed and used. Models reflect the flow of information during the learning process through the human information processor (nervous system) as an input, processing and output feedback system (Refer to Figure 2.3).

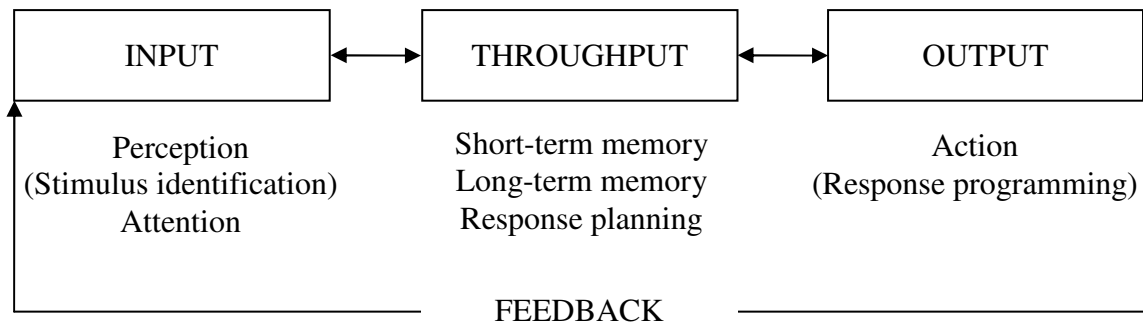


Figure 2.3 Conceptualisation of a simplified model of information processing

(Schmidt & Wrisberg, 2004)

This information flow involves the initial reception of information using perceptual systems, then a processing function involving memory and decision-making processes and finally an action or behaviour via response mechanisms (Lerner, 1997; VandenBos, 2007).

2.3.2 Executive functioning

Participation in challenging occupations requires executive functioning, a supervisory attentional system (Norman & Shallice, 1986), defined as “high-order functions in non-routine situations such as novel, conflicting or complex tasks” (Godefroy, 2003, p. 1). It is the “self directed mental activities that occur during the delay in responding, that serve to modify the eventual response to an event” (Barkley, 1997, p. 56). Executive function results in self-organisation, and involves the ability to sustain or shift attention, delay or inhibit responses and resist interference in order to orchestrate goal directed behaviour (Cermak, 2005; Zingerevich & LaVesser, 2009). This includes but is not limited to planning, developing and using strategies, initiation of actions, flexible sequencing of actions, carrying out goal directed behaviour, reasoning, problem solving and self-correcting in response to feedback

(Katz & Hartman-Maeir, 1997; Luria, 1966; VandenBos, 2007). Executive functions involve processing of complex material, or that which is novel and non-routine, or when routine responses and knowledge are judged as insufficient or unavailable for use (Stuss, 1992).

2.3.3 Metacognition

Executive functioning is considered by some researchers as part of metacognition (Katz & Hartman-Maeir, 1997; Ylvisaker & DeBonis, 2000). Others argue that the terms metacognition and executive functioning, originating from different fields of study and from different times, are overlapping but not synonymous constructs (Harris, Reid and Graham, 2004). There is consensus that cognition can be controlled through metacognitive processes (Weinstein, Husman, & Dierking, 2000). Metacognition is concerned with the knowledge a learner has about the skills, strategies and resources needed to effectively meet the expectations of particular activities (Harris, Reid, & Graham, 2004). This occurs in synchrony with the ability to reflect on that knowledge, to know how to regulate behaviour, to understand when errors are being made and to know how to correct these errors in order to maximise the learning process and outcomes (Vosniadou, 2001; Winne & Perry, 2000). It is a state of self-awareness and self-reflection defined as the capacity to objectively perceive self while maintaining a sense of subjectivity and is therefore an interaction of thinking and feeling (Katz & Hartman-Maeir, 1997; Stuss, 1992). Metacognitive knowledge and metacognitive action enable people to reflect on their problems and to achieve desired or needed outcomes by planning, checking progress towards their goal, modifying their plans or changing their strategies (Lawson, et al., 2006). Metacognition lays the foundation for transfer and generalisation of learned skills to

everyday functioning and is therefore a critical link between cognition and participation in occupational performance at school (Katz & Hartman-Maeir, 1997).

2.3.4 The nature of cognition and learning about participation

In an attempt to understand the world around them children develop and transform representations of their world. As these representations become deeper and more powerful configurations, children's understanding of their world becomes more precise and they are able to apply their knowledge through a range of cognitive processes and strategies. They develop strategies which can be used across a wide range of tasks including "strategies for attending, analysing given information, selecting important details, elaborating and relating new information to prior knowledge, organising knowledge, and carrying out searches for knowledge" (Lawson, et al., 2006, p. 21).

Children's thinking is highly variable at all ages, in all thought and action domains and at all points in learning (Chen & Siegler, 2000; Siegler, 2007). This variability is thought to assist children to amass a repertoire of strategies, useful for solving problems in everyday function at school. For example, Alibali (1999) found that children in the third and fourth grades used at least ten strategies in both speech and gesture while solving maths problems in class.

By the age of three years children have an awareness that they and others *know* things, and they can use multiple attention strategies to solve academic problems presented to them. By the age of four years, children have an understanding of false beliefs indicating the beginning of 'meta-strategic knowing' (Flynn, O'Malley, & Wood, 2004; Tinsley Li & Rogers, 2006; Tunteler & Resing, 2002). Preschool students have demonstrated an understanding that emotions can result from

internal or external events, and by 10 years of age students use cognitive strategies to change their emotions (Ochsner & Gross, 2004). The capacity to generate strategies, with strategic behaviour becoming organised and efficient between seven and eleven years of age, is relatively mature by twelve years of age (Anderson, 2002).

Accompanying these task and behavioural strategies are multiple *information gathering* strategies (Siegler, 2007), where children gather and manipulate information that is most appropriate to the salient problem. These information gathering strategies change within and between tasks. The ability to generate numerous thinking strategies when a problem is presented predicts generalisation (Goldin-Meadow & Alibali, 2002), and subsequent learning (Siegler, 2007). The diversity of strategies and the ability to change strategies have been linked to recall (Coyle, 2001). Cognitive flexibility which is the result of diversity of strategies can be thought of as the capacity of children to inhibit automatism and to decentralise themselves from the present situation, thereby forming the basis for ‘theory of mind’ capacity and imagination. It is children with higher cognitive flexibility, rather than higher cognitive capacity per se, that are most cooperative within social interactions with peers where a common goal is achieved together *with* the other person and not *against* him/her. No other factors (neither gender nor age) seem to play an important role (Miceli, Bonino, Ciairano, & Cognitie, 2006). Children with high flexibility carry out many co-operative behaviours, less neutral ones, and very few non-cooperative ones. Children are thought to choose adaptively from among strategies. That is, they choose strategies that ‘fit’ the demands of problems and circumstances (Siegler, 2005). With increased experience using thinking strategies children become even more adaptive as they develop. Their problem solving becomes quicker and more finely calibrated (Adolph, 1997). The success of cognitive interaction with the

learner's world is dependent upon both the quality of their knowledge schemas and the way these schemas are used when cognitive strategies are applied (Lawson, et al., 2006). A summary of strategic learning strategies gleaned from the literature reviewed is encompassed in Table 2.1.

Table 2.1 Summary of strategic learning strategies

- Learning strategies include any thoughts, behaviours, beliefs, or emotions that facilitate acquisition, processing, understanding, or later transfer of new knowledge and skills (Weinstein, et al., 2000).
- Learning strategies are concerned with the way learners approach challenging activities and problems by choosing from a repertoire of tactics those they believe to best fit the situation and applying those tactics appropriately (Winne & Perry, 2000).
- Learning strategies may differ in their accuracy, their difficulty of execution, their processing demands, the speed of application and the range of situations to which they apply. However, the broader the range of strategies which students can use efficiently and quickly, then the more successful their learning (Vosniadou, 2001).
- Learning strategies are purposeful, deliberate, and effortful. They are goal directed behaviours directed by a learner towards the acquisition and processing of information (Stroud & Reynolds, 2006; Toglia, 1998).
- Learning strategies are dependent on the learner's exposure to effective models of the use of explicit strategies and to environments which provide opportunity for rehearsal (Swanson, Cooney & McNamara, 2004; Weinstein, et al., 2000).

Competence in strategy use, based on the model of strategic change by Lemaire and Siegler (1995) has been distinguished by four dimensions.

- *Strategy repertoire*, referring to the different strategies a student uses to solve a task.
- *Strategy distribution*, involving the relative frequency with which each strategy is used.
- *Strategy efficiency*, concerning the accuracy and speed of strategy execution.
- *Strategy selection*, relating to the adaptiveness of individual strategy choices

(Torbeys, Verschaffel, & Ghesquiere, 2004)

‘Good’ strategy users are thought to know and use the following three kinds of strategy knowledge

- Declarative knowledge, knowing about a variety of strategies.
- Procedural knowledge, knowing how to use those strategies effectively
- Conditional knowledge, knowing when and why to use particular strategies

(Weinstein, et al., 2000; Zimmerman, 1989).

Occupational performance depends on a person’s ability to select the most appropriate cognitive strategies that result in efficient processing of information (Nott & Chapparo, 2008). In this current research it is hypothesised that learning to apply cognitive strategies is critical to participation (Weinstein, et al., 2000). The following sections examine how information is processed and the processing strategies that occur at each stage of the information processing system.

2.3.5 Information processing input stage

Using the basic information processing model (Refer to Figure 2.3) information is registered through internal senses (e.g., visual, tactile, auditory, kinaesthetic and proprioceptive sensory receptors). If information is considered important, attention will be allocated to processing it further, otherwise it fades (Eysenck & Keane, 2000). Attention has been defined as “a state of awareness in which the senses are focussed selectively on aspects of the environment and the central nervous system is in a state of readiness to respond to stimuli” (VandenBos, 2007, p. 82). The quality of perception is dependent upon the individual’s past experiences and the ability to organise and attach meaning to the stimulus event (Lerner, 2000). It is possible that processing strategies from this stage of information processing that are needed for successful participation include attention to visual and verbal information, attention span (sustained attention), divided attention (attention for multiple demands) and most importantly whether the student is alerted to a stimulus which is meaningful within the context of a participatory event (LeBlanc, 2010; Lerner, 1997).

2.3.6 Information processing throughput stage

The next stage of information processing is throughput which involves several cognitive processes. Sensory stimuli are registered, categorised and coded before being stored in memory. Memory is defined as the ability to receive, store, retain and retrieve previously experienced sensations and perceptions when the stimulus which induced them is only in the “mind’s eye” (Lerner, 1997, p. 204). Short term memory, held in conscious awareness and receiving current awareness, and long term memory, held in storage ready to be recalled, have been theorised to be separate fundamental

functions (Groome, Dewart, Esgate, Gurney & Kemp, 1999). While it was originally thought that information was directly transferred from short term to long term memory stores (Atkinson & Shiffrin, 1968), current conceptualisations suggest memory to be located in many different brain sites depending on the type of information “held in mind” (Craik, 2002, p. 308). The ability to remember new information is critical for participation in academic tasks (Benson, 2010; Josman, 2005). The ability to activate prior knowledge and to relate new information to this prior knowledge is critical for understanding and learning (Vosniadou, 2001). Errors in keeping information in mind while simultaneously manipulating the same, or other, information (i.e., working memory) have been observed in the performance of students with learning difficulties (Passolunghi & Siegel, 2001; Swanson & Sachse-Lee, 2001). Working memory plays a significant role in the participation of challenging activities such as comprehension, learning and reasoning for these students (Baddeley, 2002b).

Response selection including organisation, control, regulation, planning, evaluation and decision-making all take place in this information processing throughput stage. These cognitive processes are entwined through numerous multidirectional feedback loops with schemas of past experiences (Shumway-Cook & Woollacott, 2007). By accessing prior knowledge, students have the capacity to apply rules or known procedures to participation, allowing less time to be allocated to action planning. Students with learning difficulties have been observed to demonstrate difficulties with cognitive processes in this throughput stage, specifically self-awareness, goal setting, proactivity, organising, choosing, decision making, sequencing and evaluating (Pulis, 2002; Raskind, Goldberg, Higgins, & Herman, 1999).

2.3.7 Information processing output stage

Decisions made during the throughput stage are processed further using a feedforward mechanism in order to generate and calibrate responses (i.e., thoughts, ideas, actions, words). At the same time, these output responses provide a continuous form of feedback resulting in the information processing system keeping itself informed at all times about performance as it is happening. Through multiple input, feedforward and feedback loops in the system are able to “evaluate performance and store information for future reference” (Ranka, 2010, p. 44).

The cognitive strategy items and item categories contained within the Perceive, Recall, Plan and Perform (PRPP) System of Task Analysis have been aligned with each of the input-throughput-output stages of the information processing model, and are outlined in Figure 2.4.

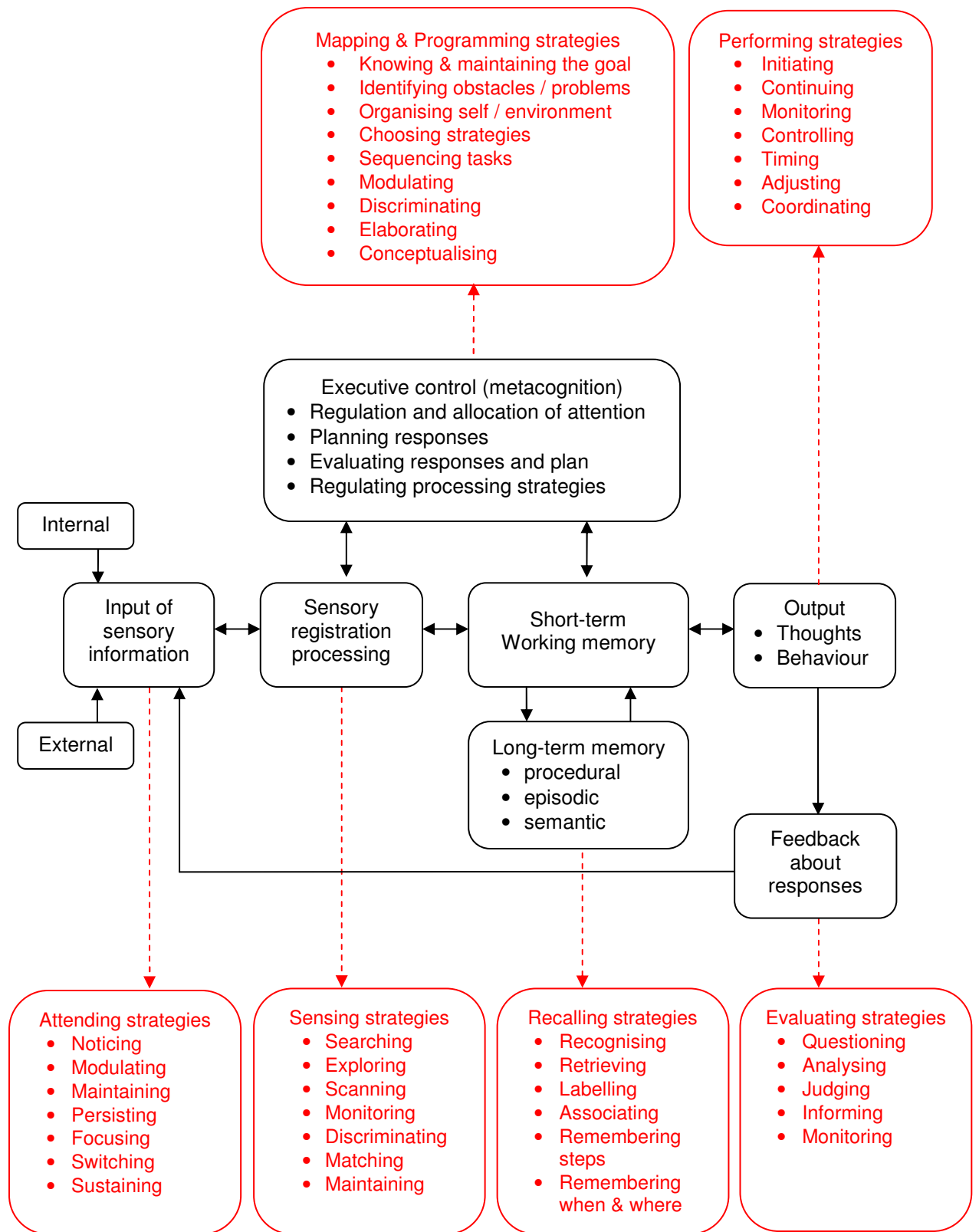


Figure 2.4 Information processing model aligned with associated cognitive processing strategies from the PRPP System of Task Analysis (Nott, 2008, p. 78)

2.3.8 Cognitive strategies and learning difficulty

Many attempts have been made to define a learning difficulty however most definitions have several elements in common. These elements include central nervous system dysfunction, uneven growth of various components of intellectual capacity with intra-individual differences resulting in cognitive processing variations, unsuccessful learning of a skill after validated teaching of that skill as well as a gap between the student's capacity for learning and actual achievement (Lerner, 2000). The enigma of students who experience unusual and extraordinary difficulty with learning, in spite of intellectual capacity, is not new (Lerner). Although a learning difficulty is life-long, the problem appears in different forms at different ages (Lerner, 1997; Nippold & Schwarz, 2002). While students with learning difficulties are a heterogeneous population, demonstrating a constellation of disorders of attention, coordination for gross motor and fine motor activities, and difficulties with information processing, oral language, academia (reading, writing, mathematics) and social behaviour. One characteristic, theorised by Lerner to be a common and critical characteristic and the focus of this research, is a disorder of development and application of cognitive strategy use during the learning process.

Strategic learning is at the core of successful learning, an outcome identified as the highest priority guiding the teaching learning experience for all students (NSW Department of Education and Training, 2005). Students with learning difficulties tend to be learners who adopt strategies that are both inefficient, i.e., learned with maximum effort to a minimal level, and ineffective, i.e., not learned to the point of generalisation (Harris, 1982; Page-Voth & Graham, 1999). These students demonstrate difficulty knowing how to organise and regulate their thinking, how to increase their knowledge, how to incorporate new matter with past experiences and

knowledge already gained, how to remember what they learn, or how to approach tasks purposefully (Lerner, 2000). Children who have difficulty learning have been found to resist changing their thinking strategies and persistently present ‘wrong’ solutions to problems, despite feedback (Siegler & Chen, 1998). Siegler and Chen have hypothesised that this may be due to a failure to correctly code information about the problem, or failure to process and code the abstract structure of problems (Siegler and Sventina 2006). Participation is a construct that contains many complex and abstract dimensions that align with *theory of mind* view of human function, including understanding of the need to change a course of action (strategy) when it is not working. It is possible that children who experience difficulty generating strategies for learning, experience the same paucity of strategies when faced with problems of participation at school. There have been no studies however, to test this hypothesis.

2.3.9 Frequency of strategy use and level of difficulty

Learners require time to practice skills and to acquire expertise in an area. Even small differences in the amount of time during which people are exposed to information can result in large differences in the information they acquire (Vosniadou, 2001). A very small body of research has explored the relationship between how often people perform a skill and assumptions about the level of difficulty subsequently attributed to that skill. In a questionnaire examining frequency of prospective memory (i.e., carrying out intended actions at a specific time in the future e.g., remembering to pass on a message) a link was made between *frequency* of observed behaviours and *failure* of prospective memory (Chau, Lee, Fleming, Roche, & Shum, 2007). That study rated frequency of performance with ‘very often’, ‘often’, ‘occasionally’,

'rarely', and 'never' scores and interpreted 'very often' and 'often' as 'failure' in performance. Similarly, students with learning difficulties were identified to nominate fewer social solutions to problems than typically developing students suggesting frequency of strategy use was a social interaction difficulty (Bauminger, Schorr-Edelsztein, & Morash, 2005, p. 56). A final study which used Lemaire and Siegler's model of strategic change (1995) to investigate the difference in strategy use between students with, and without mathematical disabilities, identified no differences in strategy repertoire between students with and without mathematical difficulties. However differences were identified in the frequency, accuracy, speed and adaptiveness of strategy use between the two groups of students (Torbeyns, et al., 2004).

2.4 TEACHERS' AND PARENTS' EXPECTATIONS AND PERSPECTIVES OF PARTICIPATION

Previous sections of this literature review have presented participation as something that occurs between people. Specifically, school participation occurs through engagement in activities shared between students, teachers, peers and to a lesser extent, parents. This part of the chapter addresses the notion that occupational therapists work in schools by forming partnerships with teachers and parents. To explore the participation and cognitive strategy use of students with a learning difficulty, information needs to be gathered in context, from a number of viewpoints, and incorporating multiple inputs of data. This is a principle embedded in contemporary education assessment (Cumming & Maxwell, 2004). Examination of educational assessment methodology indicates that teacher and parent ratings dominate contemporary child assessment (Reitman, 2006). Occupational therapists

often use formal and informal questionnaires in the form of rating scales to gather teachers' and parents' perspectives of children's performance abilities (Jamieson, 2000). While the views of teachers and parents are thought to provide unique and valuable information, their documented perspectives about the perceived requirements for successful student participation in schoolwork tasks are minimal. Little is known about the expectations teachers and parents hold for student performance in school and home-based school tasks (Overby, Carrel, & Bernthal, 2007; Wight & Chapparo, 2008).

2.4.1 Teachers' expectations and perspectives

Teachers are uniquely positioned and respected for their ability to judge academic and behavioural qualities of student learning for work at school and are therefore a key element in performance assessment (Cumming & Maxwell, 2004; Meisels, DiPrima Bickel, Nicholson, Xue, & Atkins-Burnett, 2001). Researchers report teachers to be valid assessors of student's intellectual, socio-emotional and behavioural performance because of their interaction with, and observation of, students on a daily basis. The professional judgement of teachers is integral to assessment and has been the "ruling paradigm" in Australian primary schools (Queensland Studies Authority, 2009, p. 2). Teachers' judgements of behavioural characteristics have been useful in identifying students with learning difficulties (Lerner, 2000) and identifying problems with attention span, classroom behaviour and social interactions (Elliot, Gresham, & Frank, 2008). The validity of teacher perspectives is dependent on direct observation measures of student behaviours, criterion referenced measures, and specific, understandable metrics for reporting judgements (Winne & Perry, 2000).

In a report highlighting the evidence for quality of teacher judgments and the contribution teachers made to assessment, Cumming, Wyatt-Smith, Elkins, & Neville (2006) reported the additional dimensions teachers identify about students' learning processes and strategies used during participation in activities. For example, various students were described as "going off on a tangent and producing interesting work while another student went off on a tangent and produced confusing work", "being slow in getting things going", "using strategies being modelled", "getting blockages and not being able to work things out in her head" (p.54-56). Furthermore, the report identified teachers as uncovering students who, despite achieving tests results above benchmarks, were clearly struggling with aspects of literacy and numeracy. The researchers argued for teacher judgement to be more fully utilised as an essential and robust means of information gathering about student learning, especially for students deemed "at risk". Research has demonstrated that teachers generate performance expectations relative to individual student's performance as well as expectations at a whole class level for all students (Rubie-Davies, Hattie, Townsend, & Hamilton, 2007). A further study by Rubie-Davies (2010) differentiated teachers into two groups, those with high expectations and those with low expectations. This particular finding has implications for criterion-referenced assessment, supporting the proposal for triangulating teacher judgements with data gathered by other protocols (Winne & Perry, 2000).

2.4.2 Parents' expectations and perspectives

Parents have identified a strong need for their child to experience success at school (Cohn, Miller, & Tickle-Degnen, 2000; Coster, 1998). Best practice guidelines within the Australian educational system affirm an effective partnership between

parents and schools in the learning process to have a positive impact on student learning (Cuttance & Stokes, 2000). In line with these guidelines, educational assessments frequently comprise both teacher and parent questionnaires (Gioia, Isquith, Guy, & Kenworthy, 2000; Hammill & Bryant, 1998; Reynolds & Kamphaus, 2004). Constructive feedback to parents includes meaningful descriptions of student's performance in technical-free language with links to the curriculum (Cumming et al, 2006).

Parents of children, grouped according to the child's diagnosis (autism spectrum disorders, down syndrome and learning difficulties), have been surveyed about their perceptions and expectations of their child's schooling. These parent groups discussed six areas of concern: teacher's knowledge about their child's difficulties, best practices, behavioural concerns, parent school collaboration, education team, and Individual Education Plans. Group differences were identified in a number of items and in almost every one of the listed areas of concern, the parent group of children with learning difficulties rated items significantly lower than one or more of the other parent groups (Starr, Foy, Cramer, & Singh, 2006). Furthermore, significant differences were indicated between what parents felt was being offered to their child, and what parents perceived their child needed from school in order to achieve their maximum potential. The majority of parents want to be involved in, and be advocates for, their children's education based on the fact that they know their children, and have a strong perception that they know their children's needs better than school personnel (Glascoe, 2003; Sixsmith, Gabhainn, Fleming, & O'Higgins, 2007; Starr, et al., 2006; Stephenson & Chesson, 2008). Discrepancies between what parents feel is needed for their child and what is provided can be minimised by creating meaningful partnership opportunities (Starr, et al., 2006).

A review of the literature focusing on the relationship between parental expectations, parental beliefs and children's educational performance uncovers contradictory findings (Englund, Luckner, Whaley, & Egeland, 2004). In one small but relevant study of 20 mothers who described their perceptions about their child's learning difficulties, respondents related their frustration at assessment approaches which were too narrow and which focussed only on component skills (Chapparo & Lowe, 1999). Mothers were also concerned about issues relating to their child and family roles, role partnerships, role expectations, and the capacity of their child to carry out the skills required of them at school. Collaboration with parents, a long-standing key element in the delivery of paediatric therapy services, focuses on consideration of parents' diverse and unique perspectives and the establishment of shared goals in order to achieve meaningful and functional outcomes (Hanna & Rodger, 2002). These authors argue that it is critical occupational therapists develop skills in building essential, collaborative partnerships with parents by "stepping down from the pedestal of professionalism" (p.21).

In summary, occupational therapists work with teachers and parents to serve student's educational needs and goals across a range of situations but within context parameters (Price, 2005). The effectiveness of teacher-occupational therapist partnerships has been identified as highly effective in helping students to better access the curriculum (Hasselbusch, 2010; Hinder & Ashburner, 2010; Muhlenhaupt, 2003; Wehrmann, Chiu, Reid, & Sinclair, 2006). Parents have the ability through collaborative partnerships to provide a wealth of critical information about their child's performance during the assessment process. The issue of assessment will be discussed in the next and final part of this chapter.

2.5 ASSESSMENT OF PARTICIPATION

As stated previously in this chapter, students need to know what cognitive strategies to use, when to use them and how to use them when participating in school tasks. Knowledge of task purposes and cognitive strategies should be explicitly and functionally made available to them during the learning process at school and home (Lawson, et al., 2006). The inference is that cognitive strategies need to be consciously observed, reported, discussed and modified where appropriate (Lawson, et al., 2006). The Queensland Studies Authority [QSA] (2002b) proposed that educational assessment should be aligned with the competencies of life-long learning. The QSA states that although some of the cognitive attributes of students are currently addressed in formal assessment, self-regulatory metacognitive strategies, awareness and control strategies, personal and interpersonal competencies are not explicitly valued. Similarly teachers have stated that while they value assessment of cognitive competence per se, they lack the resources to identify a way forward for improving student performance. For example, in a study by Lawson, et al (2006) one teacher stated: *“When I go – OK my kids are having trouble with complex thinking. What can I do? I should be able to jump on asite and click on complex thinker – there’s a whole pile of strategies for me to follow. They assume people know what a complex thinker looks like. We don’t teach complex thinking. The reason we don’t is that we don’t have the resources”* (p. 68).

In order to assess student participation in the light of priorities expressed by teachers and parents, this section contains a review in three parts of: (a) assessment approaches, (b) pertinent aspects of psychometrics and (c) contemporary instruments available to occupational therapists for examining the research constructs under consideration. The overall purpose of this last part of the chapter is to identify the

clinical utility of these instruments and to highlight any gaps in the assessment of participation in school occupations for students with learning difficulties.

2.5.1 Definition

Different meanings have been applied to the terms “evaluation”, “assessment”, “measurement”, “test” and “instrument” resulting in the terms often being used interchangeably. In this thesis, the term “assessment” will be used to describe global information gathering about a construct, the term “instrument” will be used to name a specific tool, and the term “measure” will be used to describe the action of judging the magnitude, quantity, quality or frequency of a construct within an instrument (Law & Baum, 2005).

2.5.2 Assessment approaches

Assessment in school-based occupational therapy serves multiple specific purposes which include determining (a) the degree to which a student’s performance is or is not typical, (b) the impact of performance on learning and interaction with peers and adults, (c) reasons a student is experiencing difficulty with performance, (d) recommendations for improving a student’s performance, (e) a formal baseline of a student’s performance, (f) eligibility for funding, and (g) the outcome of intervention/programming (Brown & Chien, 2010; Hanft, 1996).

Principles of assessment and reporting within NSW schools have outlined assessment as needing to be (a) relevant (i.e., linked directly to learning outcomes in the syllabus), (b) valid (i.e., using measurement methods which capture appropriate information accurately), (c) fair (i.e., free from bias), (d) reliable, (e) integrated into the teaching and learning cycle, (f) manageable (i.e., efficient and convenient), (g)

providing useful information which is both summative and formative, and (h) drawing on a wide range of evidence (NSW Department of Education and Training, 2008).

Furthermore, the NSW Department of Education and Training states that reports should (a) meet specific requirements, (b) be easy to understand in plain everyday language, (c) demonstrate what a student is able to do, (d) be able to demonstrate progress, (e) explicate learning expectations, (f) provide information about all aspects of development including social and academic, for example, skills such as working independently, completing tasks with concentration, (g) be constructive forming the basis for discussion, and (h) be manageable and time efficient to prepare.

The next part of the chapter provides an overview of relevant assessment approaches which underpin useful reporting of information.

2.5.2.1 Norm-referenced and criterion-referenced approach

Norm-referenced and criterion-referenced instruments differ in three main ways: their intended purpose, the way in which content is selected, and the scoring process which determines how test results must be interpreted (Bond, 1996). In occupational therapy practice any decision to use a norm-referenced or criterion-referenced instrument should be made on the basis of the assessment purpose (Kielhofner, 2006). Norm-referenced instruments calculate the degree of performance competence of a student in comparison to same grade/age/gender peers against a representative sample of students from which the instrument was initially developed. A norm-referenced instrument requires the student to perform a prescribed task with standardised administration, scoring and interpretation processes in order for findings to be deemed valid (Ottenbacher & Christiansen, 1997). Norm-referenced instruments

examining underlying performance components appear to be the most common type of instrument used by paediatric occupational therapists (Burtner, McMain, & Crowe, 2002; Munkholm & Fisher, 2008). Proponents of norm-referenced instruments claim that norms provide critical points of reference for judging whether or not a student's performance is of concern, and thereby warranting placement or intervention. Yet, the approach has been criticised for stigmatising students who are different from the average and for not directing the therapist's attention to tasks or behaviours which may hold the greatest importance for a student, teacher or parent (Coster, 1998; Kielhofner, 2006). In many instances, comparison with a typical population is considered unsuitable to the process of assessment and programming (Dunn, 2001).

A criterion-referenced approach attempts to measure a student's performance with reference to an established standard or criteria of acceptable performance for a specific behaviour in a particular context (Bowyer, Ross, Schwartz, Kielhofner, & Keller, 2005; Ferrin, Bishop, & Tansey, 2010). This approach outlines content, either skills or information, in behavioural sequential performance steps or learning outcomes (Crist, 1998). Proponents argue that a criterion instrument has several advantages. These include the capacity to isolate specific prerequisite skills or performance difficulties, to decide whether performance demonstrates competence and mastery, and to more easily guide instructional programming in a specific context (Crist, 1998; Ottenbacher & Christiansen, 1997). This is particularly so, if the measurement process targets a student's performance over a block of time (Mash & Terdal, 1981; Shapiro, 2003). A criterion assessment approach across academic and social skills content is critical for students with learning difficulties and draws much of its strength from the principle of alignment (Howell & Morehead, 1987). This

principle maintains that maximum learning occurs in programs that ensure that instruction and evaluation are both aligned to criterion within the curriculum.

Assessment reform in Australian schools over the last 30 years reinforces the preference for criterion-referenced assessment (Cumming & Maxwell, 2004). The level of specificity of criteria for task performance depends upon the needs of the student, the nature of the learning outcome and the context of the task (Lawson, et al., 2006). Assessment therefore needs a judgment to be made at the point of performance, usually the classroom (Pellegrino, Chudowsky, & Glaser, 2001), with the teacher being the key assessor. A critical requirement of criterion assessment is for performance expectations to be articulated explicitly through curriculum and assessment guidelines (Cumming & Maxwell, 2004).

High reliability has been reported in teacher judgments of student performance (Cumming & Maxwell, 2004). Teachers make judgements about student performance following analysis of that which the student is expected to know and do, consideration of learning outcomes, and use of a range of evidence (Queensland Studies Authority, 2002a). This authority states that in so doing, teachers judge a student's learning without references to the performance of other students, but rather, in reference to expectations of a particular student's performance.

2.5.2.2 Bottom-up and top-down approach

Contemporary occupational therapy practice increasingly refers to a bottom-up or a top-down approach (Kolehmainen, 2010). A bottom-up approach typically focuses on measures of isolated components of performance (e.g., visual memory) and is frequently administered in situations apart from real-life contexts (Stewart, 1999). The purpose of such assessment is to identify specific performance

components considered to have a causative relationship to performance capacity (Fawcett, 2002). Bottom-up assessments mainly focus on body structure and function levels within the International Classification of Functioning, Disability and Health (ICF) (World Health Organisation, 2001). A bottom-up approach has been criticised for reasons including (a) mismatch between *measurement relevance* and the person's functional needs leading to frustration with occupational therapy service provision (Trombly, 1993), (b) unclear relationship between *measurement scores* and the person's functional and natural performance, and (c) conceptual discord between *measurement congruence* and the profession's domain of concern: occupation (American Occupational Therapy Association, 2002; Canadian Association of Occupational Therapists, 1997; Occupational Therapy Australia, 2010).

By contrast, a top-down approach assumes a global perspective, focussing on a person's participation during occupation in context so as to examine areas of importance deemed important or meaningful to that person (Brown & Chien, 2010; Grieve, 2000). The focus is closely linked with the activity and participation levels of the ICF (World Health Organisation, 2001) and aligns with client- and family-centred approaches (DeGrace, 2003). Three rationales for the adoption of top-down or occupation-based assessment have been raised. Foremost, assessment focusing on occupation communicates the objective of occupational therapy to students, teachers and parents. Second, research studies have demonstrated that improvement in performance components has not automatically transferred to improved occupational performance. Finally, assessment focussed on occupation encourages attention on the person and associated issues such as the person's adaptive strategies or interaction with the environment (Hocking, 2001). The weakness of a totally top down approach

lies in the inability of the assessor to specifically locate the cause of the functional difficulty when required.

2.5.2.3 Occupation-focussed assessment

A small but growing number of top-down measures are now available for occupational therapists to examine the participation of school students, and to understand the factors which either support or hinder their participation (Galvin, et al., 2010; McConachie, Colver, Forsyth, Jarvis, & Parkinson, 2006). However, assessment instruments that Australian paediatric occupational therapists appear to be using, for the most part, do not reflect occupation based theories, or indeed, any theory (Rodger, Brown, & Brown, 2005). Ultimately, the purpose of choosing whether an assessment is occupation focussed, or not, is determined by the degree to which the assessment

- measures an aspect of occupation which is named in the “lexicon of the culture” (Clark, Parham, Carlson, Frank & Jackson, 1991, p. 301)
- considers the roles and activities of students which are important for all stakeholders
- explores fit between the student’s capacity to participate, occupation, and context
- captures the experience or process of participation
- measures a student’s performance against task criteria
- identifies how a student engages in occupation (rather than simply describing the specific outcome of performance)
- documents specific goals which will help children better fulfil their role of student at school

- incorporates real and familiar occupations
- determines occupational priorities
- evaluates the results of intervention

(Hocking, 2001; Law, 2002a; Law, Baum & Dunn., 2005b)

2.5.2.4 Observation

Observational assessment has been identified as a useful methodology for collecting data about student performance in naturalistic situations, and has often been called *authentic assessment* (Meisels, et al., 2001; Shapiro, 2003). Observation has been defined as assessment which is integrated into the daily curriculum and instructional activities of a classroom comprising “real instances of extended criterion performances, rather than proxies or estimators” (Meisels, et al., 2001, p. 75). Several advantages have been put forward for its use. First, results from real world observations do not need to be generalised from a test context to a functional context, which may leave the interpreter open to errors of interpretation. Second, assessment allows for the natural flow of behaviour resulting from the integration of social-emotional and cognitive processes and how the flow changes in the face of obstacles (Bronson, 1994). Third, observations by teachers and parents which focus on the same phenomena from different contextual perspectives provide comprehensive information about students’ participation across settings (Pellegrini, Symons, & Hoch, 2004). Finally, observation of a student over time allows the observer to gain a deeper understanding of the cognitive process a student is adopting, for example, problem solving (Fisher, Bryze, Hume, & Griswold, 2007).

Observational approaches often use questionnaires which adopt a rating scale, a versatile methodology commonly used to quantify teacher and parent judgements

(Elliot, et al., 2008; Merrell, 2003). Well constructed rating scales are useful both for research and clinical purposes and provide an important method of data collection because of their comprehensiveness, clinical usefulness, time efficiency and financial economy (Benson, 2010; Squires, Bricker, Heo, & Twombly, 2001; Witt, Elliott, Daly, Gresham, & Kramer, 1998). Rating scales are based on several inherent assumptions: (a) ratings are efficient summaries of specific behaviours or classes of behaviour quantifying behaviour that may vary widely in frequency, intensity, or duration, (b) ratings are situation specific, evaluative judgements affected by the environment and a rater's standards for behaviour, (c) the social validity of the instrument is determined by the importance placed on certain behaviours by the rater, (d) the purpose and theoretical orientation of the rater need to be compatible with the rating scale (Elliot, et al., 2008).

2.5.3 Properties of assessment instruments

The major outcome of this thesis was the development of a teacher and parent instrument that could provide reliable and valid information about cognitive aspects of student participation in school and home-based school activities. Previous sections in this literature review have proposed that student participation in school activities is supported by the student's capacity to allocate, or use cognitive strategies that suit the particular occasion. Children with learning difficulty have been described as being unable to generate the number of cognitive strategies to match their peers, or to easily change or adapt their cognitive processing style to changes in activity, thereby impacting on their ability to fully participate across school contexts and activities. Information processing, in combination with a theoretical view of occupational performance, was posited as forming a suitable theoretical foundation for assessment

of difficulties with participation experienced by students who have a learning difficulty (Groth-Marnat, 2009). This section further addresses the desired psychometric properties of such an assessment, with a focus on questionnaire instruments. Multimodal and comprehensive assessment of students has revealed that students rarely experience a single problem (Reitman, 2006). The dilemma facing clinicians is to determine which instruments provide the most theoretically relevant and clinically efficient method of collecting data for everyday use (Law, Baum & Dunn, 2005a).

2.5.3.1 Assessment reliability

Statements about reliability reflect the amount of error, both random and systematic, intrinsic to all measurement (Streiner & Norman, 2003) The reliability of a questionnaire is concerned with the degree to which it is reproducible and dependable, performing the same way every time it is administered across persons, situations, and time (Myers & Winters, 2002; Portney & Watkins, 2009). Reliability can be measured in a number of ways but typically includes: stability of the scale over time (test-retest reliability), and stability of the scale regardless of rater (inter-rater reliability).

The use of reliable questionnaires is essential for paediatric occupational therapists to provide a valid evaluation of a student's performance (Spiliotopoulou, 2009). It is particularly important in paediatric assessment because of rapid developmental changes occurring during childhood (Yule, 1993) and because of the high reliance on indirect sources such as teacher and parent observations (Bagner, Harwood, & Eyberg, 2006). Reliability is especially important when a questionnaire is being considered for use as a measure of progress during intervention (Myers &

Winters, 2002). If a questionnaire is not stable then it is not possible to know whether measured change is either real, or represents random error. Although questionnaires can enrich understanding and ensure systematic documentation of observed behaviours through the use of quantifiable rating scales of behaviour, they do not provide “the truth” (Myers & Winters, 2002). They do represent a methodical process of assigning a number to a variable, or a measurement of behaviour. However any measurement made by human judgment is prone to error. It is this measurement error which creates questions about the results of any assessment. Investigation of the psychometric properties of an assessment measured under controlled conditions provides an estimate of this error, and offers the assessor evidence about the ‘truthfulness’ of results obtained (Portney & Watkins, 2009).

Test-retest reliability refers to the consistency of a score on an assessment over time (temporal stability). It is estimated by conducting the same questionnaire using the same respondent (e.g., parent) rating the same target (e.g., child) on two separate occasions. The degree of stability is affected by the length of time between the two administrations and the type of information measured (Bagner, et al., 2006). Test-retest reliability of parent reports have been found to be highest for preschool students and lowest for high school students (Edelbrock, Costello, Dulcan, Kalas, & Conover, 1985; Merydith, 2001). Inter-rater reliability refers to the degree to which an assessment produces consistent scores when administered by multiple raters. In the case of questionnaires inter-rater reliability involves conducting the same questionnaire at the same time using different respondents (e.g., teacher and parent) rating the same target (e.g., child).

2.5.3.2 Assessment validity

Validity is defined as the ability of individual items in an instrument, and the instrument as a whole, to measure attributes of the construct under consideration in a particular context and for a particular group of people (Bagner, et al., 2006; Groth-Marnat, 2009). Validity is directed towards the degree of confidence which can be placed on inferences made about participants based on information they provide (Streiner & Norman, 2003). Lincoln and Guba (1985) have used the expression *trustworthiness* from a qualitative perspective. Validity implies that the measure represents the realities of the construct being measured, and is considered credible, by the people involved (Pellegrini, et al., 2004; Schwandt, 1997). Validity refers not to the data, but rather to inferences drawn from, or perspectives provided by, the data (Hammersley & Atkinson, 1983; Portney & Watkins, 2009). The rigour of assessment is considered excellent if more than two well designed validity studies support instrument validity (Law, Baum, & Dunn, 2005a). As with reliability, different levels of confidence are inherently desired by different types of validity (Streiner & Norman, 2003). Different types of validity testing provide different perspectives about data. Each of these types of validity cumulatively form different facets of a unified view of construct validity (Brown, 2000; Goodwin & Leech, 2003).

Face validity is defined as the extent to which an instrument appears to reflect the intended construct, and is based on subjective interpretation and is not considered a formal psychometric property (Bagner, et al., 2006; Kazdin, 1998). However, face validity is useful in the early stages of instrument construction when an item pool is being constructed, as it provides information about how potential respondents might interpret items (Bagner, et al., 2006; DeVon, Block, Moyle-Wright, Ernst & Hayden, 2007).

Content validity refers to the extent to which items in the sample truly reflect a universe of items by sampling all of the important, relevant, and only relevant, domains of the underlying conceptual theory (Streiner & Norman, 2003). Content validity differs from face validity in that it is more comprehensive and may use a panel of content experts to review items or quantitative data to correlate items addressing relevant aspects of the intended construct (Bagner, et al., 2006; DeVon, et al., 2007). The inference of content validity is that the instrument measure is both representative and comprehensive in terms of content coverage and content relevance.

Criterion validity refers to the association between the assessment under consideration and previously validated “gold standard” instruments (Bagner, et al., 2006). Criterion validity encompasses three types of validity: discriminant, concurrent and predictive validity. Discriminant validity is the only criterion validity within the scope and time demands of this thesis and as such will be the only criterion validity described by the researcher.

Discriminant validity refers to the ability of an instrument to categorise students into contrasting groups based on the assessed behaviours (Robins, Schoff, Glutting, & Abelkop, 2003). Discriminant validity is important if a categorical decision is being made, for example, whether or not a student demonstrates significant cognitive processing difficulties (Bagner, et al., 2006). The inference of discriminant validity is that the instrument measure differentiates between persons who demonstrate and do not demonstrate the target construct, for example, difficulty with cognitive strategy use during participation in school activities.

Internal consistency refers to the extent to which items measure the same attribute or construct (Crist, 1998). The inference is that the higher the consistency, the more homogenous the test (or within test construct) is considered (Polgar, 2003).

Internal consistency is often referred to as a measure of reliability, however the essence of internal consistency has more to do with whether the items are consistent with each other, tapping the same construct, and therefore tends to be more closely aligned with validity than reliability (Myers & Winters, 2002).

Construct validity is concerned with determining to what degree the instrument scores correlate accurately with an articulated outcome which is not operationally defined but which represents the construct for which the instrument is being developed. Construct validity is considered central to all measures of validity and is closely connected to the theoretical premise of the instrument (Pellegrini, et al., 2004).

Ecological validity refers to the degree to which a measurement score predicts real world performance in natural contexts (LeBlanc, Hayden, & Paulman, 2000). Consideration of an instrument's ecological validity is critical for occupational therapists who are required to make judgments about a student's performance in school activities (Groth-Marnat, 2009)

Intervention validity refers to the extent to which the results of assessment can be used to guide intervention and evaluate outcomes (Elliot, et al., 2008). This term does not appear in the widely accepted Standards for Educational and Psychological Testing (American Educational Research Association, 1999). However the concept is a natural extension of a discussion about ecological validity. It could be suggested that informing intervention should be the outcome for most assessment measures that are used by occupational therapists, required to use assessment details to provide or suggest intervention methods.

Parent and teacher rating scales have high social validity described as an accurate reflection by teachers and parents of a student's everyday functioning in their

natural environments (Van Horn, et al., 2007). The social validity of behaviors should be interpreted within context as performance in a particular context may reflect the criteria of that rater (Witt, et al., 1998). Since rating scales require evaluative judgements by an informant, they should be supplemented by direct observational data (Fennerty, Lambert, & Majsterek, 2000). In a report which investigated the validity for teacher judgments of student performance Cumming, Wyatt-Smith, Elkins, & Neville (2006), cited studies which demonstrated that teacher judgement of students correlated highly with student achievement on standardised educational tests (Fuller, 2000; Kellis & Silvernail, 2002). However, teacher judgements tended to be more comprehensive than the test outcomes. While teachers were reluctant to identify students as 'not passing', when they did make such a judgement, their judgements were almost always accurate. Gender and behaviour of students are not considered to bias teacher's judgements of students' academic performance (Perry & Meisels, 1996).

2.5.4 Review of instruments

This final part of the chapter contains a review of instruments that have been developed to measure the major research constructs under study for school students with learning difficulties. These constructs are participation, cognitive processing, occupation, and perceptions of teachers and parents. The purpose of this instrument review was to locate (a) observation instruments which explored participation across social and academic school tasks, (b) cognitive processing instruments which captured a student's capacity to apply pertinent cognitive strategies, and (c) occupation based instruments which addressed a student's behaviour in everyday routines activities at school, and (d) whether there was a need for an additional

assessment procedure that targeted cognitive strategy use within the context of participation in school activities.

In the initial stage, instruments which are commonly used by paediatric Australian occupational therapists working in the area of learning difficulties were sourced from the literature (Brown, 2004; Rodger, 1994; Rodger, et al., 2005) and from a paediatric occupational therapy internet server, paediatricots@lists.health.nsw.gov.au. This process generated an exhaustive list of instruments. However, the list mostly contained instruments which focused on single performance skills (e.g. handwriting speed) or isolated performance capacity (e.g. visual motor integration) and contained a very small number of occupation-focussed instruments. While these few occupation instruments did address a range of skills and performance capacities which closely approximated the notion of participation, they all utilised direct observation. Indirect parallel measures in the form of standardised teacher and parent questionnaires were not present in the list of assessments used by therapists.

Therefore the next stage of instrument review was expanded to the education and psychology literature to discover if professions beyond occupational therapy used teacher and parent indirect measures to gather information about the participation of school students with learning difficulties. If questionnaires were found to be used in education and psychology, but no parallel teacher and parent questionnaires within the occupational therapy domain, two assumptions were made. First, education and psychology questionnaires might be suitable for use by occupational therapists if applied within an occupation-centred assessment framework. Second, an investigation of the education and psychology questionnaires, might guide future directions for questionnaire development by occupational therapists.

The final stage was to select instruments for review. The selection process was guided by the following criteria.

- Eligible for use by occupational therapists.
- Accessible for review by the researcher.
- Developed for use with students enrolled in Kindergarten to Year 6 (equivalent to students 5- to 12- years of age).
- Developed/adapted for measurement with students experiencing learning difficulties.
- Developed to measure a *range* of aspects, not a single aspect, of functional performance or cognitive performance.
- Measure participation relative to cognitive processing.
- Suitable for administration during school activities.
- Observational in nature.
- Assessment findings inform programming.

A list of excluded instruments, with reasons for exclusion, is located in Appendix 2.1. In total, 14 instruments were selected for review against conventional measurement criteria relative to their theoretical base, psychometric properties and clinical utility (Groth-Marnat, 2009; Law, Baum, & Dunn, 2001; Nott, 2008; Smart, 2006).

2.5.4.1 Instruments focussing on participation and occupational role

The Occupational Therapy Psychosocial Assessment of Learning (OT PAL)

Theoretical base: The OT PAL (Townsend, Carey, Hollins, Helfrich & Blondis, 1999), an instrument based on the Model of Human Occupation (Kielhofner, 1985), is

reported to assess the capacity of students to fulfil expectations and roles within the classroom by measuring psychosocial skills and student-environment fit.

Psychometric properties: No evidence is reported for reliability and limited evidence is reported for content validity (Brown & Chien, 2010a).

Clinical utility: Data are collected on psychosocial and environmental factors which impact on student learning. This measure uses an observation format consisting of 23 items, indicating levels of student volition and habituation, and a four-point rating scale. The observation is reported to require 40 minutes with an accompanying 45 minute interview (Brown & Chien, 2010a).

Short Child Occupational Profile (SCOPE) Version 2.2

Theoretical base: The SCOPE-2.2 (Bowyer, Kramer, Ploszaj, Ross & Schwartz 2008) has its theoretical orientation in the Model of Human Occupation (Kielhofner, 2008) and is reported to determine how occupational performance constructs within the model (volition, habituation, skills and environment) facilitate or restrict participation (Kramer, Bowyer, Kielhofner, O'Brien, & Maziero-Barbosa, 2009). Children's occupational participation is considered to emerge as an outcome of self-organisation within these constructs (Kramer, et al., 2009).

Psychometric properties: Information about validity and reliability of this measure is not readily available. The test developers do indicate that lack of knowledge of the Model of Human Occupation is likely to affect the reliability of this measure.

Clinical utility: Assessment development, resulting in the selection of 25 items spread across six sections, occurred through a process of partnership between researchers and clinicians (Kielhofner, Dobria, Forsyth, & Basu, 2005). The occupation-focussed criterion-referenced measure uses a four-point rating scale to indicate the quality of

(a) a child's participation in occupation, and (b) support afforded to the child by the environment.

Table 2.2 Summary of participation and occupational role instruments reviewed, using measurement criteria

CRITERIA	OT PAL	SCOPE-2.1
Theoretical base	✓	✓
Psychometrics		
Standardisation: sample	×	×
Standardisation: administration	×	×
Reliability	×	×
Validity	?	×
Clinical utility: efficiency		
Target population	✓	✓
Availability, ease of use	✓	✓
Time	✓	✓
Training, qualifications	✓	✓
Cost	✓	✓
Flexibility	✓	✓
Format	✓	✓
Interpretation	✓	✓
Clinical utility: relevance		
Criterion referenced	✓	✓
Norm referenced	×	×
Top-down approach	✓	✓
Bottom-up approach	×	×
Occupation focused	✓	✓
Teacher & parent questionnaire	×	×

Notes: ✓ criteria reported as present with clear evidence

? criteria reported as present but with equivocal/limited evidence, or further testing required

× criteria reported as not present, or information not readily available

Summary of instruments focussing on participation and occupational role

The OT PAL and SCOPE-2.1 specifically address the notion of occupational role, an area of significant importance to occupational therapists working in schools. This is an area which has not received the research attention it is due. The concept and importance of occupational role has been outlined earlier in this chapter (2.2.2). However, limited available information about the psychometric properties of these

instruments in conjunction with the documented need to be well informed about the Model of Human Occupation minimises the clinical utility of the instruments (Refer to Table 2.2).

2.5.4.2 Instruments focussing on participation and occupation in the performance area of school work

The School Function Assessment (SFA)

Theoretical base: The SFA (Coster, Deeney, Haltiwanger, & Haley, 1998) defines participation in accordance with ICF terminology (World Health Organisation, 2001), though specific to the school environment (Egilson & Traustadottir, 2009) and focuses on the concept of adaption.

Psychometric properties: Review of the standardisation sample indicates adequate sampling of (a) urban and rural subjects, (b) gender and ethnicity, and (c) age and grade. A breakdown of participant by disability is also presented, a feature absent in most other scales (Piersel & Schafer, 2001). The instrument demonstrates appropriate levels of content validity, construct validity, criterion validity, discriminant validity for students with autism and learning difficulty, internal consistency for each of the scales, test-retest reliability and inter-rater reliability for teachers and occupational therapists (Brown & Chien, 2010a; Coster, 1998; Davies, Soon, Young, & Clausen-Yamaki, 2004; Hwang & Davies, 2009).

Clinical utility: The SFA was the first occupational therapy instrument developed in response to the need for a criterion-referenced, standardised measure of functional performance for students in Kindergarten to Year Six. Selection, retention and grouping of items were structured by expert opinion. The instrument uses a collaborative report with a rating scale to document a student's functional strengths and limitations in tasks that support participation across academic and social aspects

of school. The instrument contains three domains: *participation* (six-point scale evaluating levels of participation across six settings: classroom, playground, bathroom, mealtimes, transport to and from school, and transitions to and from class); *task supports* (four-point scale evaluating assistive support and adaptive support for 12 physical tasks and 9 cognitive/behavioural tasks); and *activity performance* (four-point scale specifically evaluating the 21 tasks represented in the second domain). Criterion scores are provided for two groups of students: Kindergarten to Year 3, and Year 4 to Year 6. The user can determine which domains and which behaviours are furthest from the criterion score. Testing time is considered to be 90-120 minutes. However each of the 26 scales takes approximately 5-10 minutes to complete and only scales required to address specific needs of the child need to be completed (Brown & Chien, 2010a). The content of the SFA has been reported as strongly resembling a measure of adaptive behaviour, defined as the ability of the individual to adapt and cope with his or her environment, with the suggestion that the SFA is not sufficiently distinctive to warrant its use given existing measures of adaptive behaviour (Piersel & Schafer, 2001).

School Assessment of Motor and Processing Skills-Second Edition (School AMPS-2)

Theoretical base: The School AMPS-2 (Fisher, et al., 2007), an extension of the Assessment of Motor and Processing Skills (Fisher, 1997), is grounded in occupational performance (Unsworth, 1999) and more recently linked to the Occupational Therapy Intervention Process Model (Fisher, 2009).

Psychometric properties: The standardisation sample, comprised of 1,592 students was mostly drawn from North America. Information about the process of item selection for the instrument is not readily available. The instrument demonstrates appropriate

levels of intra- and inter-rater reliability, internal validity, as well as freedom from bias associated with three world regions and gender (Fisher, et al., 2007).

Discriminant validity between typically-developing students and students with mild disabilities is reported in conjunction with hierarchies identifying some school motor skill items and all school process skill items being more difficult to perform for the students with mild disabilities (Munkholm & Fisher, 2008). Content and construct validity have been reported (Brown & Chien, 2010a).

Clinical utility: The instrument was developed as a client-centred, occupation-based criterion-referenced assessment for use by occupational therapists within the classroom to measure work performance at the level of activity and participation (Fisher, 2006). The criterion of reference used is *competence*, defined as the “absence of observable diminished skill or decreased quality of the goal-directed action being performed” (Fisher, et al., 2007, p. 83). This instrument is identified by the test developers as the only existing standardised tool to systematically and comprehensively measure the quality of student’s schoolwork task performance in regular class settings by observing the interaction between the student, school work task and environment (Fisher, et al., 2007; Munkholm & Fisher, 2008). Occupational therapists are only able to use the assessment if they attend a five day training and calibration (i.e. reliability) workshop followed by completing post- training rater calibration requirements on ten students.

Tasks to be performed are selected from a predetermined list of work tasks by the therapists and teacher. A four point rating scale measures two single, unidimensional constructs: school motor skills and school process skills. Raw scores of a minimum of two tasks and a maximum of four tasks, are entered by the test user into a School AMPS computer-scoring program (AMPS Project International, 2005)

to generate composite school motor and school process quality of performance measures. Scores are then transformed by the test authors into standardised z-scores, normalised standard scores and percentile ranks, allowing students to be compared to a distribution of same-aged typically-developing students who have no known educational difficulties. Items are calibrated on a hierarchy of item difficulty for school motor skills (16) and school process skills (20). As well, school tasks (25) are calibrated on two hierarchies of task challenge from easier to harder according to enacted motor or process skills. This instrument, integrating assessment with intervention, is free from cross-cultural bias as students are required to perform tasks according to their school culture (Fisher, et al., 2007). Testing time is considered to be 40 minutes for the observation component and 30 minutes for an interview component (Brown & Chien, 2010a).

Clinical limitations of the instrument include: (a) tasks need to be selected from a pre-determined list, (b) content overlooks participation requirements in non-academic areas of schooling e.g. taking off a sweater, being the library monitor, erasing the blackboard, handing out books, (c) capacity of the student to acquire knowledge is perceived as being outside the domain of occupational therapy thereby discounting student participation during each and every stage of learning, (d) confines work tasks to five task groups: pen/pencil writing, drawing and colouring, cutting and pasting, computer writing, and manipulatives, denying the broad scope of schoolwork tasks e.g. presenting a speech, reading a book; or schoolwork tools e.g., geometric compass, brush, needle, knife, (e) interpretation of results requires compulsory computer scoring by the test authors, (f) administration needs to involve a teacher and at least four students present, invalidating use for individualised instruction or small groups of two to three students, (g) context needs to be within a natural classroom

setting, invalidating use for work related activities e.g., excursion, (h) administrative challenges if a teacher makes unpredictable changes to the pre-determined task, denying the nature of schoolwork tasks which frequently evolve and do not always follow a pre-set formula, (h) invalid scoring if a student is involved in an insufficiently challenging task, (i) scoring accuracy does not reflect the accuracy of a student's response e.g., getting correct answer on a math problem or the comprehension of written or oral information, or writing a sentence which accurately reflects comprehension of a read story. The authors consider these matters to be judgement of academic performance and thereby the responsibility of the teacher (Fisher, et al., 2007, p. 83), and (j) some items are excessively rule bound e.g., item CP-3: pasting with no cutting, specifies pasting five or more items onto a flat surface. This discounts an activity that might involve pasting four items (e.g. facial features) on a round surface (e.g. balloon). Despite appropriate reliability and validity, the rigidity of tool administration together with financial and time costs of user training and scoring mechanisms raise concerns about the clinical utility of the School AMPS.

Table 2.3 Summary of participation and occupation in the performance area of school productivity: work domain measures reviewed, using measurement criteria

CRITERIA	SFA	SCHOOL AMPS
Theoretical base	✓	✓
Psychometrics		
Standardisation: sample	✓	✓
Standardisation: administration	✓	✓
Reliability	✓	✓
Validity	✓	✓
Clinical utility: efficiency		
Target population	✓	✓
Availability, ease of use	✓	✓
Time	✓	✓
Training, qualifications	✓	✓
Cost	✓	✓
Flexibility	✓	×
Format	✓	✓
Interpretation	✓	✓
Clinical utility: relevance		
Criterion referenced	✓	✓
Norm referenced	×	×
Top-down approach	✓	✓
Bottom-up approach	×	×
Occupation focused	✓	✓
Teacher & parent questionnaire	✓(teacher) × (parent)	×

Notes: ✓ criteria reported as present with clear evidence

? criteria reported as present but with equivocal/limited evidence, or further testing required

× criteria reported as not present, or information not readily available

Summary of instruments focussing on participation and occupation in the performance area of school productivity: work domain

Instruments specifically directed at the level of occupational performance in the school context are a timely and welcome addition to occupational therapy paediatric assessment. While the SFA and School AMPS both have sound psychometric properties, the School AMPS provides a better fit to capture the

participation of students with learning difficulties. However the rigidity of administration procedures and narrow scope of task content significantly reduce the clinical utility of this assessment. Although training and calibration processes are in place to ensure reliable and valid scoring for this measure, the process is not cost or time efficient for many therapists. In addition, neither of the assessments allows for cross-informant data collection from both teachers and parents (Refer to Table 2.3).

2.5.4.3 Instruments focussing on participation and intra- and inter-personal performance capacities

Behaviour Assessment System for Children, Second Edition (BASC-2)

Theoretical base: The BASC-2 (Reynolds and Kamphaus, 2004) was developed within the psychology field however information on the theoretical orientation is not readily available.

Psychometric properties: The BASC-2 demonstrates extensive and rigorous standardisation normed on U.S. national (n=13,000) and clinical (n=1,779) samples separated by age grouping, gender and diagnosis (Stein, Watson, & Wickstrom, 2007). High internal consistency and moderate to high test re-test reliability is reported however inter-rater reliability is reported to have coefficients ranging from low to high for different domains (Stein, et al., 2007). Divergent, convergent, construct and moderate to strong concurrent validity are reported (Stein, Watson & Wickstrom, 2007; Titus, Kanive, Sanders, & Blackburn, 2008).

Clinical utility: The BASC-2 is an assessment system comprising a norm-referenced set of rating scales: Teacher Rating Scale (TRS), Parent Rating Scale (PRS), Self-Report of Personality (SRP), Student Observation System (SOS), and Structured Developmental History (SDH) as well as a BASC-2 Intervention Guide. The system

is reported to enable differential diagnosis and educational classification of various emotional and behavioural disorders and to guide intervention planning. Positive and problematic behaviours are rated, using a four-point frequency scale, within four domains: adaptive skills, externalising problems, internalising problems and school problems. These domains are reported to collect data about emotional, behavioural and executive functioning (Sullivan & Riccio, 2006). Users score observable behaviours, according to frequency evidenced during the previous six months, by means of 17 scales. Raw scores are converted to content scales using computer software. Limitations of the BASC-2 are considered to be (a) unclear integration of data from different components of the system, (b) complex and lengthy test manual, and (c) labour intensive time required to complete the TRS and PRS (Stein, et al., 2007).

Evaluation of Social Interaction (ESI)

Theoretical base: The ESI (Fisher & Griswold, 2009), is based on an occupational therapy model of social interaction (Doble & Magill-Evans, 1992), the Model of Human Occupation (Fisher & Kielhofner, 1995) and the Occupational Therapy Intervention Process Model (Fisher, 2009).

Psychometric properties: The standardisation sample (n=468 persons 2- 90 years, including 257 children) was drawn from Nordic countries (60%), North America (15%), and Asia (25%). Intra- and inter-rater reliability, internal validity, freedom of bias associated with gender, and sensitivity of the measures to detect change over time while retaining high stability between two different sets of results are reported (Fisher & Griswold, 2009; Simmons, Griswold, & Berg, 2010). Discriminant validity between typically-developing children and at-risk/mild children is documented

(Fisher & Griswold, 2009). A significant high positive curvilinear relationship with age is also reported. However caution is recommended because of the small sample size (Fisher & Griswold, 2009).

Clinical utility: This occupation-based instrument measures a unidimensional construct: quality of social interaction defined as the ability to interact socially with social partners of choice or need in a natural ecologically-relevant context and in a manner that is (a) effective and (b) consistent with the norms and/or cultural or societal convention, and (c) uses client-specified and meaningful objectives (Fisher & Griswold, 2009). Information about the process of item selection is not readily available. The assessment requires criterion scoring but offers criterion- and norm-based interpretations for performance which has been observed on at least two occasions. The authors acknowledge that children often demonstrate typical for age behaviour that is socially immature because they are children. However the scoring is invalid if a child is given a higher rating because the observed socially inappropriate behaviour is considered normal for a child of that age or in that social context. Raw scores, entered into an ESI data entry program after each evaluation for rater calibration, are transformed and interpreted to the occupational therapist by the test developers. Social interaction skills (27) and intended purposes of social interactions (6) are calibrated on a hierarchy continuum. Limitations of the ESI include (a) invalid scoring if a student is involved in an insufficiently challenging task, and (b) availability of the assessment only to occupational therapists who attend a three day training course and calibrate as a valid and reliable rater, and (c) compulsory computer scoring which is provided only to calibrated raters.

School Social Behavior Scales, Second Edition (SSBS2) and the Home and Community Social Behavior Scales (HCSBS)

Theoretical base: The SSBS2 (Merrell, 2002) is a teacher rating scale and the HCSBS (Merrell, Streeter, & Boelter, 2001) is a partner parent rating scale forming two parts of the Social Behaviour Scales (SBS). The SBS was developed using a behavioural dimensions approach based on factor analysis, and a rationale-theoretical approach based on theoretical models of social and antisocial behaviour (Stein & Diaz, 2005).

Psychometric properties: The SSBS2, standardised on a sample of 2,280 children, was drawn mostly 14 years before the development of the second version suggesting that norms may be soon outdated. Several groups are considered to be over sampled and sex-based normed tables are not available, a limitation when evaluating social skills (Alfonso, Rentz, Oriovsky, & Ramos, 2007). Content validity, construct validity, convergent validity, discriminant validity, internal consistency, and moderate to high inter-rater reliability are reported however test-retest reliability is not considered to meet acceptable criteria (Alfonso, et al., 2007; Flanagan, Furlong, & Soliz, 2005). For both test-retest and inter-rater reliability, scores were more consistent in ratings of social competence than of antisocial behaviour. The HCSBS, standardised on 1,562 children, demonstrates convergent, discriminant and criterion validity, internal consistency, test-retest reliability and inter-rater reliability (Coladarci, 2005; Stein & Diaz, 2005; Wade, Wolfe, Maines Brown, & Pestian, 2005). Validity is compromised in both measures as a *never* score is allocated regardless of whether the student does not demonstrate the behaviour or whether the behaviour is not observed (Coladarci, 2005).

Clinical utility: The SSBS2 and HCSBS are norm-referenced and comprise two scales: social competence and antisocial behaviour. Each scale contains 32 items

scored using a five-point rating scale for behaviour observed during the previous three months. The SSBS2, administered individually or in group, requires all items to be completed in order to generate a valid score.

The Social Skills Improvement System (SSIS) Rating Scales

Theoretical base: The SSIS Rating Scales (Gresham & Elliott, 2008) replace the Social Skills Rating System (SSRS) (Gresham & Elliot, 1990) and have been developed within the education and psychology fields, using a Response to Intervention (RTI) theoretical framework (Barnett, Elliott, Wolsing, Bunger & Haski, 2006; Batsche, Graden, Grimes & Kovalski, 2005) incorporating an applied behaviour analysis approach.

Psychometric properties: The SSIS rating scales, standardised on a sample of U.S. children, demonstrate weak to moderate inter-rater reliability consistent with cross-informant agreements in the literature (Gresham, Elliott, Cook, Vance, & Kettler, 2010). However, this study also reported dramatically increased correlations when raters shared environments (e.g., teacher-teacher) confirming conclusions in the literature regarding the situational specificity of behaviour.

Clinical utility: The purpose of the multi-tiered SSIS rating scales, enabling assessment of individuals and small groups, was designed to evaluate social skills, competing problem behaviours and academic competence. The system incorporates ten social skills prioritised by a sample of teachers (n=8,000) as being most critical to academic success (Elliot, et al., 2008). Item-level ratings document frequency and importance of social skills strengths, performance deficits and acquisition deficits (Bandura, 1977). The norm-referenced tool includes combined and separate sex norms.

Scales of Social Competence and School Adjustment (SSCSA): Elementary Version

Theoretical base: Information about the theoretical orientation of the SSCSA:

Elementary Version (Walker & McConnell, 1995) is not readily available.

Psychometric properties: The measure was standardised on a sample of U.S. children (n=2,000) however detailed demographic information is not provided. Internal consistency, criterion validity, construct validity, content validity discriminant validity, and test-retest reliability are reported (Fennerty, et al., 2000; Walker & McConnell, 1995) however inter-rater reliability is low (Worthington & Harrison, 1989-1990).

Clinical utility: The SSCSA was designed to be completed by teachers and other school professionals in order to identify social competence. The scale uses a five-point rating system to identify the frequency of 43 positively worded behaviours divided into two components: adaptive classroom behaviour and interpersonal social skills.

Table 2.4 Summary of participation and occupation in the component of intra- and inter-personal performance abilities: social domain measures reviewed, using measurement criteria

CRITERIA	BASC-2	ESI	SSBS2 HCSBS	SSIS	SSCSA
Theoretical base	×	✓	✓	✓	×
Psychometrics					
Standardisation: sample	✓	✓	✓	✓	?
Standardisation: administration	✓	✓	✓	×	✓
Reliability	✓	✓	✓	✓	✓
Validity	✓	✓	✓	×	✓
Clinical utility: efficiency					
Target population	✓	✓	✓	✓	✓
Availability, ease of use	✓	✓	✓	×	✓
Time	✓	✓	✓	×	✓
Training, qualifications	✓	✓	✓	×	✓
Cost	✓	✓	✓	✓	✓
Flexibility	×	×	✓	×	×
Format	✓	✓	✓	✓	✓
Interpretation	✓	✓	✓	×	✓
Clinical utility: relevance					
Criterion referenced	×	✓	×	×	×
Norm referenced	✓	✓	✓	✓	✓
Top-down approach	×	✓	×	×	×
Bottom-up approach	×	×	×	×	×
Occupation focused	×	✓	×	×	×
Teacher / parent questionnaire	✓	×	✓	✓	✓

Notes: ✓ criteria reported as present with clear evidence

? criteria reported as present but with equivocal/limited evidence, or further testing required

× **criteria reported as not present, or information not readily available**

Summary of instruments focussing on participation and occupation in the component of intra- and inter-personal performance abilities: social domain

The reviewed social domain instruments represent one instrument developed within the field of occupational therapy (ESI) and four instruments developed within the field of education/psychology. The latter instruments are norm-referenced and comprise teacher and parent questionnaires. While the ESI is criterion referenced, the cost and time involvement in completing rater calibration and the fact that no teacher

and parent questionnaires are available minimises the clinical utility of this instrument (Refer to Table 2.4).

2.5.4.4 Instruments focussing on participation and cognitive strategy use

Behavior Rating Inventory of Executive Functioning (BRIEF)

Theoretical base: The BRIEF (Gioia, Isquith, Guy, et al., 2000) is based on the theoretical assumption that executive function is not completely independent or mutually exclusive of other psychological or cognitive processes (Baron, 2000). The test authors consider constructs within the instrument to be separable in a clinically meaningful way, yet related within an overarching executive system suggesting the premise of executive functions as a multidimensional construct (Gioia, Isquith, Retzlaff, & Espy, 2002). Using a neuropsychological perspective the authors developed the instrument to assess executive functions from a broad perspective.

Psychometrics: The instrument was standardised using normative and clinical child populations from U.S. teachers (n=720) and parents (n=1,419). Studies demonstrate satisfactory findings for convergent validity, discriminant validity, predictive validity, construct validity, internal consistency, test-retest reliability and parent teacher inter-rater reliability, given expectations for different contexts (Baron, 2000; Fitzpatrick & Schraw, 2010; Gioia, Isquith, Guy, et al., 2000). Two scales, inconsistency and negativity, provide additional validity indices (Isquith & Gioia, 2008).

Clinical utility: The BRIEF was designed to provide information about everyday behaviour associated with specific domains of executive function during active and novel problem solving. The instrument contains two scales: behavioral regulation which identifies the student's ability to "shift cognitive set and modulate emotions and behaviour via appropriate inhibitory control" and metacognition which reflects

the child's ability to "initiate, plan, organise, self-monitor, and sustain working memory...actively problem solve" (Isquith & Gioia, 2008, p. 6). Scores on 86 items are interpreted by gender and age grouping. Interpretation of the BRIEF can be unclear because of three levels of interpretation (Fitzpatrick & Schraw, 2010).

Classroom Climate Scale (CCS)

Theoretical base: Information about the theoretical orientation of the CCS (Kim, Briggs, & Vaughn, 2003) is not readily available.

Psychometric properties: Items were developed and tested over a two year time span and included three phases: (a) literature review and scale development, (b) item refinement, component scale identification, reliability and validity testing, and (c) development of performance indicators and further testing for inter-rater reliability and validity. Observer bias was inspected by random checks raters during data collection (McIntosh, Vaughn, Schumm, Haager, & Lee, 1993)

Clinical utility: The CCS was designed to provide a measure of student-teacher interactions and student-student interactions for students with learning disabilities in mainstream classrooms. Two scores are given for each item by the rater: one score for typical students and one score for students with learning disabilities

Learning Disabilities Diagnostic Inventory (LDDI)

Theoretical base: The LDDI (Hammill & Bryant, 1998), developed within education and psychology fields, is based on the neuropsychological aspects of learning disabilities.

Psychometric properties: The LDDI was normed on U.S. students with learning disabilities (n=2,152). Although the measure demonstrates levels of reliability and

validity, test reviewers argue limitations throughout in regard to the quality of the procedures and question the overall construct validity and clinical utility (Gutkin & MacDonald, 2001).

Clinical utility: The LDDI, a norm-referenced measure, was designed to identify intrinsic processing/executive functioning disorders and learning disabilities in children. The instrument is comprised of six independent subscales comprising 90 items (listening, speaking, reading, writing, mathematics, and reasoning). The test authors state that the LDDI should never be used in isolation from other test data and that it should not be used as a basis for planning individualised intervention (Gutkin & MacDonald, 2001).

Learning Disability Evaluation Scale-Renormed Second Edition (LDES-R2)

Theoretical base: The LDES-R2 (McCarney & Arthaud, 2007) was developed within the education and psychology fields. The measure was designed to enable school personnel to document performance behaviours most characteristic of learning disabilities based on the U.S. federal definition of learning disabilities (United States Department of Education, 2004).

Psychometric properties: Information is not readily available regarding the psychometric properties of the LDES-2.

Clinical utility

The norm-referenced instrument contains seven subscales (listening, thinking, speaking, reading, writing, spelling, and mathematical calculations) comprising 88 negatively worded items. A four-point response scale generates frequency scores which are converted into subscale percentiles using LDES-R2 Quick Score computer program. The LDES-R2 is accompanied by the Learning Disability Intervention

Manual-Revised (LDIM-R, 2006) linked to the student's Individual Education Plan (IEP) and classroom intervention, for each of the behaviours documented in the scale.

Perceive, Recall, Plan, and Perform (PRPP) System of Task Analysis

Theoretical base: The PRPP System of Task Analysis (Chapparo & Ranka, 2005) evaluates the hypothesised link between the sensory and cognitive performance components of the Occupational Performance Model (Australia) and occupational roles, routines and activities that people perform over time and in context. The PRPP was initially adapted from a model of information processing within the field of instructional design. This model had been developed by Romiszowski (1984) in order to explain the process of learning tasks in the workplace (Aubin, Chapparo, Gelinas, Stip, & Rainville, 2009). The PRPP was further developed in synchrony with current human and ecological views of health (Chapparo & Ranka, 2005).

Psychometric properties: The PRPP has standardised administrative procedures relative to language of the assessment, method of observation and scoring. Content, discriminant, cultural and concurrent validity, internal consistency, inter-rater reliability (occupational therapist- occupational therapist) and test-retest reliability, have been reported in published and unpublished studies (Aubin, Stip, Gelinas, Rainville, & Chapparo, 2010; Boland, 2004; Chapparo & Ranka, 1992, Fordham, 2001; Lohri, 2005; Munkhetvit, 2005; Pulis, 2002; Still, Beltran, Catts, & Chapparo, 2002)

Clinical utility: The PRPP System of Task Analysis, a two-stage criterion-referenced, occupation-focussed assessment, uses task analysis to measure mastery of occupation, capacity of information processing and influences of context (Chapparo & Ranka, 2005). Overall, it measures a student's strategy use during participation in relation to

the criterion demands of the activity. Stage One of the assessment uses behavioural task analysis to identify errors in steps at an occupational performance level, whereas Stage Two uses cognitive task analysis to identify errors at a cognitive performance component level. A total of 12 sub-quadrants including 34 behavioural descriptors are used to evaluate the effectiveness of information processing strategies applied during participation. Scores are obtained from a three-point rating scale whereby summed descriptor scores, sub-quadrant, quadrant and global PRPP system processing scores can be calculated. The PRPP affords flexibility with (a) activities being selected by the student or teacher i.e. not pre-determined, and (b) activities capturing large task units, e.g. being a lunch monitor, or small task units e.g. folding a paper fan.

This instrument uses observation predominantly. While items can be used as stimulus questions in an interview, the instrument still requires an occupational therapist trained in its use to explicate the meaning of the strategy items (e.g., 'chooses', 'modulates', or 'calibrates') to a range of pertinent tasks. One of the aims of the current research was to develop a questionnaire that could be used by teachers and parents without the need for the interview process.

Table 2.5 Summary of participation and cognitive processing measures reviewed, using measurement criteria

CRITERIA	BRIEF	CCS	LDDI	LDES-R2	PRPP
Theoretical base	✓	x	?	x	✓
Psychometrics					
Standardisation: sample	✓	x	✓	✓	
Standardisation: administration	✓	x	x	x	✓
Reliability	✓	?	?	x	✓
Validity	✓	?	?	x	✓
Clinical utility: efficiency					
Target population	✓	✓	✓	✓	✓
Availability, ease of use	✓	✓	✓	✓	✓
Time	✓	✓	✓	✓	✓
Training, qualifications	✓	✓	✓	✓	✓
Cost	✓	✓	✓	✓	✓
Flexibility	x	✓	x	x	✓
Format	✓	✓	✓	x	✓
Interpretation	?	✓	✓	x	✓
Clinical utility: relevance					
Criterion referenced	✓	✓	x	x	✓
Norm referenced	x	x	✓	✓	x
Top-down approach	x	x	x	x	✓
Bottom-up approach	✓	✓	✓	✓	✓
Occupation focused	x	x	x	x	✓
Teacher /parent questionnaire	✓	x	✓	x	x

Notes: ✓ criteria reported as present with clear evidence
 ? criteria reported as present but with equivocal/limited evidence, or further testing required
 x criteria reported as not present, or information not readily available

Summary of instruments focussing on participation and occupation in the performance component of cognitive strategy use

Review of each of the cognitive processing measures reviewed in this section highlighted constructive information about the content and format of the measures. For example, the LDES-R2 was unappealing with negatively worded items however the CCS appealed through use of common language and wide scope of rater response options. Three of the measures were criterion referenced (BRIEF, CCS and PRPP)

however only two of these demonstrated a strong theoretical basis and sound psychometric properties (BRIEF and PRPP) and only one (BRIEF) provided teacher and parent questionnaires. The only occupation based instrument was the PRPP System of Task Analysis (Refer to Table 2.5).

The purpose of this assessment review had been to locate (a) indirect observation measures which explored participation across social and academic school tasks, (b) cognitive processing measures which captured a student's capacity to apply pertinent cognitive strategies, and (c) occupation measures which addressed a student's behaviour in everyday routines activities at school. At this stage, available measures met one or more of these purposes but not all three. The PRPP System of Task Analysis was the only tool, from the evaluated 14 tools, which was identified to measure cognitive strategy application (b), and measure occupation (c) and have the capacity to be used as a framework measuring observation of participation across social and academic school tasks (a).

The next section expands on the summary provided above to further evaluate the suitability of PRPP System of Task Analysis as a framework for the construction of teacher and parent questionnaires in following phases of the research.

2.5.4.5 The PRPP System of Task Analysis: comprehensive review

As mentioned in 2.5.4.4 the PRPP System of Task Analysis (Chapparo and Ranka, 2005) evaluates the hypothesised link between the sensory and cognitive performance capacities within the Occupational Performance Model (Australia) and occupational roles, routines and activities that people perform over time and in

context. This model provides paediatric occupational therapists with an instrument to measure the everyday performance of students across associated work and social domains over time and within the context of school. As observed in Figure 2.5 the model is concerned not with cognition per se, but with cognitive *processes*, as they are applied during everyday activity in situ, as illustrated by multidirectional arrows.

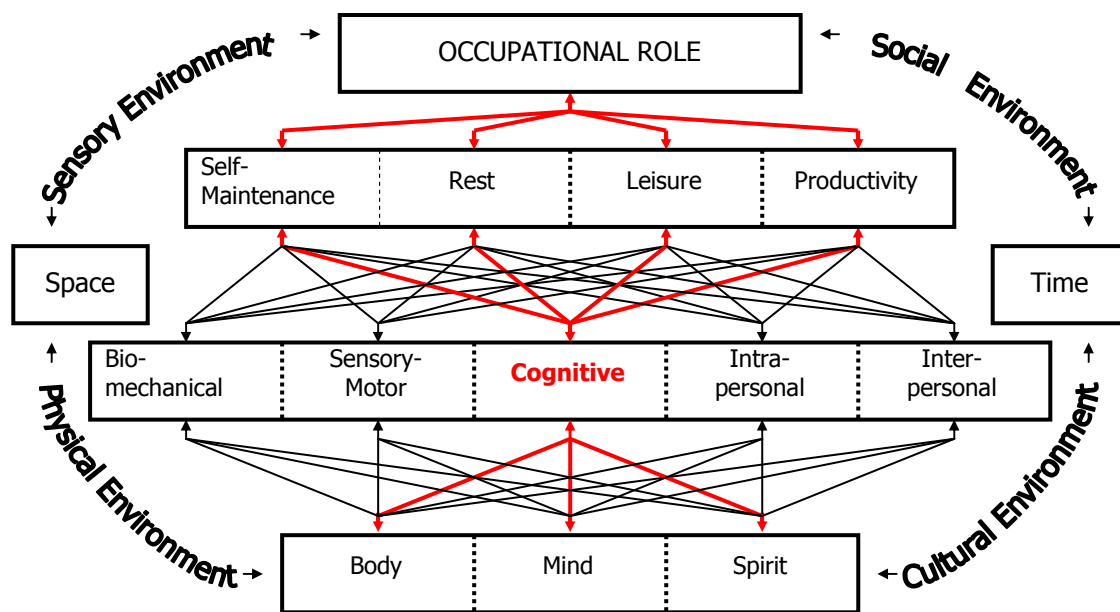


Figure 2.5: Relationship of cognition to other constructs within the Occupational Performance Model [Australia] (Chapparo & Ranka, 1997)

Stage Two of the PRPP measures the capacity of students to efficiently apply cognitive strategies to contextual demands. This stage is comprised of four quadrants each representing an information processing domain: (i) attention and sensory perception [Perceive]; (ii) memory [Recall]; (iii) response planning and evaluation [Plan]; and (iv) performance monitoring [Perform] (Refer to Figure 2.6 for quadrant labels which are represented in the inner circle).

The Perceive quadrant evaluates strategies for gathering sensory information from the environment so as to create sensory images of one's body and the task environment (Schmidt and Wrisberg, 2004). Processing in this quadrant allow the

student to be in a state of readiness for processing information and to attend for learning (Chapparo and Ranka, 2007). The Recall quadrant measures strategies required for storage, extension and retrieval of information to match the task (Craik, 2002; Lerner, 2000; Toglia, 2005). Processing in this quadrant allows the student to build a functional reference system and to make sense of what is being perceived (Chapparo and Ranka, 2007). The Plan quadrant evaluates the student's strategies for manipulating, applying and evaluating information in novel or complex experiences (Galotti, 2008). Processing in this quadrant allows the student to map out and program salient or rapid responses when involved in executive functions such as critical thinking, ideating, reasoning, problem solving and decision making (Miyake, Friedman, Emerson, Witzki and Howerter, 2000). The Perform quadrant measures the student's strategies to monitor, regulate and refine performance based on all this information (Schmidt and Wrisberg, 2004). Processing in the quadrant allows the student to control actions and thoughts with timing and coordination, adjusting performance throughout to meet changing demands of the activity (Chapparo and Ranka, 2007).

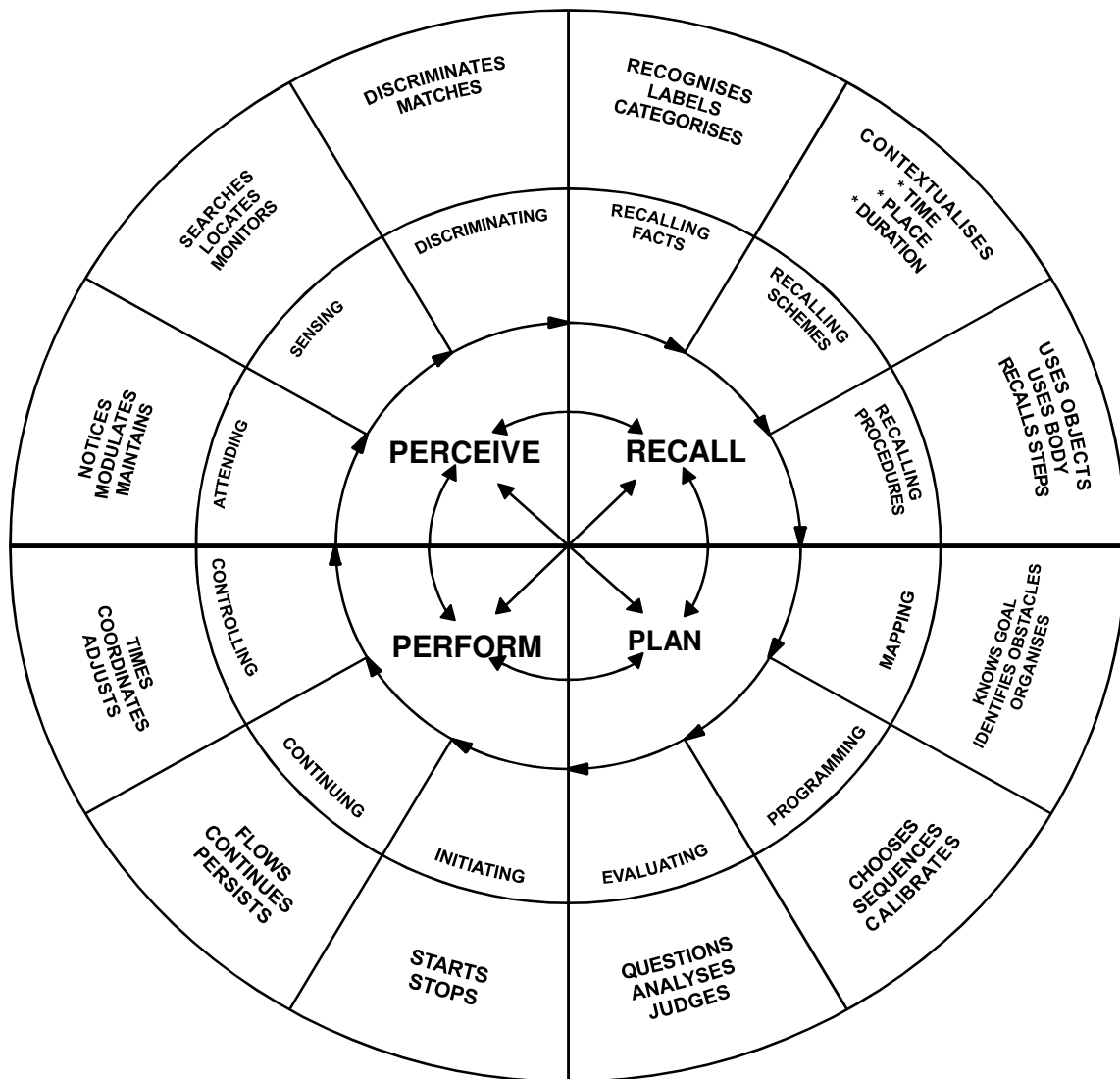


Figure 2.6: The PRPP System of Task Analysis (Chapparo & Ranka, 2005)

The system is further conceptualised by 12 sub-quadrants and 34 behavioural descriptors, used individually or cumulatively. These are represented in the middle and outer layers respectively. These observable descriptors are used to evaluate the effectiveness of information processing strategies applied during participation. The PRPP System of Task Analysis provides a framework for the occupational therapist to observe a student's participation, for example, doing a maths worksheet, and to systematically rate the extent to which the student applies information processing

strategies to that activity. Descriptors are rated using a three-point scale indicating the student's proficiency in applying processing strategies as (3) effective, (2) questionable, or (1) ineffective.

Although the PRPP was initially developed for use with persons with a brain injury, the cognitive deficits observed in these persons are similar to those observed in other diagnostic populations including students with learning difficulties (Aubin et al, 2009; Nott, Chapparo & Heard, 2008; Dickerson Mayes & Calhoun, 2004; O'Donnell, Romero, & Leicht, 1990; Riemsma, Forbes, Glanville, Eastwood, & Kleijnen, 2001).

2.6 Summary of findings outlined in this chapter

Relative to the overall research question posed in Chapter One which was

How can cognitive aspects of student participation during school occupations be assessed?

the following findings from this review of the literature can be stated.

Finding 2.6.1

Participation was described as purposeful and meaningful cognitive engagement during occupational performance across all aspects of academic and social domains to the satisfaction of students, teachers and parents.

Finding 2.6.2

Participation was described using the Occupational Performance Model Australia (Chapparo & Ranka, 1997) in terms of the interactive dynamics which occur *between* occupational role, occupational performance areas, performance components and context within time and space.

Finding 2.6.3

Cognition, and cognitive strategy use by students, central to the vision of education in Australian primary schools, was identified as a possible critical component of successful participation in school occupations.

Finding 2.6.4

Students with learning difficulties are reported to have more difficulties with both participation and cognition than their typical peers. The manner in which cognition impacts upon participation at school however, is still largely unknown.

Finding 2.6.5

Collaboration with teachers and parents during assessment processes was identified as enabling meaningful and functional outcomes for students. Teachers were identified as providing valid reporting of student behaviours according to task expectations.

Finding 2.6.6

Best practice assessment uses occupation-focussed criterion-referenced instruments within an ecological paradigm. Parallel teacher and parent questionnaires are not currently available to gather information within an occupational therapy framework.

The findings of this review support the stated purpose of this study, which was to examine how the participation of students with learning difficulties in school activities is affected by inefficiencies in their capacity to apply pertinent cognitive strategies to support performance. The following chapter further explores critical elements of participation from the perspective of major stakeholders: teachers, parents and students.

CHAPTER THREE

PHASE ONE: CASE STUDY

Chapter Three contributes to Phase One of the research, which addressed the research question, “*Which cognitive strategies support the participation of school students with and without learning difficulties in classroom and playground occupations from the perspectives of teachers, parents and students?*”

The purpose of this phase of the research was to discover the critical elements of participation from the perspective of major stakeholders: teachers, parents and students (Refer to Figure 3.1). This chapter reports on an investigation of school participation over time in the life of one student, “Tim” (a pseudonym) using case study methodology. Part A in the chapter provides information about the methodology used throughout the chapter. A description of participatory abilities, and changes to ability, in Tim’s school participation over 13 years of schooling is found in Part B of the chapter. This part is in journal format, submitted for publication as Lowe, S & Chapparo, C. Learning difficulty and school participation: A longitudinal case study of one student’s experience. *Australian Occupational Therapy Journal* (Under review: submitted June 2010). Part C of the chapter extends this aspect of the case study by specific examination of cognitive strategy use as a critical component of Tim’s difficulties with school participation. Information from this part of the research contributed to the focus of the remaining phases of the research, namely the difficulties in strategy use during participation in school and home-based school activities, experienced by students who have learning difficulties.

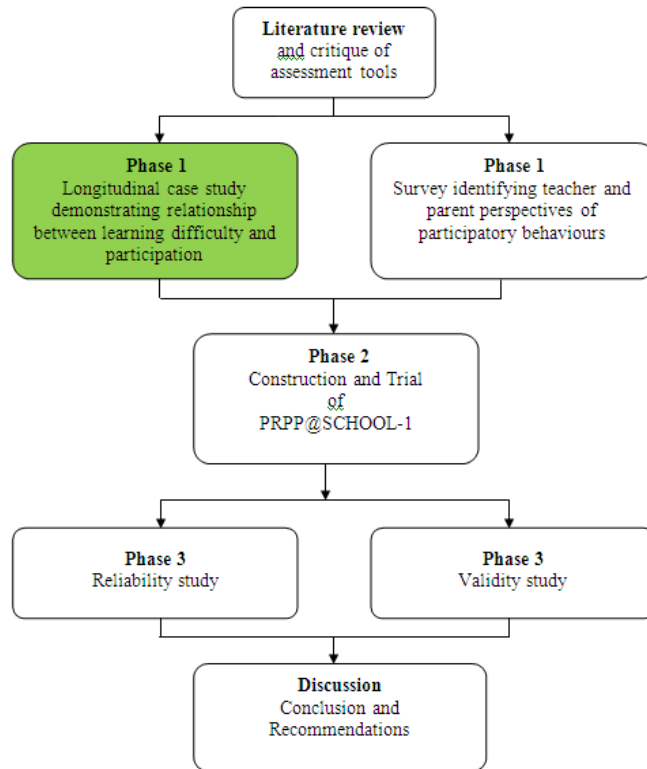


Figure 3.1 Flow chart of phases in the research displaying the relation of this chapter to the thesis as a whole

PART A

METHODOLOGY

3.1 RESEARCH DESIGN

This phase of the study was exploratory, and adopted a qualitative research design aiming to “dig deeper into people’s perspectives and challenge the taken for granted view” (Minichiello, Sullivan, Greenwood, & Axford, 2004, p. 68).

Specifically, case study design involving six methods of data collection was used to describe the experience of participation at school of one child with a learning difficulty over 13 years. Case study is particularly suited to situations where little is known about phenomena, or when a number of human factors are involved, and has contributed important information about the lived experience of individuals with learning disorders (Yin, 2003). Longitudinal studies have been used to “describe

patterns of change in individuals over time to establish the direction and magnitude of relationships among conditions, events, treatments, and later outcomes” (McKinney, 1994, p. 203).

3.2 METHODS

3.2.1 Informants

The primary informant in the case study was “Tim” (a pseudonym) who represented the essential propositions under study and the target subject group for future research (Yin, 2003). Tim was enrolled in preschool at the commencement of the case study and was a Year 10 student at its conclusion. Detailed information about Tim is provided in the Methods section of Part B of this chapter. Other informants in the study were Tim’s mother and father, his occupational therapists, speech and language pathologists, teachers, school counsellor, physiotherapist, psychologists, paediatrician and psychiatrist.

Tim’s mother was employed as a part-time teacher in a local primary school. During Tim’s high school (secondary) years, he was enrolled in home schooling through Distance Education and Tim’s mother assumed an additional role as teacher within the family. Tim’s father worked as a lawyer.

Two occupational therapists, employed in a private paediatric occupational therapy clinic in Greater Western Sydney, provided ongoing therapy to Tim for the complete duration of the case study. Six speech and language pathologists provided assessment and intervention services at different points in time throughout the case study. Three pre-school teachers, seven primary school teachers and a number of education support teachers and school counsellors were involved in Tim’s public school education during pre-school and primary school years. High school teachers

during Year Seven were employed in the local public high school and from Year Eight, teachers from the centralised Distance Education High School were involved in Tim's education. A physiotherapist, psychologist, paediatrician and psychiatrist from the private sector provided services to Tim on an intermittent basis during the period of time of the case study.

The conduct of this study was approved by the local institutional ethics review committee (Refer to Appendix 3.1).

3.2.2 Data collection methods

Multiple data collection methods were used in this phase of the research to allow questions raised by one method to be answered by another method, and compensated for any methodological error by using techniques which comprised complementary strengths and non-overlapping limitations (Axinn & Pearce, 2006; Brewer & Hunter, 2006). The process of data analysis was iterative and reflective, occurring parallel to data collection. The purpose of an integrated data collection-analysis process was to allow each research finding to guide and shape the study into different facets of participation (Erickson, 1992; Pope, Ziebland, & Mays, 2000).

Data sources in this research were both primary and secondary, based on the different roles of the researcher over the time of the longitudinal study. In the initial years of Tim's schooling the researcher was a clinician to Tim, his family and his teachers. In this early stage of the documentation used in the case study, data were collected for clinical purposes. In the later stages of Tim's schooling, the role of the researcher as a clinician changed to that of researcher and data were collected specifically for research purposes. The research questions examined in Phase One

with corresponding data collection methods, principles, and application are discussed below in more detail than appears in the journal article in Part B.

3.2.2.1 Non-participant and participant observation

Observation is a traditional and systematic reflective methodology, useful for identifying unique elements of behaviour as well as studying the context in which behaviour takes place (Babbie, 2004; French, Reynolds, & Swain, 2001). In this case study, observation was particularly useful as it accessed information about incidents which may have been overlooked or misinterpreted by others. It also enabled comprehensive recording and classification of Tim's behaviour in a natural context, at particular points in time using explicit rules to enable objectivity and replication (Pellegrini, Symons, & Hoch, 2004; Polgar & Thomas, 2008). Limitations of observational methodology include the time involved in implementing observation, coding interactions and administering reliability checks (Gardner, 2000). This phase of the research was carried out over several years. Coding was restricted to categorising observed behaviours into 'positive' and 'negative' school performance, providing sufficient information for the exploratory purpose of this phase. Rater consistency was investigated by the researcher using documentation of behaviours noted by more than one informant at the time. For example, during the morning session behaviours were documented by the researcher and during the afternoon session behaviours were documented by the class teacher.

Non-participant observation

This type of observation involves the researcher being visible in the setting but identified by people in the context as someone who is not participating (Gray,

Williamson, Karp, & Dalphin, 2007). In this research, non participant observation was used at specific times to gather information about aspects of context that were critical for Tim's school participation. It was hypothesised that school was more than a physical context, and that other contexts such as sensory, social, emotional, play and work would be critical elements to participation. Video recording was used twice during the course of data collection to identify contextual boundaries for different periods of the day (Erickson, 1992). The researcher viewed the video several times to define and record contexts within and across time periods, for example, "physical" context in which the activity was bound by space (e.g., classroom, canteen, playground); "social" context which involved more than one person in activity; "play" context in which the child was allocated free choice; and "work" context in which the child was involved in activity instructed by the teacher.

Participant observation

This type of observation allowed the researcher to observe and engage with Tim and others during performance in school based occupations. The specific purpose of conducting participant observation was to explore ways in which Tim's participatory behaviour could be described and defined. It was hypothesised that requirements for participation at school would be more complex than in a clinic setting. Additional information about Tim's thinking processes was obtained through questioning, enabling constant integration of data collection with data analysis (Gray, et al., 2007; Polgar & Thomas, 2008). The success of systematic and analytical observation was dependent on the researcher making accurate, highly specific and detailed notes of objective and subjective information (Gray, et al., 2007). Data analysis involved writing jotted notes of observations sufficient to retain the integrity

of conversations and events during the allocated time (Buddenbaum & Novak, 2001), immediately followed by documenting visual and auditory content into a complete exact record of specific and detailed field notes (Gray, et al., 2007). The researcher labelled and categorised behaviours into “positive” and “negative” columns, counted the frequency of activities, graphed activities on a continuum from easy to difficult, noted if and when triggers for behaviour occurred, and filed dated observations in chronological order. The researcher and teacher established a hierarchy of participation behaviour so that Tim’s behaviour could be reported on a “steps of participation” hierarchy. (Refer to Appendix 3.2 for an example of note-taking).

3.2.2.2 Historical chart review

Historical chart review involved collection and analysis of 66 original documents, collected from Tim’s parents as part of data gathering for the purpose of clinical assessment at different points in time. The specific purpose of this review was to explore different perspectives of participation by various professionals over time. It was hypothesised that perusal of documents external to occupational therapy experience could provide unique descriptions of participatory behaviour. It was also hypothesised that reviewing behaviour over several years might provide a broader insight into Tim’s behaviour. Chart review, an unobtrusive method of data collection with visible objectivity, enabled patterns of Tim’s behaviour to be revealed which may easily have been overlooked amongst a mass of information (Charmaz, 2006). Content analysis aimed to find meaning from each of the document texts by using the authors’ own words (Van Manen, 1990). Documents were sorted first by profession and then by date, read to generate general topics and highlighted to mark key words, phrases and sentences. This was followed by a search for similarities, differences and

patterns of language within and across documents. (Refer to Appendix 3.3 for an example of a chart review and analysis).

3.2.2.3 Narratives

Narratives, an increasingly important methodology tool over the past 20 years, are being used across a wide range of professional disciplines (French, et al., 2001). In this study narratives were written at different times in response to a general question: “Tell me about you (Tim) and being a school student (Tim’s teacher, mother)”.

Narratives were used to explore descriptions of participation from the perspective of the subject and those intimately involved in his life situation. It was hypothesised that responses would provide a rich “lived” account providing a deeper probe into themes and that by gathering a number of narratives from each person at different points in time that the construct of change could be explored.

Inductive content analysis was used to locate themes (Babbie, 2004).

Narratives were perused to develop general topics, specific key words and sentences were highlighted, and themes were generated through open and axial coding. The researcher compared and contrasted narratives by searching for similarities, differences and patterns within and across narratives. This was achieved by examining manifest and latent data by creating and labeling text tables. Exhaustive and mutually exclusive categories were reviewed, relabeled and examined for persistence of themes. (Refer to Appendix 3.4 for examples of narratives and analysis).

3.2.2.4 Questionnaires

Several questionnaires in the form of rating scales were used to collect observational data from Tim's teachers. The specific purpose of the questionnaires was to collect data about Tim's capacity for cognitive strategy use in the context of school participation. (Part C of the chapter contains a more detailed description of the questionnaires). It was hypothesised that responses would help delineate core attributes of successful participation required for school performance and expected by teachers. Data analysis used descriptive analysis to explore consensus between teacher's responses across school years.

3.2.2.5 Semi-structured group interviews

A semi-structured interview is a directed conversation providing opportunity for in-depth exploration of a specific topic or experience. The specific purpose of these interviews was to explore the impact of difficulty with participation on the occupational role of a student from the perspective of key stakeholders. It was thought that findings would confirm the need for ongoing partnership of teachers, parents and occupational therapists to address participation issues. Questions varied in content and sequence with additional questions being asked in response to significant replies (Bryman, 2001; Gray, et al., 2007). Data analysis methodology involved note-taking, condensing content and circulating a summary for consensus. (Refer to Appendix 3.5 for an example of interview questions).

3.3 DATA ANALYSIS

Data in the form of therapy file notes, transcripts from interviews, notes from videotapes, and test scores were organised, edited and checked for accuracy.

Inductive and deductive data analysis was carried out on the data collected. Inductive analysis or constructive analysis begins with empirical observations and builds concept categories from the data. In the absence of previously identified constructs that fully described participation for this particular child, the researcher derived conceptual categories of Tim's participatory experiences through systematic descriptions that arose from the data itself without a preconceived model of elements of participation (Miles & Huberman, 2003). This occurred through colour coding of single words and 'chunks' of narrative to develop a preliminary set of themes pertaining to his participation experience (Refer to Appendix 3.6 for an example of data analysis thematic coding). Inductive analysis resulted in the findings reported in Part B of the chapter below.

Deductive analysis occurs when a pre-determined set of variables is used to organise the findings (Elo & Kyngas, 2008; Miles & Huberman, 2003). There are three steps to this analysis. First, constructs or propositions to test or observe are generated from an existing body of literature. Second, these analytic propositions are "operationalised" into starting codes (Miles and Huberman, p. 134). Third, the codes are matched to a body of data. One key theme emerging from the inductive analysis of the case study was that cognitive difficulties appeared to have a profound and recurring impact on Tim's capacity to participate at school. Data contributing to this theme were further analysed using the three steps of deductive analysis outlined above.

First, the Perceive, Recall, Plan and Perform System of Tasks Analysis (Chapparo & Ranka, 1997) was identified as a conceptual model of cognitive strategy use. This model was described in Section 2.5.4.4 and 2.5.4.5 of Chapter Two and was used because (a) it was judged as having the capacity to include most dimensions of cognitive strategy use that might apply to school participation, and (b) the occupation

therapy assessment used over 13 years of Tim's history included teacher questionnaires and observations of participatory behaviour that were modelled on constructs embedded in the PRPP System of Task Analysis.

Second, quadrant and sub-quadrant categories (such as attention, perception, recall, planning and performance monitoring) within the PRPP System of Task Analysis (Refer to Figure 2.10 for PRPP Quadrant and Sub-Quadrant categories) were operationalised as start-up codes, against which data about Tim's cognitive strengths and difficulties could be matched.

Third, observations of Tim's cognitive difficulties with participation that were recorded in the data were coded to match the categories of cognitive strategies available in the PRPP assessment model. Deductive analysis resulted in the findings outlined in Part C of this chapter.

3.4 FINDINGS

The findings from the case study are described below in two parts. A longitudinal case study submitted for publication forms Part B of the chapter. This part of the findings described the following themes that emerged from the data: (a) difficulties with participation ranged across all school academic and social domains, (b) problems with participation were persistent and escalated over time, (c) emotions and feelings associated with participation at school.

Part C of the chapter describes cognitive strategy use difficulties observed in Tim by teachers and therapists during his primary school, early high school and then home schooling participation over 13 years.

PART B

Part B reports on a description of participatory abilities, and changes to ability, in Tim's experience over 13 years of schooling.

This part is currently under review with the Australian Journal of Occupational Therapy. The manuscript was submitted in June, 2010 as Lowe, S., & Chapparo, C. Learning difficulty and school participation: A longitudinal case study of one student's experience. *Australian Occupational Therapy Journal* (Under review: submitted June 2010). All sources cited in the manuscript are referenced at the end of the chapter.

Authorship statements attesting to the contribution of the researchers are included in Appendix A.

ABSTRACT

Background/Aim: Participation at school has been universally espoused as important for school membership and performance for children experiencing learning difficulties. The goal of this project was to explore the construct of participation within a school context, and to generate a description of difficulty experienced by one child with a learning difficulty over 13 years of schooling.

Methods: A longitudinal retrospective critical case study with six methods of data collection was undertaken. Thematic analysis used open and axial coding to delineate patterns and themes

Results: Pervasive, persistent and escalating difficulties with school participation across all academic and social domains were confirmed. Particular subthemes included differences in the child's participation capacity between individual contexts and group school contexts; increasing isolation and lack of friendship; unfulfilled expectations, frustration, helplessness and guilt; grief; positive experiences and hope. Agents of change within home and school contexts, while positive, were ineffective in the long term.

Conclusions: Participation and learning difficulties impact a range of school routines and are not task specific. While difficulties are not 'fixed' by therapy in the long term, positive change occurs when specific core areas are targeted. Occupational therapists need to explore ways to identify difficulties with school participation as reliance on traditional assessments and clinical labels may not capture the realities of contextual performance.

Key Words: occupation, ecology, learning difficulties, participation, school

Background

Participation in school life is critical for all students, including those with learning difficulties (Okolo, Ferretti, & MacArthur, 2007). It has been estimated that in the Australian primary school population, 20% of children are underachieving and 3% are severely struggling in listening, speaking, reading, writing, reasoning and mathematics skills because of atypical learning (Chan & Dally, 2000). Learning disability has been described as a lifelong condition. Although some specific skills may be improved, learning difficulties do not go away ‘despite the best efforts of teachers, therapists, and parents to remediate them’ (Raskind, Goldberg, Higgins and Herman, 1999. p. 45). However, minimal data are available about the impact of learning difficulty on children’s participation in school life, and whether children with atypical learning capacities continue to experience difficulties with school participation over time.

Successful participation is linked to positive life outcomes and has been described as the extent to which children actively engage in school roles and occupations to the degree expected by the school context, and to the satisfaction of children and their parents (Simeonsson, Carlson, Huntington, Sturtz McMillen, & Brendt, 2001). However therapists indicate they do not always fully understand, or are equipped to address, the unique issues of working within a school community (Brandenburger-Shasby, 2005). A profile of Australian paediatric occupational therapists identified that while preschool and primary school age children with a learning disability are one of their major recipient groups, 76.6% of service to these children is based outside the school context (Rodger, Brown, & Brown, 2005).

Research has shown that a number of attributes, beyond academic abilities, have a significant effect on life outcomes of persons with learning difficulty. A 20

year longitudinal study of people with learning difficulties found self-awareness, pro-activity, perseverance, emotional stability, appropriate goal setting, and use of support systems discriminated successful from unsuccessful adult outcomes better than any other independent variable (Raskind, Goldberg, Higgins and Herman, 1999). In terms of life stressors, the informants in the Raskind et al. study reported the stress of having a learning disability to be the major influence on their lives, far outweighing other events or conditions, especially during childhood and adolescence. Informants who were designated as ‘successful’ participants in adulthood occupations such as community and family living, employment, and health indicated the stress of having a learning disability was felt most strongly during childhood, lessened somewhat in adolescence, and became much less stressful during adulthood once they had left the academic context.

Few longitudinal studies in occupational therapy literature have explored the impact of learning difficulties on participation at school. In order to further explore the needs of children with learning difficulties who experience problems with participation in school occupations this study chronicled the participation difficulties from an occupational perspective of one child, Tim (pseudonym) from preschool to secondary school. The research question addressed in this study was: *‘What was the impact of learning difficulty over time on this child’s school participation?’* This study is part of a bigger research project which focused on identification and assessment of school participation for children experiencing learning difficulties.

Methods

This study was approved by the local institutional ethics review committee. A longitudinal retrospective critical case study involving six methods of data collection was used to describe the experience of participation at school of one child with a

learning difficulty over 13 years. Case study, particularly suited to situations where little is known about phenomena, or when a number of human factors are involved, has contributed important information about the lived experience of individuals with learning disorders (Yin, 2003). Longitudinal studies have been used to ‘describe patterns of change in individuals over time to establish the direction and magnitude of relationships among conditions, events, treatments, and later outcomes’ (McKinney, 1994, p. 203).

Subject:

‘Tim’ (a pseudonym), representing the essential propositions under study and the target subject group for future research was selected (Yin, 2003). Tim and his family met the following criteria:

- Multiple referrals to occupational therapy for school performance difficulties from preschool to high school
- Diagnosis of learning disorder and associated co-morbidities
- Access to longitudinal data for research purposes
- Child and family consent to access data and to publish findings

At the time of this study, Tim was in Year 10. He had received occupational therapy periodically since 3 years of age (Preschool). Initial referral cited difficulty with fine motor and gross motor skills and later, difficulty with school work, notably handwriting (Year 1). Pressure for a diagnostic label to ‘fit’ school funding criteria resulted in diagnostic categorization from various medical and education sources which included hypoxia (birth), fine motor delay (Preschool), tremor (Year 1) low average intellectual ability (Year 2), Non Verbal Learning Disorder and impairment in social cognition (Year 4), Asperger’s Syndrome (Year 5) and moderately disordered receptive language, severely disordered expressive language and marked pragmatic

language disorder (Yr 10). Tim experienced difficulty relative to participation throughout schooling in spite of a nurturing school community, involved and supportive family, and collaborative occupational therapy. Performance in individual therapy situations was vastly discrepant to performance in the group classroom and playground contexts. It had been assumed that Tim would achieve success in expected learning outcomes if he was given assistance for the physical limitations of his fine motor problems, if he remained confident in his abilities, and if he worked hard and applied himself (teacher and therapy reports). However Tim's records indicated an ongoing incapacity to manage the demands of school tasks that presented increasingly complex academic and social challenges.

Data collection methods:

Diverse data gathering strategies using a broad range of data sources and data types over different points in time within an ecological approach are strongly recommended when carrying out longitudinal studies (Wilkinson & Birmingham, 2002). In this study data were gathered using six methods.

Non participant observation using video recording of performance at school was used to identify elements of participation which are not easily quantifiable or which change over time. In this study, 6 hours of uninterrupted video observation (Year 4) documented interactions between Tim, his teacher and peers in tasks within classroom and playground contexts. It was in Year 4 that both social and academic participation became an issue for Tim.

Participant observation using systematic note-taking was employed to record observations about Tim's academic and social participation in the classroom and playground. In this study Tim was observed across a wide range of classroom tasks (e.g. discussion, worksheets, sport) and settings (e.g. playground, classroom,

assembly hall). One limitation of observational methodology is the extent to which the subject of observations behaves differently because of awareness of the observation process. The impact of observer presence was offset by the observer's natural engagement in school activities and the use of repeated and lengthy observations (Gardner, 2000).

Historical chart review (Pereira Gray, 2001) utilizing information from 66 reports (30 school, 36 medical/therapy) provided information from different perspectives of Tim's performance over the course of 10 years.

Narrative accounts of personal experiences (French, Reynolds, & Swain, 2001) were used to further discover the impact of learning disability upon Tim's participation at school. Nine narratives (Tim (2), teacher (1), mother (4) and therapists (2)) were written at different times in response to a general question: 'Tell me about you (Tim) and being a school student (Tim's teacher, mother, therapist)'.

Several *questionnaires* (French, Reynolds, & Swain, 2001) with closed and open ended response choice were employed at various points in Tim's schooling to gather information about school participation for clinical assessment purposes.

Three *semi structured group conversational interviews* (French, Reynolds & Swain, 2001) using open ended questions with probes were recorded involving teachers, parents and therapist to further interpret the respondents' experience of Tim. Interviews provided opportunity to listen to information not previously committed to paper.

Data analysis:

Four stages of data preparation, exploration, analysis and validation were followed (Creswell & Plano Clark, 2007). After data were organised and checked for accuracy, colour coding was used to develop a preliminary set of themes pertaining to

participation. Analysis comprised generating common themes through open and axial coding of frequent key words, phrases and sentences in both manifest and latent data. Lincoln and Guba's (1985) model of trustworthiness was used to determine that data was 'plausible, credible, trustworthy, and, therefore, defensible' (Johnson & Christensen, 2000, p. 207). Truth value involved prolonged engagement (10 years), persistent observation (34 days), triangulation (multiple methods and sources), peer debriefing (conference and workshop presentations) and member checking. Consistency entailed recording each specific step undertaken during the research while neutrality was generated through self reflection and peer review.

Findings

Three major themes, each with sub-themes emerged from analysis of the data and are outlined below.

Theme One: Difficulties with participation ranged across all school academic and social domains.

Tim was described at different points in time as having various strengths including delightful social skills and social awareness (*12 months of age, Physiotherapist*), curiosity, knowledge about diverse topics, great interest in print, eagerness to learn, competence with pre-academic skills as well as a happy and cooperative nature (*Preschool, Early Childhood Advisory Teacher*). He was kind and caring (*Yr 3, Teacher*), had a good imagination (*Yr 4, Psychologist*) and a unique sense of humour (*Yr 6 Teacher*). He was keen to please, enjoyed drama and music, was affectionate and wanted to join in the same as other students (*Yr 7, Occupational Therapist*) however throughout these points in time he also experienced problems with many aspects of performance.

Literacy and numeracy skills were consistently recorded within 'beginning' ranges. Tim was disorganised (*Yr 3, Teacher*), refusing to work (*Yr 4, Psychologist*), seldom actively participating in lessons, displaying initiative, being conscientious or motivated, demonstrating effort or completing set tasks (*Yr 8, Teacher*). Gaps in learning were a major concern. Socially in the classroom and playground, Tim usually participated alone or alongside other children, tending to 'do his own thing', withdrawing in group situations, needing encouragement to participate in turn-taking and sharing activities. In situations involving conflict with peers he became agitated with difficulty articulating the problem and resettling (*Preschool, Early Childhood Advisory Teacher*). He was defiant and stubborn (*Yr 3, Teacher*), had difficulty making friends (*Yr 4, Psychologist*), had temper outbursts, increasing non compliance, poor regulation of mood, destructive behaviour, inability to move on after incidents, and emotional lability (*Yr 5, Psychologist*). Tim experienced high levels of anxiety expressed in depressive language ('I want to die'), self harming behaviours (continual lip biting, sore picking, walking in front of a moving car), withdrawal (lying on the floor), unpredictable and high levels of verbal abuse and physical aggression towards objects and others (shredding paper, kicking, punching, squeezing another child around the neck), rigid, irrational and oppositional behaviour (*Yr 7, Occupational Therapist*). Teachers expressed concern and helplessness with Tim's inability to participate in everyday routines of school life across both academic and social domains in spite of perceived quality teaching.

Tim's participation in the classroom and playground was different to that in individual situations. Classroom behaviour was characterised by minimal or no social participation (*video*). In contrast, performance in individual occupational therapy typically involved cooperation, perseverance and skill development unless tasks were

perceived by Tim to be too difficult (*note-taking, interview*). Formal assessments of Tim's capacities and performance to explore this discrepancy presented findings which were often perceived by teachers to be incomplete, tangential or superficial (*interview*). Furthermore diagnostic labels did not capture the essence of Tim's everyday school performance (*chart review*). Similarly, assessment recommendations did not always guide a way forward to increase Tim's participation (*questionnaire, interview*). Although there was a match between labelling and school funding for Tim there was no marked change in the presenting problem of his unsuccessful participation.

Theme Two: Problems with participation are persistent and escalate over time

As early as preschool, Tim's difficulties with participation were posited to '*persist and significantly interfere with school work*' (*chart review*). Data findings highlighted the importance of intensive and frequent school-based occupational therapy intervention as an agent of change. This intervention, occurring for one school term during Year 5, and involving strategy use for information processing, scaffolding, adaptation, modelling, visual prompting and verbal cueing transformed Tim's participation (*note-taking, interview*). During this programming, Tim's participation changed to a type and level conducive to learning. He was observed to be enjoying school more, asking questions and making comments during class discussions, identifying when he felt overwhelmed, selecting strategies to deal with situations, completing a larger volume of work, and appropriately managing social interactions within the classroom and playground (*note-taking, questionnaire, interview*). While a diagnostic label had elicited school funding it was cognitive task analysis of activities/routines matched with systematic instruction of cognitive strategies during concentrated school-based intervention which appeared to best

support successful participation. Positive change in successful participation in response to periods of school-based therapy however was not maintained (*note-taking*). Participation difficulties resurfaced after cessation of therapy, with Tim again demonstrating variable levels of difficulty (*chart review*).

Although learning problems had become apparent in the first year of preschool Tim was still perceived to be an enthusiastic, happy and cooperative learner with a gentle and stable mood (*Early Childhood Advisory Teacher*). However Tim became consistently 'uncooperative and avoidant of tasks as demands of tasks increased' (*Year 5, Psychologist*). By Year 10 Tim was depicted as an unenthusiastic, unhappy and uncooperative learner who demonstrated episodic, unpredictable and significant verbal and physical aggression, was academically lacking competence and socially withdrawn. Problems with performance while present at preschool presented with escalating differences between initial and final stages of schooling.

Theme Three: Emotions and feelings associated with participation at school

Several interrelated sub-themes emerged from within this third theme, offering more specific descriptions of increasing isolation and lack of friendship, unfulfilled expectations, feelings of grief, as well as positive experiences associated with participation.

Increased isolation with lack of friendship

Isolation has been defined as a state of being detached without significant contact with others. Friendship defies isolation and is a connecting relationship with others based on supportive and cooperative behaviour. Friends share interests in common, welcome each other's company and exhibit loyalty to each other (VandenBos, 2007). Tim's mother expressed her concern with Tim's lack of friends, stating '*Differences between Tim and other children are more obvious..... He has*

become isolated, finding it hard to make and keep friends' (narrative). This observation was mirrored in Tim's narrative, with recorded statements such as, 'I often play by myself. They don't usually include me in games. I don't go to find them. I'm quite used to being on my own' (narrative).

Unfulfilled expectations, frustration, helplessness, and guilt

Unfulfilled expectations provide potential for increased frustration at daily defeats. Frustration can occur where an individual is blocked from reaching a personal goal with helplessness becoming a state of inability to either act or react to situations, with attached potential feelings of inadequacy, impotence or guilt (VandenBos, 2007). Tim's mother communicated her thoughts about unfulfilled expectations in regard to uncertainty about Tim, saying, *'My expectations have had to constantly adapt to the realities. Nothing has worked out how I expected. It's hard to see Tim as an adult and I don't know where life's path will take him' (narrative).* Tim's mother described the frustration she felt with lack of understanding from family and friends together with a growing sense of guilt. *'They don't often understand the joy you get in achieving a particular goal, as their own children did this some time before...we get frustrated with Tim's difficulties' (narrative).* Linked with this were strong feelings of helplessness and guilt in not fully supporting Tim by not grasping the depth of his participation difficulties in comments such as, *'Tim's entry into high school was a nightmare and as a parent, teacher and person I am appalled at how little I understood the pressures he was under' (narrative).*

Grief

Grief has been described as a multifaceted reaction to loss but for parents of children with a learning difficulty as 'a loss yet presence', 'ambiguous loss' and 'non-finite loss and grief with losses that are contingent on development: the passage of

time; and a lack of synchrony with hopes, wishes, ideals and expectations' (Babb, 2007). Multiple and successive episodes of grief were reflected in this study. 'I have an ongoing fluctuating grief about Tim's problems' stated Tim's mother (*narrative*). Anguish over diagnoses was accompanied by constant disappointment and sadness for Tim's parents as they repeatedly read in school reports about Tim's participation difficulties (*interview*). Similarly, Tim talked about frustration with difficulties and subsequent sadness-'*If I didn't have problems it would be better. Sometimes I get depressed. I don't like to think about it. Things get too much for me*' (*narrative*).

Positive experiences and hope

Hope relates to a belief in a positive outcome related to circumstances in one's life, implying a belief that a better or positive outcome can/will happen even when there is evidence to the contrary (VandenBos, 2007). Tim's mother identified aspects of Tim's personality which provided her with joy and hope for the future. '*He is incredibly affectionate, easily moved to tears by something sad. He loves hugs and praise. He is funny and loves telling jokes....He is fun to be around* (*narrative, Year 6*)..... *Probably the best thing to have happened is that Tim now has a friend. It's easy to look back and see mistakes and hardships, and look forward and see only problems but that one fact shows me that something tremendous has happened. Maybe that's the way our lives will pan out – lots of problems, lots of frustrations, but great things will continue to happen. Progress will be made, and others will get to see the son I still cherish for who he is* (*narrative, Year 10*).

Tim is now in the final months of secondary school and beginning transition into his next life role as a worker. While Tim, his therapists, teachers and family each acknowledge the massive impact of a permanent and pervasive learning difficulty on his everyday performance, there is also recognition of treasured gains not typically

documented as educational and therapeutic goal outcomes. Tim is applying learned strategies to attributes posited as being critical for success: self awareness and use of appropriate support systems (*'This bit is too difficult – I want you to help with this bit but that bit I can do'*), perseverance (*'he is now able to voice when something is wrong, when he doesn't understand or when he's frustrated instead of completely shutting down'*), pro-activity (*'He's on the ball. More organised. Taking initiative'*), emotional stability (*'He's coping with stuff and is very happy in himself'*) and goal setting (*'We can move positively now to make plans about his life future'*). Problems will persist but his parents suggest that so too, will hope for successful participation in future life roles, depending upon ongoing and appropriately targeted support.

Discussion

The aim of this study was to explore difficulties that one child with learning difficulties, Tim, experienced with school participation over time. The findings of this study indicated that for Tim the impact of a learning difficulty on his participation in activity with others was immense, involving pervasive, persistent and escalating difficulties across academic and social domains over many years. Sub themes reflected problems with participation within individual and group school contexts, lack of friendship, and feelings of frustration and helplessness, grief, and hope. Although occupational therapy service delivery contributed to positive changes to his ability to participate in school life, he was unable to maintain a high level of participation, with difficulties reappearing in successive school years. His inability to participate in school life over many years appears to have contributed to an overwhelming burden on his ability to cope in his present adolescence period of development.

The limitations of this study are clear. Tim may not be representative of all children with learning difficulties, and his experiences, and those of his parents,

teachers and therapists, may not be universal. It is not the purpose of the study to generalise the findings to all children and therapy services, but to present one child's longitudinal experience. This study does, however begin to fill a notable gap in occupational therapy research, namely documenting the lived experiences of children with learning difficulties over their childhood and adolescent lifetimes. The study joins only a handful of longitudinal studies in occupational therapy literature, with none documenting the difficulties with participation of a child with learning difficulties from initial referral in preschool years to final years of high school. Despite these limitations, the findings resonate in education and psychology literature as discussed below.

One finding of this study indicated that difficulties with participation were not task specific, but impacted a range of school activities. This is consistent with recent discussion in education literature regarding the pervasive nature of participation difficulties at school (Conroy, Sutherland, Haydon, Stormont, & Harmon, 2009). The findings of this study are consistent with evidence indicating that although learning difficulty has a broad impact in every functional context of life experience and outcomes, problems with participation are particularly evident within the highly social school context, where participatory skills are required for social and academic survival (Raskind, Goldberg, Higgins, & Herman, 1999).

The findings of this study support the notion that learning difficulty does not disappear over time but ranges in expression, with peaks of progress and troughs of severity, at different stages. Children with learning difficulties typically experience a rapidly developing discrepancy between expectations of their environment and their performance in the classroom and the playground in the early years of school resulting in referral to therapy services (Norwich & Kelly, 2005). Tim's participation

was characterised by overwhelming and unhappy experiences despite the presence of a supportive family and school structure, physical and intellectual assistance at school, confidence in his own abilities and application of effort. His ability to engage with others in academic and social activity remained fragile throughout the recorded period of his school life. Tim's occupational therapy and educational history indicated that the core problems with school participation observed in Year 10 were described similarly to those observed in Preschool, only broader and more complex. The core difficulties experienced by Tim were not 'fixed' by therapy and will potentially pose lifelong challenges for him and his family.

Recent perspectives on learning at school clearly define it as a social process, based on children's shared experiences of learning with others (Wight & Chapparo, 2008), and that the ability to successfully participate in shared learning is associated more with children's social cognition, confidence, and application of effort, than physical capacity and physical approximation to others. Clearly, Tim's difficulty with participation was dependent upon a range of skills which traditional diagnostic labels assigned to him over time, did not explicate and which need to be explored in future research.

A major concern arising out of this study is the capacity of traditional assessments and clinical labels to identify the realities of contextual performance. Impacting issues arising from Tim's history include the tendency of assessments to focus on a single aspect of performance, insensitivity to performance in naturalistic contexts, failure to take a long term and predictive perspective, reliance on the false importance of objectivity, and limited links between formal assessment and intervention (Larkin & Cermak, 2002). These problems are exacerbated for children with learning difficulties because there is no single or simple solution to complex and

pervasive problems of participation (Bishop, 2004). Assessment focusing on the participation of children with a learning difficulty requires a multifaceted perspective including analysis of both the context and the child's capacity to meet contextual expectations (Raskind, et al., 1999).

Further research is warranted to identify how these findings can be used to scaffold school participation in a way that is relevant and meaningful, which accommodates school culture, which is flexible to the changing and dynamic demands of the child, teacher and environment, and which has the capacity to guide inclusive programming. This study highlights the need for ongoing and targeted therapy service provision focusing on those aspects of the child, task and context which are critical for successful participation.

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PART C

CASE STUDY: USE OF COGNITIVE STRATEGIES

Part C of this chapter extended the findings outlined in Part B by exploring one specific theme, use of cognitive strategies as a critical success attribute for Tim's school participation. The findings describe strategy application errors that were identified over time by Tim's teachers when observing his school participation relative to the expectations of school routines. These findings were the stimulus for the focus of the remainder of the research which addressed assessment of cognitive strategy use in school participation.

3.11 METHODS

3.11.1 Data gathered from teachers and parents

During Tim's involvement with occupational therapy, questionnaires were distributed as a regular part of service delivery to Tim's teachers, accompanied by a cover letter outlining the purpose of observation. Data were collected during Years 2, 4, 6 and 10 with 100% response rate. Two complimentary informal rating scales were used to collect these clinical data. First, the Perceive, Recall, Plan, and Perform (PRPP) Teacher Rating Scale and Perceive, Recall, Plan, and Perform (PRPP) Parent Rating Scale (Fordham, 2001) was used as short form questionnaire as well as a longer version of the same questionnaire (Refer to Appendix 3.7a and 3.7b). The context for Tim's performance in the short form questionnaires was a mainstream primary school whereas the context for the long form questionnaire was home school. The purpose of these instruments was to identify errors in cognitive strategy use, made by students during participation in school routines, as observed by teachers. The

PRPP Teacher Rating Scale, short and long forms, used constructs from the PRPP System of Task Analysis (Chapparo and Ranka, 2005) as item questions and were the forerunners of the current PRPP@SCHOOL-1&TQ & PQ). The forms were evaluated as having acceptable reliability and validity (Fordham 2001) for documenting the cognitive performance of children during participation in school occupations. Both the short and long forms used in this part of the research employed adapted PRPP category groupings to identify patterns in the capacity to use cognitive strategies. Table 3.1 lists the labels for each category and the number of items during task performance within each category.

Table 3.1 Category labels and number of items in each category for short and long form instruments.

Category	Short Form n	Long Form n
Attention	16	17
Recall	9	37
Planning	12	45
Doing	0	9

Note: n=number of items

The focus of the items in the short form was on participation in independent task performance whereas the long form included participation in tasks with other students during group work. Table 3.2 provides examples of items within each of the instruments. The shaded upper panel shows similar items, the item on the left in the short form focusing on participation in tasks, the same item of the right in the long form extended to focus on participation in tasks with others. The unshaded lower panel shows items which were not included in the short form but which were added to the long form. Doing category was not included in the short form.

Table 3.2 Examples of items within categories for short and long form instruments.

Category	Short Form	Long Form
Attention	Stay focused long enough to finish tasks	Stay focussed long enough to finish activity, conversation
Recall	Remember instructions to complete a task	Follow instructions spoken to a group without needing individual prompts
Planning	Choose strategies to carry out a task	Choose the best, most efficient strategy
Doing		Recommence an activity after there has been an interruption
Attention		Be aware of other people’s feelings by searching for body language
Recall		Know the difference between what is, and is not, important
Planning		Stop every now and again to check performance
Doing		Persevere, keep going and try hard when obstacles arise or when effort is required

Note: The Short Form focused on participation in tasks done independently of others
The Long Form focused on participation in tasks with others

Both the short form and long form versions of the questionnaire operated as criterion referenced assessments, where a student’s performance on relevant and particular salient tasks was judged against the performance expectations of teachers (Ferrin, Bishop, & Tansey, 2010), rather than in comparison to other students in the class setting or across classes. For each item, the questionnaires instructed respondents to observe Tim and consider the question “*Compared to performance expectations of ___ activities, this student is able to.....*”. The short form required teachers to score observed performance using a dichotomous yes/no rating scale. The long form required teachers to score using a five point rating scale: 5=“always” (100% of the time), 4=“frequently” (75% of the time), 3=“sometimes” (50% of the time), 2=“seldom” (25% of the time) and 1=“never” (0% of the time). A broad range of routines was used by the teachers as school occupations for observation of Tim’s performance. Refer to Table 3.3 for examples of these routines and to Appendix 3.8

for a complete list of activities and routines (Refer to Table 3.4 for examples of task expectations for two typical routines).

Table 3.3 Examples of school daily routines

Activity category	Activity
Individual classroom	Copying from the board Spelling test Journal writing Silent reading
Group classroom	Reading group Peer support Craft Maths mania
Recess and lunch	Chess club Handball Tag Choir
Before and after school	Bus lines Climbing equipment
Class responsibilities	Desk monitor Canteen courier

Table 3.4 Examples of task analysis of typical classroom routines

Activity category	Task analysis
Recess monitor: An activity which is rotated amongst students and which involves <u>assuming responsibility</u>	<ul style="list-style-type: none"> • <i>Remember</i> what time you need to leave • <i>Be aware</i> of the time - look at the clock • <i>Start</i> walking to staff room at 10.55 • <i>Check</i> who is on duty-look at the playground duty roster • <i>Choose</i> which monitor looks after which teacher • <i>Check</i> what the teacher requires for morning tea • <i>Find</i> your teacher's bucket • <i>Wait</i> for the teacher to make the tea or coffee • Take the bucket with the morning tea to the teacher • Return the bucket to the staffroom • Wash the bucket • Go and enjoy your own morning tea
Maths activity: An activity which involves <u>problem solving</u>	<ul style="list-style-type: none"> • <i>Find</i> the correct section in your maths textbook • <i>Find</i> the next page in your maths exercise book • <i>Choose</i> to work out the problem by either colouring, cutting, drawing, tracing, using real shapes or discussing with a buddy • <i>Estimate</i> the answer if you can't work out an exact answer • <i>Check</i> out your guess: look, measure, feel, ask • Write or draw the answer

Note: Words in *italic* signify specific thinking behaviours

3.12 DATA ANALYSIS

Descriptive deductive analysis was performed on the data to calculate frequency in errors of strategy use in each category over time. Error patterns which persisted over time were identified within categories.

3.13 FINDINGS

3.13.1 Descriptions at an item level

The findings from teacher, parent and therapist data indicated that strategic and flexible use of cognitive processing appeared to impede Tim's participation in school occupations. For example, teachers described Tim's continued difficulties with attention. Specifically, they gave instances where he was unable to *shift attention* for a reading comprehension activity, *focus on important details* during topic discussions, *concentrate long enough* to play a game of cricket with friends at recess, and *divide his attention between talking, writing, listening and thinking* during group maths work.

Difficulty with *remembering more than one thing at a time* was problematic for Tim, for example, listening to a sequence of instructions while opening his book to the next page. *Recalling procedures for routine and familiar activities* were also ongoing areas of inefficient strategy use as observed by Tim's teachers. Problems with *remembering social and procedural rules* for routines such as how to line up outside class, participate in circle time on the floor, or listen to other students present a class speech often resulted in discord with both class mates and teachers. Errors extended to problems with recognising and interpreting the appropriate context relative to time and place. In particular, Tim had difficulty *knowing when and where* something should be said and done. Teachers reported that his comments and actions

were often not an appropriate contextual fit, for example, being playful in class during work time.

Reports frequently indicated that Tim *often didn't know what he was supposed to be doing, or forgot what he was doing*, for example, during a library research activity. He needed help *figuring out why he wasn't able to complete an activity* such as being aware that the pencil being used for drawing was blunt. He had difficulty *getting himself ready for activity in an organised way*, such as in preparation for sport. Teachers reported that *choosing an idea or an action*, such as selecting an idea for writing a journal entry was highly problematic. Tim's difficulty with analysing situations and making judgments about how to act in social situations was acknowledged by teachers during primary school, and was further identified during his early adolescent years as being a critical barrier to Tim's lack of success in secondary school. Tim was observed to make errors *questioning if there were better ways to do something, stopping every now and again to check his performance, and making safe decisions*. Continuous difficulties with evaluating situations, and then monitoring and adjusting his inflexible behaviour to match the situation resulted in crisis for Tim, his family and his school.

3.13.2 Descriptions at a category level

Visual analysis using colour coding on the short form questionnaire (Years 2, 4, and 6) and the long form questionnaire (Year 10) suggested the greatest difficulty with use of cognitive strategies occurred in the Planning category, followed by the Attention category and then the Recall category. This is similar to the descriptions given by teachers and parents in the previous section, and was consistent across all years at school (Refer to Table 3.5).

Table 3.5 Frequency of inefficient strategy use, expressed as a percentage score.

CATEGORY	Year 2	Year 4	Year 6	Year 10
Attention	56	50	38	33
Recall	11	11	22	26
Planning	59	73	64	41
Doing	n/a	n/a	n/a	38

A number of the same items were repeatedly scored by different teachers across the years at school, indicating Tim's ongoing difficulty with efficient use of a particular cognitive strategy against the performance expectations of the teacher (Refer to Table 3.6).

Table 3.6 Inefficient use of strategies which persisted over time

CATEGORY	INEFFICIENT STRATEGIES
Attention	Shifting attention Focusing on important detail Sustaining attention Dividing attention to multitask
Recall	Remembering more than one thing at a time Recalling procedures for familiar routines Remembering rules
Plan	Knowing the specific goal and keeping that goal in mind Identifying obstacles hindering performance Getting himself and objects ready for activity in an organised way Choosing a strategy or an action Questioning if there were better ways to do something Stopping every now and again to check his performance Making safe and informed decisions

The findings from this aspect of Tim's case study indicated that inefficient use of cognitive strategies appeared to be a major obstacle to his participation in school occupations, and that his ability to use cognitive strategies did not improve with time.

3.14 SUMMARY OF FINDINGS FROM THE CASE STUDY AS A WHOLE

The analysis and findings set out in this chapter focused on describing school participation from the perspective of the experiences over time of one student with learning difficulties. The findings in this chapter addressed part of the research question posed in Phase 1:

Which cognitive strategies support the participation of school students with and without learning difficulties in classroom and playground occupations from the perspectives of teachers, parents and students?

In relation to this research question, the following findings emerged relative to one student with learning difficulties.

Finding 3.14.1

Tim's difficulty with participation impacted to a very significant degree with school work and with social interactions. His difficulty with school participation ranged across all school academic and social domains, and was more keenly experienced in group contexts than individual interactions.

Finding 3.14.2

Tim's difficulty with participation was persistent over time. Difficulties observed in preschool were similar to difficulties observed in high school. Tim's difficulty with participation escalated over time. The gap between peer's successful participation and Tim's unsuccessful participation increased and the impact of the gap became more significant.

Finding 3.14.3

Examination of Tim's difficulty with participation highlighted themes of (a) increased isolation with lack of friendship, (b) unfulfilled expectations, frustration,

helplessness, and guilt, (c) grief, and (d) positive experiences and hope in his own life and the lives of his teachers and parents.

Finding 3.14.4

Assessment findings relative to Tim's capacities and performance by professionals were often perceived by teachers to be incomplete, tangential or superficial. Diagnostic labels did not capture the essence of Tim's everyday participation at school. Furthermore, assessment recommendations by health professionals did not always lead to increased participation by Tim. While intensive and frequent school-based occupational therapy, using an information processing approach, was an agent of change, positive change was not maintained after the cessation of school-based therapy.

Finding 3.14.5

Deductive analysis of Tim's participation using an information processing model of strategy use indicated his difficulty using many cognitive strategies. His difficulty with using cognitive strategies during school and home-based school activities demonstrated that he used a small repertoire of strategies only. This problem was exacerbated by his inflexible use of strategies particularly during situations which involved change and/or problem solving. Although he experienced difficulty applying strategies in all domains of information processing, planning attracted the most concern from parents and teachers.

CHAPTER FOUR

PHASE ONE: SURVEY

Chapter Four contains a report of a small study that sought to further identify critical elements of participation from the perspective of teachers and parents using survey methodology (Refer to Figure 4.1). This study contributes to the overall aim of Phase One of the research which was to identify which cognitive strategies support the participation of school students with and without learning difficulties in classroom and playground occupations from the perspectives of teachers, parents and students.

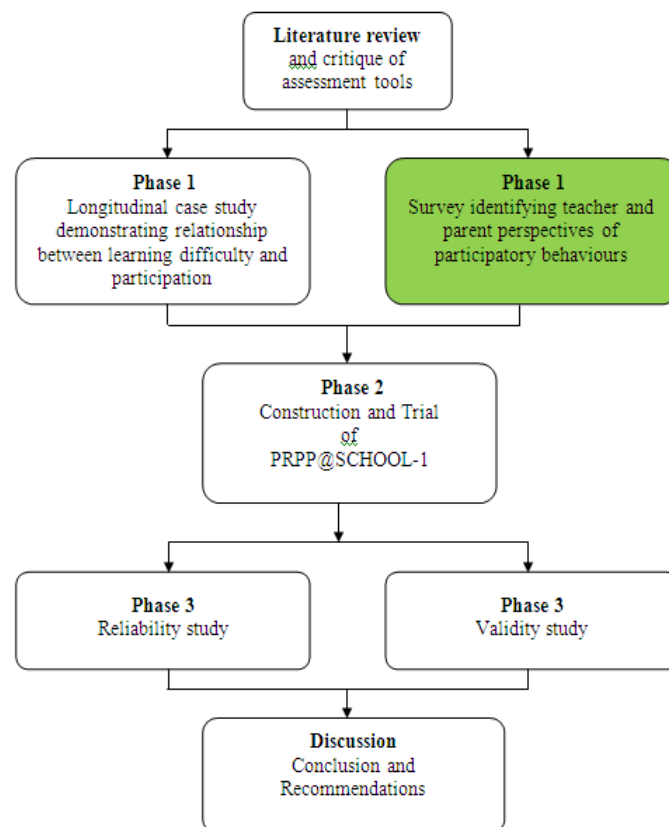


Figure 4.1 Flow chart of phases in the research displaying the relation of this chapter to the thesis as a whole.

Chapter Four contains three parts.

- Part A outlines the overall survey methodology used for this part of the research.
- Part B contains the findings of a teacher and parent survey which identified some of the elements critical to the participation of students in school work tasks. The findings are presented as they were published: Lowe, S. & Chapparo, C. (2010). *Work at school: Teacher and parent perceptions about children's participation. Work: A Journal of Prevention, Assessment and Rehabilitation. (36) 2, 249-256.*
- Part C contains the results of an examination of the specific information processing strategies which teachers and parents indicated were a critical element of school participation for students.

PART A

METHODOLOGY

4.1 RESEARCH DESIGN

Survey is the most common research methodology within the social sciences because of its distinct advantages relative to time and cost efficiency, respondent convenience and absence of interviewer effect (Babbie, 2004). In this study, survey was used as a systematic method for gathering a broad range of information to identify those elements of school participation that teachers and parents viewed as essential to success in the performance of school, and home-based school activities. Specifically, cross-sectional survey using paper based self-administered questionnaires proved to be a suitable research design because (a) a survey was thought to be able to generate the breadth, rather than depth, of descriptive data required at this stage of the research, and (b) the respondents had a high degree of understanding of the construct of participation in school and home-based school tasks,

and were involved in life situations in which behaviours associated with this construct were not rapidly changing (Babbie, 2004; Charmaz, 2006).

4.2 RESEARCH QUESTIONS

The overall research question addressed in Phase One of the study was:

Which cognitive strategies support the participation of school students with and without learning difficulties in classroom and playground occupations from the perspectives of teachers, parents and students?"

Two specific research questions emanating from this overall research question were addressed in this part of Phase One of the research.

What are the most frequently reported elements of participation for children at school who are participating fully and consistently or who are having difficulty participating?

How do information processing elements of participation, reported by teachers and parents, align with information processing strategies as stated in the Perceive, Recall, Plan, and Perform (PRPP) System of Task Analysis?

It was hypothesised that by collecting, comparing and contrasting the thoughts and feelings held by teachers and parents about participation, a full inventory of difficulties with participation in general and cognitive strategy use during school participation in particular, would be generated from people closest to children with learning difficulties, and that the inventory would be characterised by tangible, behavioural descriptions of difficulty rather than intangible concepts. It was hoped

that the language generated by teachers and parents would be used in subsequent research to develop a teacher and parent rating scale instrument.

4.3 METHODS

4.3.1 Informants

Purposive sampling was adopted whereby the researcher selected specific groups of teachers and parents to be surveyed because of their knowledge and experience with children who have difficulties with school participation (Gray, Williamson, Karp, & Dalphin, 2007). It was considered crucial to target the perspectives of teachers and parents in the sample, as occupational therapists' notions of student participation can often be framed by the label attached to a student's disability/delay/disorder, the therapist's training, the therapist's employer or workplace policies, available assessments, time, or the therapist's own view of school performance skills. It was therefore important to look outside the researcher's own experiences and perceptions as a therapist.

A convenient sample of 94 adults (50 teachers and 44 parents) of students enrolled in Kindergarten to Year Six and referred to occupational therapy for school performance difficulties, was drawn from Greater Western Sydney. Teachers and parents who were connected with the researcher's clinic through referral of children, were invited to participate by open invitations at teacher workshops and via a written notice in the clinic reception room. The sample contained those who chose to participate and who returned a completed questionnaire within a set time frame (Gray, et al., 2007). Further details about the sample are found in Parts B and C of this chapter. The conduct of this study was approved by the local institutional ethics review committee (Refer to Appendix 3.1).

4.3.2 Procedures

A range of dichotomous, rating scale and open-ended questions using common language were developed in order to explore the research topic. Most questions were open-ended so as to elicit responses from respondents in their own words, without bias from the researcher, and without the social or psychological influences of face-to-face contact (Portney & Watkins, 2009). Given that open-ended questions can generate unexpected responses this technique was an important methodological technique for exploring the relatively new phenomena of participation at school from an information processing perspective (Bryman, 2001). Examples of survey questions were:

- *The word PARTICIPATION means different things to different people. What does this word mean to you when you think about the children you are teaching (your child)?*
- *In the life of your (child's) classroom (home) what activities require a high degree of participation?*
- *What aspects of a student's (your child's) participation have you found most difficult to address or change in the classroom (at home)?*

(Refer to Table 1 in Part B of this chapter for the complete list of questions in the survey.)

4.4 DATA ANALYSIS

Examination of the data was conducted using content analysis, a systematic and replicable technique quantifying content in terms of categories (Bryman, 2001;

Gray, et al., 2007). Data analysis procedures are outlined within the specific methodology sections of Parts B and C of the chapter.

4.5 FINDINGS

The findings are also located within specific findings sections of Part B and Part C of this chapter.

PART B

Part B contains the findings of a teacher and parent survey which identified some of the elements critical to the participation of students in school work tasks.

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Authorship statements attesting to the contribution of the researcher are included in Appendix B.

Work at school: Teacher and parent perceptions about children's participation

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Abstract. *Objective:* Little research has been carried out on the behaviours that lead to children's successful participation in work roles at school. The objective of this study was to identify some of the elements critical to participation of students by listening to the perspectives of teachers and parents of children who have difficulties with school work. The study is part of a larger research project aimed at developing an assessment tool to describe the participation of children at school with particular reference to students who experience a difficulty with learning.

Participants: 50 teachers and 44 parents of children referred to occupational therapy for problems with school work.

Methods: A survey approach using an open ended written response questionnaire.

Results: The findings indicated that there are core elements of participation in work that are commonly perceived as crucial by teachers and parents. These included common definitions of work participation with the emergence of several themes relative to work roles and meaning, opportunity for inclusion in school work, risk taking and enjoyment as part of work, and thinking processes. Differences between teacher and parent responses related to perceived reasons for a difficulty with participation, activities which require high levels of participation and aspects of participation that are most difficult to change.

Conclusion: This study provided descriptive data on which to build further research into children's experiences of work, and highlights the need for occupational therapists to consider perceptions of key stakeholders when assessing children's work ability at school.

Keywords: Participatory work behaviours, school, teacher and parent perspectives

1. Background information

Occupational therapy research has emphasised the importance of play, self-care, and the behaviours that support them as childhood occupations [3]. Less has been written about work in childhood, or of the behaviours required for successful participation in work roles at school. Occupational therapists are requested to provide assessment and intervention services to children who experience difficulties participating in school work [29]. Therapeutic efforts to enhance development

of children's performance in work tasks and routines are done in partnership with teachers, parents, children and other stakeholders [4,19,26]. However, little is known about the expectations of children's work behaviour held by each of these stakeholders. The purpose of this study was to discover elements critical to participation of children in the workplace of school [15] by listening to the perspectives of teachers and parents.

Agreement about the definition and nature of work remains elusive [18]. Children's work has been described as being useful, adult-initiated, needing simultaneous performance with other children, requiring the use of the same materials to construct similar products, and involving a level of difficulty that requires sufficient effort and concentration [6,32]. While it has often been

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assumed that work is something that children do individually, research indicates that the capacity to engage in work relationships with others is a critical factor to success [30]. A major part of children's work involves participatory learning, which is defined as a dynamic social process, requiring sophisticated information processing skills [14].

As with work, the notion of *participation* although not new, remains poorly defined and is largely reflected in descriptions of the extent to which people engage in physical and social aspects of life occupations including work [1]. Although the word participation was first used in 1380 [27] the meaning has extended from the original notion of physically taking part in *doing activities*, to a social association, involving engagement with others in a *relationship*, thereby emphasising the notion of community, fellowship and being related to a larger whole [27,28]. This is reflected in the language of participatory work practices at school, where educators emphasise the need for all children, regardless of ability, to *participate* in all aspects of school work.

The impact of the physical context on children's participation in school activities has received the largest emphasis in occupational therapy literature, with a heavy focus on inclusion and integration of children with physical disabilities in social activities and play. However educators suggest that authentic participation for children with a learning difficulty is not necessarily equated with physical proximity, but is a complex function of the activity, context and culture in which it occurs. Wenger [30] has suggested that participation in school work involves a process of engagement in a specific culture, a 'community of practice' that includes teachers, parents and other children. The scant research in this area indicates that the characteristics of work participation within the school community may vary from task to task. Sometimes the style of participation in work is quite formal, such as that found in teacher-directed learning activities. At other times it is very fluid and informal, such as that observed in children's group work activities [6,30]. It is probable that the style and nature of participation in work tasks at school defines itself through a mutual understanding of work among children, teachers and parents along three dimensions: the goal, a *joint enterprise* that is understood and continually renegotiated by all; how it functions, a *mutual style of engagement* that binds children and teachers together into a social entity with expected behaviours; and what is produced, the *shared skill repertoire* of what children, teachers and parents are able to produce as a result [30]. The fact that

they are organizing behaviours around a common area of knowledge and activity gives them a joint sense of 'what is work'.

From this perspective, work at school is not simply defined as the acquisition of certain forms of knowledge and skill, but an outcome of highly specific and situated social co-participation. Therefore, participation in work tasks at school refers not just to children's engagement in certain isolated activities with certain people, but to a more encompassing process of being active participants in the *work practices* of the social community of school, and constructing a *work identity* that fits with other people in the community of school [30].

Occupational therapists are referred children who experience difficulty with various aspects of work at school. Assessment and intervention is largely centred on class teacher and parent expectations and demands for improved performance in children's schoolwork. Schoolwork is believed to foster the capacity to participate in later adult work [25]. Adults' views of work are thought to influence those of young children in the first years of school [32], and contribute to the way children are socialised into the world of work [5]. It has been hypothesised that children are exposed to adult expectations of work role behaviours at school and at home, and associated work behaviours are explicitly and implicitly taught and rehearsed across many home and school work tasks, forming the basis for entry into organisational work in later years [22]. However, little is known about how adults in the children's world of work describe and measure children's capacity to participate in schoolwork [20]. Teachers for example, are in an optimal position to observe and provide feedback on the academic and behavioural status of students. Parents report a strong personal need for their child to 'fit in' and belong to the social school group [7], as well as to experience success in schoolwork [8,10]. However, there is scant information about what teachers and parents perceive as successful work participation [20], and less about the critical capacities that support *participatory work behaviour*. Since the abilities that are critical for children's participation in work tasks have not yet been fully identified, therapy assessment of children's participation in work is vulnerable to a superficial and fragmented approach [31]. Listening to the perspectives of teachers and parents may assist occupational therapists to provide optimum learning opportunities for children who find school to be a confusing, overwhelming and unhappy work place.

The goal of this study was to gather information about the range of *participatory behaviours* required

Table 1
Teacher Questionnaire Items with Parent Equivalent Items in Parentheses

<ol style="list-style-type: none"> 1. The word PARTICIPATION means different things to different people. What does this word mean to you when you think about the children you are teaching (your child)? 2. Can you describe what participation looks like as you observe <ul style="list-style-type: none"> – your students (child) who are participating [in work]? – your students (child) who are having difficulty participating [in work]? 3. Given the fact that students (children) have different personalities and intellectual abilities – what do you think are the indicators of <ul style="list-style-type: none"> – a student (child) who is participating fully and consistently [in work at school]? – a student (child) who is participating adequately? – a student (child) who is having difficulty participating? – a student (child) who is not participating? 4. There are many reasons why children have difficulty with participation. These include physical, attention, organisation, social and emotional factors. In your (child's) classroom can you describe which of these factors are frequently inhibiting your students' (child's) participation [in schoolwork]? <ul style="list-style-type: none"> – physical – attention – organisation – social – emotional – other (please describe other) 5. In the life of your (child's) classroom which activities require a high level of participation? 6. Teachers (parents) have fabulous strategies which increase a student's (their child's) participation [in school work]. What strategies have you used which you have found to successfully change the level of your student's (child's) participation? 7. What aspects of a student's (your child's) non-participation or poor participation have you found the most difficult to address or change in the classroom? 8. Do you have any general comments about issues related to schoolwork participation which have not been covered in these questions? 	<hr/>
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for schoolwork from the perspectives of teachers and parents of children in mainstream grade school. The research reported in this article is part of a larger study aimed at developing an ecological assessment that can be used by occupational therapists, teachers and parents to describe and measure early work behaviours in children.

2. Method

2.1. Research design

This was a descriptive study that employed a survey approach. Specifically, an open-ended questionnaire was used to collect written response data from teachers and parents of their perceptions of grade school students' *participatory work behaviours*.

2.2. Respondents

A convenient sample of 94 adults (50 teachers: 44 parents) of grade school students (Kindergarten to Year 6) who had been referred to occupational therapy because of difficulties with various aspects of schoolwork was drawn from the western suburbs of Sydney, Aus-

tralia. Classroom teachers and parents associated with the researcher's clinical practice were invited to participate through open invitations at teacher workshops and via a written notice in the clinic reception room. The sample contained those who chose to participate and who returned a completed questionnaire within a set time frame.

2.3. Procedures

After explanations of the purpose of the study and confirmation of consent to participate, respondents were asked to complete a four-page questionnaire containing eight common language questions, as summarised in the Teacher Questionnaire in Table 1. Parents were offered the same questions, with the substitutions in parentheses in Table 1.

The respondents completed the questionnaires individually by writing their responses in the spaces indicated, without discussing their responses with the researchers, therapists or peers. The questions were open-ended so as to elicit responses from respondents in their own words, without bias from the researcher, and without the social or psychological influences of face-to-face contact [21].

Table 2
Summary of work themes and associated work behaviours

Work theme	Work behaviours
Roles and meaning	Working in small group, being fulfilled, self satisfaction, pride
Opportunity for inclusion	Differentiated curriculum, modified activity, learning styles, choice, participate to potential
Confident risk taking and joy	Having a go, confidence, enthusiasm, fun
Thinking through how to participate	Alertness, listening, multitasking, remembering, being organised, thinking for self, making decisions
Participation for work	Effort, independence, progress, success

2.4. Data analysis

Data analysis followed five stages outlined by Creswell and Plano Clark [9]. Within this framework common themes describing participation perspectives were generated through a process of content analysis of both the manifest and latent data [2]. The content analysis followed an open and axial coding process [23] using Zipf's law, whereby frequency of occurrence of key words, phrases and sentences of data was used to explore the data without any prior assumptions. This was followed by a process of developing categories and creating connections within and between categories. Visual analysis using paraphrasing and text tables to review and relabel the experience of participation using exhaustive but mutually exclusive categories increased the reliability of data [13]. A distinct advantage of content analysis methodology for descriptive analysis in this study was the opportunity to examine persistence of themes across individual respondents and between teacher and parent groups [2]. Throughout the process of content analysis a search for difference as well as a search for consensus was undertaken [13] in order to determine thematic categories that were relevant to either or both groups.

3. Results

Four of eight questions resulted in teachers and parents providing parallel responses that formed a summary *definition of participation*. The data indicated that they viewed participation to be a '*crucial*' element of school performance that involved '*joining in by active and individual engagement with activities and with other people in all aspects of school life*'. Several sub themes emerged through the teacher and parents responses to their definition of 'participation'. These themes are outlined below and are summarised in Table 2. The descriptions of the emerging themes from this study contain examples of responses from the participants, which are noted in italic script.

3.1. Roles and meaning of participation

Responses particularly noted the importance of participation across all roles including work – the need for a child to be involved as a learner, friend, player, creator in craft and art work, and as a class community member in activities such as excursions, assemblies and concerts. It appeared important to participants that all children have roles in school work and that they explicitly understand their role in relation to the group, for example '*working in a small group taking on a role and coming back to the big group to share knowledge and ideas*'. Moreover, participation in work roles was perceived to be meaningful if the child had the skills to carry out the expected role behaviours and experienced success, described by one participant as '*being fulfilled and experiencing self satisfaction with pride*'.

3.2. Opportunity for inclusive participation in schoolwork

This theme was concerned with the degree to which a child was given equal opportunity to be included in all aspects of their work role performance. In order that each child was able to participate in some way in the same activity as the class group, the need for a '*differentiated curriculum*' or '*modifying the activity so that various levels of skill can be accommodated*' was acknowledged. Also noted was the notion of enabling children to work by helping them '*engage in learning using their own style of learning and all their senses*'. This was thought by participants to provide children with the opportunity to '*have choices*' and to participate '*at their own level to the best of their ability, fulfilling their potential*'. Other participants suggested that this would allow '*interaction with others*' during work tasks '*regardless of the activity, and regardless of the difficulties faced*'. It appeared important to participants that for optimum participation in work at school, the child felt physically, socially and emotionally part of the class – and not '*an outsider*' in any way.

3.3. *Confident risk taking and joy of participation in schoolwork*

This theme involved notions of intrinsic motivation to engage in work tasks with 'willingness' and 'not being afraid to make mistakes', 'getting in there and giving everything a go', regardless of the quality of perceived success. It required 'being confident' and implied acceptance by the group. It seemed important to all respondents that children feel an 'enthusiasm and eagerness' for learning in which they 'explore limits', enjoy themselves and have 'fun', as well as be 'enthusiastic' and 'interested'.

3.4. *Thinking through how to participate in work activities at school*

This theme had a greater variety of descriptions than any of the other themes. There were multiple examples of the critical role of information processing capacity in participatory work behaviour. Some of these descriptions related to having the capacity to attend to the work task, with the expectation for the child to 'be alert' and 'listen by looking at the teacher with eyes and ears', 'concentrate on the given task' and 'multi-task'. Other descriptions highlighted the importance of memory for successful participation in work, involving 'remembering activity content', and 'to be able to ask and answer questions'. Yet other descriptions related to planning and organisation such as 'being organised with materials', 'thinking for self rather than copying others', and 'making decisions'.

3.5. *Participation in work*

While all the themes outlined above related to participatory behaviours desired for successful role performance in all roles at school, the final theme describes specific participatory behaviour that respondents related to work only. Parents and teachers both referred to children needing to 'put in extra effort' and 'completing set task as independently as possible to the best of their potential'. They were concerned that children 'make progress' and 'achieve with success'.

Teachers and parents were able to clearly differentiate between children who were experiencing difficulty with participation in individual and group work tasks and those who were not. Moreover they were able to describe in detail four graded levels of participation using observable and measurable behavioural markers for each level. When asked which instructional strategies were most useful for increasing levels of participation parents and teachers nominated praise, rewards and encouragement.

3.6. *Differences between respondent's views of participation*

Three of the stimulus questions resulted in diverse findings between teachers and parents. When asked about the most common reasons for a difficulty with participation, attention issues more frequently inhibited participation than other factors for teachers, while planning or organisation was perceived to be a critical factor by parents. In regard to activities requiring high levels of participation, respondents all listed group activities. However teacher responses documented group activities in the context of work in the classroom, whereas parents documented group activities in the social context of the playground or sport.

Aspects of participation perceived to be *the most difficult to change* by teachers centred on attention and behaviour issues such as non-compliance. Parents identified social issues, referring to the social dilemma of adults not being able to structure children's time outside of the classroom with resulting participatory problems.

In summary, the respondents in this study identified a number of themes that described the nature of children's work participation at school and nominated associated participatory work behaviours that they designated as critical to success. Together with established definitions of work and participation gleaned from the literature, these themes and behaviours form an emerging conceptual model of children's participatory work at school, as perceived by parents and teachers (See Fig. 1).

4. Discussion

Teachers and parents all listed relationships with peers as a high priority for success in work participation; however each had a different emphasis. For teachers, working in a group and demonstrating specific group work behaviours that included sharing, co-operating, and contributing was an important marker of success, mirroring key indicators noted by the Department of Education and Training in New South Wales [11]. For parents, joining in, being happy, enjoyment, being accepted and belonging were perceived as critical to successful participation in work at school. Respondents in this study indicated social participation in the shared formal or unstructured work milieu of the classroom is highly valued, perhaps more valued than physical access to the work environment. Respondents in this study were teachers and parents of children in

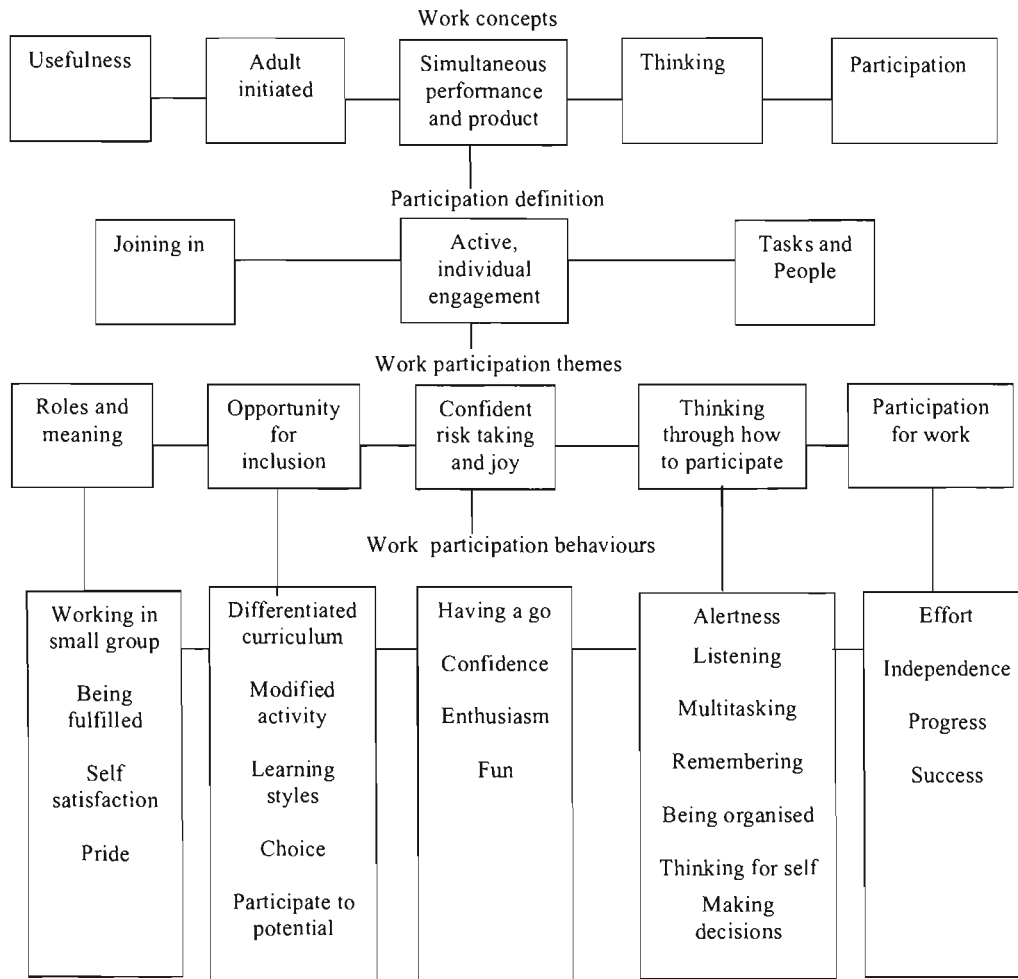


Fig. 1. An emerging conceptual model summarising child work participatory behaviours at school.

regular grade school classes who experienced difficulty with school work. Such children are most often referred to occupational therapists for fine motor or handwriting difficulties, and social competence is viewed as a secondary issue [12]. These findings suggest that if teachers and parents perceive social interaction as a priority skill for successful participation in work at school, then there is a need for thorough assessment of classroom work behaviours as well as development of classroom-based interventions that specifically target social skills required for participatory work.

As with previous studies of children's work at school [6], successful work in this study is linked to elements of internal control, skill and internal motivation. Participation in shared school work tasks involves children learning to effectively manage feelings during events that are typically stress-inducing such as

being left out, dealing with criticism, and escalation of anger [17]. One implication from these findings is the need for research to further investigate the notion of risk-taking and challenge in the development of work behaviours, the management of feelings and emotions posed by challenging work tasks, and how this could be addressed by teachers, therapists and parents. The findings of this study confirm earlier research, which suggested that a willingness to engage in challenges was an important element of work. Risk-taking is critical in the development of resilience, which has been defined as the capacity to survive, to progress through difficulty, to bounce back, to move on positively again and again in life [17]. Reduced resilience has been found to persist over time with resulting difficulties in psychological and social adjustment remaining into adulthood [24]. It was important to respondents in this

study that children seize the opportunity to take risks in response to challenges posed by work at school, and that they feel safe enough to 'have a go'.

The findings of this study indicated that while work participation means different things to different people, there are core behaviours that are common and considered crucial to success. Information processing skills, notably attention and behavioural organization, and 'thinking and planning for doing', are perceived by teachers and parents to more frequently inhibit a child's participation than factors such as physical access. However there are no clear guidelines in the literature about how to describe and accurately measure the information processing elements of participation required for 'on the job' work by children in the school context. Questions remain about the degree to which information processing capacity enables or inhibits work participation within the academic and social context of the classroom. Furthermore, it is not known whether elements of work participation are hierarchical, with some elements underpinning others. If occupational therapists are to engage in 'best practice' assessment and intervention to enable children's work performance at school, further research in this area is a priority.

The findings of this study suggest the challenge for adults who guide the development of children's work behaviours is to create learning environments for work in which children are able to model successful participatory work behaviours across a range of tasks, and that they experience work at school within the personal context of fulfilment, fun, challenge and success.

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PART C
INFORMATION PROCESSING STRATEGIES
CONSIDERED CRITICAL FOR SCHOOL PARTICIPATION
BY TEACHERS AND PARENTS

4.11 METHODS

4.11.1 Informants

The informants in this part of the study were the same teachers and parents as in Part B of this chapter.

4.12 DATA ANALYSIS

The research sub-question addressed in this part of the Phase One was,

How do information processing elements of participation, reported by teachers and parents, align with information processing strategies as stated in the Perceive, Recall, Plan, and Perform (PRPP) System of Task Analysis?

Teacher and parent responses were examined to determine alignment between teacher and parent descriptions of behaviours, and PRPP System of Task Analysis behavioural strategies. The researcher had been trained in use of the PRPP System of Task Analysis and was therefore familiar with its structure as a clinical and research instrument. The researcher sought to categorise the cognitive strategies, which were described by teachers and parents as elements of participation, in terms of the PRPP System of Task Analysis.

Content analysis was used to explore alignment between survey descriptions of cognitive strategy use and PRPP descriptors. The researcher carried out the following steps:

- Separated teacher and parent responses in order for descriptions to be analysed first, separately and then, together.
- Read all the descriptions (Refer to Table 4.3 for examples).

Table 4.3 Teacher and Parent Descriptions of Participation

<p><i>“Face to face: eye contact, eager demeanour, sitting alert, contributing information, listening. Desk work: concentration, spending a lot of time at the task comfortably, interested, comments, suggesting ideas improvements or innovations, making connections”</i> (Jan, Year 3 class teacher).</p> <p><i>“Full engagement of mind imagination exchange, and interchange of ideas, cross fertilisation and modifications which occur because of this higher order thinking, synthesising, creating, evaluating”</i> (Marie, Year 5 class teacher).</p> <p><i>“They give ideas or suggestions towards a game or discussion, asking questions, organising activity or other people, volunteering”</i> (Danielle, mother of Kindergarten student).</p> <p><i>“At home and generally when we go to a playground he participates well and I think this is usually because he is in control. But at school in class and in the playground he doesn’t play with anyone and his mind wanders off so he doesn’t know what is going on”</i> (Cassandra, mother of Year 1 student).</p> <p><i>“Focussed behaviour, asks questions and enthusiastically interacts. follows the course of what’s going on”</i> (Gael, mother of Year 3 student)</p>
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- Used different colours to highlight and code similarities in key words, phrases and sentences in the teacher and parent descriptions of participation behaviours (Refer to Appendix C)
- Grouped similar descriptions together
- Labelled categories of behavioural descriptions according to the content of descriptions within each group: (a) general thinking processes, (b)

participation in work, (c) participation with classmates in classwork or playground activities, and (d) belonging in school life.

- Tabulated the number of descriptions within each behavioural category to explore which behaviours teachers and parents considered a priority, of most concern, most frequently observed, or most easily observed.

4.13 FINDINGS

Content analysis indicated the following findings.

First, teachers and parents documented cognitive strategy use behaviours in every day common language devoid of technical terms. For example: *tuning into activity, maintaining eye contact, remembering steps, applying knowledge to task, negotiating terms, questioning.*

Teachers and parents contextualised their observations in everyday school activities. Rather than stating *listening*, informants typically described *listening to the instructions* or *listening to the story* or *listening for the important key information*. Other examples included *joining in a discussion, attempting new and “out of comfort zone” activities like drama, and completing work in a group activity.*

After tabulation of the numbers of responses in the thematic categories, the category with the highest percentage of behavioural descriptions was ‘thinking processes’ for both teacher and parent descriptions (Refer to Table 4.4).

Table 4.4 Frequency of descriptions recorded as raw scores and percentages of the total number of descriptions

Categories	Descriptions			
	Teacher N	Teacher %	Parent n	Parent %
Thinking processes	115	61	46	31
Participation in work	39	21	12	8
Participation with classmates	22	12	19	13
Belonging in school life	12	6	71	48

**Note: Total number of teachers=50, total number of teacher descriptions=190
Total number of parents=44, total number of parent descriptions=149**

Descriptions of cognitive strategy use behaviours demonstrated agreement with fit to each other as well as agreement with fit to the PRPP System of Task Analysis at a quadrant, sub-quadrant and descriptor level (Refer to Tables 4.5, 4.6, 4.7, 4.8).

Table 4.5 PRPP descriptors for PERCEIVE quadrant: Alignment with teacher and parent descriptions of cognitive strategies needed for participation

	Attending SubQuadrant	Sensing SubQuadrant	Discriminating SubQuadrant
PRPP descriptors	Notices, Modulates, Maintains	Searches, Locates, Monitors	Discriminates, Matches
Teacher descriptors	Switched on, alert, on task , attends, remains focussed, listen with eyes and ears	Listens, bright eyes, watches, not distracted, inquisitive, want to find out more	Knows what is important or not
Parent descriptors	Alert, eye contact, looks eager, aware of what is happening, focussed	Absorbed, listens to find out what to do	

Table 4.6 PRPP descriptors for RECALL quadrant: Alignment with teacher and parent descriptions of cognitive strategies needed for participation

	Recalling facts SubQuadrant	Recalling schemes SubQuadrant	Recalling procedures SubQuadrant
PRPP descriptors	Recognises, Labels, Categorises	Contextualises to Time, Place and Duration	Uses objects, Uses body, Recalls steps
Teacher descriptors	Articulates	Remembers where to put things	Remembers steps, applies knowledge, remembers activity content
Parent descriptors	Communicates thoughts and feelings	Remembers what he did	Follows instructions

Table 4.7 PRPP descriptors for PLAN quadrant: Alignment with teacher and parent descriptions of cognitive strategies needed for participation

	Mapping SubQuadrant	Programming SubQuadrant	Evaluating SubQuadrant
PRPP descriptors	Knows goal, Identifies obstacles, Organises	Chooses, Sequences, Calibrates	Questions, Analyses, Judges
Teacher descriptors	Works towards common goal, knows what to do, organised with materials	Makes right choices, compromises, giving opinion, suggests	Has questions, investigates, problem solves, negotiates, synthesises, evaluates, able to explain what and why
Parent descriptors	Organises activity or other people	Gives own ideas, plans, suggests	Asks questions, negotiates, makes decisions

Table 4.8 PRPP descriptors for PERFORM quadrant: Alignment with teacher and parent descriptions of cognitive strategies needed for participation

	Initiating SubQuadrant	Continuing SubQuadrant	Controlling SubQuadrant
PRPP descriptors	Starts, Stops	Flows, Continues, Persists	Times, Coordinates, Adjusts
Teacher descriptors	Attempts, starts, has a go, steps out of comfort zone	Puts in concerted effort, strives, follows through, enjoys challenge	Works to deadlines, works towards completion of task
Parent descriptors	Volunteers, has a go, joins in, puts hand up to be chosen, initiating	Tries, attempts obstacles, tries again	Takes time to think, finishes set tasks

All PRPP System of Task Analysis sub-quadrants except for ‘Discriminating’ matched with numerous descriptions from both teachers and parents. Minimal descriptions in the ‘Discriminating’ sub-quadrant suggest that behaviours in this area are either more difficult to observe, or considered less important, by parent respondents.

4.14 SUMMARY OF FINDINGS FROM THE SURVEY AS A WHOLE

The analysis and findings set out in this chapter focused on describing school participation from the perspective of teachers and parents, and addressed the following research questions:

What are the most frequently reported elements of participation for children at school who are participating fully and consistently or who are having difficulty participating?

How do reported information processing elements of participation align with information processing strategies as stated in the Perceive, Recall, Plan, and Perform (PRPP) System of Task Analysis?

In relation to these research questions, the following findings emerged.

Finding 4.14.1

Teachers and parents viewed participation as a crucial element of school performance and defined participation as ‘joining in by active and individual engagement with activities and with other people in all aspects of school life’. Social participation in the classroom was as highly valued, if not more highly valued than physical access to the curriculum.

Finding 4.14.2

Teachers and parents described participation in terms of cognitive strategy use utilising everyday language contextualised in school and home-based school activities. Furthermore they stated that cognitive strategy use was essential for successful participation and achievement in schoolwork.

Finding 4.14.3

Descriptions of cognitive strategy use behaviours provided by teachers and parents demonstrated agreement with each other, and to the PRPP System of Task Analysis.

Finding 4.14.4

Teachers reported that attention issues more frequently inhibited participation than any other factors in school activities whereas parents reported that planning issues more frequently inhibited participation than any other factors in home-based school activities.

Finding 4.14.5

Teachers and parents were able to differentiate between children who were and were not experiencing participation difficulties. In addition, they contextualised the extent of participation to individual or group activities. Teachers indicated group

schoolwork activities required high levels of participation whereas parents indicated that social group activities in the playground or sport required high levels of participation.

Finding 4.14.6

Teachers and parents provided parallel responses to themes of (a) role performance: participation was needed for successful role performance in all school roles - learner, worker, friend, player, creator, community member, (c) inclusion: participation was considered an opportunity and an inclusive right for all students, and (c) resilience: informants desired children to be confident, take risks and enjoy school.

A discussion of these results can be found in Chapter Eight, Section 8.3.2. The following chapter outlines the initial construction and trial of Version 1 of the PRPP@SCHOOL Teacher Questionnaire and Parent Questionnaire.

CHAPTER FIVE

PHASE TWO:

INSTRUMENT CONSTRUCTION AND TRIAL

Chapter Five contains an outline of the initial construction and trial of the PRPP@SCHOOL-Version 1 (Refer to Figure 5.1). This instrument was comprised of a teacher and a parent questionnaire which was based on teacher and parent perspectives of student participation during school and home-based school activities. PRPP@SCHOOL-1 Teacher Questionnaire (TQ) was designed to be administered by teachers and PRPP@SCHOOL-1 Parent Questionnaire (PQ) administered by parents as part of comprehensive occupational therapy assessment. The questionnaires evaluate student use of cognitive strategies expected by teachers and parents during participation in school and home-based school occupations.

This chapter contains two parts.

Part A describes the construction of PRPP@SCHOOL-1(TQ & PQ).

Part B outlines an initial trial of the PRPP@SCHOOL-1(TQ & PQ).

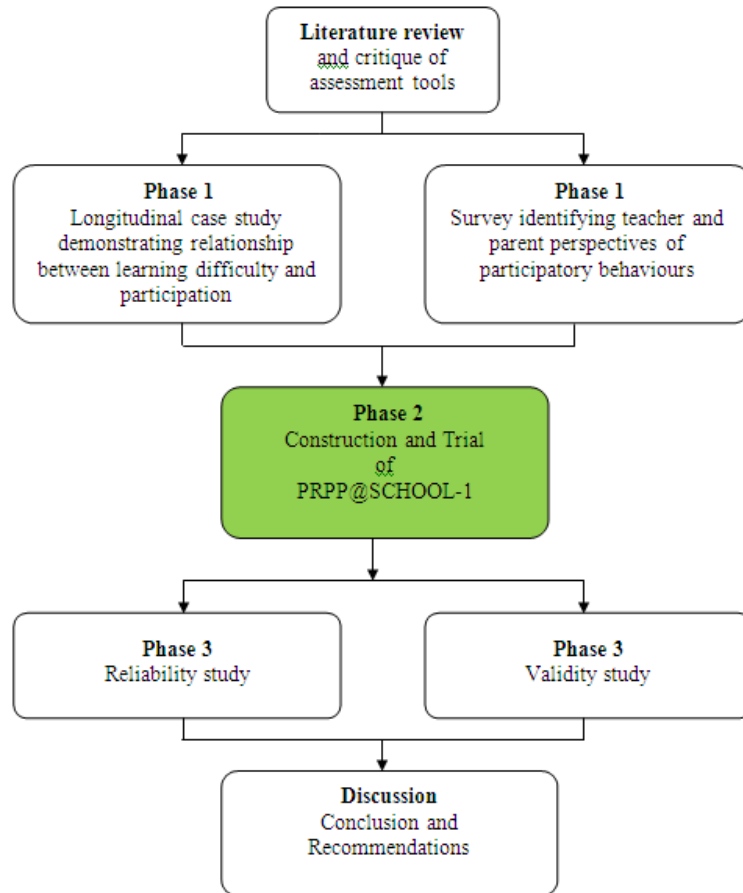


Figure 5.1 Flow chart of phases in the research displaying the relation of this chapter to the thesis as a whole

PART A

Part A describes the initial construction of the PRPP@SCHOOL-1(TQ & PQ) by listing the principles which guided the overall design of the questionnaire and the sequence of steps which were carried out by the researcher.

5.1 DESIGN OF THE QUESTIONNAIRE

The PRPP@SCHOOL-1(TQ & PQ) was designed for use by teachers and parents of school students enrolled in Kindergarten to Year Six. Information generated by the instrument is intended to be interpreted and synthesised with other assessment data collected by occupational therapists as part of comprehensive

occupational therapy assessment. Design of the instrument was guided by rules for instrument development (DeVellis, 2003) that are particular to principles of questionnaire construction (Dillman, 2007; Holden, Fekken, & Jackson, 1985; Streiner & Norman, 2003). Selected rules and principles regarding their application to the PRPP@SCHOOL-1(TQ & PQ) are listed and discussed as follows.

5.1.1 Rule one: Make content clear

Rules governing clarity of content consider the following: the content to be included within the instrument construct, the criterion for observation of this construct, the basis of the measurement scale, and the level of specificity allocated to each of these areas.

5.1.1.1 Content of the questionnaire construct

The PRPP@SCHOOL-1(TQ & PQ) records teacher and parent observations of cognitive strategy use by students during participation in school and home-based school activities. Cognitive strategy use was operationalised in the instrument as attention, recall, planning and doing factors for participation at school (Refer to Appendix 5.1).

5.1.1.2 Criterion for observation of questionnaire content

The PRPP@SCHOOL-1(TQ & PQ) is considered a criterion-referenced instrument. Criterion-referenced assessments attempt to measure performance with reference to an established standard of acceptable performance, for a specific behaviour in a particular context (Bowyer, Ross, Schwartz, Kielhofner, & Keller, 2005; Ferrin, Bishop, & Tansey, 2010). Respondents were therefore instructed to

observe the target student, consider the question and record observations of student cognitive strategy use compared to expectations of performance in that particular context (classroom, home). Consequently, items on the instrument were contextualised to particular situations of participation by the following statement “*Compared to performance expectations for participation in activities in the classroom and/or playground, my student is able to.....*”. Similarly, the parent questionnaire instructed respondents to observe their child and consider the question “*Compared to performance expectations for participation in home-based school activities, my child is able to.....*”. Respondents were not required to select a specific activity. Strategy use by students was compared to the performance expectations of the activities that the student was required to do at the time the questionnaire was administered. Strategy use was not compared against the performance of peers in the school context or siblings in the home context. Teacher and parent responses from the survey described in Chapter Four indicated respondents understood the difference. For example, “*Their observable behaviour is in line with my expectations, whether it is answering questions or participating appropriately in another task*” (Year Three Teacher).

5.1.1.3 Content of the questionnaire measurement

The researcher chose to use frequency of observed behaviour as the basis for the scale measurement in the PRPP@SCHOOL-1(TQ & PQ). In this study, infrequent demonstration of designated items was hypothesised to infer persistent difficulty. This decision to use “frequency” to reflect “level of difficulty” was made for the following reasons. First, the findings from survey methodology described in Chapter Four indicated that teachers and parents were able to describe participation

using observable and measurable behavioural markers. Qualifiers used by them included many frequency terms, for example, “*only occasionally focussed*”, “*rarely following instructions*”, or “*constantly distracted*”. Teachers and parents both used many frequency terms to describe difficulty with participation, suggesting a strong connection between frequency and difficulty. (Refer to Table 5.1 for examples of frequency terms used in the survey by informants to describe student difficulty with participation).

Table 5.1 Frequency terms used by informants to describe difficulty with cognitive strategy use

Teachers	Parents	Example
always, a long time, longer periods of time, constantly	almost always	“focussed all of the time”
sometimes, occasionally most of the time, on occasion, maintaining, not always, usually, generally, 75% of the time	often, inconsistent	“focussed most of the time”
often, only occasionally, frequent, intermittent, numerous, some, rarely	usually, sometimes, constant, rarely	“focussed only occasionally”
never, continually, consistently, not at all,	Always	“never focussed”

Second, the findings from the case study described in Chapter Three also indicated a connection between frequency and difficulty. For example, “*As early as preschool, Tim’s difficulties with participation were posited to persist and significantly interfere with school work*” (chart review). Persistence is a time duration concept implying longevity, permanence, a continuous and connected period of time (Merriam-Webster online, 2010). Over the course of the longitudinal study this comment was a constant theme. This infrequent performance of desired cognitive behaviours was interpreted by teachers and parents as a difficulty. Therefore, in this

study, a scale measuring frequency of observed cognitive behaviour, rather than a “least to most difficult” scale was thought to offer the most concrete way to operationalise the concept of difficulty.

Items in the PRPP@SCHOOL-1(TQ & PQ) were stated in positive language to reflect the expectation of teachers and parents that frequent and persistent presence of a particular cognitive strategy was a requisite for successful participation in activities. (Refer to examples in Table 5.2).

Table 5.2 Language describing positive word items as expectations of participation in comparison to alternative negative wording.

Wording	
Positive	Negative
Reacts appropriately to distracting sound or movement (Attention item 9)	Is distractible
Remembers the rules for routine activities (Recall item 3)	Forgets what to do
Thinks before doing (Plan item 1)	Is impulsive
Coordinates movements for physical activity (Doing item 7)	Is clumsy and awkward

Note: Positive wording item reflects expected behaviour by teachers and parents

Having made the decision to use a frequency rating scale the following three principles were applied.

- *Use equal numbers of positive and negative categories for scale questions*

Consistent with this principle, scaled response options in the PRPP@SCHOOL-1(TQ & PQ) consisted of two positive options and two negative options, with a neutral option placed between them. The scaling options were as follows:

Always.....Frequently.....Occasionally.....Seldom.....Never

The options were defined in the written instructions at the beginning of the instrument.

When presented with an activity my student (child) responds in this manner

Always *100% of the time*

Frequently *75% of the time*

Occasionally *50% of the time*

Seldom *25% of the time*

Never *0% of the time*

The direct estimation scale used a combination of adjectival and numerical descriptors along a continuum, a procedure which reportedly provides sound psychometric properties (Streiner & Norman, 2003) and efficient scoring (Pellegrini, et al., 2004). In this questionnaire, numerical descriptors (e.g., 75% of the time) were included to clarify the meaning of the adjectives (e.g. frequently).

- ***Distinguish undecided from neutral by placement at the end of the scale***

Two undecided options were provided and placed at each end of the scale as follows.

Not expected...Always...Frequently...Occasionally...Seldom...Never...Don't know

These undecided options were defined in the written instructions at the beginning of the instrument:

Not expected *This is not an expected ability*

Don't know *Not sure, I'm only guessing, the statement is confusing or
difficult to understand*

The number of levels on a scale is dependent upon the rater's ability to discriminate, implying loss of information if the levels are less than rater ability (Streiner & Norman, 2003). During the teacher and parent survey both teachers and parents demonstrated strong ability to discriminate levels of cognitive strategy use.

- *Develop response categories that are mutually exclusive*

The instrument was designed for respondents to select only one response option. Teachers and parents were therefore instructed to “*tick inside one box in every row. Do not put any ticks on a line-only inside boxes*”.

5.1.1.4 Specificity of content and measurement

Conceptual coherence is increased when instrument items match in regard to level of specificity (DeVellis, 2003). The researcher made the decision to adopt a high level of specificity based on the following principle.

- *Avoid specificity that exceeds the respondent’s potential for having an accurate ready-made answer*

Respondents indicated in the surveys reported in Chapter Four that they had a high level of understanding of cognitive strategy use as it applied to school and home-based school activity expectations. Subsequently, the researcher formatted specific questions to match the descriptions in the survey data. For example, “*Compared to performance expectations for participation in school (home-based school) activities, my student (child) is able to stop every now and again to check performance [Am I doing it right? Should I do it different?]*” (Planning item 22). Refer to Table 5.3 for other examples of informant data selected for item construction.

5.1.2 Rule two: Generate an item pool

This rule covered the content of items and the number of items which was associated with the length of the questionnaire (Dillman, 2007; Holden, Fekken, & Jackson, 1985; Streiner & Norman, 2003).

5.1.2.1 Content of items

Item selection and wording for the PRPP@SCHOOL-1(TQ & PQ) were derived from the teacher and parent survey data described in Chapter 4. Items were selected from survey data which reflected theoretical and empirical descriptions of cognitive strategies (Galotti, 2008; Reynolds & Horton, 2008) and the descriptors in the PRPP System of Task Analysis (Chapparo & Ranka, 1997). Data which teachers or parents listed infrequently in the survey were not included as items in the questionnaire. This decision was made on the basis that respondents in the survey had used frequency words to describe a difficulty with expected participatory behaviours. The researcher assumed that any data which were listed infrequently were behaviours which were not typically perceived to be expectations for successful participation in school or home-based school activities. (Refer to Table 5.3 for examples).

Table 5.3 Examples of teacher and parent data selected for item construction

Examples	
Teacher/parent data from teacher/parent survey	Constructed items in PRPP@SCHOOL-1(TQ & PQ)
Easily distracted	React appropriately to distractions (Attention item 9)
Doesn't know what to do, didn't remember instructions	Remember specific goal of activity (Recall item 13)
Refusal to attempt set task	Be willing to attempt activity, 'have a go' (Planning item 45)
Slow to start work	Start work within an appropriate time (Doing item 1)

Language from the teacher and parent survey data was edited by the researcher according to the next five principles (Dillman, 2007; Holden, Fekken, & Jackson, 1985; Streiner & Norman, 2003).

- ***Choose simple over specialised words***

The researcher avoided language which was technical or unfamiliar to respondents by using words generated by teachers and parents in the surveys. For example, instead of asking respondents about the frequency of ‘calibrating’ (a technical term found on the PRPP System of Task Analysis), the questionnaire asked respondents about the frequency with which a student “...*is able to negotiate, be willing to give-and- take in order to reach a compromise*” (Planning item 39).

- ***Choose as few words as possible to pose questions***

Questionnaire items were worded as short as practicable while retaining clarity. For instance, some items were extremely short “...*is able to share*” (Recall item 29) while others were quite long “...*express affection appropriately e.g., stay in own personal space, use appropriate body language with appropriate people*” (Recall item 34).

- ***Use complete sentences to ask questions***

Each item was written in a complete sentence but formatted in three separate parts to avoid repetition and to highlight the targeted cognitive strategy. For example, “*Compared to performance expectations for participation during activities in the classroom and/or playground...*
my student (child) is able to...
Get self and objects ready for activities in an organised way” (Planning item 4)
Make correct choices, choose everything needed for an activity” (Planning item 5)

- ***Avoid double-barrelled items with multiple meanings***

For the most part, the researcher adhered to this principle. Examples of clear and specific items included *complete activities within an appropriate time frame*, or, *be willing to attempt activity and ‘have ago’*.

- *Soften the impact of potentially objectionable questions*

The researcher worded every item in positive terms. This decision was made with the awareness that parents are often overwhelmed by the frequency, persistence and pervasiveness of their child's difficulty with strategy use, and positive wording could avoid obtaining information that was generated by a negative emotional response. Furthermore, teachers typically write student reports using positive wording, so the format used by PRPP@SCHOOL-1(TQ & PQ) was consistent with educational assessment practice. As discussed in Section 5.2.1.3 of this chapter, items in the PRPP@SCHOOL-1(TQ & PQ) were stated in positive language to reflect the expectation by teachers and parents that a particular cognitive strategy was a requisite for participation in activities.

5.1.2.2 Number of items

At this stage in the research, an over inclusive approach was adopted in regard to the number of items in the item pool. The purpose of this approach was to (a) capture the variety of behavioural expressions of cognitive strategies by including items which revealed the application of cognition to participation in different ways, and (b) increase the reliability of the instrument through the use of multiple items (DeVellis, 2003). It was planned that items be retained, removed or refined at later stages of test development (Streiner & Norman, 2003). For example, five items such as “*use words to express feelings*” (Recall item 18), “*use non verbal or body language to express feelings*” (Recall item 19), “*express own feelings in an appropriate way*” (Recall item 20), “*use acceptable ways to express anger*” (Recall item 21), and “*use acceptable ways to express own excitement*” (Recall item 23) were possibly redundant, as these items express a similar observation in different ways. DeVellis (2003)

recommends an item pool which is three or four times larger than the anticipated final item number. The initial PRPP@SCHOOL-1(TQ & PQ) was constructed with 108 items.

5.1.3 Rule three: Determine the format for measurement

Given the large number of items in the instrument, the researcher decided to group items for the ease of respondents answering questions and therapists analysing the data. Streiner and Norman (2003) point to evidence that respondents typically try to discern the purpose of a questionnaire and to respond appropriately. Items were grouped into four labeled categories, Attention (A), Recall (R), Planning (P), and Doing (D) because the researcher wanted to provide the respondents with clear information in order to help them deliberately reflect on the performance of students. (Refer to Table 5.4 for examples of grouping items into categories).

Table 5.4 Examples of items grouped within Attention and Planning categories

Category	Item
Attention	<ul style="list-style-type: none"> • Stay alert • Stay focused long enough to complete an activity • Switch or shift attention from one thing to another • Narrow attention to focus on important detail
Planning	<ul style="list-style-type: none"> • Think up plans to achieve a goal • Plan the next step in an activity • Understand the goal of an activity • Identify why an activity has or has not been done well

To further support respondent reflection the following principle was adopted:

- *Use cognitive design techniques to improve recall*

Questionnaire respondents tend to answer questions quite quickly, possibly minimising reflection and recall accuracy (Dillman, 2007). It has been reported that recall accuracy increases if respondents are asked to first consider context details (Jobe & Mingay, 1989). The first section of the PRPP@SCHOOL-1(TQ & PQ) provided respondents with opportunity to consider details about the student’s participation in school and home-based school activities before the respondents commenced answering questions about the student’s cognitive strategy use for these school and home-based school activities. Background information and activity questions in the first section of the TQ covered two pages and in the PQ covered four pages (Refer to Table 5.5. for examples and to Appendix 5.1a and 5.1b for the complete questionnaires).

Table 5.5 Examples of questions at the beginning of PRPP@SCHHOOOL-1(TQ & PQ) to prompt respondents’ recall of student cognitive strategies and to contextualise judgments about performance

If fine motor is an issue: Please <input checked="" type="checkbox"/> tick any fine motor skills which you believe to be difficult participation skills for your student compared to performance expectations for activities:		
<input type="checkbox"/> Puzzles	<input type="checkbox"/> Construction and manipulative activities	<input type="checkbox"/> Folding
<input type="checkbox"/> Colouring	<input type="checkbox"/> Cutting and pasting	<input type="checkbox"/> Drawing
<input type="checkbox"/> Handwriting legibility	<input type="checkbox"/> Copying from the blackboard	<input type="checkbox"/> Task completion speed
<input type="checkbox"/> Writing – generating ideas	<input type="checkbox"/> Writing – organising ideas	<input type="checkbox"/> Writing – expanding ideas
<input type="checkbox"/> Computer	Does your student avoid indoor or desktop activities? <input type="checkbox"/> Yes <input type="checkbox"/> No	

Cognitive strategy items in PRPP@SCHOOL-1(TQ & PQ) were organised into four categories, Attention (A), Recall (R), Planning (P) and Doing (D), based on the quadrants used in the PRPP System of Task Analysis (Chapparo & Ranka, 1997),

Perceive, Recall, Planning, and Perform. Similar labels were provided because items generated by teachers and parents reflected similar, but not identical constructs to those within the PRPP System of Task Analysis. For example, items in the Attention category of PRPP@SCHOOL-1(TQ & PQ) mirrored elements of ‘noticing’, ‘modulating’ and ‘maintaining’ attention found in the Attention sub-quadrant of the PRPP System of Task Analysis. However, some items representing Sensing/Discriminating perception as documented in the same instrument were not represented (Refer to Chapter Two and Appendix 7.4 for PRPP System of Task Analysis glossary: item wording and description).

As stated above, category wording in the PRPP@SCHOOL-1(TQ & PQ) matched terms used by teacher and parent survey responses (Chapter Four). The number of items in each category was uneven, reflecting the disproportionate representation of data in the teacher and parent survey (Chapter Four): 17 Attention items (A), 37 Recall items (R), 45 Planning items (P), and 9 Doing items (D). Parallels between the PRPP@SCHOOL-1(TQ & PQ) and PRPP System of Task Analysis, review of the number of items in the questionnaire as a whole and in each category, as well as review of category labeling was carried out in a later stage of the research and is reported in Chapter Seven.

PART B

5.2 RESEARCH QUESTIONS

Part B outlines the initial trial of the PRPP@SCHOOL-1(TQ & PQ) and includes the following research question which guided this part of the study.

What inefficiencies in students' use of cognitive strategies during participation in school occupations are identified by teachers and parents using the PRPP@SCHOOL-1(TQ & PQ)?

This question was reduced further into four parts that addressed how often students with learning difficulties used required cognitive strategies during school and home-based task performance; how efficiently they used selected strategies during participation in school and home-based school activities; and whether two variables, gender and year enrolled at school, had an associative relationship with student use of cognitive strategies.

Sub-question 5a:

To what extent do teachers' and parents' ratings agree on the frequency of observed cognitive strategy use by students during participation in school and home-based school activities?

Sub-question 5b:

How frequently do students display cognitive strategies during participation in school and school-related activities as identified by teachers and parents using the PRPP@SCHOOL-1(TQ & PQ)?

Sub-question 5c:

How does cognitive strategy use of students differ according to year enrolled at school?

Sub-question 5d:

How does cognitive strategy use of girls differ from boys during participation in school and home-based school activities?

5.3 METHODS

5.3.1 Research design

The research in this part of the study used quantitative methods to evaluate the frequency of cognitive strategy use by students during participation in school and home-based school activities and compared cognitive strategy use according to school year of students and gender of students. The conduct of this study was approved by the local institutional ethics review committee (Appendix 3.1).

5.3.2 Sample

A sample of 355 students was recruited via the occupational therapy clinic of the primary researcher according to the following inclusion criteria:

- Referral to occupational therapy for school performance difficulties
- Enrolment in mainstream school Kindergarten through to Year Six
- Parent permission to request data from student's teacher
- Teacher and parent consent to use client data for the secondary purpose of instrument construction

The sample consisted of 273 boys (76.9%) and 82 girls (23.1%), enrolled in mainstream schools from Kindergarten to Year Six. Table 5.6 presents the demographic data for year at school of recruited students.

Table 5.6 Year at school

Year at school	N	%
K	70	19.7
1	67	18.9
2	59	16.6
3	62	17.5
4	41	11.5
5	28	7.9
6	28	7.9
Total	355	100

The mean age of the students was 8 years. The sample was not diagnosis specific, allowing potential for applicability across different groups (Streiner & Norman, 2003). A third (33%) of the students presented with a specific medical diagnosis including language delay/disorder (16%), below average intellectual ability (14%), Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder (10%), Autism Spectrum Disorder (9%), and a mix of other diagnoses (8%). The students were referred from three sources: schools (49%), parents (39%) and family doctors or paediatricians (12%). Multiple school performance difficulties across a range of domains were identified during assessment: handwriting legibility (69%), writing (67%), general fine motor (41%), social competence (36%), gross motor (34%) and self care (32%). A number of the students presented with more than one diagnostic label and many of the students experienced numerous school performance difficulties.

All students experienced a common difficulty with participation in school and home-based school activities across academic and social domains.

The sample, collected from consecutive referrals over a period of three years, was drawn from four local government areas in Greater Western Sydney covering 4,862 square miles with a population of 577,495 (Australian Bureau of Statistics, 2006). Students in the sample were enrolled in a wide range of mainstream schools from NSW Department of Education and Training, Catholic Education System, and Independent Schools of NSW. (Refer to Table 5.7).

Table 5.7 Number and type of schools from local government areas represented in the data

LGA	Number of schools		Number and type of schools in data		
	In LGA	In sample	DET	CEO	IS
City of Blue Mountains	29	20(69%)	14	3	3
City of Penrith	56	34 (61%)	19	10	5
City of Hawkesbury	30	8(27%)	4	2	2
City of Blacktown	84	5(6%)	3	1	1
Total	199	67 (34%)	40	16	11

**Note: LGA=Local Government Area,
DET =NSW Department of Education and Training,
CEO=Catholic Education System, IS=Independent Schools of NSW**

5.3.3 Data collection and respondent recruitment procedures

Data were collected from the teachers and parents of the 355 students via questionnaire. Following recruitment of each student, the PRPP@SCHOOL-1(TQ) was distributed by fax to each student's teacher accompanied by a cover letter outlining the assessment purpose (both clinical and research) and the time frame for

return of completed questionnaire. Data from the TQ were collected within four weeks of recruitment. The PRPP@SCHOOL-1(PQ) was distributed to each student's parent accompanied by verbal and written explanation of the clinical assessment and research process. Data from the PQ were collected at the time of the student's initial assessment at the occupational therapy clinic. Parents completed the questionnaire while waiting for their child to complete an occupational therapy assessment. Time duration for the assessment ranged between 40 and 90 minutes. Data were not collected from parents who indicated they had a difficulty with written language. In addition, data were not collected from teachers during the first five weeks of the school year or from relief casual teachers as it was assumed that these teachers may not be sufficiently familiar with student's performance.

5.4 DATA ANALYSIS

Data were analysed using quantitative procedures with SPSS Version 15.0 (SPSS, 2006). Demographic data were initially analysed to describe the sample. Descriptive statistics using frequencies and percentages of expected cognitive strategy use by students were used to address research sub-questions 5a and 5b. Between-groups analyses of variance (ANOVAs) were used to answer research sub-questions 5c and 5d. Data on teacher ratings and data on parent ratings were analysed separately for all four sub-questions in order to compare the perspectives of teachers and parents. In addition, data on teacher ratings and parent ratings were combined and analysed as a whole for sub-question 5b. This procedure was conducted in order to obtain a single hierarchy of items, scored from most frequently observed to least frequently observed in the seldom or never measurement category.

Data in sub-questions 5a and 5b were best answered with dichotomous data. The successful outcomes of the analyses suggested it was viable to proceed with further analyses in sub-questions 5c and 5d using a more discriminating four-point rating scale.

Rationale for use of dichotomous data

Research sub-questions 5a and 5b were the initial focus of data analysis. Their purpose was to determine if teachers and parents were able to make a consistent discrimination between the students' behaviours described in the PRPP@SCHOOL-1(TQ & PQ) items.

Teachers and parents recorded their observations of student cognitive strategy use on a five-point rating scale. The researcher hypothesised that behaviours observed as “*always*”, “*frequently*” and “*occasionally*” could be interpreted as “*OK*” and that behaviours observed as “*never*” or “*seldom*”, and requiring intervention, could be interpreted as “*not OK*” from a clinical perspective. Since the most important clinical issue centred on behaviours “*never*” or “*seldom*” exhibited by students, initial analysis concentrated on these two response options. Therefore, a decision was made to collapse the five-point rating scale data into dichotomous responses for Questions 5a and 5b as follows

- “*never*” or “*seldom*” displays this behaviour
(rating scale categories “1” and “2”)
- “*always*”, “*frequently*” or “*occasionally*” displays this behaviour
(rating scale categories “5”, “4”, and “3”)

The reason for this decision was based on combination of the following three reasons:

- “*never*” and “*seldom*” categories have the same clinical significance, indicating the student’s performance requires intervention and is “*not OK*”, justifying combination of the two categories.
- “*always*”, “*frequently*” and “*occasionally*” categories have the same clinical significance, indicating the student’s performance does not require intervention and is “*OK*”, justifying combination of the three categories.
- Collapsing the scores resulted in a more symmetrical distribution of scores.

When the scale was collapsed into dichotomous clinical categories, a clearer pattern of response was revealed. While “*never*” and “*seldom*” categories were separated in the questionnaires because they were observationally different, they were combined in the data analysis because they were functionally equivalent.

Rationale for use of four-point data

The five-point rating scale data were collapsed into four-point rating data for analysis which addressed sub questions 5c and 5d as follows:

- “*never*” or “*seldom*” displays this behaviour (categories “1” and “2”)
- “*sometimes*” displays this behaviour (rating scale category “3”)
- “*frequently*” displays this behaviour (rating scale category “4”)
- “*always*” displays this behaviour (rating scale category “5”)

The purpose for this decision was based on combination of the following three reasons:

- four-point rating scales have increased precision over dichotomous rating scales.
- “*never*” and “*seldom*” categories have the same clinical significance of “*not OK*” which justifies combining the two categories.
- “*occasionally*”, “*frequently*” or “*always*” categories represent graded differences within “*OK*” and are potential categories for assessment of intervention outcomes in future research.

A four point rating scales suited the type of analysis applied to the data, as described below. Scores were ascribed to the four-point rating scale data as follows: “*never*” or “*seldom*”(2), “*sometimes*” (3), “*frequently*”(4) and “*always*”(5).

5.4.1 Data analysis: Teacher and parent frequency agreement

Descriptive statistics using frequencies and percentages were conducted on dichotomous data, followed by several tests of inter-observer agreement to address the sub-question:

To what extent do teachers’ and parents’ ratings agree on the frequency of observed cognitive strategy use by students during participation in school and home-based school activities?

This question was answered by exploring the data to discover what percentage of students were rated by teachers and parents as ‘*never/seldom*’ performing each specific cognitive strategy. Each item’s percentage ‘*never/seldom*’ observed was averaged separately for teachers and parents. These item “*scores*” were entered into an Intraclass Correlation analysis to produce an intraclass correlation coefficient (ICC) that ranges between 0±1, with scores closer to 1 representing high levels of agreement. Because item scores were averages, an ICC (3,k) was calculated (Shrout & Fleiss, 1979). SPSS uses the terminology “Mixed Model with Consistency” to calculate this coefficient. Agreement between parents and teachers (inter-observer agreement) was next examined using percentage exact agreement for each item of the PRPP@SCHOOL-1(TQ & PQ). Finally, the comparative frequency of scoring ‘*never/seldom*’ on each item by teachers and parents was directly compared at an item by item level.

5.4.2 Data analysis: Frequency of ineffective cognitive strategy use during participation in school and home-based school activities

In order to answer the sub-question:

How frequently do students display cognitive strategies during participation in school and school-related activities as identified by teachers and parents using the PRPP@SCHOOL-1(TQ & PQ)?

descriptive statistics using frequencies and percentages were again conducted on dichotomous data. Analysis was first conducted on teacher questionnaires, then on parent questionnaires and then on combined questionnaires. Trends in the frequency of reporting “never” and “seldom” between parents and teachers are described. Lack of data normality did not permit further statistical testing of this data.

5.4.3 Data analysis: Sensitivity of the PRPP@SCHOOL-1(TQ & PQ) to year at school differences

In order to answer the sub-question:

How does cognitive strategy use of students differ according to year enrolled at school?

between-groups analysis of variance (ANOVA) were conducted using four-point rating scale data. Two series of ANOVAs were conducted, one on teacher ratings and one on parent ratings. Bonferroni adjustment was performed to decrease the likelihood of Type 1 error ($p=.05/8=.006$). Comparisons will be considered significant at .006. Of interest in this part of the study was student performance at a category level (Attention, Recall, Planning and Doing). Scores from the four categories on the PRPP@SCHOOL-1 were calculated by averaging the sum of all scores for the items in each category. The notion of variance is at the core of ANOVA which tests whether a difference exists between the means of groups (Coakes, Steed, & Dzidic, 2006).

One-way between-groups analysis of variance was applied to the data in this study. The students' performance scores were compared using only one independent variable, year enrolled at school, and one dependent variable, teachers' and parents' ratings of the students cognitive strategy use (Pallant, 2007). Assumptions of population normality (distributions of the variables being normal around the population mean) and homogeneity of variance (each population of scores having the same variance) were tested and upheld (Coakes, et al., 2006).

5.4.4 Data analysis: Sensitivity of the PRPP@SCHOOL-1(TQ & PQ) to gender differences

In order to answer the sub-question:

How does cognitive strategy use differ according to gender?

one-way between-groups analysis of variance (ANOVA) was conducted using four-point rating scale data. These procedures were used to explore the independent variable, gender, and the dependent variables, teachers' and parents' ratings of the students' cognitive strategy use. The dependent variables were the students' category total scores (Attention, Recall, Planning and Doing). All ANOVA's assumptions were tested and upheld.

5.5 FINDINGS

Of the 355 students in this study, parent questionnaires were available for 93% of the students and teacher questionnaires were available for 86% of the students. Of these questionnaires 82% were paired teacher and parent questionnaires reporting observations of the same student. In some instances, parents requested that data not be collected from a teacher. In other instances, teachers requested that data only be collected through the school. All respondents completed the whole questionnaire with occasional missing data responses caused by typographical error, inclusion of some additional items during the course of data collection by the researcher, as described in the preliminary monitoring of the data analysis, and oversight by the respondents (probably due to the questionnaire format). Missing responses were followed up by the primary researcher for the purpose of data analysis. The two response category options ("*not a task expectation*" and "*don't know/not sure/only guessing/statement is*

confusing”) were coded as missing data in this current analysis. From the total of 6% missing data, 3% was contributed by these two response category options and 3% was blank responses that could not be later verified by the researcher.

5.5.1 Findings in response to research sub-question 5a: Teacher and parent agreement

Sub-question 5a investigated whether teachers and parents agreed on the frequency of cognitive strategies use by children. The following question was addressed.

To what extent do teachers’ and parents’ ratings agree on the frequency of observed cognitive strategy use by students during participation in school and home-based school activities?

Agreement between teachers and parents was assessed in several ways. Each item’s percentage ‘*never/seldom*’ observed was averaged separately for teachers and parents and agreement evaluated using ICC (3,k). The ICC was high at 0.91, indicating a high level of agreement between average scores for each item as determined by teachers and parents. However when exact agreement was examined, very low inter-observer agreement was evident. This figure was a very low 1.85% with teachers’ and parents’ ratings differing by five points or more for 76.85% of items. For example, Item number P23 “Question if there is a better was to do an activity” Teacher’s reported this was ‘*never/seldom*’ performed in 69% of children, while parents reported this to be ‘*never/seldom*’ performed in 46% of children. Therefore exact agreement differed by 23 points. This discrepancy reinforced the need for a more detailed inspection of the items.

The third analysis highlighted that general agreement was present between teachers and parents on what was most difficult for students, however agreement in percentage values for observation of ‘*never/seldom*’ was not the same. For example:

- Teachers and parents both nominated “*divide attention to multitask*” (Attention item 13) as the cognitive strategy observed least frequently in students. Of the 355 students referred for participation difficulties, 70% of students were observed by teachers and 60% were observed by parents to seldom or never apply this cognitive strategy.
- Of all the teachers who rated students as ‘*seldom/never*’ demonstrating use of cognitive strategies, 88% of teachers identified a higher percentage of students than parents’ ratings of students (Refer to Table 5.8 for an example of higher teacher percentages). Appendix 5.2 lists the 13 parent items (12% of the total number of items) which rated higher than teacher percentages.

Table 5.8 Comparison of teacher and parent frequencies from seldom or never scoring categories.

Item Number	Description	Frequency percentage	
		Teacher	Parent
Planning 23	Question if there is a better way to do an activity	69	46
Planning 22	Stop frequently to check performance	60	38
Planning 43	Organise own work, own time	58	51
Planning 25	Choose best strategy	56	39
Planning 12	Pace self	56	48

- Of the one third of items (36) most often rated in the seldom or never scoring category, 29 (81%) of the items appeared in both teacher and parent lists. Clinically, the highest third of items are particularly important given the criterion expectation of 100% frequency of observed cognitive strategy use for full participation.
- Of this highest third of items in the seldom or never scoring category (36 items) the range of percentage frequency was similar. (Refer to Table 5.9).

Table 5.9 Range of percentage frequency in highest third of items.

Rating scale	% Frequency in hierarchy		Frequency range between item number 1 and item number 36
	Item number 1	Item number 36	
Teacher	70	35	35
Parent	60	28	32

- Of the one third of items (36) often rated in the seldom or never scoring category, 20 (56%) of the items appeared in both teacher and parent lists.
- Of this middle third of items in the seldom or never scoring category (36 items) the range of percentage frequency was the same. (Refer to Table 5.10)

Table 5.10 Range of percentage frequency in middle third of items.

Rating scale	% frequency in hierarchy		Frequency range between item number 37 and item number 72
	Item number 37	Item number 72	
Teacher	35	24	11
Parent	28	17	11

- Of the one third of items (36) not often rated in the seldom or never scoring category, 28 (78%) of the items appeared in both teacher and parent lists.
- Of this lowest third of items in the seldom or never scoring category (36 items) the range of percentage frequency was similar. (Refer to Table 5.11).

Table 5.11 Range of percentage frequency in lowest third of items.

Rating scale	% frequency in hierarchy		Frequency range between item 73 and item 108
	Item number 73	Item number 108	
Teacher	24	7	17
Parent	17	2	15

- Of all the items for the whole instrument in the seldom or never scoring category (108 items), the range of percentage frequency between teacher and parent ratings was similar. (Refer to Table 5.12). This range was similar to the range when teacher and parent rating scales were combined (60).

Table 5.12 Range of percentage frequency in whole instrument.

Rating scale	% frequency in hierarchy		Frequency range between Item 1 and Item 108
	Item number 1	Item number 108	
Teacher	70	7	63
Parent	60	2	58

In summary, although there was poor exact agreement between the teacher and parent lists, the broad pattern of ratings over the entire frequency range was similar. In this context, the ICC is a better representation of overall agreement than either the percent exact agreement or the percent close agreement.

5.5.2 Findings in response to research sub-question 5b: Frequency of ineffective cognitive strategy use by students

Sub-question 5b investigated whether students were able to apply cognitive strategies to the level demanded of pertinent school and home-based school activities. The following question was addressed.

How frequently do students display cognitive strategies during participation in school and school-related activities as identified by teachers and parents using the PRPP@SCHOOL-1(TQ & PQ)?

Teachers and parents had identified in Phase One of the research that students needed to apply cognitive strategies to participation in particular activities for specific amounts of time in order for participation to be successful, and that success was determined by how frequently strategies were used. The expected criterion for use of cognitive strategies by students was “*When presented with an activity my student (child) responds in this manner always, 100% of the time*”.

First, findings are presented at an item level. Appendix 5.4 and Appendix 5.5 list all the items in the PRPP@SCHOOL(TQ & PQ), between 7%-70% for teacher ratings, 2%-60% for parent ratings, and between 4%-64% for combined teacher and parents ratings. This list indicates the percentage of students who demonstrated less use of cognitive strategies than was expected for successful participation in school and home-based school activities. These are the students for whom teachers marked

the “*seldom*” or “*never*” measurement categories. In Appendix 5.4 the items are listed with the teachers’ and parents’ separate ratings of the percentages of students who seldom or never displayed the behaviours. In Appendix 5.5 the teachers and parents ratings are combined. Items are in descending order of percentage “*seldom*” or “*never*” demonstrated.

Second, the findings are presented at a category level. The data were examined to explore any patterns of response at a category level when using the PRPP@SCHOOL-1(TQ & PQ). Table 5.12 reports the frequency percentage of items from the list in the highest third of the instrument (Appendix 5.3), according to location within PRPP@SCHOOL-1(TQ & PQ) item categories, and in comparison to the percentage of items per category in the whole of PRPP@SCHOOL-1(TQ & PQ). The items in the highest third of the instrument were of interest to the researcher as these items indicated the student’s performance was “not OK” and required intervention. Lack of data normalcy did not permit further statistical testing but the pattern in the samples suggests that for students scored in the “*seldom*” or “*never*” scale,

- The number of items from the recall and doing categories are under-represented in the teacher and parent data compared to the number of items in the PRPP@SCHOOL-1(TQ & PQ).
- The number of items from the attention category are level in the teacher and parent data compared to the number of items in the PRPP@SCHOOL-1(TQ & PQ).

- The number of items from the planning category are over-represented in the teacher and parent data compared to the number of items in the PRPP@SCHOOL-1(TQ & PQ).

These trends are apparent even allowing for the unequal representation of items within categories in the questionnaire, shown in the left column of Table 5.13.

Table 5.13 Percentage of items within each PRPP@SCHOOL-1(TQ & PQ) category

Category	% of items			Comparison
	in whole instrument	in highest third of teacher ratings	in highest third of parent ratings	
Attention (A)	16	19	14	Similar
Recall (R)	34	17	25	Much lower
Planning (P)	42	61	56	Much higher
Doing (D)	8	3	5	Much lower

Note:

Data taken from highest third of total number of items reported by teachers and parents as being observed “seldom”/ “never”, indicating strategy use “not OK”. Comparison= The percentage of items from each category in the highest third of the list are compared to the percentage of items from each category in the whole instrument. A higher comparison indicates items in that category are over represented in the data.

In summary, using the PRPP@SCHOOL-1(TQ & PQ), teachers and parents reported that a large number of students, seldom or never, demonstrated use of desired cognitive strategies during participation in school and home-based school activities. Items which were most likely to be reported ‘*seldom/never*’ were items within the Planning category of the PRPP@SCHOOL-1(TQ & PQ). The responses to sub-questions 5a and 5b suggested teacher and parents were able to make consistent

distinctions between the relative frequencies of behaviours exhibited by students described in the PRPP@SCHOOL-1(TQ & PQ).

5.5.3 Findings in response to research sub-question 5c: Sensitivity of the PRPP@SCHOOL-1(TQ & PQ) to year at school (grade) differences

Sub-question 5c investigated the sensitivity of the PRPP@SCHOOL-1(TQ & PQ) to year at school (grade) differences by addressing the following question:

How does cognitive strategy use differ according to year enrolled at school (grade)?

The between-groups analysis indicated all ANOVAs to be non-significant, for teacher ratings of cognitive strategy use between school years (Refer to Table 5.14 for teacher ratings and to Table 5.15 for parent ratings). Parent ratings approached significance for the Planning and Attending categories. This suggests that teachers and parents adjust their expectations of the frequency of cognitive strategy use for students in each school year, as expected in criterion related measures. It is possible that parents may have less ability to do so.

Table 5.14: Between group differences by school year-as reported by TEACHERS

	n	Mean (SD)	Min-max	F value	P value
ATTENTION (min-max: 34-85)					
Kindergarten	60	52.1 (12.2)	35-85	1.2	.298
Year 1	56	55.0 (14.1)	34-85		
Year 2	48	54.9 (13.0)	35-80		
Year 3	50	58.5 (12.6)	37-85		
Year 4	35	56.7 (14.3)	36-85		
Year 5	24	55.1 (12.6)	40-82		
Year 6	19	53.6 (11.8)	34-79		
RECALL (min-max: 74-185)					
Kindergarten	60	123.6 (24.9)	82-178	1.4	.223
Year 1	55	131.3 (26.0)	82-182		
Year 2	48	129.7 (25.7)	77-171		
Year 3	50	136.8 (24.4)	93-185		
Year 4	35	130.1 (31.6)	77-185		
Year 5	24	127.5 (27.5)	88-183		
Year 6	19	123.7 (24.2)	98-176		
PLANNING (min-max: 90-225)					
Kindergarten	57	136.6 (28.4)	91-208	1.2	.301
Year 1	55	145.5 (31.8)	90-220		
Year 2	48	143.8 (31.6)	92-203		
Year 3	50	150.5 (31.2)	96-222		
Year 4	35	144.4 (37.4)	93-216		
Year 5	24	140.0 (32.6)	95-216		
Year 6	19	134.2 (30.5)	98-207		
DOING (min-max: 18-45)					
Kindergarten	57	27.7 (6.4)	18-44	1.9	.078
Year 1	55	29.5 (7.2)	18-45		
Year 2	47	30.8 (7.6)	18-45		
Year 3	50	32.2 (7.3)	18-45		
Year 4	35	29.6 (8.1)	18-45		
Year 5	24	29.3 (7.6)	18-44		
Year 6	19	30.6 (6.2)	21-41		

***p* value with Bonferroni adjustment (0.05/8 = 0.006),**

Number of items in each item category=Attention(17), Recall(37), Planning(45), Doing (9)

Low mean score indicates higher frequency in the seldom/never measurement category

Table 5.15: Between group differences by school year-as reported by PARENTS

	n	Mean (SD)	Min-max	F value	p value
ATTENTION (min-max: 34-85)					
Kindergarten	67	57.2 (9.1)	37-85	2.6	.018
Year 1	60	57.5 (10.4)	38-80		
Year 2	56	60.8 (11.3)	36-83		
Year 3	59	60.4 (10.9)	38-84		
Year 4	38	61.5 (10.4)	40-82		
Year 5	25	54.5 (12.6)	35-77		
Year 6	27	54.7 (11.9)	36-80		
RECALL (min-max: 74-185)					
Kindergarten	67	129.3 (21.3)	86-178	2.1	.048
Year 1	60	133.9 (22.0)	85-177		
Year 2	56	135.5 (21.0)	83-185		
Year 3	59	137.9 (21.9)	88-181		
Year 4	38	133.4 (23.2)	94-178		
Year 5	25	124.7 (27.1)	85-183		
Year 6	27	124.5 (22.3)	88-165		
PLANNING (min-max: 90-225)					
Kindergarten	67	141.7 (25.3)	91-211	3.0	.007
Year 1	60	147.7 (27.7)	107-211		
Year 2	56	152.3 (28.1)	93-217		
Year 3	59	154.9 (28.3)	98-222		
Year 4	38	148.0 (29.3)	104-211		
Year 5	25	137.8 (32.5)	92-212		
Year 6	27	133.6 (27.4)	96-201		
DOING (min-max: 18-45)					
Kindergarten	66	29.5 (5.2)	18-45	2.1	.054
Year 1	60	30.7 (6.0)	18-43		
Year 2	56	30.8 (5.2)	18-45		
Year 3	59	31.6 (6.0)	19-45		
Year 4	38	31.2 (5.5)	18-44		
Year 5	25	27.9 (6.6)	18-43		
Year 6	27	28.6 (6.3)	18-42		

**p value with Bonferroni adjustment (0.05/8 = 0.006),
Number of items in each item category=Attention(17), Recall(37), Planning(45),
Doing (9)
Low mean score indicates higher frequency in the seldom/never measurement
category**

5.5.4 Findings in response to research sub-question 5d: Sensitivity of the PRPP@SCHOOL-1(TQ & PQ) to gender differences

Sub-question 5d investigated the sensitivity of the PRPP@SCHOOL-1(TQ & PQ) to gender differences by addressing the following question:

How does cognitive strategy use differ according to gender?

The between-groups analysis indicated significant differences between boys and girls on TQ Attention, Recall and Planning scores and PQ Attention and Planning, with boys' use of cognitive strategies observed to be consistently lower than girls. As expected, boys were over-represented in this sample of students with learning difficulties. Table 5.16 shows that both teachers and parents rated boys as less frequently displaying use of efficient cognitive strategies in the categories of Attention and Planning. Teachers also rated boys as significantly less often displaying Recall behaviours, compared to girls, and parents ratings were close to the Bonferroni-adjusted significance level for this category. Gender differences were not evident for the Doing category however a trend is still evident that boys were using desired cognitive strategies less often than girls.

In summary, girls demonstrated increased frequency of cognitive strategy use, in comparison to boys with the same pattern of difference in all PRPP@SCHOOL-1(TQ & PQ) categories being observed by teacher and parent ratings. (Refer to Table 5.16).

Table 5.16: Between group differences by gender

TEACHER					
	n	Mean (SD)	Min-max	F value	p value
ATTENTION (min-max:34-85)					
Male	230	53.8 (12.9)	34-85	11.0	.001*
Female	62	59.9 (12.9)	35-85		
RECALL (min-max:74-185)					
Male	229	127.1 (31.4)	79-185	8.5	.004*
Female	62	138.0 (29.3)	77-185		
PLANNING (min-max:90-225)					
Male	227	140.1 (30.9)	90-222	8.81	.003*
Female	61	153.6 (33.0)	90-216		
DOING (min-max:18-45)					
Male	226	29.4 (7.1)	18-45	4.1	.045
Female	61	31.5 (7.8)	18-45		

PARENT					
	n	Mean (SD)	Min-max	F value	p value
ATTENTION (min-max:34-85)					
Male	256	57.4 (10.6)	35-84	12.8	<.001*
Female	76	62.3 (11.0)	36-85		
RECALL (min-max:74-185)					
Male	256	130.6 (22.0)	85-183	7.5	.007
Female	76	138.6 (23.2)	83-185		
PLANNING (min-max:90-225)					
Male	256	144.1 (27.2)	91-222	9.6	.002*
Female	76	155.5 (30.9)	92-217		
DOING (min-max:18-45)					
Male	255	29.9 (5.5)	18-45	4.9	.027
Female	76	31.6 (6.7)	18-45		

**p value with Bonferroni adjustment (0.05/8 = 0.006),
Number of items in each item category=Attention(17), Recall(37), Planning(45),
Doing (9)**

Low mean score indicates higher frequency in the seldom/never measurement category

5.6 SUMMARY OF FINDINGS FROM THE TRIAL OF THE PRPP@SCHOOL-1(TQ & PQ)

The analysis and findings set out in this chapter focused on examining the initial trial of the PRPP@SCHOOL-1(TQ & PQ) and includes the following research question which guided this part of the study.

What inefficiencies in students' use of cognitive strategies during participation in school occupations are identified by teachers and parents using the PRPP@SCHOOL-1(TQ & PQ)?

In relation to this research question, the following findings indicate that the PRPP@SCHOOL-1(TQ & PQ) demonstrates measurement viability in a number of areas as follows.

Finding 5.6.1

Teachers and parents have the capacity to observe cognitive strategy use behaviours in students and can differentiate frequency of desired cognitive strategy use. Teachers and parents determined successful participation by how frequently strategies were used.

Finding 5.6.2

Moderate agreement exists between teacher and parent observations regarding the frequency of cognitive strategy use during participation in school and home-based school activities. The broad pattern of teacher and parent ratings over the entire frequency range was similar.

Finding 5.6.3

Teachers mostly reported a higher frequency of students' inefficient strategy use in school activities than parents' reports in home-based school occupations.

Teachers and parents both reported that a large number of students, '*seldom/never*'

demonstrated use of cognitive strategies described in some items during participation in school or home-based school activities.

Finding 5.6.4

Allowing for the unequal representation of items within categories in the PRPP@SCHOOL-1(TQ & PQ), more items from the Planning category were scored in the '*seldom/never*' rating scale than items from other categories in the instrument.

Finding 5.6.5

Year at school was not related to frequency of cognitive strategy use in the reports of either teachers or parents in this sample.

Finding 5.6.6

Gender was related to frequency of cognitive strategy use with teachers and parents both rating boys as less frequently displaying use of efficient cognitive strategies in Attention and Planning categories.

A discussion of these results can be found in Chapter 8, Section 8.3.3. The following chapter examines the reliability of the PRPP@SCHOOL-1(Parent Questionnaire).

CHAPTER SIX

PHASE THREE: RELIABILITY

Phase Two of the research which comprised the construction and trial of the PRPP@SCHOOL-1(TQ & PQ) was reported in the previous chapter. The purpose of Phase Three was to determine reliability and validity measurement properties of the PRPP@SCHOOL-1. This chapter, the first of two chapters reporting on Phase Three, examines the reliability of the PRPP@SCHOOL-1(Parent Questionnaire) and is highlighted in Figure 6.1. The research question that directed this part of the research was the following:

How reliable is the PRPP@SCHOOL-1(Parent Questionnaire) when measuring cognitive strategy use by students during participation in home-based school occupations?

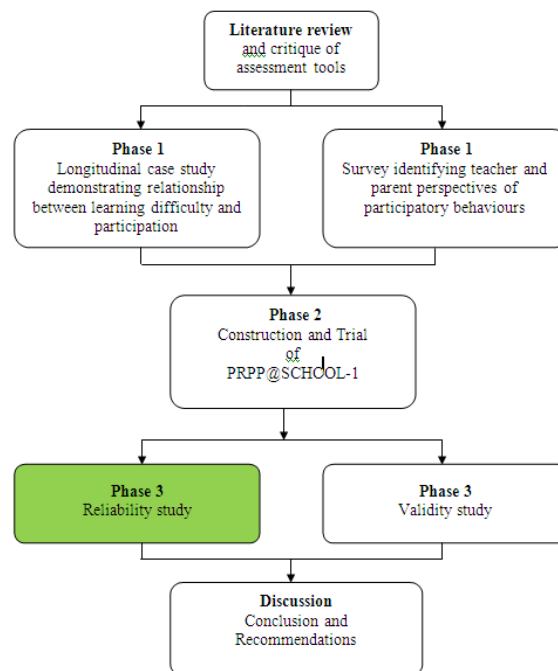


Figure 6.1 Flow chart of phases in the research displaying the relation of this chapter to the thesis as a whole

6.1 METHODS AND FOCUS

Reliability, and specifically test-retest reliability, of the PRPP@SCHOOL-1(PQ) was the focus of this part of the research. As stated in Chapter 2.7.5.1 reliability reflects the amount of error, both random and systematic, intrinsic to all measurement (Streiner & Norman, 2003). Test-retest reliability is estimated by administering the same instrument using the same respondent (e.g., parent) rating the same target (e.g., child) on two separate occasions over a time period in which the target's performance is not expected to change. DeVellis (2003) argues that a more accurate terminology for test-retest reliability is *temporal stability* of the instrument. The reason being, that test-retest reliability examines aspects of both (a) the *phenomenon* and (b) the *instrument*. If test-retest reliability is low it can be difficult to determine whether the reason is real change in the construct of interest, systematic fluctuations in the phenomenon e.g., time of day, changes attributable to differences in the subject/respondent e.g. fatigue, or temporal instability caused by the inherent unreliability of the measurement procedure. All four reasons could affect the result but only the last reason, temporal instability, caused by the inherent unreliability of the measurement procedure is true test-retest reliability.

Time frame is a crucial factor in test-retest reliability. In this study, a 14 day time interval between administration of the PRPP@SCHOOL-1(PQ) on two separate occasions was considered sufficient to assume that, in regard to the *phenomenon* the student's cognitive strategy use was unlikely to change, and in regard to the *instrument*, item response would not be remembered by respondents (Portney & Watkins, 2009). A time difference of two to four weeks is generally considered an acceptable time interval to adequately counteract bias resulting from memory of the previous rating (Depoy & Gitlin, 2005; Waltz, Strickland, & Lenz, 2005).

6.2 RESEARCH DESIGN AND RATIONALE

This part of the study comprised quantitative research using questionnaire methodology as a group measure. Test-retest reliability, was selected for a combination of the following reasons.

- To determine if the PRPP@SCHOOL-1(PQ) was reproducible and dependable over time (Myers & Winters, 2002; Portney & Watkins, 2009).
- To determine whether the instrument was vulnerable to random change.
- To combat subjectivity regarding reporting of student performance (Bresciani, Oakleaf, Kolkurst, Nebeker & Barlow, 2009).
- To provide a sound psychometric property for the PRPP@SCHOOL-1(PQ) in order for it to be considered an instrument capable of measuring outcome change during intervention.

Parents, rather than teachers, were selected to be respondents for a combination of the following reasons.

- *Parent availability.* Parents attended the researcher's clinic once a week or once a fortnight and remained at the clinic for 30-60 minutes each time, providing a suitable convenience sample for recruitment.
- *Parent familiarity with the phenomenon under study.* Given that test-retest reliability is a measure of both the phenomenon and the instrument, and the primary purpose of the research was to evaluate temporal stability of the instrument, parents whose child had previously had an assessment and were attending a block of intervention should be very familiar with the phenomenon. In this case, a low index of reliability could be safely attributed to inherent unreliability of the instrument rather than other reasons previously

suggested by DeVellis (2003).

- *Parent opportunity for reflection.* While attending the clinic, parents typically observed their child during occupational therapy intervention sessions. Completing the PRPP@SCHOOL-1(PQ) during a session gave them an immediate context to observe/reflect on their child's cognitive strategy use during a school-related activity.
- *Time restraints of teachers.* Teachers had previously allocated time to complete the PRPP@SCHOOL-1(PQ) for each student attending the clinic at the time of initial assessment. It was the decision of the researcher, after communication with several teachers that they would generally be reluctant to commit time to re-administer the instrument.
- *Complex ethical procedures.* The recruitment process for teachers comprises lengthy ethical procedures within independent and government educational systems, and imposed an impossible timeline for the completion of this research. Examination of the process is warranted at a more advanced stage of the research.

6.3 METHODS

6.3.1 Sample

The sample was comprised of 51 parents who met all the following inclusion criteria.

- Parent of a student referred for occupational therapy services due to difficulties with learning at school.
- Parent of a student enrolled in Kindergarten to Year Six in a regular primary school.

- Lives with the student or is familiar with the student's usual performance at home and school and who is able to complete the questionnaire twice within a two week interval.
- Demonstrates competence with spoken and written English.

Of the parent sample, 48 (94%) were mothers. This is representative of the parents who typically attended the clinic. The University of Sydney Human Research Ethics Committee granted approval for this study (Refer to Appendix 6.1). Respondents provided informed consent and were able to withdraw from the study at any time.

6.3.2 Recruitment methods

Parents were recruited from a private occupational therapy clinic in Greater Western Sydney. Parents of students who were receiving intervention, due to difficulties with learning at school, were recruited using convenience sampling. These parent respondents were a different group to the parent respondents involved in instrument construction and trial described in the previous phase of the research. Parents involved in trial of the instrument were parents of students receiving an initial assessment, while parents in the test-retest reliability study were parents of students who were receiving an initial block of intervention, or follow up intervention. The amount of time parents and their child had been involved with the clinic ranged between 1 and 63 months. As a consequence, many of the respondents had become familiar with the concept of cognitive strategy use. Respondents were drawn from 29 towns situated across four local government areas (Refer to Table 6.1). Both the length of time involvement with the clinic and geographical location of respondents were representative of the parents who typically attended the clinic.

Table 6.1 Demographic information about the parent sample.

GENDER	n (%)
Female	48 (94)
Male	3 (6)
LOCAL GOVERNMENT AREA	
City of Blue Mountains	34 (67)
City of Penrith	11 (21)
City of Blacktown	4 (8)
City of Hawkesbury	2 (4)
LENGTH OF TIME SINCE CHILD'S REFERRAL TO THE CLINIC	
0-6 months	18 (35)
7-12 months	16 (31)
13-18 months	2 (4)
19-24 months	5 (10)
> 25 months	10 (20)

The clinic office manager gave respondents who met all the inclusion criteria a letter of invitation to participate in the study. Respondents who were interested in participating were then given an information sheet to read (Refer to Appendix 6.2). Contact details of the primary and second researcher were provided if respondents required further information about the study. The size of the sample was determined by the number of respondents who chose to participate in the study within a recruitment period of four weeks.

6.3.3 Data collection

Parents who chose to participate in the study were given an envelope containing instructions for completion of the two questionnaires, a consent form, a number coded descriptive data sheet, and a number coded questionnaire (Refer to Appendix 6.3). Respondents completed the first questionnaire while waiting for their child to complete a 30 to 60 minute therapy session and returned the completed questionnaire in a sealed envelope. Some of the respondents chose to complete the questionnaire at home later the same day because of the presence of young siblings who required

supervision and who were a distraction to questionnaire completion. In this situation, questionnaires were returned at the time of the next intervention session. After a time lapse of 14 days from provision of the first questionnaire, the respondents completed a second questionnaire using the same procedure and with the same instrument instructions. The mean time for questionnaire return was 14 days. A log was maintained by the primary researcher of the date the questionnaire was provided and returned.

In this study the reliability of the raters was assessed. The following information is provided about the children, who were the source of the parent information. The children's enrolment at school was spread across all primary school years. Of all the children, 45 (88%) were boys. Children in this sample were representative of children who typically attended the clinic (Refer to Table 6.2).

Table 6.2 Demographic information about the children, source of parent information

Year at school	Boys	Girls	Total
Kindergarten	2	1	3
Year 1	9	1	10
Year 2	11	2	13
Year 3	4	1	5
Year 4	9	0	9
Year 5	5	0	5
Year 6	5	1	6
Total	45	6	51

6.4 DATA ANALYSIS

In order to examine test-retest reliability, this study used intraclass correlation coefficients (ICC) based on a repeated measures analysis of variance (ANOVA). ICC

is defined as the “ratio of the variance of interest over the sum of the variance of interest plus error” (Shrout & Fleiss, 1979, p. 420). This reliability coefficient was selected because it reflects both the degree to which the scores are correlated and whether agreement from the first questionnaire to the second is significant (Portney & Watkins, 2009). ICC is similar to other reliability techniques in terms of the core concept of consistency, the range of the coefficient from 0.00 to 1.00, and the researcher’s desire for the instrument reliability to have a value as close as possible to 1.00 (Portney & Watkins, 2009). ICC values of test-retest reliability are determined to be excellent between .75 and 1.00, good between .60 and .74, fair between .40 and .59 and poor when lower than .40 (Cicchetti & Sparrow, 1981).

Different equations are available for calculating an ICC depending upon the specific situation defined by both the research design and the conceptual intent of the study. The most popular of these equations, based on a three model explanation (Shrout & Fleiss, 1979), is identified by two numbers placed inside parentheses following the letters ICC. In this study ICC (2,1) was selected. The first of the two numbers identifies which of the three statistical models have been assumed as a foundation to the data. The second number identifies whether the reliability of the rater or the mean scores provided by a group of raters is being utilised as the measurement. In this study the parent raters were randomly selected (identified by the number “2”) and a single rating at each time by each rater was identified by the number “1” (Huck, 2004). An assumption made when using ICC (2,1) is that the raters represented the population of raters, from which they were drawn, and that findings could be generalised to other raters with similar characteristics (Portney & Watkins, 2009). Reporting which of the ICC procedures is used within a study is recommended as the estimated reliability coefficient can differ extensively depending

on which formula was used for computation (Huck, 2004). All underlying assumptions for ANOVA were examined and met.

Single-measure ICC (2,1) and 95% confidence intervals were generated for data analysis over two occasions for 51 subjects in order to test the stability of the PRPP@SCHOOL-1(PQ) over time. The procedure involved collecting raw scores generated by all items on the PRPP@SCHOOL-1(PQ) to yield a total score, and from each of the four PRPP@SCHOOL-1(PQ) sub-categories (Attention, Recall, Planning and Doing) to yield four sub-category scores. Scores for all children for PQ Time 1 and Time 2 were then summed separately using Microsoft Office Excel 2003 and entered into SPSS Version 15.0 (SPSS, 2006). Data columns were labelled accordingly (i.e. Attention1, Attention2).

6.5 FINDINGS

In answer to the research question,

How reliable is the PRPP@SCHOOL-1(PQ) when measuring cognitive strategy use by students during participation in home-based school occupations?

test-retest reliability was conducted on the PRPP@SCHOOL-1(PQ). ICCs based on repeated measures ANOVA identified the preliminary test-retest reliability of PRPP@SCHOOL-1(PQ) as excellent with a high level of agreement between PQ scores for Time 1 and Time 2 (Portney & Watkins, 2009). ICC coefficients for the study sample of 51 parents ranged from .89 to .96 for the individual measurement category scores (Attention, Recall, Plan and Doing) with a stability coefficient of .97 being yielded for the total PRPP@SCHOOL-1(PQ) (Refer to Table 6.3).

Table 6.3 Intraclass correlation coefficients (ICC) with 95% confidence intervals (CI) for test-retest reliability.

Category	T1 M (SD)	T2 M (SD)	ICC	95%CI
Attention	55.57 (11.52)	53.76 (11.64)	.89	.81-.94
Recall	122.94 (26.97)	121.73 (27.20)	.95	.92-.97
Planning	132.49 (34.10)	133.25 (34.54)	.96	.92-.97
Doing	28.59 (6.37)	28.67 (6.63)	.90	.84-.94
Total PQ	339.55 (74.96)	337.41 (77.27)	.97	.95-.98

Notes: T1 = Time 1, T2 = Time 2, M = mean, SD = standard deviation

A discussion of these results can be found in Chapter 8, Section 8.3.4. The following chapter examines the validity of the PRPP@SCHOOL-1(TQ & PQ).

CHAPTER SEVEN

PHASE THREE: VALIDITY

Chapter Seven draws together findings from across the phases of the research to demonstrate validity of the PRPP@SCHOOL-1(TQ & PQ) and fulfils the purpose of Phase Three of the research which was to determine reliability and validity measurement properties of the PRPP@SCHOOL-1(TQ & PQ). This chapter, the second of two chapters reporting on Phase Three, examines the validity of the PRPP@SCHOOL-1(TQ & PQ). Refer to Figure 7.1.

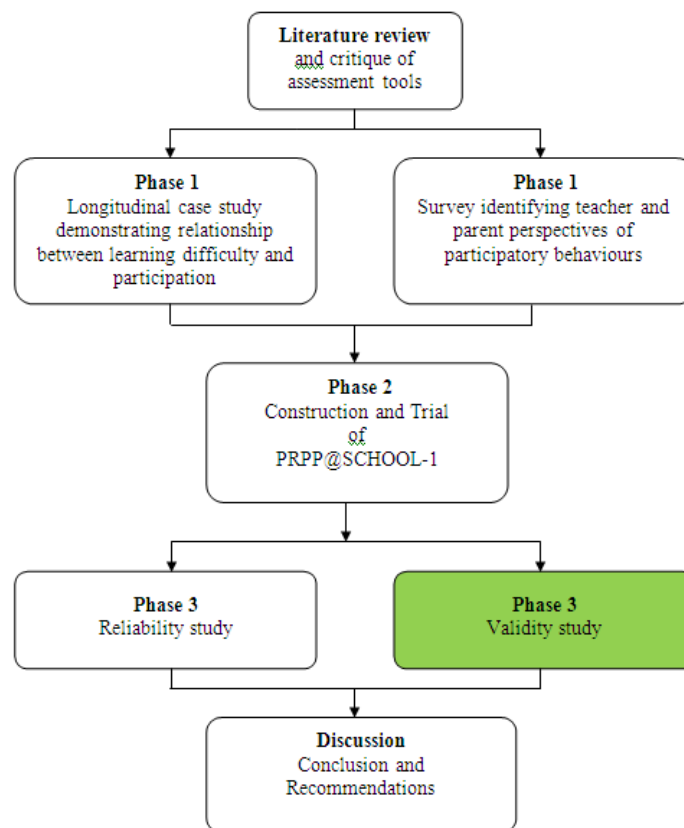


Figure 7.1 Flow chart of phases in the research displaying the relation of this chapter to the thesis as a whole

Chapter Seven builds on the previous research phases outlined in Chapter Five which included first, an explanation of how the PRPP@SCHOOL-1(TQ & PQ) was constructed and administered and second, preliminary evidence that the instrument and its rating scale appeared to be viable and tractable. Using the PRPP@SCHOOL-1(TQ & PQ) to observe students with learning difficulties, teachers and parents demonstrated a capacity to document student cognitive strategy use relative to performance expectations of school activities. Item ratings were consistent with the hypothesis that the items were measuring the intent of the instrument. Furthermore, items could be differentiated by their "seldom or never" clinically relevant ratings.

Consistent with theory reviewed in Chapter Two, teachers and to a lesser extent parents, rated cognitive strategy use behaviours belonging to the Planning category as most problematic in children with learning difficulties, that boys with learning difficulties use cognitive strategies less frequently in most areas than girls with learning difficulties, and that no differences in cognitive strategy use appeared to exist between school years. Teachers' and parents' scores showed moderate agreement across results, so both sets of raters reported differences where differences were expected, and reported no differences where none were expected. One conclusion of Chapter Five was that the properties of the PRPP@SCHOOL-1(TQ & PQ) warranted more detailed examination to establish its validity.

Aspects of the tool which were identified in Chapter Five by teachers, parents and the researcher as detracting from inferences which could be made from the PRPP@SCHOOL-1(TQ & PQ) included (a) questionnaire length and time required for respondents to answer, (b) uneven number of items within categories, and (c) item duplication with several items implying similar processing behaviours. In addition, the researcher was unaware to what extent items in the PRPP@SCHOOL-1(TQ & PQ)

were accurately grouped into the four named categories, Attention, Recall, Planning and Doing. Furthermore, the research had not yet determined whether the instrument could identify differences in cognitive strategy use behaviours between students who did and did not have difficulty with participation during school occupations. In order to address these concerns the following research question and sub-questions were raised.

7.1 RESEARCH QUESTIONS

The research question that was addressed in this part of the research was:

How valid is the PRPP@SCHOOL-1(TQ & PQ) when measuring cognitive strategy use by students during participation in school occupations?

This question was further sub-divided into the following four sub-questions.

Sub-question 7a:

How well do items in the PRPP@SCHOOL-1(TQ & PQ) reflect a representative sample of cognitive strategies used by students with learning difficulties when participating in school and home-based school activities?

Sub-question 7b:

How well do items in the PRPP@SCHOOL-1(TQ & PQ) differentiate between children with and without cognitive strategy use difficulties from the perspective of teachers?

Sub-question 7c:

What are the underlying factors within the PRPP@SCHOOL-1(TQ & PQ) that explain participation in school activities?

Sub-question 7d:

Is there a significant relationship between items within factors or categories which supports the use of item grouping in the PRPP@SCHOOL-1(TQ & PQ)?

This chapter is comprised of five parts. Each of the first four parts answers a research sub-question which addresses a different aspect of validity. The first part addresses content validity, the second part discriminant validity, the third part construct validity and the fourth part internal consistency (Refer to Figure 7.2).

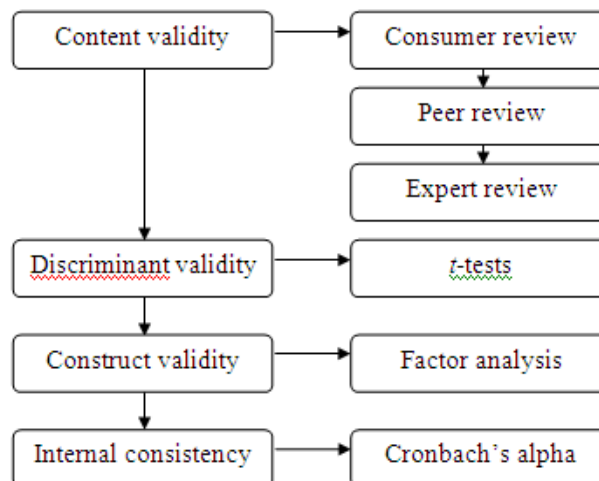


Figure 7.2 Flow chart of validity study displaying the relation of different aspects of validity and data analysis procedures to the chapter as a whole

The final part of the chapter comprises a summary of the results and an outline of the subsequent preliminary steps undertaken to construct a second version of the PRPP@SCHOOL-1(TQ & PQ) named the PRPP@SCHOOL-2(TQ & PQ).

The conduct of this study, as part of the overall research, was approved by The University of Sydney Human Research Ethics Committee (Refer to Appendix 3.1). In this chapter, data entry, storage, retrieval, and generation of calculations for data analysis procedures using a quantitative approach was conducted using SPSS Version 15.0 (SPSS, 2006).

7.2 PART A: CONTENT VALIDITY

This part of the study addressed content validity in response to research question 7a:

How well do items in the PRPP@SCHOOL-1(TQ & PQ) reflect a representative sample of cognitive strategies used by students with learning difficulties when participating in school and home-based school activities?

7.2.1 Methods

7.2.1.1 Research design and rationale

In this phase of the research, content validity was examined using a qualitative approach involving member checking via consumer review (teachers and parents), peer review (occupational therapy clinicians) and an expert panel review (occupational therapy researchers). The overall purpose was to review the extent to which items in the PRPP@SCHOOL-1(TQ & PQ) covered aspects of student cognitive strategy use during participation in school and home-based school activities, with relevance and completeness (Babbie, 2004; DeVon, et al., 2007). Each of the procedures used to achieve this purpose are discussed separately below.

Member checking involves providing respondents with research data and interpretations in order for them to determine the credibility of the information (Creswell & Miller, 2000). Member checking differs from triangulation in that the

outcome of member checking is a judgement of overall credibility while the outcome of triangulation is an outcome of the accuracy of specific data items (Lincoln & Guba, 1985). Member checking has been described as the “most crucial technique for establishing credibility” testing data, analytic categories, interpretations and conclusions with members of stakeholding groups from whom the data were originally collected (Lincoln & Guba, 1985, p. 314).

In this study respondents were systematically questioned as to whether the overall questionnaire including its themes and categories made sense, were developed with sufficient evidence, and were realistic and accurate, that is, that the questionnaire represented people’s “own realities” (Lincoln & Guba, 1985, p. 314). This procedure was followed by the researcher incorporating the respondent’s responses into questionnaire refinement (Creswell & Miller, 2000). Consumer, peer and expert opinion reviews have been found to be useful in identifying the relevance, clarity, and importance of items in the early stages of instrument construction (Netemeyer, Beardon, & Sharma, 2003). In this study member checking was conducted for a combination of the following reasons.

- To determine intentionality, confirming the respondent’s intent in providing certain information.
- To correct error, providing the respondents with opportunity to challenge incorrect interpretations.
- To provide additional information, stimulating the respondents to recall information from a previous time.
- To correct researcher error.
- To provide an opportunity to summarise and begin process of data analysis.

Lincoln and Guba (1985)

7.2.2 Consumer review

Consumer review employed member checking by the first group of teachers and parents who were administered the PRPP@SCHOOL-1(TQ & PQ). The specific purpose of the consumer review was to (a) gather comments about the teachers' and parents' experiences of completing the questionnaires, and (b) determine a judgement of overall credibility of the PRPP@SCHOOL-1(TQ & PQ) by teachers and parents.

7.2.2.1 Sample

The first 50 teacher and 50 parent respondents to use the PRPP@SCHOOL-1(TQ & PQ) were recruited to participate in the consumer review. The sample of recruited teachers and parents represented 55 students enrolled from Kindergarten to Year Six who had been referred to a private occupational therapy clinic in Greater Western Sydney because of learning difficulties with school or home-based school activities. The sample recruited for this consumer review formed part of the larger sample described in the trial of the PRPP@SCHOOL-1[TQ & PQ] (Refer to Chapter Five, Section 5.3.2). Table 7.1 presents the demographic data for gender of teachers, parents and students who participated in the consumer review. Information is not available about the years of teaching experience of the teacher respondents. Table 7.2 presents the demographic data for the year at school of the students they represented. Table 7.3 presents the time of year that teachers and parents were invited to participate in the consumer review.

Table 7.1 Gender of teachers, parents and students represented by the consumer review data

Respondents	Male		Female	
	n	%	n	%
Teachers	13	26	37	74
Parents	5	10	45	90
Students	44	80	11	20

Table 7.2 Year at school of students represented by the consumer review data

Year at school	n	%
K	11	20
1	7	13
2	7	13
3	9	16
4	8	14
5	6	11
6	7	13

Table 7.3 Term of school year teachers and parents recruited to consumer review

Term of school year	n	%
1	6	11
2	21	38
3	15	27
4	13	24

7.2.2.2 Recruitment procedures

Recruitment procedures for teachers and parents were the same as those described in 5.3.3.

7.2.2.3 Data collection

Teachers and parents were invited in writing to provide feedback on the content and format of the PRPP@SCHOOL-1(TQ & PQ). Feedback options included using telephone, email, fax or writing comments directly on to the PRPP@SCHOOL-1[TQ & PQ] (Streiner & Norman, 2003). Data were collected from the sample using consecutive assessment referrals over a 12 month time duration, equivalent to four school terms.

Respondents completed the PRPP@SCHOOL-1(TQ & PQ) and recorded their observations of the student's cognitive strategy use during school occupations at school and at home using a five-point rating scale (Refer to PRPP@SCHOOL-1[TQ & PQ] in Appendix 5.1). After completion of the questionnaire, respondents were requested to (a) review the data they had provided about the student to ensure that the data were complete and accurate, (b) consider the accuracy and realism of the questionnaire, (c) determine whether the categories and items made sense, (d) note any items which they perceived to be unnecessary and could be deleted (e) identify any items they considered to be unclear, requiring further explanation or example, (f) suggest items they believed were important but omitted and, (g) nominate any frustrations experienced while completing the questionnaire (Creswell & Miller, 2000; Hoffart, 1991).

7.2.2.4 Data analysis

The researcher converted all feedback to written notes and used concept-mapping to organise feedback. The map began with a central topic, "Feedback". Main branches were added and labeled with a summary term as broad topic feedback was provided by respondents, for example, "completion time" or "usefulness". Small

branches were added to each main branch as specific detail feedback was provided by respondents, for example, “took longer to complete than I expected but it’s got me thinking about Aaron in a different way”. The first detail was added to “completion time” and the second detail was added to “usefulness”. Main topic branches and small specific branches were only added to the concept map as information was provided by respondents. Data were collected separately from teachers and from parents resulting in one concept map constructed for teacher feedback and one constructed for parent feedback. [Refer to Appendix 7.1 for parent feedback concept map] (Babbie, 2004; Buzan, 2003).

7.2.2.5 Results

Feedback from respondents outlining main topics and specific detail is listed in Table 7.4. A small number of parents and teachers (n=5) responded, and insufficient quantity of feedback was provided to examine similarities and differences between teacher and parent responses.

Table 7.4 Feedback from teachers and parents in consumer review

Main topic	Specific detail
Content	Items covered relevant depth and breadth of content Minor additions suggested Inclusion of scenario examples to exemplify the content of items requested (n=1)
Time	The instrument required a longer than anticipated time to complete (n=2)
Usefulness	Items positively stimulated teacher thinking about the student Parent and teacher appreciation at being included in data collection and reporting

In response to parent feedback and suggestions, a total of ten items (refer to Appendix 7.2) were added to the questionnaire over the course of 12 months resulting in a total of 108 items. As this aspect of validity was examined in the early stage of

instrument development, the researcher adopted an excessively inclusive approach to item selection in order that the questionnaire capture a “thick, rich description” of cognitive strategy use behaviours (Creswell & Miller, 2000, p. 129).

7.2.3 Occupational therapist review

Occupational therapist review was conducted by occupational therapists who used the PRPP@SCHOOL-1(TQ & PQ) as part of information gathering during occupational therapy assessment. The specific purpose of the occupational therapist review was to (a) determine items which therapists perceived to be critical within different school roles and contexts (e.g., worker role in the classroom, friend role in the playground) and (b) determine a judgement of overall credibility of the PRPP@SCHOOL-1(TQ & PQ) by occupational therapists.

7.2.3.1 Sample

Six occupational therapists, recruited because of their experience in the clinical area of learning difficulties and their understanding of cognitive strategy use participated in the peer review. Clinical years of experience ranged from 2 to 22 years (mean of 8.3 years). All therapists were involved in the assessment and intervention of students both in school and clinic contexts, participated in ongoing professional development, and were employed on a full-time basis with caseloads comprised of students with learning difficulties.

7.2.3.2 Recruitment procedures

Occupational therapists were private paediatric occupational therapists practicing in the Greater Western Sydney area. Participation was by open invitation with a response rate of 80%.

7.2.3.3 Data collection

The occupational therapists were instructed to consider questionnaire items in the PRPP@SCHOOL-1(TQ & PQ) they perceived to be critical for (a) individual participation in class work, (b) group participation in class work, (c) interaction in the playground, and (d) retaining in the questionnaire in the event of item reduction at any future stage. The therapists were provided with these four-response options in column format to facilitate ease in recording their judgements (Refer to Appendix 7.3). Data were collected over a one month time duration. Responses were returned in a sealed envelope with no identifying information apart from years of clinical experience.

7.2.3.4 Data analysis

Data analysis entailed tabulation of the number of responses for each of 108 items according to the four response categories outlined above (Refer to Appendix 7.3).

7.2.3.5 Results

Peer review by occupational therapists confirmed the items covered a relevant and complete range of classroom and playground participation behaviours. The therapists identified 73 of the 108 items (66.7%) as needing to be retained in the questionnaire during further stages of instrument development. The therapists

suggested that 6/17 items (Attention category), 14/37 items (Recall category), 12/45 items (Planning category), and 3/9 (Doing category) could be removed from the questionnaire. The reasons provided were that the therapists (a) did not consider these items to be critical for participation during activities in either the classroom or the playground, or (b) the items were duplicated elsewhere in the questionnaire, and (c) the items did not reflect cognitive strategy use behaviours. Of these 35 items, five of the items (R36, P44, D6, D7, and D8) were items which teachers and parents from the consumer review had suggested be added to the original 98 items, suggesting some difference in importance of the behaviours, or difference in understanding of the items between teachers and occupational therapists.

7.2.4 Expert panel review

Expert panel review was conducted during research Phase Three and comprised member checking by occupational therapy researchers with expertise in the area of cognitive strategy use. Expert panel reviews, a widespread practice in many agencies, are convened for purposes such as generating ideas to move a project forward, extending thinking beyond the obvious, or improving the features of program initiatives (Zalles, 2005). In this study, the expert panel review contributed to a phase of construct refinement. The specific purpose of the expert panel review was to (a) decide whether items in the PRPP@SCHOOL-1(TQ & PQ) reflected the concept of cognitive strategy use, and (b) establish whether items in the PRPP@SCHOOL-1(TQ & PQ) aligned with descriptors in the PRPP System of Task Analysis, and (c) refine item content and number.

7.2.4.1 Sample

The sample was comprised of three expert occupational therapists, a number considered to meet the minimum criterion for determination of content validity (Lynn, 1986). The experts were all researchers at a tertiary academic institution, held a doctorate in occupational therapy or related field, and had a high level of clinical experience in the domain of cognitive strategy use. Two of the experts were authors of the PRPP System of Task Analysis and the third expert was a clinical researcher with extensive experience using the PRPP System of Task Analysis in the area of cognition and traumatic brain injury.

7.2.4.2 Recruitment procedures

The experts were invited to meet in one location to focus intensively on item content in the PRPP@SCHOOL-1(TQ & PQ). All three experts agreed to meet with the researcher.

7.2.4.3 Data collection

The members of the panel were provided with PRPP@SCHOOL-1(TQ & PQ) items prior to the meeting and then met together on two occasions, six days apart, for a total of three hours. The researcher instructed the members of the panel to systematically review items in the PRPP@SCHOOL-1(TQ & PQ) through a series of steps:

Step One: Verification that each item reflected specific cognitive strategies

The purpose of the first step was to determine whether items in the PRPP@SCHOOL-1(TQ & PQ) reflected cognitive strategy use (Schultz & Whitney, 2005). The reason for this step was that an excessive number of items had been

initially included in the instrument to capture the concept of cognitive strategy use as described by teachers and parents. Any items which had been nominated by these respondents and which loosely represented aspects of strategy use required for school performance had been incorporated into the questionnaire. In preparation for the expert panel review, the researcher marked each of the items according to her understanding of whether, or not, the items reflected cognitive strategy use (Refer to Table 7.5). During the expert panel review and in response to the question “Does this item describe cognitive strategy use?” if the panel decided “yes” then the item was confirmed and either retained or collapsed with another item. If the panel decided “no” then the item was refuted and either deleted or moved to a different section of the PRPP@SCHOOL-1[TQ&PQ] (Refer to 7.5).

Table 7.5 Expert panel review: Step one example

PRPP@SCHOOL Item Number	Description	Cognitive strategy use behaviour?	Action
A1	Reacts to what is happening by looking and listening	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Retain <input checked="" type="checkbox"/> Collapse <input type="checkbox"/> Delete <input type="checkbox"/> Move to different section

Step Two: Alignment of each item with PRPP strategy descriptors given that the PRPP@SCHOOL-(TQ & PQ) was to be used as a companion tool to the PRPP System of Task Analysis

The purpose of the second step was to determine whether remaining items in the PRPP@SCHOOL-1(TQ & PQ) aligned with one of the 34 descriptors in the PRPP System of Task Analysis. (Refer to Appendix 7.4 for a glossary of descriptors from the PRPP System of Task Analysis.) The reason for this step was that items initially

generated by teachers and parents as expectations of participation in school and home-based school activities had similar meaning to descriptors in the PRPP System of Task Analysis. Subsequently items had been grouped into four categories which broadly approximated the four quadrants of the PRPP System of Task Analysis. In preparation for the expert panel review, the researcher marked each of the items according to her understanding of which PRPP System of Task Analysis descriptor was aligned with each PRPP@SCHOOL-1(TQ & PQ) descriptor (Refer to Table 7.6). The expert panel was asked “Does this item align with PRPP descriptor _____?” If the panel answered “yes” then the item-descriptor alignment was confirmed. If the panel answered “no”, then the panel selected an alternate PRPP descriptor which was then inserted.

Table 7.6 Expert panel review: Step two example

PRPP@SCHOOL Item Number	Description	PRPP System of Task Analysis descriptor suggested by researcher	If “no” then insert PRPP System of Task Analysis descriptor
P11	Copes with changes to routine	Monitors <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<i>Adjusts</i>

Step Three: Reduction and refinement of items

The purpose of the third step was to refine item content and number. The reason for this step was that after completion of Step Two, some descriptors from the PRPP System of Task Analysis descriptors were loaded heavily with PRPP@SCHOOL-1(TQ & PQ) items while others had no representation within the PRPP@SCHOOL-1(TQ & PQ). This was to be expected as teacher and parent generated items had resulted in an unequal distribution of items in the

PRPP@SCHOOL-1[TQ & PQ] (i.e., Planning category 45 items, Recall category 37 items, Attention category 17 items, and Doing category 9 items). The expert panel review was asked to

- Generate any items which they perceived had been omitted from the PRPP@SCHOOL-1(TQ & PQ).
- Recommend action for items be retained, collapsed with other items, or removed.
- Make suggestions for improved wording “without interfering with the content validity judgment” (Lynn, 1986, p. 384). Refer to Table 7.7 for an example of one item.

Table 7.7 Expert panel review: Step three example

PRPP@SCHOOL Item Number	Description	Improved wording
P24	Uses strategies to do an activity in a systematic and purposeful way (not random or haphazard)	<i>Puts steps of activity in order</i>

7.2.4.4 Data analysis

Data analysis comprised discussion and note-taking. When five or fewer experts are present in a panel, complete agreement needs to be reached for an item to be retained (Lynn, 1986). The members of the panel systematically and sequentially worked through each item. If any member of the expert panel disagreed, the members discussed the item. Some items were considered for only the briefest time while other items were discussed at length. A decision was made on retaining, collapsing, moving or deleting each item before moving onto the next item. The reason for lengthy discussion on some items was that these items were considered to be broad cognitive

strategy use behaviours which comprised a number of underlying cognitive strategies. In this situation, members discussed which descriptor was a best alignment. If a PRPP System of Task Analysis descriptor could not be determined because the PRPP@SCHOOL-1(TQ & PQ) item could not be limited to a single PRPP System of Task Analysis descriptor, the panel made a decision to move the PRPP@SCHOOL-1(TQ & PQ) item to a different section of the PRPP@SCHOOL-1(TQ & PQ). The decision to move an item was made for any items which were deemed to be all-encompassing global cognitive strategy behaviours.

7.2.4.5 Results

The content validity of the PRPP@SCHOOL-1(TQ & PQ) at a whole questionnaire level was asserted based on a judgement of overall credibility of the PRPP@SCHOOL-1(TQ & PQ). While adhering to principles of judgment, the panel indicated that certain items be retained, other items be reworded, other items be moved to a different section of the PRPP@SCHOOL-1(TQ & PQ), some items be collapsed and some items be deleted. A decision was not made by the researcher until all data from the validity study were collected and analysed. The expert panel suggested that six items needed to be generated in order for each PRPP System of Task Analysis descriptor to be represented in the PRPP@SCHOOL-1(TQ & PQ). Of the six descriptors in the PRPP System of Task Analysis not represented by the PRPP@SCHOOL-1(TQ & PQ), three descriptors (monitors, discriminates and matches) were in the Perceive quadrant and three descriptors (categorises, uses objects and uses body) were in the Recall quadrant. All descriptors in the Plan and Perform quadrants of the PRPP System of Task Analysis were represented in the PRPP@SCHOOL-1(TQ & PQ). In effect, 82% of the PRPP System of Task Analysis

was represented by items from the PRPP@SCHOOL-1(TQ & PQ). Refer to Appendix 7.5 for (a) a list of PRPP@SCHOOL-1(TQ & PQ) items indicating to which PRPP System of Task Analysis descriptor the PRPP@SCHOOL-1(TQ & PQ) item is linked, and (b) a list of PRPP System of Task Analysis descriptors indicating items from the PRPP@SCHOOL-1(TQ & PQ) which are linked to the PRPP System of Task Analysis descriptor. The two lists indicate the extent of alignment between the PRPP System of Task Analysis and the PRPP@SCHOOL-1(TQ & PQ).

7.2.5 Summary of Part A: Research question 7a

Member checking provided evidence that the PRPP@SCHOOL-1(TQ & PQ) items displayed content coverage and content relevance. Teacher and parent feedback in the consumer review indicated that the instrument contained items consistent with the content of school and home-based school activities. Respondents reported favourably on the instrument, evidenced by a very high response rate for return of PRPP@SCHOOL-1(TQ & PQ), identification of few difficulties with using the instrument and only few requests for changes being offered. Occupational therapists using the questionnaire identified a large number of items as critical for participation across classroom and playground contexts. Expert occupational therapists deemed the instrument to reflect a range of cognitive strategies consistent with information processing theory and with the original strategy use conceptual model that was used to construct this instrument, the PRPP System of Task Analysis.

7.3 PART B: DISCRIMINANT VALIDITY

This part of the study addressed discriminant validity in response to research question 7b:

How well do items in the PRPP@SCHOOL-1(TQ) differentiate between children with, and without, cognitive strategy use difficulties from the perspective of teachers?

7.3.1 Methods

7.3.1.1 Research design and rationale

In this phase of exploratory research, discriminant validity was examined using the PRPP@SCHOOL-1(TQ) only, and adopted a quantitative comparative approach involving a series of *t*-tests. Discriminant validity is assessed by study of the relationships between questionnaire scores and item variables, based on the assumption that “unfavourable characteristics are associated with poorer scores” (Beasejour, Joncas, Goulet, Roy-Beaudry & Parent, 2009, p. 624). In this study, the overall purpose was to review the capacity of items in the PRPP@SCHOOL-1(TQ) to identify differences between students with and without participation difficulties based on the student’s use of cognitive strategies in school and home-based school activities.

7.3.1.2 Sample

The sample comprised 363 students, forming two groups. Group One (LD) was comprised of 292 students with learning difficulties who had problems participating in school or home-based school activities. Group Two (TD) was comprised of 71 “typically developing students” (Refer to 1.4.8). The groups were independent with no overlap of students. Students in both groups were enrolled in mainstream schools from Kindergarten through to Year Six.

Data on Group One (LD) were drawn from the sample utilised in the initial administration of the PRPP@SCHOOL-1(TQ & PQ) described in Chapter Five, and were comprised of all students for whom teacher questionnaires were available. Students in this group were recruited from a private occupational therapy clinic in Greater Western Sydney who had been referred because of learning difficulties for school or home-based school activities (Refer to 5.3.2 for a detailed explanation of the sample).

Students in Group Two (TD) were recruited by convenience sampling through an open request to teachers via professional networks and workshops. The researcher contacted teachers in writing and in person to explain the purpose of this part of the research and to invite teachers to participate. Those teachers who expressed interest in the research were faxed, mailed or emailed a PRPP@SCHOOL-1(TQ). The teachers were instructed to complete the questionnaire on a student in their class who they considered to have no learning difficulties, or participation difficulties impacting on classroom or playground activities. The researcher set a time allocation of six months to collect the data. After two months, the researcher reviewed the school grade and gender of students in the sample. The school grade distribution was similar in Group One [LD] and Group Two [TD] (Refer to Table 7.8 for the final distribution of student year at school). Gender distribution was different between groups, with more female students represented in the Group Two (TD). Henceforth, the researcher instructed teachers to administer the questionnaire on male students in order to redress the gender distribution (Refer to Table 7.9 for the final distribution of student gender).

Table 7.8 Year at school of students

Sample	Kinder	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Total
Group One	n=70 (19.7%)	n=67 (18.9%)	n=59 (16.6%)	n=62 (17.5%)	n=41 (11.5%)	n=28 (7.9%)	n=28 (7.9%)	355
Group Two	n=17 (23.9%)	n=12 (16.9%)	n=13 (18.3%)	n=12 (16.9%)	n=4 (5.6%)	n=6 (8.5%)	n=7 (9.9%)	71

Table 7.9 Gender of students

Sample	Girls	Boys	Missing data	Total
Group One	n=82 (23.1%)	n=273 (76.9%)		355
Group Two	n=14 (19.7%)	n= 55 (77.5%)	2	71

In the final data for Group One (LD) and Group Two (TD), the mean age of students was 7 years (SD, 2.0). There was no significant difference between Group One (LD) and Group Two (TD) in year at school, gender or age. The only apparent difference between the well-matched groups was the presence of learning difficulties associated with problems participating in school and home-based school activities.

7.3.1.3 Recruitment procedures

Students in Group One (LD) were drawn from Greater Western Sydney. The students recruited in Group Two (TD) were drawn from a wider geographical area than the students in Group One with some students enrolled in schools located in the northern suburbs of Sydney and Canberra. The schools represented in both groups were similar, that is, drawn from mixtures of state, Catholic and independent schools.

7.3.1.4 Data collection

Data collection, using PRPP@SCHOOL-1(TQ), ceased at the end of six months. Data collection followed the procedures outlined in initial administration of the instrument 5.3.3.

7.3.2 Data analysis

Data analysis was planned to identify any differences between students with learning difficulties in Group One (LD) and students without learning difficulties in Group Two (TD). Data describing scores generated by the instrument were summed to establish four category scores (Attention (A), Recall (R), Planning (P) and Doing (D)) and a total questionnaire score for each student. Differences between the two groups in category and total scores as measured by the PRPP@SCHOOL-1(TQ) were analysed using independent group *t*-tests. While the two groups were of unequal size, Group One (n= 355) and Group Two (n=71), this was not considered an issue for this analysis as there was no significant difference between Group One (LD) and Group Two (TD) in year at school, gender or age (Tabachnick & Fidell, 2001). Prior to statistical analysis, assumptions of population normality were tested (Coakes, Steed, & Dzidic, 2006). Population normality was upheld. Independent group *t*-tests were appropriate to determine discriminant validity as only two groups were involved in the analysis. Significance was determined at $p < .05$.

7.3.3 Results

Students without learning difficulties in Group Two (TD) had higher mean scores for Attention, Recall, Plan, and Doing as well as for the total questionnaire (Refer to Table 7.10) than students in Group One (LD). These results indicate that

students with typically developing skills in the area of cognitive strategy use were able to demonstrate frequent effective use of strategies during participation in school occupations, as desired by their teachers.

Table 7.10 Mean and standard deviation for Group One and Group Two on PRPP@SCHOOL-1(TQ) total and categories.

	n	Mean (SD)
ATTENTION (min-max: 17-85)		
Group One	292	51.93 (14.72)
Group Two	71	72.59 (9.00)
RECALL (min-max: 37-185)		
Group One	291	117.86 (31.32)
Group Two	71	159.83 (19.94)
PLANNING (min-max: 45-225)		
Group One	288	124.78 (39.70)
Group Two	71	183.51 (29.63)
DOING (min-max:9-45)		
Group One	287	27.57 (8.73)
Group Two	71	40.01 (5.77)
TOTAL (min-max: 108-540)		
Group One	292	319.56 (88.61)
Group Two	71	455.94 (60.95)

Note: High scores indicates effective and frequent use of desired strategies

A statistically significant difference at the $p < .05$ level in category and total mean scores between the two groups of students was demonstrated (Refer to Table 7.11).

Table 7.11 T-test independent samples equality of means results for Group One and Group Two

Category	<i>t</i>	<i>df</i>	<i>Sig</i> (2-tailed)	95% Confidence Interval of the Difference	
				Lower	Upper
Attention	-15.062	173.169	<.001	-23.37	-17.95
Recall	-14.017	165.190	<.001	-47.89	-36.06
Plan	-13.905	139.032	<.001	-67.07	-50.37
Doing	-14.525	159.387	<.001	-14.13	-10.75
Total	-15.323	150.846	<.001	-153.97	-118.80

Note: Equal variance was not assumed for all calculations

Group Two mean score is represented by a –score.

7.3.4 Summary of Part B: Research question 7b

Results indicated that the items in the PRPP@SCHOOL-1(TQ) discriminated between this sample of students with learning difficulty and participation difficulties, and their typical peers (TD).

7.4 PART C: CONSTRUCT VALIDITY

This part of the study addressed construct validity in response to research question 7c:

What are the underlying cognitive factors within the PRPP@SCHOOL-1(TQ & PQ) that may explain participation in school activities?

7.4.1 Methods

7.4.1.1 Research design and rationale

In this phase of research, construct validity was examined using a quantitative approach involving factor analysis methodology. Factor analysis, frequently used to determine construct validity, includes a number of statistical procedures that can be used to (a) *reduce* the number of variables and (b) to *detect structure* or to *classify* the relationships between variables. It can therefore be applied as a data reduction or structure detection method. It was used in this study as an exploratory procedure to

identify and classify coherent constructs that may be measured by items in the PRPP@SCHOOL-1[TQ & PQ] (Coster, 2006; Whiteside, McCarthy, & Miller, 2007), and also as one item reduction procedure (Pallant, 2007; Tabachnick & Fidell, 2001).

7.4.1.2 Sample

The sample for the factor analysis was 355 students enrolled in mainstream classes Kindergarten through to Year Six with data collected from a total of 624 teacher and parent questionnaires. The students were recruited from a private paediatric occupational therapy clinic in Greater Western Sydney. This sample of students includes the same students as in the initial administration of the PRPP@SCHOOL-1[TQ & PQ] (Refer to 5.3.2 for a detailed explanation of the sample). Criteria for sample size in factor analysis is considered to be approximately five respondents per variable, or the number of variables needs to be exceeded by 50 respondents (DeVon, et al., 2007). The criteria were therefore satisfied in this study as the questionnaire comprised 108 variables and the sample was comprised of 355 students.

7.4.1.3 Data collection and recruitment procedures

Data collection and recruitment procedures for students were the same as those described in 5.3.3.

7.4.2 Data analysis

Assumptions of sample size, population normality, linearity, multicollinearity and factorability of the correlation matrix were tested and upheld (Coakes, Steed, & Dzidic, 2006). Sample size exceeded the preferable 200. The factor analysis solution

was improved through normal distribution of the variables and linearity. Outliers were not present in any of the cases. Shared variance of items was investigated on combined PRPP@SCHOOL-1(TQ & PQ) in order to determine how well items correlated with each other and formed unique groups or factors (Tabachnick & Fidell, 2001).

As described in Section 5.4, the original five-point rating scale data were collapsed into four-point rating data for this analysis:

- (a) “*never or seldom displays this behaviour*” (rating scale categories “1” and “2”)
- (b) “*sometimes displays this behaviour*” (rating scale category “3”)
- (c) “*frequently displays this behaviour*” (rating scale category “4”)
- (d) “*always displays this behaviour*” (rating scale category “5”)

Data analysis included (a) extracting a set of factors from the correlation matrix using principal components analysis (PCA), (b) interpreting the factors by orthogonal rotation using the Varimax procedure, and (c) determining the number of factors using Kaiser’s eigenvalue rule, considering only factors with an eigenvalue >1.0, and Catell’s scree test, retaining only factors above the ‘elbow’ (Minichiello et al, 2004). PCA as a mathematical process determined the linear combinations of variables in order to explain the maximum amount of variance in the data. Orthogonal rotation maximised the variance of the squared loadings of a factor on all the variables in a factor matrix, thereby differentiating the items by extracted factor (Brown, Unsworth, & Lyons, 2009). The data analysis in this research has followed mainstream recommendations (Portney & Watkins, 2009; Streiner & Norman, 2003;

Tabachnick & Fidell, 2001). The final test is to determine if interpretable factors emerge, and if they are consistent with other evidence.

Tabachnik and Fidell (2001) recommend that factor analyses are acceptable if variables correlate highly with each other within a factor, variables within one factor correlate with other factors, and that a high percentage of the variance amongst variables is accounted for by the first few factors. Moreover, the first factors should explain at least 50% of the cumulative variance (Streiner & Norman, 2003). As a compromise between guidelines provided by Nunnally and Bernstein (1994) and other authors (Kinnear & Gray, 2008; Tabachnick & Fidell, 2001), this study classified factor loadings between .4 and .6 as fair, with any scores greater than .6 as good. Items correlating less than .4 with a factor were classified as not loading on the factor.

7.4.3 Results

Factor analysis of items in the PRPP@SCHOOL-1(TQ & PQ) identified 12 factors with an eigenvalue of >1.0 (Kaiser's eigenvalue rule). Only five factors were located above the "elbow" [Catell's scree test] (Refer to Figure 7.3).

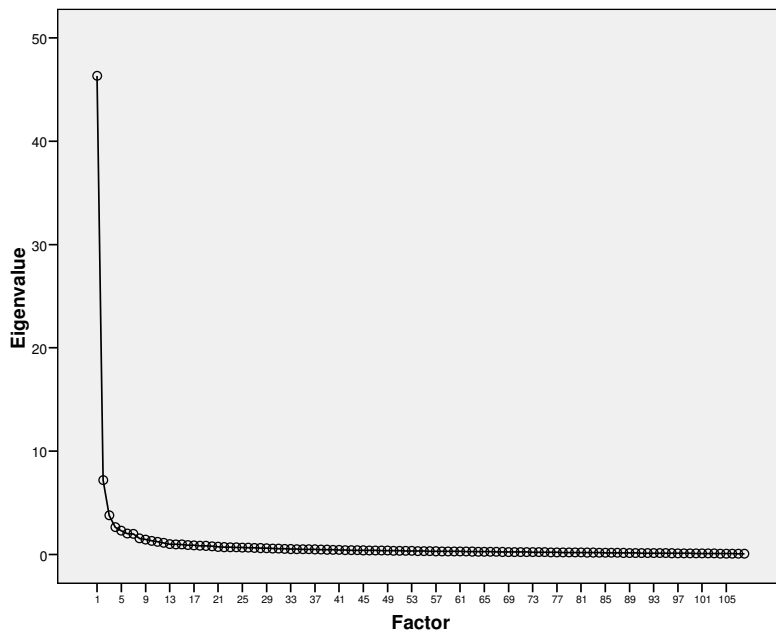


Figure 7.3 Factors on Catell’s Scree Test

Of the 108 items, 35 items loaded significantly on Factor 1 (eigenvalue of 46.33 accounting for 42.90% of the variance), 27 loaded significantly on Factor 2 (eigenvalue of 7.20 accounting for 6.67% of the variance), 12 items loaded significantly on Factor 3 (eigenvalue of 3.79 accounting for 3.51% of the variance), 9 items loaded significantly on Factor 4 (eigenvalue of 2.65 accounting for 2.45% of the variance), and 8 items loaded significantly on Factor 5 (eigenvalue of 2.30 accounting for 2.14% of the variance). The first five factors accounted for 57.65% of the cumulative variance. Of the 108 items, 91 items (84.25%) loaded on the first five factors. No items loaded on more than one factor.

Refer to Appendix 7.6 for a list of item numbers in each of the first five factors. Refer to Appendix 7.7 for a list of item descriptions in each factor. Refer to Appendix 7.8 for a list of items not loaded onto any factor, that is, items with <.4 correlation.

Factor One consisted of items describing awareness of others, empathy, emotion, perspective taking, getting along with others, and gentleness. These items

were all Planning items which related to social interaction. For example, *“dealing with somebody else’s anger appropriately by not getting angry him/her self”* (P38), *“negotiate, be willing to give and take in order to compromise”* (P39), *“be supportive of other people’s feelings”* (P32), and *“cooperate”* (P33). Cognitive strategies hypothesised to link with these items were the ability to perceive what was happening internally and externally and to generate and calibrate a response to others which aligned with social expectations. This factor is referred to as “Social interaction”.

Factor Two also consisted of Planning items describing goal setting and strategy use for generating alternative responses, evaluating, and problem solving. For example, *“question if there are better or different ways to do an activity, question own performance as the activity progresses”* (P23), *“figure out problems which might get in the way or hinder ability to do an activity”* (P20), *“plan the next step in an activity, or plan a sequence of steps in an activity so that the activity flows”* (P17), and *“anticipate consequences”* (P18). Cognitive capacities that were hypothesised to link with these items were the ability to identify salient information in a situation, identify problems, and to purposefully plan a best response. This factor is referred to as “Goal setting and problem solving”.

Factor Three consisted of Doing and Attention items describing the use of focused attention, organisation, motivation and perseverance in the context of managing time. For example, *“get started on an activity within an appropriate amount of time”* (D1), *“recommence activity after there has been an interruption”* (D3) *“stay focused long enough to complete an activity or for the time required by the activity”* (A10), and *“persevere, keep going and try hard when obstacles arise or when effort is required”* (D9). Cognitive strategies hypothesised to link with these items were the ability to be aware of what is needed to be ready, and to know what

“finished” looks like relative to performance expectations of the activity, and cognitive effort. This factor is referred to as “Managing time and effort”

Factor Four consisted of Recall items describing understanding, remembering and following steps in an activity, rules and procedures. For example, “*remember all of the steps which are required in order to finish a familiar and known activity*” (R9), “*follow instructions directed to the child*” (R5), “*know where things should be done*” (R2), and “*remember to bring required materials*” (R10). Cognitive strategies hypothesised to link with these items implied memory for facts, schemes and sequences. This factor is referred to as “Remembering rules and procedures”.

Factor Five consisted of Attention and Planning items describing looking and listening and being “ready” for engagement in activities with others. For example, “listen until an instruction is finished” (A3), “control being fidgety” (P41), “sit at seat for length of activity” (A4), and “control talkativeness” (P40). Cognitive strategies hypothesised to link with these items were modulating attention in order to maintain focus sufficient to participate. This factor is referred to as “Getting ready”.

7.4.4 Summary of Part C: Research question 7c

Factor analysis of the PRPP@SCHOOL-1(TQ & PQ) identified five main factors underpinning strategy use for students with learning difficulties during participation in activities at school and home. This may indicate possible multidimensionality of the construct addressed in this instrument.

7.5 PART D: INTERNAL CONSISTENCY

This part of the study addressed internal consistency in response to research question 7d:

Is there a significant relationship between items within factors or categories which supports the use of item grouping in the PRPP@SCHOOL-1(TQ & PQ)?

7.5.1 Methods

7.5.1.1 Research design and rationale

In this phase of exploratory research, internal consistency was examined using a quantitative approach involving Cronbach's alpha, a measure of the average correlations among all items (Cronbach, 1951; Polgar & Thomas, 2008). Internal consistency is a property of the scores of a test for a particular sample of people and is not a fixed property of a scale (Streiner, 2003). In this part of the study, the overall purpose of statistical analysis was to determine if the PRPP@SCHOOL-1(TQ & PQ) consisted of items that sampled the entire domain of cognitive strategy use, and did not include items that tapped other abilities or constructs (Streiner, 2003). A high degree of internal consistency is desired because it "speaks directly to the ability of the clinician or the researcher to interpret the composite score as a reflection of the test's items" (Henson, 2001, p. 178).

7.5.1.2 Sample

The sample used for internal consistency was the same as in the previous section [7.5.1.2] (Refer to 5.3.2 for a detailed explanation of the sample).

7.5.1.3 Data collection and recruitment procedures

Data collection and recruitment procedures for students were the same as those described in 5.3.3.

7.5.2 Data analysis

Data on the PRPP@SCHOOL-1(TQ & PQ) were examined using Cronbach's alpha. The five-point rating scale data were collapsed into dichotomous responses for this analysis:

(a) "*never or seldom displays this behaviour*" (rating scale categories "1" and "2") indicating the hypothesised presence of strategy use errors and thereby a need for occupational therapy intervention, and

(b) "*occasionally, frequently or always displays this behaviour*" (rating scale categories "3", "4", and "5") indicating no need for occupational therapy intervention.

Transforming responses into dichotomous data for the Cronbach's alpha was conducted in the same manner and for the same reasons as described in 5.9. Use of dichotomous data for Cronbach's alpha is identical to the Kuder-Richardson-20 formula of reliability for sum scores. Dichotomising data using clinical descriptions maintained authenticity with the clinical purpose of questionnaire development, and allowed cross tabulation of response frequencies using a 2x2 cross tabulation matrix. Cronbach's alpha was calculated on items grouped into (a) five individual factors identified through factor analysis, (b) four individual categories of the PRPP@SCHOOL-1(TQ & PQ), (c) combined factors, and (d) combined categories i.e., the whole instrument. Item sets which were highly correlated were determined to be internally consistent (Cronbach, 1971).

Interpretation of Cronbach's alpha is concerned with the direction of the correlation (-1 to 1), the magnitude of the correlation, and the significance of the

correlation. Conventionally, an alpha score between 0.70 and 0.90 is considered reliable for research purposes with a score $>.80$ determined as significant in order to demonstrate internal consistency (Bland & Altman, 1997; Streiner & Norman, 2003). While Cronbach's alpha is the most commonly used procedure to test internal consistency data there are issues which need to be considered with its use and application (Spiliotopoulou, 2009).

If the alpha score is negative Streiner (2003) argues this may indicate serious problems with the construction of a scale possibly related to "the variability of the individual items exceeding their shared variance, which may occur when items are tapping a variety of different constructs" (p.102).

Streiner (2003) suggests that an alpha score $>.90$ is too high. Reasons for an excessively high alpha score include one or more of the following reasons

- *Heterogeneity of sample.* The more heterogeneous the sample, then the larger the variance of the total scores and the higher the reliability (Streiner, 2003)
- *Number of items.* Cronbach's alpha could be substantial if the scale has enough items. Although alpha is a prerequisite for internal consistency, it does not assure internal consistency. A long multidimensional scale will also have high alpha scores. Cronbach's alpha increases with the number of items resulting in scales which have more than 14 items naturally attracting a Cronbach's alpha of 0.70 or higher (Spiliotopoulou, 2009; Voss, Stem, & Fotopoulos, 2000). The longer the scale the more homogenous it will appear simply because there are more items (Portney & Watkins, 2009).

- *Number of response options.* Scales which have over four response options have been found to have a greater variance which probably increases alpha (Voss, et al., 2000).

Therefore, higher values can reflect unnecessary replication of content across items and point more to redundancy than homogeneity and a desirable level of internal consistency (Streiner, 2003).

7.5.3 Results

Internal consistency measures in this study using Cronbach's alpha suggested high correlations between all items at the individual factor and category level and at the combined factor and category level. (Refer to Table 7.12). However, as discussed previously, Cronbach's alpha is affected by sample heterogeneity, number of items, and number of response options. Therefore these very high scores could be indicating redundancy of certain items within the scale rather than internal consistency.

Alternatively, the high scores could be reflecting the fact that the scale is quite long with 108 items.

Table 7.12 Cronbach's alpha scores for factors from factor analysis and categories in PRPP@SCHOOL-1(TQ & PQ)

Factor	Number of items	Cronbach's alpha	Category	Number of items	Cronbach's alpha
Social fitting in	35	.98	Attention	17	.94
Goal setting and strategy use for problem solving	27	.98	Recall	37	.97
Managing time and effort	12	.93	Planning	45	.98
Remembering rules and procedures	9	.92	Doing	9	.89
Getting ready	8	.89	Total (1-4)	108	.99
Total (1-5)	91	.99			

7.5.4 Summary of Part D: Research question 7d

The results of Cronbach's alpha indicate high correlations among all items. This finding needs to be interpreted with caution and may lend further support to the deletion of multiple items that conceptually appear to measure the same strategy use behaviour.

7.6 SUMMARY OF FINDINGS OF THE CHAPTER AS A WHOLE

The analysis and findings set out in this chapter focused on examining the validity of the PRPP@SCHOOL-1(TQ & PQ) and addressed the following research question:

How valid is the PRPP@SCHOOL-1(TQ & PQ) when measuring cognitive strategy use by students during participation in school occupations?

In relation to the subsequent research sub-questions, the following findings emerged.

Finding 7.6.1

The outcome of consumer review, peer review, panel of experts evaluation of the PRPP@SCHOOL-1(TQ & PQ) indicated the instrument to have good content validity, and theoretical alignment with the planned companion instrument, the PRPP System of Task Analysis.

Finding 7.6.2

The PRPP@SCHOOL-1(TQ & PQ) discriminated between students who had learning and participation difficulties at school, and those that did not.

Finding 7.6.3

Data from factor analysis identified five main factors regarding the nature of reduced strategy use for students with learning and participation difficulties. These patterns demonstrate the potential for further development of construct validity supporting this instrument and the concept of cognition as it may apply to participation at school.

Finding 7.6.4

There are high correlations among all items on the measure, which requires further investigation.

7.7 Outcome

The final outcome of this chapter was the creation of Version 2 of the PRPP@SCHOOL (TQ & PQ), as a result of item deletion and refinement.

Details of the data analysis, from cross-tabulations, factor analysis and occupational therapist peer review, which contributed towards refinement of items is located in Appendix 7.9.

The rationale for retaining, collapsing, rewording, moving to a different section of the questionnaire or removing items as part of the development of PRPP@SCHOOL-2(TQ & PQ) is located in Appendix 7.10.

The list of items which are retained, collapsed, reworded, moved to a different section of the questionnaire or removed is located in Appendix 7.11.

A draft PRPP@SCHOOL-2(TQ & PQ), based on findings from this thesis, is located in Appendix 7.12. A discussion of these results is contained in the following chapter, Section 8.3.5.

CHAPTER EIGHT

DISCUSSION AND CONCLUSION

The purpose of this final chapter is to view the research as a whole in order to determine the significance of the findings for paediatric occupational therapy practice. Initially, an overview is presented restating the purpose, methods and outcomes of each research phase. The major findings of the overall research are then discussed relative to current literature and clinical practice (Refer to Figure 8.1). Next, the research limitations are reviewed followed by the theoretical, clinical, empirical and methodological significance of the research. Recommendations for future research and practice are finally outlined.

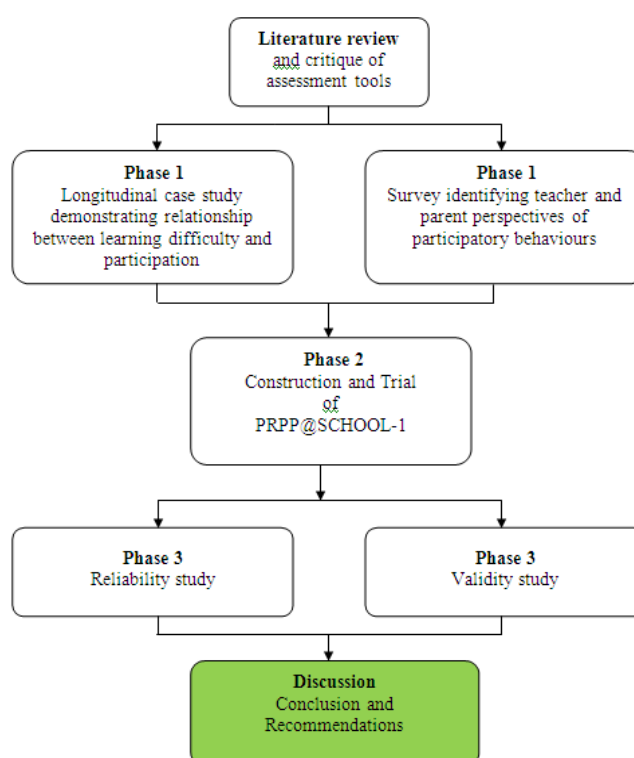


Figure 8.1 Flow chart of phases in the research displaying the relation of this chapter to the thesis as a whole

8.1 OVERVIEW

This research was stimulated by my experience working in clinic and school contexts with primary school students who experienced difficulty with learning, difficulty participating in work routines in the classroom and at home, and in social interactions. Inefficient use of cognitive strategies appeared to underpin both learning and participation difficulty. Learning and participation literature provided minimal information about the specific cognitive strategies required for successful participation by students in school activities and home-based school activities.

Teachers, parents and occupational therapy co-workers communicated a need for an occupational therapy assessment for use with students with learning difficulties which could pin-point difficulties with participation across a range of academic and social school activities. Clear links between assessment outcomes and inclusive programming were desired. Many of the available clinical instruments used by occupational therapists generated findings that lacked direct application to everyday performance of students in their natural school context. Teacher and parent questionnaires, suitable for gathering observations about student participation in the “real world” of the classroom and playground, were not available to support the total therapy assessment process, and to guide intervention.

In response to this clinical problem, the purpose of my research was twofold: (a) to explore the relationship between the use of cognitive strategies by students with learning difficulties and school participation, and (b) to investigate the potential of existing instruments to describe and measure cognitive strategy use by students during participation in school and home-based school activities, and (c) to develop a measure to describe and measure cognitive strategy use in this context if none existed. A literature review was conducted to explore and discover connections between six key

concepts, participation, school occupations, context, cognitive strategy use, perspectives and expectations of teachers and parents, and assessment.

Participation was described as a multifaceted phenomenon which could only be evaluated against the contextual criteria set by people within the participation relationship. Participation was defined as purposeful and meaningful cognitive engagement during occupational performance across all academic and social activities to the expectations of teachers, parents and students. Meaning in the context of participation necessitated a desire to participate, opportunity to participate and the capacity to participate in the occupations and roles expected of students in the classroom and playground.

The ecology of school was found to be a critical element of participation. Subsequently, any description or measure of a student's school performance conducted *out of context* could be considered artificial. For this reason, it was suggested that assessment of a student's participation should consider the context in which participation occurs and the expectation of participation partners: teachers, peers and parents.

The literature review confirmed that situated learning at school necessitates not only cognition per se, but also the ability to apply cognitive strategies purposefully in situations of participation. Strategies used by typical children were found to be numerous and flexible. Students with learning difficulties appeared to have a minimal repertoire of strategies, infrequent application of strategies, and inefficient execution of strategies. It was proposed that, because of their participatory relationship with students, teachers and parents are uniquely positioned to observe and document the effectiveness of the strategies that students use in school and home-based school activities.

The literature review examined 14 psychological, educational and occupational therapy instruments, purported to be (a) developed or adapted for use with primary school students with learning difficulties, (b) suitable to use as a measure of participation, and (c) observational in nature. Of these, the Perceive, Recall, Plan, and Perform System of Task Analysis was selected as a promising tool on which to base the development of a teacher and parent questionnaire. The research question which was refined from the literature review was, *“How can cognitive aspects of student participation during school occupations be assessed?”* Three research phases were structured to address this research question, each with its own sub-questions.

8.1.1 Research Phase One

The research sub-question which guided Phase One of the research was, *“Which cognitive strategies support the participation of school students with and without learning difficulties in classroom and playground occupations from the perspectives of teachers, parents and students?”* A longitudinal retrospective case study involving non participant observation (video-recording), participant observation (note-taking), chart review, narratives, questionnaires and interviews was used to explore the participation of one student over 13 years. This phase also used a survey to identify core elements of participation in class work commonly perceived as critical by 50 teachers and 41 parents. Descriptions of participation provided by respondents were used as the basis for item selection in the development of a teacher and parent questionnaire, PRPP@SCHOOL-1(TQ & PQ).

8.1.2 Research Phase Two

The research sub-question which guided Phase Two of the research was, “*What inefficiencies in students’ capacities to use cognitive strategies during participation in school occupations are identified by teachers and parents using the PRPP@SCHOOL-1 Teacher and Parent Questionnaire?*” This phase involved the construction and trial of the new teacher and parent questionnaire, PRPP@SCHOOL-1 (TQ & PQ), an observational measure of cognitive strategy use during participation in school and home-based school activities. The design of the PRPP@SCHOOL-1(TQ & PQ) was guided by accepted principles of questionnaire construction. Frequency of observed behaviour was selected as the scale of measurement. In this research, observation of infrequent performance was hypothesised to infer persistent difficulty with nominated strategies that teachers and parents had described as critical for participation in all school activities. Of the many descriptions of cognitive strategy use generated by teachers and parents in Phase One of the research, 108 were selected by the researcher and constructed into four item categories, named Attention, Recall, Planning and Doing.

In Phase Two of the research, inefficiencies in students’ capacities to consistently use cognitive strategies were further explored by analysing data collected from 355 students enrolled in Kindergarten to Year Six across 40 Department of Education and Training schools, 16 Catholic Education System schools, and 11 Independent schools in Greater Western Sydney.

Combined teacher and parent ratings indicated that a large number of students in the sample demonstrated infrequent use of effective cognitive strategies. Items which were reported to be used most infrequently were items within the Planning category. There was moderate agreement between teacher and parent ratings of

perceived students' difficulties in school and home-based school activities, indicating context to be a possible confounding variable, and supporting the need for both a teacher and parent questionnaire.

Between groups analysis of variance (ANOVA) conducted on separate teacher and parent ratings indicated no significant differences in cognitive strategy use by students according to year enrolled at school, but boys used effective cognitive strategies less frequently than girls.

8.1.3 Research Phase Three

The research sub-question which guided Phase Three of the research was, *How reliable and valid is the PRPP@SCHOOL-1 when measuring cognitive strategy use by students during participation in school occupations?* Test-retest reliability was conducted on PRPP@SCHOOL-1 (PQ). Data were collected from 51 parents who were parents of students receiving an initial block of intervention or follow up intervention. Intraclass correlations indicated excellent reliability with a high level of agreement between parent questionnaire scores for Time 1 and Time 2.

Validity was tested to determine the ability of individual items in the PRPP@SCHOOL-1(TQ & PQ), and the questionnaire as a whole, to measure attributes of cognitive strategy use in school and home-based school activities for students with learning difficulties. Content validity was assessed by means of a consumer review by (a) the first 50 teachers and 50 parents to be administered the PRPP@SCHOOL-1(TQ & PQ), (b) peer review by six occupational therapists who used the PRPP@SCHOOL-1(TQ & PQ) as part of a comprehensive occupational therapy assessment, and (c) expert panel review by three occupational therapists who were researchers with expertise in the area of cognitive strategy use. Findings

indicated that the PRPP@SCHOOL-1(TQ & PQ) items displayed content coverage and relevance to the concept of cognitive strategy use during participation in school and home-based school activities. Data provided by the peer review and expert panel contributed to item refinement in the PRPP@SCHOOL-1(TQ & PQ) and the initial development of a second version of the instrument, PRPP@SCHOOL-2(TQ & PQ).

Discriminant validity was addressed by comparing results from the PRPP@SCHOOL-1(TQ & PQ) administered to 355 students with learning difficulties and 71 typically developing students recruited by convenience sampling. Results of analysis demonstrated a statistically significant difference in all category and total mean scores, indicating that the PRPP@SCHOOL-1(TQ & PQ) is able to differentiate between typically developing students and students with learning difficulties.

Construct validity was addressed using factor analysis on the same group of 355 students with learning difficulties. Five factors which accounted for 84.25% of the cumulative variance emerged from the analysis. These factors were labelled “Social interaction”, “Goal setting and strategy use for problem solving”, “Managing time and effort”, “Remembering rules and procedures” and “Getting ready”. Overall, factor analysis demonstrated that the PRPP@SCHOOL-1(TQ & PQ) was functioning as a multidimensional measure.

Examination of internal consistency indicated high correlations among all items however these findings need to be interpreted with caution due to possible sample heterogeneity, number of items, and number of response items still remaining in the PRPP@SCHOOL(TQ & PQ) measure.

8.2 DISCUSSION OF FINDINGS

This section presents a discussion of the major findings of the research listed below.

- Participation difficulties are pervasive, persistent and escalating across academic and social domains.
- Teachers and parents associate difficulties in school participation with a student's capacity to apply cognitive strategies in situ.
- PRPP@SCHOOL-1(TQ & PQ) demonstrates measurement viability.
- PRPP@SCHOOL-1(PQ) demonstrates stability over time.
- PRPP@SCHOOL-1(PQ & TQ) demonstrates validity.

8.2.1 Difficulties with participation in school activities are pervasive, persistent and escalating across academic and social domains

The first major finding from the case study indicated that the impact of a learning difficulty on participation in activity with others was immense, involving pervasive, persistent and escalating difficulties across academic and social domains over many years. Although occupational therapy service delivery contributed to positive changes to Tim's ability to participate in school life, he was unable to maintain a high level of participation, with difficulties reappearing in successive school years.

This finding is consistent with recent discussion in education literature regarding the pervasive nature of participation difficulties at school (Conroy, Sutherland, Haydon, Stormont, & Harmon, 2009). The findings of the case study were consistent with evidence indicating that although learning difficulty has a broad impact in every functional context of life experience and outcomes, problems with

participation are particularly evident within the highly social school context, where participatory skills are required for social and academic survival (Raskind et al, 1999).

The findings of the case study also supported the notion that learning difficulty does not disappear over time but ranges in expression, with peaks of progress and troughs of severity, at different stages. Children with learning difficulties typically experience a rapidly developing discrepancy between expectations of their environment and their performance in the classroom and the playground in the early years of school resulting in referral to therapy services (Norwich & Kelly, 2005). Tim's participation was characterised by overwhelming and unhappy experiences despite the presence of a supportive family and school structure, physical and intellectual assistance at school, confidence in his own abilities and application of effort. His ability to engage with others in academic and social activity remained fragile throughout the recorded period of his school life. Tim's occupational therapy and educational history indicated that the core problems with school participation observed in Year 10 were described similarly to those observed in Preschool, only broader and more complex. Tim's core difficulties were not 'fixed' by therapy and would potentially pose lifelong challenges for him and his family.

Recent perspectives on learning at school clearly define learning as a social process, based on children's shared experiences of learning with others (Wight & Chapparo, 2008). In addition, the ability to successfully participate in shared learning is associated more with children's social cognition, confidence, and application of effort, than with physical capacity and physical approximation to others. Clearly, Tim's difficulty with participation was dependent upon a range of skills which traditional diagnostic labels assigned to him over time, did not explicate.

A major concern arising out of the longitudinal study was the capacity of traditional assessments and clinical labels to identify the realities of contextual performance. Issues arising from Tim's history included the tendency of assessments to focus on a single aspect of performance, insensitivity to performance in naturalistic contexts, failure to take a long term and predictive perspective, reliance on the false importance of objectivity, and limited links between formal assessment and intervention (Larkin & Cermak, 2002). These problems are exacerbated for students with learning difficulties because there is no single or simple solution to complex and pervasive problems of participation (Bishop, 2004). Assessment focusing on the participation of students with a learning difficulty requires a multifaceted analysis of both the context and the child's capacity to meet contextual expectations (Raskind, et al., 1999). This case study highlighted the need for assessment development focusing on those aspects of the child, task and context which were critical for successful participation.

8.2.2 Difficulties with participation in school activities is associated with the capacity to apply cognitive strategies during task performance

Findings from the case study, the survey and the trial of the PRPP@SCHOOL-1(TQ and PQ) indicated that difficulties with students' ability to use cognitive strategies impeded their participation in school occupations. This problem is reflected in other studies which identify that children with learning difficulties have inefficient cognitive strategy use across all academic domains (Geary, Hamson, & Hoard, 2000; Rodriguez, Jarvelin, Obel, Taanila & Miettunen, 2007; Swanson & Sachse-Lee, 2001; Swanson, 1993). This finding is supported by information processing theory which suggests that successful performance requires

the application and integration of numerous cognitive strategies including attending to and perceiving sensory information, storing, recalling and retrieving information from memory stores, planning, evaluating and problem solving in salient situations, and monitoring and adjusting performance with the use of feedback mechanisms (Chapparo and Ranka, 2005; Lerner, 2000; Toggia, 2005)

The ability to attend during activities was one set of strategies with which students made constant errors. Strategic use of attention is one of the cognitive processes integral to effective information processing and is reported to assert a *gatekeeper* role at the input or acquisition information stage by regulating and organising internal and external stimuli (Finneran, Francis, & Leonard, 2009; Sterr, 2004). Attention has been defined as “a state of awareness in which the senses are focussed selectively on aspects of the environment and the central nervous system is in a state of readiness to respond to stimuli” (VandenBos, 2007, p. 82). For the students in this research, attention strategies were critical for participation in all school activities. This finding is consistent with studies which have explored the impact of attention while controlling for other factors (Dobbs, Doctoroff, Fisher, & Arnold, 2006; Fuchs, Fuchs, Compton, Powell & Seethaler, 2006; Rabiner, Malone, & Conduct Problems Research Group, 2004; Rodriguez, et al., 2007). In fact, problems with attention strategies are one of the strongest predictors of unsuccessful participation in school tasks, and the widening performance gap as the demands for sustained attention increase over successive school years (Rabiner, et al., 2004; Richards, Samuels, Turnure, & Ysseldyke, 1990; Sterr, 2004).

Memory, specifically recall is critical for participation at school in ways that have not traditionally been the focus of research (Benson, 2010; Josman, 2005; Eysenck & Keane, 2005). An increasing number of researchers argue for memory

phenomena to be studied in naturalistic settings. Neisser (1996) suggests that a crucial difference exists between memory as observed in traditional clinic settings and memory in everyday life. He proposes that while the motivation for memory in clinic settings is the desire for accuracy, the basis for memory in natural settings is remembering for “purposeful action” as influenced by situational demands (p.204). Although most memory research has been on retrospective memory (Eysenck & Keane, 2005) the study of prospective memory is of relevance to the findings of this current research. Prospective memory involves applying cognitive recall strategies to carry out intended actions. It is an ability which is “at the heart of competent behaviour in everyday life” (Burgess, Quayle & Frith, 2001).

The capacity to plan activities purposefully was the cognitive area which teachers and parents reported to be most problematic for students in the research. Other researchers have also found that being organised with materials and for classroom routines, being able to prioritise steps, problem solve and plan writing tasks are all behaviours reported to be difficult for students with learning difficulties in the classroom (McMullen, Shippen, & Dangel, 2007). Home based school activities appear to be equally vulnerable to poor planning, as found in this research. Homework, a school related organisation driven task, has been identified as a problem for 56% of students with learning difficulties, double the percentage for typical students (Bryan & Burstein, 2004). Errors in making inference, problem solving and decision making because of inefficient, limited and inflexible strategy use are all characteristic of students with learning difficulties (Fulmer, 1998). Students in the research demonstrated cognitive strategy use difficulties consistent with executive control or supervisory attention dysfunction (Baddeley, 2002a; Norman and Shallice, 1986). Metacognitive strategies such as planning and problem solving, modulating

and switching attention between task components, monitoring information and readjusting responses are necessary for maintenance and generalisation of acquired skills and for application of learned skills to new and unfamiliar situations (Missiuna, Mandich, Polatajko & Malloy-Miller, 2001; Miyake et al, 2000);

The findings in the current research are consistent with previous research using the PRPP System of Task Analysis research, in which planning strategies have been identified as one of the most complex areas of cognitive strategy use for people with compromised information processing function (Aubin et al, 2008; Fordham, 2001; Fry & O'Brien 2002; Nott & Chapparo 2008; Pulis, 2002; Still et al, 2002).

8.2.3 PRPP@SCHOOL-1 (TQ & PQ) demonstrates measurement viability

The findings suggested that the PRPP@SCHOOL-1 is a viable tool for measuring cognitive strategy use during participation in school occupations. Viability was concerned with the capacity of the instrument to identify the (a) frequency of ineffective strategy use by students during participation in these occupations at an item level, (b) differences in strategy use according to year enrolled at school at a category level, and (c) differences in strategy use according to gender at a category level and (d) extent of agreement between teacher and parent observations of the frequency of students' expected use of cognitive strategies during participation in school and home-based school occupations. Teachers and parents could discriminate consistently. They broadly agreed but with detailed differences. There were no differences with year enrolled at school but expected differences with gender were observed. Data analysis indicated a good range of "never" or "seldom" ratings on items. This suggested ability to identify cognitive strategy difficulties that require clinical intervention.

Teachers and parents confirmed the instrument covered relevant depth and breadth of content. Questionnaires were typically returned for all students. The high response rate was possibly the result of a combination of factors including (a) questionnaires being used in the first instance for clinical purposes, (b) the majority of referrals for assessment being generated by classroom teachers, and (c) the content of PRPP@SCHOOL-1(TQ & PQ) being acknowledged by teachers as addressing abilities required for school curriculum content. In reporting that the questionnaire had stimulated their thinking about the student in a new and different way, teachers indicated this thinking had caused them to consider different programming strategies. Likewise, parents indicated that completing the instrument helped them to better understand the reasons for their child's participation difficulties.

Teachers and parents also positively acknowledged that occupational therapists, as a profession, were actively seeking data from key informants of the participation relationship and not relying on traditional measures. These respondents also indicated appreciation that their observations were included in data collection and reporting. Comments such as these from teachers and parents were to be expected by the researcher because of the strong foundation of teacher-parent-therapist partnership on which the researcher's workplace was established. However the comments are consistent with reports in the literature acknowledging the value of consultation and collaboration, and the need for occupational therapists to proactively and sensitively connect with teachers and parents in a way which is meaningful and relevant to the school context (Collins & Crabb, 2010; Villeneuve, 2009; Vincent, Stewart, & Harrison, 2008).

PRPP@SCHOOL-1(TQ & PQ) demonstrated ease of use by both teachers and parents with most respondents being able to answer all the items and only a few

respondents occasionally using “*item not expected for activity participation*” or “*respondent not sure*” options for some items. The results suggested that it was possible to capture behaviours reflecting cognitive strategy use, that teachers and parents did not require specialised training to acquire requisite skills for observation and reporting, that teachers and parents were able to observe student use of cognitive strategies, and were able to match their observations to the item wording used in the PRPP@SCHOOL-1(TQ & PQ). These results indicated that the item content in the questionnaires was meaningful to the respondents. The results were not “*random noise*” implying that teachers and parents were able to make responses which discriminated between children. These results support previous research literature identifying teachers and parents as sound informants of cognitive strategy use by students (Gioia, Isquith, Guy, & Kenworthy, 2000; McCarney & Arthaud, 2007).

Both teachers (70%) and parents (60%) identified “*dividing attention to multitask*” (A13) as the cognitive strategy students performed least frequently across school and home contexts. This mirrors research that describes difficulties with multitasking which may result from a very minor reduction in information processing capacity. Multitasking is the simultaneous execution of several tasks by interleaving (Burgess, 2000). The information processing system has a self-limiting capacity. Every individual task consumes information storage and processing and as more tasks are commenced, the information processing system typically slows down and becomes less efficient (Rubinstein, Meyer, & Evans, 2001). Multitasking appears to be an all-encompassing or global behaviour comprising the application of a number of underlying cognitive processes including retrospective memory, prospective memory and planning (Burgess, Veitch, de Lacy Costello, & Shallice, 2000). Global items have been identified by researchers as useful for overall classification of behaviour

while specific and more narrow items are considered by clinicians to be more prescriptive and to demonstrate increased clinical utility (Gresham, Noell, & Elliott, 1996; Ruffalo & Elliott, 1997).

While there was moderate agreement between teachers and parents there were also differences. Differences related to the order of frequency reflecting different expectations, demands and priorities of school and home contexts. This was an encouraging outcome as different perspectives and motivations should be expected. PRPP@SCHOOL-1(TQ & PQ) teacher and parent ratings should not be identical. Had observations by teacher and parents been identical the results may have been mirroring shared social stereotypes rather than actual observations. This outcome is reflected in a large body of literature which has reported low to moderate agreement between teacher and parent ratings of student behaviours on many measures (Hinshaw, Han, Erhardt, & Huber, 1992; McConaughy, Stanger, & Achenbach, 1992; Merydith, 2001; Ruffalo & Elliott, 1997). Eighty eight per cent of teacher percentages were higher than the parent percentages of students who seldom or never demonstrated use of cognitive strategies expected. On the other hand, items including “*managing change without frustration*”(P28), “*remembering to bring required equipment to school*”(R10), “*accepting consequences*”(P8), and “*managing anxiety*”(R24) were all reported by parents with a much higher frequency than teachers. It may be more important in a classroom of 20 to 30 persons for students to attend to contextual cues, “*focus regardless of motivation or interest*”(A7) and search for pertinent information, “*focus on important detail*”(A12), examples of items which were rated more highly by teachers.

The results suggested different expectations, challenges, demands and priorities between home and school contexts and highlighted the importance of

cognitive strategy use for participation in “*school work*”. The results in this study confirmed the need to gather data from both teachers and parents in order to better understand the phenomena of cognitive strategy use for participation across occupational performance areas (McCandless & O’Laughlin, 2007).

In comparison to the representation of items in the PRPP@SCHOOL-1(TQ & PQ) as a whole, Planning category comprised a much higher representation of items across both rating scales, Attention category comprised a level representation of items while Recall and Doing categories comprised a much lower representation. The findings indicated teachers and parents both perceived elements such as the ability to map out a plan, “*plan sequence of steps in a task*” (P17), programme strategies to be implemented, “*choose best strategy*”(P25), and evaluate/make judgements about performance, “*identify why an activity is, is not, successful*”(P21) to be important but observed infrequently in certain students. The implication that planning strategies are crucial for participation is consistent with previous PRPP research conducted with students displaying academic learning and social competence difficulties and students displaying typically developing skills (Fordham, 2001; Nott & Chapparo, 2008; Pulis, 2002; Wight & Chapparo, 2008). The reason for this phenomenon may be the high order executive functions required for response planning and programming during participation in all everyday activities (Anderson, 2008; Ylvisaker & Feeney, 2008; Zingerevich & LaVesser, 2009).

Teachers and parents had identified in Phase One of the research that students needed to apply cognitive strategies to participation in particular activities for specific amounts of time in order for participation to be successful. The research results indicated that most students could use the expected strategies but could not apply these strategies with sufficient or consistent frequency. There is no prior empirical

data to link frequency of performance with difficulty of performance. The study has thus far highlighted the links teachers and parents have made between frequency of observations and level of difficulty. In the clinical context, the researcher's experience is that occupational therapists also tend to hypothesise that a low frequency rate of performance indicates a high level of difficulty. While that could have been the situation in this data analysis, there may be several other explanations, apart from cognitive strategy use which need to be investigated. Elements for consideration in association with low level of frequency include external elements such as lack of exposure, teaching, or opportunity and internal elements including motivation, interest, energy, discipline, or emotion. The hypothesis that infrequent demonstration of cognitive strategy use has a direct link with level of difficulty is an area for future investigation.

No differences were found in PRPP@SCHOOL-1(TQ & PQ) ratings according to year enrolled at school. Observations by teachers and parents of infrequent strategy use during participation in school and school-related occupations in Kindergarten were still present in Year Six. The ongoing, and consistent nature, of these behaviours from preschool through adolescence into adulthood is emerging in the literature (Chandler, 2007; Haynes, 2003; LeCompte, 1978; Raskind, Gerber, Goldberg, Higgins, & Herman, 1998; Reynolds & Horton, 2008) and resonates with the clinical experiences of the researcher.

Significant differences were found in PRPP@SCHOOL-1(TQ & PQ) ratings according to gender. Teachers and parents identified significant differences between boys and girls across Attention, Recall, and Planning categories with a trend towards significant differences in the Doing category. A higher percentage of boys were represented in the "*seldom*" or "*never*" frequency ratings suggesting that girls may

have been able to use cognitive strategies more efficiently than boys. The literature supports gender differences in participation and performance of academics between girls and boys at school (Frydenberg, Ainley, & Russell, 2005; Miceli, Bonino, Ciairano, & Cognitie, 2006). The gender distribution in the general school population within NSW government schools has consistently averaged 51% boys and 49% girls (DET, 2007) however boys receive education support more frequently than girls (Bleuer & Walz, 2002; Deed, 2008). Debate continues as to the reasons for these differences (Deed, 2008; Gurian, Henley, & Trueman, 2001; Gurian & Stevens, 2005; Mead, 2006). The results from this data analysis suggest that some differences could be accounted for by frequency of cognitive strategy use or the match between student gender, student cognitive strategy use capacities and teacher/parent expectations. These findings are consistent with the experiences of the researcher's clinical practice in which 87% of students referred for assessment of participation difficulties are boys.

8.2.4 PRPP@SCHOOL-1(PQ) demonstrates stability over time

Findings from Chapter Six indicated that parents could rate the cognitive strategy use of their children using the PRPP@SCHOOL-1(PQ) with a high degree of consistency. This indicates the instrument has temporal stability and is a reliable measure of cognitive strategy use by students during participation in school and school-related activities. It also indicates that temporal stability has a stronger influence on scores than extraneous influences (Stagnitti, 2002). Examples of extraneous influences considered during this phase of the study included respondent fatigue, emotional status and physical health. Results obtained during the study were comparable to other test-retest research using the PRPP System of Task Analysis on

students with learning difficulties and adults with acquired brain injury (Fordham, 2001; Munkhetvit, 2005; Nott, Chapparo, & Heard, 2009; Pulis, 2002).

The stability of the PRPP@SCHOOL-1(PQ) was supported by several factors. First, features of the instrument including item selection, administration procedures, item wording, and category labelling contributed to ensuring reliability. Second, PRPP@SCHOOL-1(PQ & TQ) was developed within the school culture for which it was intended, with the purpose being for item content and phrasing to match how strategy use during school participation was initially identified by teachers and parents in the surveys. Streiner and Norman (2003) argue that reliability is not a permanent, inherent property of a questionnaire, rather, it is the *interface* between the instrument, the specific group of respondents and the situation. Parents in the sample were generally involved in their child's occupational therapy intervention, which included informal education about strategy use and its impact on school task performance. It could be assumed therefore that there was a high degree of interface between the instrument (PQ), respondents (parents) and the situation (strategy use during home based school tasks), and that this contributed to high test-retest reliability in this sample.

Third, the test-retest interval was 14 days, an amount of time considered appropriate. However for children with persistent difficulties with learning and participation at school, 14 days is a relatively short period of time, and may have influenced scores, thereby inflating reliability. Finally, the PRPP@SCHOOL-1(PQ) contained a large number of items. Reliability scores can be associated with length of test, with reliability being increased for longer tests (Streiner & Norman, 2003). In terms of statistical theory, it is stated that whenever the "test items are not perfectly correlated, the true variance will increase as the square of the number of items,

whereas the error variance will increase only as the number of items” (Streiner & Norman, 2003, p. 197). The large number of test items in this proforma version of the PRPP@SCHOOL-1(PQ) may therefore have contributed to the reliability findings.

The use of a reliable questionnaire, such as the PRPP@SCHOOL-1(PQ), is an essential foundation for paediatric occupational therapists to provide a valid evaluation of a student’s performance (Spiliotopoulou, 2009) and is especially important when a questionnaire is being considered for use as an outcome measure during intervention (Myers & Winters, 2002). Although any measurement made by parents is prone to error, reliability estimates of error in the PRPP@SCHOOL-1(PQ) suggest that occupational therapists can consider parents consistent raters of their child’s cognitive strategy use during participation in school and school related activities.

Quantifiable information provided by the PRPP@SCHOOL-1(PQ) is essential not only for evaluation but also for accountability for service provision within the school system and to other professionals involved with school students (Hammell, 2001; McLaren & Rodger, 2003). Reliability of the PRPP@SCHOOL-1(PQ) in this study indicated that parents do not need specialised training in order to observe, identify and report cognitive strategies used by their children. It must be noted, however, that parents in this part of the study have gleaned knowledge about their child’s diagnosis, difficulty and the place of cognitive strategies in everyday activity as part of their child’s therapy. Reliability values of parents who had not obtained this understanding may be lower. The instrument is able to systematically capture these observations in a way that is economical in terms of time and cost, and efficient in terms of scoring and interpreting by therapists.

8.2.5 PRPP@SCHOOL-1(PQ & TQ) demonstrates validity

The outcome of six procedures used during this research (consumer review, peer review, panel of experts, t-test, factor analysis and Cronbach's alpha) provided evidence that the PRPP@SCHOOL-1 has acceptable content validity, discriminant validity, construct validity, and internal consistency. Member checking provided evidence that the questionnaire items displayed content coverage and content relevance. A low response rate for feedback about the PRPP@SCHOOL-1 to the researcher from teachers and parents in the consumer review may have reflected a high level of satisfaction with the questionnaire content and format or may simply have reflected that respondents, in particular teachers, had many other time commitments which hindered a response to the feedback request (Hartas, 2004). In addition, consumers such as teachers and parents may have not voiced criticism in order to avoid being confrontational (Rudolph, Simon, Rivard, Dufresne, & Raemer, 2007).

While most parent respondents were female and many teacher respondents were female, the majority of students represented by the data were male. The reported gender percentages in the study are consistent with the researcher's experience. Both teacher gender and parent gender are considered mediating factors when reporting on children (Duffy, Warren, & Walsh, 2002; Waters, Doyle, Wolfe, Wright, & Wake, 2000). While the purpose of this consumer review was not to examine respondent gender, the findings do raise the question as to whether the predominance of female teachers and parents completing the PRPP@SCHOOL-1 on boys influenced the scoring. This is an area for possible future validity testing of the questionnaire.

Occupational therapy clinician's preference for experience over research evidence has been a recurring theme in the literature, with personal networks

providing a basis for clinical decision making and a low level of skill and involvement reported in evidence-based research (Humphris, Littlejohns, Victor, O'Halloran, & Peacock, 2000; McCluskey, 2003). The occupational therapist review displayed a high response rate (80%) with clinicians contributing their experience to review items in the PRPP@SCHOOL-1(TQ & PQ) and to consider those which were most critical across four school domains. Therapists were able to differentiate between cognitive strategies required for participation in individual work activities and group work activities in the classroom and between the classroom and playground. Of particular interest to this study was the ability to identify cognitive strategies required for cooperative learning, an approach adopted in many classroom settings. This setting provides a milieu for students to learn how to work together, to think critically through discussion, to problem solve and make decisions, to share and take turns (Gillies & Khan, 2009; Howe, 2009; Tarim, 2009). Validity testing indicated that the PRPP@SCHOOL-1(TQ & PQ) demonstrated the capacity to document cognitive strategy use by students across different learning contexts within the classroom.

Expert opinion review in this study was a critical procedure used to determine validity. It is essential that questionnaires used by occupational therapists are credible, reflecting occupational therapy theory (Payne, 2002). Occupational therapy experts in the area of cognitive strategy use determined that items in the PRPP@SCHOOL-1 reflected both the concept of cognitive strategy use and aligned with descriptors in the PRPP System of Task Analysis. In the preliminary stages of determining research evidence, expert opinion provides a beginning point for “best evidence” (Bennett & Bennett, 2000, p. 174). In this study, the expert panel investigated a conceptual relationship and indicated that items in the PRPP@SCHOOL were representative of cognitive strategy use in coverage (Bagner, Harwood, & Eyberg, 2006; DeVon, et al.,

2007). Expert opinion was also useful for refining the concept. Items were discussed and recommendations made to the researcher to retain, collapse, reword, move or delete items based on conceptual theory (Streiner & Norman, 2003). The panel indicated that alignment with the PRPP System of Task Analysis would be strengthened by the inclusion of items to match certain descriptors (monitors, discriminates, matches, categorises, uses objects, uses body).

The ability of the PRPP@SCHOOL-1 to differentiate between students with and without cognitive strategy use difficulties for school participation adds to the validity of the instrument. Not only did the statistical analysis clearly differentiate between the two groups of students but the pattern of difference was similar across categories of attention, recall, planning and doing. This procedure was an important step in validity testing as until this point in time the instrument had been used exclusively with students presenting with school performance difficulties. The outcome of this procedure allows occupational therapists to better understand the cognitive strategy use of students with participation difficulties and may be of clinical value when considering the need for programming for these students.

The underlying factor structure of the PRPP@SCHOOL-1 was examined to explore dimensions contributing to student's difficulties with participation in school and school-related activities. The findings indicated a five-factor model of cognitive strategy use as a best fit for this instrument. The factors were labelled "Social interaction"(Factor One), "Goal setting and problem solving"(Factor Two), "Managing time and effort"(Factor Three), "Remembering rules and procedures"(Factor Four) and "Getting ready"(Factor Five). The common thread weaving these factors together is hypothesised to be the capacity of the child to use cognitive strategies. Two of these factors linked closely because of content bedded in

social interaction. “Social interaction” and “Getting ready” includes items which involve empathetic interaction with others and suggests perhaps the need for students to be still, and to be aware of what is happening inside and around them, in order to be alert to social nuances. The factor “Social interaction” is mirrored in other studies which describe social information processing difficulties among children with learning difficulties (Bauminger, Schorr-Edelsztein, & Morash, 2005; Kavale & Forness, 1996; Tur-Kaspa, 2002). These authors describe social cognition in terms of a student’s ability to link abilities such as reading and interpreting social cues, recognising central and peripheral social information, and being aware of different social behaviours and their consequences with cognitive processes such as attention, memory and reasoning. Studies which have focused on the relationship between attention difficulties and a child’s ability to process social information (Semrud-Clikeman, Walkowiak, Wilinon, & Minne, 2010) do not appear to have explored the specific function of “Getting ready” which involves ‘body ready brain ready’. Identifying a child’s ability to sense their internal and external environment during cooperative learning in the classroom or friendship activities in the playground could be a useful aspect of social cognition assessment. This ability may provide a small link between the difficulty some children have with reflecting on self or taking other’s perspectives on one’s own behaviour, and recognising or understanding complex emotions (Bauminger, et al., 2005). This link could be explored in further research.

Three factors, “Goal setting and problem solving”, “Managing time and effort” and “Remembering rules and procedures”, linked closely because of content bedded in task approach and task behaviours. Typically developing children possess a network of concepts or well defined *scripts* for task behaviours which appear to be immature in the case of children with learning difficulties (Bauminger, et al., 2005).

These scripts represent a multidimensional matrix of abilities including goal-setting, time use and recall of processes.

Goal setting, identified as one of the critical learning strategies within self-regulation (Locke & Latham, 2002), is important as a standard for judging satisfaction (Mento, Locke, & Klein, 1992), for focusing attention on goal-relevant activity (Rothkopf & Billington, 1979), energising effort (Bryan & Locke, 1967a), affecting persistence (Latham & Locke, 1975) and arousing task knowledge and strategy (Wood & Locke, 1990). The positive outcome of goal-setting on performance is one of the most robust, replicable findings in psychological literature (Locke, Shaw, Saari, & Latham, 1981) with current learning theory advocating an approach adopting student-chosen goals within a naturalistic context (Missiuna, Mandich, Polatajko, & Malloy - Miller, 2001). For all students, regardless of ability, the effect of goal-setting depends on properties of specificity, proximity and difficulty (Schunk, 1996). Findings from the Schunk study also indicated that a learning or process goal, when linked with opportunity for self-evaluation and sound instruction, resulted in higher self-regulated learning than did a performance or product goal. In a study by Ames and Archer (1988) students who determined that a process goal was the class learning focus used learning strategies more often. However students with learning difficulties had problems activating and coordinating cognitive capacities during performance and required strategic assistance to maximise their performance (Page-Voth & Graham, 1999).

Time management, while reported to be challenging for everyone, is even more challenging for students with learning difficulties (Deng, 2005; Janeslatt, 2010; Newhall, 2008). Teachers and parents identified in Phase One of the current research that students needed to apply cognitive strategies to participation in particular

activities for specific amounts of time in order for participation to be successful. Some students may be competent in using cognitive strategies but may not be able to apply them at the appropriate time, for the needed time duration for efficient performance. This is an additional area, highlighted by the current research which warrants further research.

Deficits in working memory are characterised by failure to remember content of classroom instructions and to keep track of processes for complex tasks (Alloway, Gathercole, Kirkwood, & Elliott, 2009; Baddeley, 2002a). This deficit was also inferred by the factor analysis in items such as “following two part instructions”, “remembering the procedure or rules for routine activities” or “knowing when to do things’. Working memory, a critical capacity used to temporarily store and manipulate information, is important for participation in functional activities (Baddeley, 2004). However, students with learning difficulties appear to have problems storing new information, retrieving stored information, and linking new information to previously learned information in ‘the here and now’.

Items within the PRPP@SCHOOL-1 group together, suggesting the viability of categories to describe different processing pathways within cognitive strategy use. Very high Cronbach’s alpha presents a dilemma indicating either a large number of items, the presence of redundant items or very high internal consistency. High values of Cronbach’s alpha do provide evidence that the items measure an underlying construct. However high alpha does not imply the measure is unidimensional (UCLA Academic Technology Services, 2010). In fact, in addition to measuring internal consistency this phase of the research explored dimensionality by performing factor analysis. The results indicate that PRPP@SCHOOL-1 is a multi-dimensional instrument. This is not surprising considering that the items were generated by

teachers and parents from their observation of students with learning difficulties in different contexts.

8.3 RESEARCH LIMITATIONS

Limitations of the research are examined in this section before an assessment of significance is made. Limitations are concerned with the characteristics of the data sample as well as procedures used for data collection and analysis. During the design stage of each phase, attempts were made to minimise the impact of limitations. None of the limitations discussed below are considered to seriously affect the findings of the research or the recommendations for future research.

8.3.1 Research Phase One

Research Phase One comprised a longitudinal single case study and a survey. While the subject of the case study was not representative of all students with learning difficulties or participation difficulties, he was purposefully selected because he was deemed to demonstrate sufficient characteristics of these difficulties to represent a 'critical case'. Assessment of another student may have generated a different profile. At this initial phase of the research the objective was not to generalise findings but to describe one student's lived experience over time. Another observer in the same environments would have focussed on different data, or interpreted the data reported here in a different way. However, the use of several data sources in the study and the reported consistency of difficulties experienced by the subject over a number of years went some way toward addressing this limitation.

The survey was comprised of teachers and parents who were associated with a single clinic located in Greater Western Sydney. The experiences of these respondents may not be universal. However, 94 teachers and parents comprising the convenience sample were considered representative of the target population and sufficiently large to provide a wide range of responses.

8.3.2 Research Phase Two

With regard to construction of the questionnaire, frequency was selected as the rating scale. While inferences can be hypothesised between the relationship between frequency and difficulty, the research findings can not make a definitive link between a student's infrequent use of strategies and the extent of difficulty experienced by that student. A hierarchy of most difficult to least difficult cognitive strategies demonstrated by students would be useful for clinicians. Further research involving comparison with a measure which employs a level of difficulty rating scale is required to statistically examine this variable. The instrument was developed to accompany the PRPP System of Task Analysis which utilises a scale to determine the 'difficulty' of cognitive strategy application. Further research that compares the findings of these two instruments on the same sample would validate the relationship between 'difficulty' and 'frequency'.

With regard to sampling for the questionnaire trial, the research used convenience sampling rather than random sampling. The convenience sampling was purposeful in that it was comprised of students with learning difficulties and specifically, students with cognitive strategy use difficulties. Students were recruited from one private paediatric occupational therapy clinic that provided assessment and intervention services for students with learning difficulties within Greater Western

Sydney. A number of implications arise from this methodology. First, some of the students were funded by support agencies and the majority of the students were funded by parents. Second, students were mostly referred to the clinic because of a difficulty with school participation associated with learning difficulties. Students did not have a primary difficulty with home or community participation. Nor were students with physical disabilities typically referred to the clinic. Therefore these implications may limit generalisation of findings beyond the research sample. However, the geographical area from which students were drawn to the clinic covered four local government areas and the range of state, Catholic and Independent schools, represented by students in the research sample, reflected a similar range of schools in the geographical area. Future research involving students drawn from a wider geographical area outside of Greater Western Sydney, from different socio-economic backgrounds, from public as well as private occupational therapy sectors, and from students with a broader diagnostic profile would be a useful addition to research on the PRPP@SCHOOL(TQ & PQ).

With regard to data collection strategies, some items were not completed by teachers or parents, however, the amount of missing data was only 3% which is very small. During data analysis, items which teachers or parents had scored as “not expected for task performance” or “not sure, confused, only guessing” were also added to the missing data which subsequently totalled 6%. This amount was not considered a concern.

8.3.3 Research Phase Three

There were several limitations of the reliability testing during this research. First, all informants were drawn from one paediatric occupational therapy clinic. It is

possible that this has introduced bias even allowing for the geographical area coverage of four local government areas in the sample. A future study could include parents from a broader geographic area with greater demographic variability. Second, this part of the study comprised parents of students with learning and participation difficulties. Therefore, it would be useful to conduct further test-retest reliability using teachers and parents of students with no participation difficulties. Third, time did not allow for examination of test-retest reliability using data from teachers. It will be important to include teachers in further reliability studies of the PRPP@SCHOOL(TQ). Therefore the current results cannot be generalised to use of the PRPP@SCHOOL-1(TQ). Fourth, the study contained a gender imbalance represented by a high representation of mothers against a high representation of male students. Gender of parents has been identified as a confounding variable so the findings need to be interpreted in the light of this matter. In any future studies of reliability of the PRPP@SCHOOL it would be useful to target fathers to redress the gender imbalance.

There were also a number of limitations of the validity testing during this research. First, occupational therapy peer review included only therapists from one geographical area, and from one service delivery system, private practice. Therapist knowledge of, and experience with, the type of students and the concepts under study may have resulted in different responses to those which might have been collected from a broader cohort of therapists from different locations and from different service delivery systems. However for the purpose of this study therapist knowledge and experience was considered an advantage. Second, a number of items in the PRPP@SCHOOL (TQ & PQ) described similar behaviours. For example, the expert panel indicated that 11 items reflected strategies describing recalling steps within an

activity and eight items reflected strategies describing making choices. Validity of the PRPP@SCHOOL(TQ & PQ) merits further testing using version 2 of the instrument comprised of a more even spread of items. Third, the PRPP@SCHOOL-1(TQ & PQ) was not administered to students against other available assessments such as the PRPP System of Task Analysis, or the School Assessment of Motor and Perceptual Skills. Exploration of concurrent validity would have added to the rigour of validity testing. Fourth, the investigation comprised a convenience sample of students drawn from Greater Western Sydney. Caution is required when applying the findings of the study to other students with similar characteristics. A randomly selected sample based on a broader group of students is recommended for future studies.

8.4 SIGNIFICANCE OF THE RESEARCH

In addressing each of the research questions posed, this study has made significant contributions to theory, to methodology, to empirical knowledge about cognitive strategy use, and to practice in the field of occupational therapy for children with participation difficulties. Each of the areas to which a contribution has been made will be addressed in this section.

8.4.1 Theoretical contribution

This research represents an attempt to integrate theory from the domains of cognitive strategy use, learning difficulty and participation within a model of occupational performance. The research focussed on a number of constructs outlined in the Occupational Performance Model [Australia] (Chapparo & Ranka, 1997) which were considered to impact on participation.

This research has contributed to knowledge about the meaning of participation as a concept, and the ways in which its theoretical elements can be operationalised in practice. The research has also made a contribution to further understanding the relationships between the construct of cognition, performance areas, contexts and core elements of time and space within the Occupational Performance Model (Australia)

This research represents a shift towards an occupation-focussed approach to the occupational therapy assessment of students with learning difficulties rather than an approach which in many areas of clinical practice still centres on evaluation of performance component areas per se. The research also represents a move towards criterion-referenced assessment of students with learning difficulties in comparison to reliance on norm-referenced assessment. While performance-component assessment using a norm referenced approach often provides a time efficient result, the findings of this research indicates that teachers and parents value assessment of critical abilities in the context of task expectations. Teachers and parents in this study have also demonstrated an ability to grasp conceptual ideas about participation and cognition as they relate to their child, and utilise them to give an opinion about effectiveness.

The findings from the current research provide a conceptual framework for ongoing development by paediatric occupational therapists of teacher and parent questionnaires. The thesis has provided principles and guidelines for linking theory to practice for data collection rather than relying on “home grown” checklists. The findings challenge occupational therapy clinicians to determine ways to collect data using qualitative and quantitative procedures, and to apply data analysis techniques which increase the rigour of the commonly used questionnaire.

8.4.2 Clinical contribution

This research provides a contribution to clinical practice by presenting the participation experiences of a child with learning difficulties from preschool years through to final years of high school. Most clinicians work directly with a student for a short period of time or work indirectly with a student using consultative collaboration. Exploration of one student's participation from preschool through to high school provides insights into the lived experience of learning difficulty from the perspectives of student, teachers and parents. The research provides practical procedures that other therapists and researchers can use to listen to the voice of these stakeholders.

The research also makes a contribution to the notion that therapists, teachers and parents can work together in the area of instrument construction. The PRPP@SCHOOL-1(TQ & PQ) is the outcome of teachers' and parents' descriptions of participation and cognitive strategy use and their knowledge of the task expectations of school and school-related occupations.

Development of the PRPP@SCHOOL-1(TQ & PQ) makes a significant contribution to paediatric occupational therapy practice in the areas of learning difficulty and school service delivery. The instrument demonstrates clinical utility with strong reliability and validity properties. Many assessments currently available to paediatric occupational therapists lack ecological validity as they are typically administered separately to the school context. Of real value to occupational therapists is the means to assess students whose performance difficulties are not targeted by traditional paediatric assessments. In addition, the PRPP@SCHOOL-1(TQ & PQ) provides the potential to demonstrate direct links between assessment and intervention.

This current research extends previous research exploring the use of teacher and parent questionnaires based on the PRPP System of Task Analysis and provides a significant addition to the assessment options available for paediatric occupational therapists.

8.4.3 Empirical contribution

The findings from all the phases in this research provide a comprehensive account of the cognitive nature of participation for students with learning difficulties. The focus on cognitive strategy use during instances of school participation contributes to a more complete body of knowledge about participation and learning difficulties at school. Data generated in this research adds to empirical evidence supporting concepts underlying the PRPP System of Task Analysis. This study comprises the first large data set to be analysed within PRPP research. The size of the data set enabled exploratory factor analysis. While allowing for subjectivity and judgement, factor analysis made an important research contribution by providing insights into the characteristics of abstract constructs, within the complex phenomenon of participation.

Furthermore, this research is the first to apply the PRPP System of Task Analysis concepts to data collected about the participation of school students, generating a new companion PRPP assessment tool, specifically targeting strategy use for school students. In addition, this research has specifically contributed to empirical data within the Australian context as the few available measures which do address aspects of school participation have been developed in North America.

8.4.4 Methodological contribution

This research presents a variety of methodological approaches available for use by clinicians in paediatric occupational therapy. Use of both qualitative and quantitative research in a mixed methods approach comprising multiple forms of data collection allowed for a comprehensive analysis of the phenomenon of school performance.

The current research joins a handful of longitudinal studies in occupational therapy literature, with none documenting the difficulties with participation of a child with learning difficulty from preschool through to high school. The methodology used in the case study is clinically viable in terms of time, ease and opportunity. The methods as outlined could be replicated across public and private occupational therapy sectors and across state, catholic and independent school systems.

8.5 RECOMMENDATIONS FOR FUTURE RESEARCH AND PRACTICE

The current research is a preliminary study that has several implications for further research. Recommendations for subsequent research that might contribute to occupational therapy knowledge and practice in the area of cognitive strategies and school participation include the following.

8.5.1 Instrument refinement:

The second version of the PRPP@SCHOOL Teacher and Parent Questionnaire, PRPP@SCHOOL-2 (TQ & PQ), is the outcome of this research study and is in the preliminary stage of development. Completion of questionnaire content and format in preparation for using the questionnaire with teachers and parents was the priority of the researcher.

8.5.2 Concurrent validity testing:

The PRPP@SCHOOL-2 could be administered by teacher and parent on the same child against other assessments such as the PRPP System of Task Analysis (Chapparo & Ranka, 2005) or the School Assessment of Motor and Perceptual Skills (Fisher, Bryze, Hume, & Griswold, 2007) using therapist observation on the same child to determine concurrent validity.

8.5.3 Inter-rater reliability testing

As a measure of validity testing (Refer to 8.3.4) inter-rater reliability using further teacher and teacher, or, using parent and parent, would be useful to evaluate the stability of assessment of student use of cognitive strategies during participation in *context*.

8.5.4 Investigation of clinical usefulness with different demographic populations:

As the scope of the current research was limited to one paediatric occupational therapy clinic further research is recommended in different geographical locations.

8.5.5 Investigation of clinical usefulness with different age populations:

As the scope of the current research was limited to primary school students enrolled in Kindergarten to Year Six, further research is recommended with high school populations.

8.5.6 Investigation of clinical usefulness with different diagnostic populations:

As the scope of the current research broadly encompassed students with learning difficulties, further research is recommended with specific diagnostic groups such as Autism Spectrum Disorder and Attention Deficit Disorder to determine any subtypes of participation and cognitive strategy use disorder.

8.5.7 Establish a formal link to PRPP@SCHOOL-Intervention

A primary purpose of assessment is to guide intervention. It will be a priority of the researcher to implement an intervention program using cognitive strategies based on the PRPP@SCHOOL findings, and to determine the usefulness of the PRPP@SCHOOL as an intervention outcome measure for students with learning difficulties.

8.6 CONCLUSION

In conclusion, this research demonstrated that cognitive strategy use is associated with difficulties in participation experienced by students who have learning difficulties in primary school. The research has made a contribution to occupational therapy in paediatric school-based practice in terms of exploration of the relationship between cognitive strategy use and participation for students with learning difficulties. A major outcome of this research is the development of a teacher and parent questionnaire, PRPP@SCHOOL (TQ & PQ) to accompany the PRPP System of Task Analysis. The PRPP@SCHOOL-1 was shown to be a reliable and valid tool that could be used by occupational therapists as part of a comprehensive assessment process. The purpose of the instrument is to document teacher and parent observations of student cognitive strategy use during participation in everyday functional school

and school-related activities. The PRPP@SCHOOL-1 presents an assessment approach which is a shift towards occupation-focussed and criterion-referenced assessment within the natural context of school. In doing so, occupational therapy service to students with learning difficulties might be enhanced and partnerships between teachers, parents and occupational therapists might be strengthened.

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APPENDIX 2.1

LIST OF INSTRUMENTS EXCLUDED FROM REVIEW

These 38 instruments were all excluded for review, despite being commonly used within the school context because they are not observational in nature and typically focus on a specific performance area or underlying performance component

- Beery-Buktenica Developmental Test of Visual-Motor Integration-Sixth Edition (Beery VMI-6) (Beery, Buktenica, & Beery, 2010)
- Brigance Comprehensive Inventory of Basic Skills (CIBS-R) (Brigance, 1999)
- Bronson Social and Task Skill Profile (BSTSP) (Bronson, 1996)
- Bruininks-Oseretsky Test of Motor Proficiency-Second Edition (BOT-2) (Bruininks & Bruininks, 2005)
- Child Occupational Self Assessment (COSAS) (Keller, Kafkes, Basu, Federico, & Kielhofner, 2005)
- Curtin University Handwriting Assessment (Summers, Marian, & Korn, 1998)
- Das-Naglieri Cognitive Assessment System (CAS) (Naglieri & Das, 1997)
- Detroit Tests of Learning Aptitude-Primary-Fourth Edition (DTLA-4) (D. Hammill, 1998)
- Developmental Test of Visual Perception-Second Edition (DTVP-2) (D. D. Hammill, Pearson, & Voress, 1993)
- Draw a Person: A Quantitative Scoring System (Draw a Person: QSS) (Naglieri, 1988)
- Draw-A-Person-Intellectual Ability Test (DAP:IQ) (C. R. Reynolds & Hickman, 2004)

- Dynamic Occupational Therapy Cognitive Assessment for Children (DOTCA-Ch) (Katz, Parish, & Traub Bar-Ilan, 2005)
- Evaluation Tool of Children's Handwriting (ETCH) (Amundson, 1995)
- Full Range Test of Visual Motor Integration (FRTVMI) (D. D. Hammill, Pearson, Voress, & Reynolds, 2005)
- Goodenough-Harris Drawing Test (Goodenough & Harris, 1963)
- Handwriting Speed Test (HST) (Wallen, Bonney, & Lennox, 1996)
- Learning Efficiency Test (LET-II) (Wheeler, 1992)
- McMaster Handwriting Assessment Protocol (Pollock, et al., 2008)
- Miller Functions and Participation Scales (M-FUN-PS) (Miller, 2006)
- Movement Assessment Battery for Children (Movement ABC) (Henderson & Sugden, 2007)
- Motor-Free Visual Perception Test-Third Edition (MVPT-3) (Colarusso & Hammill, 2003)
- Paediatric Evaluation of Disabilities Inventory (PEDI) (Haley, Coster, Ludlow, Haltiwanger, & Andrellos, 1992)
- Pediatric Card Sort (PACS) (Mandich, Polatojko, Miller, & Baum, 2004)
- Pediatric Early Elementary Examination (PEEX2) (Levine, 1996)
- Pediatric Examination of Educational Readiness at Middle Childhood (PEERAMID2) (Levine, 1995)
- Rivermead Behavioural Memory Test for Children (RBMT-C) (Wilson, Ivani-Chalian, & Aldrich, 1991)
- School Setting Interview (SSI) (Hemmingsson, Egilson, Hoffman, & Kielhofner, 2005)

- Slosson Visual-Motor Performance Test (SVMPT) (Slosson & Nicholson, 1996)
- Swanson Cognitive Processing Test (S-CPT) (Swanson, 1996)
- Test of Everyday Attention for Children (TEA-Ch) (Manly, Robertson, Anderson, & Nimmo-Smith, 1999)
- Test of Information Processing Skills (TIPS) (Webster, 2009)
- Test of Memory and Learning-Second Edition (TOMAL-2) (C. Reynolds & Voress, 2007)
- Test of Problem Solving (TOPS) (Bowers, Huisingh, & LoGiudice, 2005)
- Test of Visual-Motor Integration (TVMI) (D. D. Hammill, Pearson, & Voress, 1996)
- Test of Visual-Motor Skills-Revised (TVMS-R) (Gardner, 1995)
- Test of Visual-Perceptual Skills (non-motor)-Third Edition (TVPS-3) (Martin, 2006)
- Wide Range Assessment of Memory and Learning-Second Edition (WRAML-2) (Sheslow & Adams, 2005)
- Wide Range Assessment of Visual Motor Abilities (WRAVMA) (Adams & Sheslow, 1995)

These 5 instruments were all excluded for review, despite being commonly used within the school context and being observational in nature, because they do not cover the full age range from Kindergarten to Year 6, or only focus on one specific performance area/component.

- Conners' Rating Scales-Revised (CRS-R) (Conners, 2008)
- Motivation Assessment Scale (MAS) (Durand & Crimmins, 1992)

- Scale for Teachers' Assessment of Routines Engagement (STARE) (McWilliam, 2000)
- Sensory Profile (Dunn, 1999)
- Sensory Profile School Companion (Dunn, 2008)

Achenbach System of Empirically Based Assessment (ASEBA) (Axhenbach, 2007) was excluded for review because it can only be used by occupational therapists who have graduate training of at least Masters degree level.

Goal Attainment Scaling (Kiresuk, Smith, & Cardillo, 1994) was excluded from review because it was primary designed as intervention approach and is not considered an assessment measure for the purpose of this research

Dynamic Performance Analysis (Polatajko, Mandich, & Martini, 2000) was excluded from the review because it was primarily designed as a framework and is not considered as an assessment measure for the purpose of this research

The Child and Adolescent Scale of Participation (CASP) (Bedell, 2004) was excluded from review because the component allocated to participation at school was minimal.

The School Outcomes Measure (SOM) (McEwen, Arnold, Hansen, & Johnson, 2003), an observational measure, was excluded for review because its stated purpose is to provide a minimal data set for the measurement of groups of students.

APPENDIX 3.1

ETHICS CONSENT FORM



The University of Sydney

NSW 2006 Australia

Human Research Ethics Committee

www.usyd.edu.au/ethics/human

Senior Ethics Officer:

Gail Briody

Telephone: (02) 9351 4811

Facsimile: (02) 9351 6706

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28 August 2007

Dr Christine Chapparo
School of Occupation and Leisure Sciences
Faculty of Health Sciences
Cumberland Campus – C42
The University of Sydney

Dear Dr Chapparo

I am pleased to inform you that the Human Research Ethics Committee (HREC) at its meeting on **21 August 2007** approved your protocol entitled ***“Strategies for improving the occupational performance of children and young people with support needs”***.

Details of the approval are as follows:

Ref No.:	08-2007/10012
Approval Period:	August 2007 to August 2008
Authorised Personnel:	Dr Christine Chapparo Dr Rob Heard

The HREC is a fully constituted Ethics Committee in accordance with the *National Statement on Ethical Conduct in Research Involving Humans-March 2007* under Section 5.1.29

The approval of this project is **conditional** upon your continuing compliance with the *National Statement on Ethical Conduct in Research Involving Humans*. We draw to your attention the requirement that a report on this research must be submitted every 12 months from the date of the approval or on completion of the project, whichever occurs first. Failure to submit reports will result in withdrawal of consent for the project to proceed.

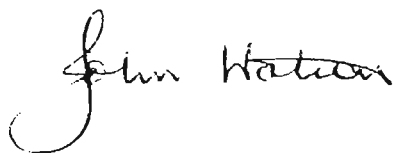
Special Condition/s of Approval

Amendment to the Participant Information Statement – the pagination should be corrected as 1 of 2 and 2 of 2.

Chief Investigator / Supervisor's responsibilities to ensure that:

- (1) All serious and unexpected adverse events should be reported to the HREC as soon as possible.
- (2) All unforeseen events that might affect continued ethical acceptability of the project should be reported to the HREC as soon as possible.
- (3) The HREC must be notified as soon as possible of any changes to the protocol. All changes must be approved by the HREC before continuation of the research project. These include:-
 - If any of the investigators change or leave the University.
 - Any changes to the Participant Information Statement and/or Consent Form.
- (4) All research participants are to be provided with a Participant Information Statement and Consent Form, unless otherwise agreed by the Committee. The Participant Information Statement and Consent Form are to be on University of Sydney letterhead and include the full title of the research project and telephone contacts for the researchers, unless otherwise agreed by the Committee and the following statement must appear on the bottom of the Participant Information Statement. *Any person with concerns or complaints about the conduct of a research study can contact the Senior Ethics Officer, University of Sydney, on (02) 9351 4811 (Telephone); (02) 9351 6706 (Facsimile) or gbriody@usyd.edu.au (Email).*
- (5) Copies of all signed Consent Forms must be retained and made available to the HREC on request.
- (6) It is your responsibility to provide a copy of this letter to any internal/external granting agencies if requested.
- (7) The HREC approval is valid for four (4) years from the Approval Period stated in this letter. Investigators are requested to submit a progress report annually.
- (8) A report and a copy of any published material should be provided at the completion of the Project.

Yours sincerely



**Associate Professor J D Watson
Chairman
Human Research Ethics Committee**

APPENDIX 3.2

EXAMPLE OF PARTICIPANT OBSERVATION USING NOTE-TAKING

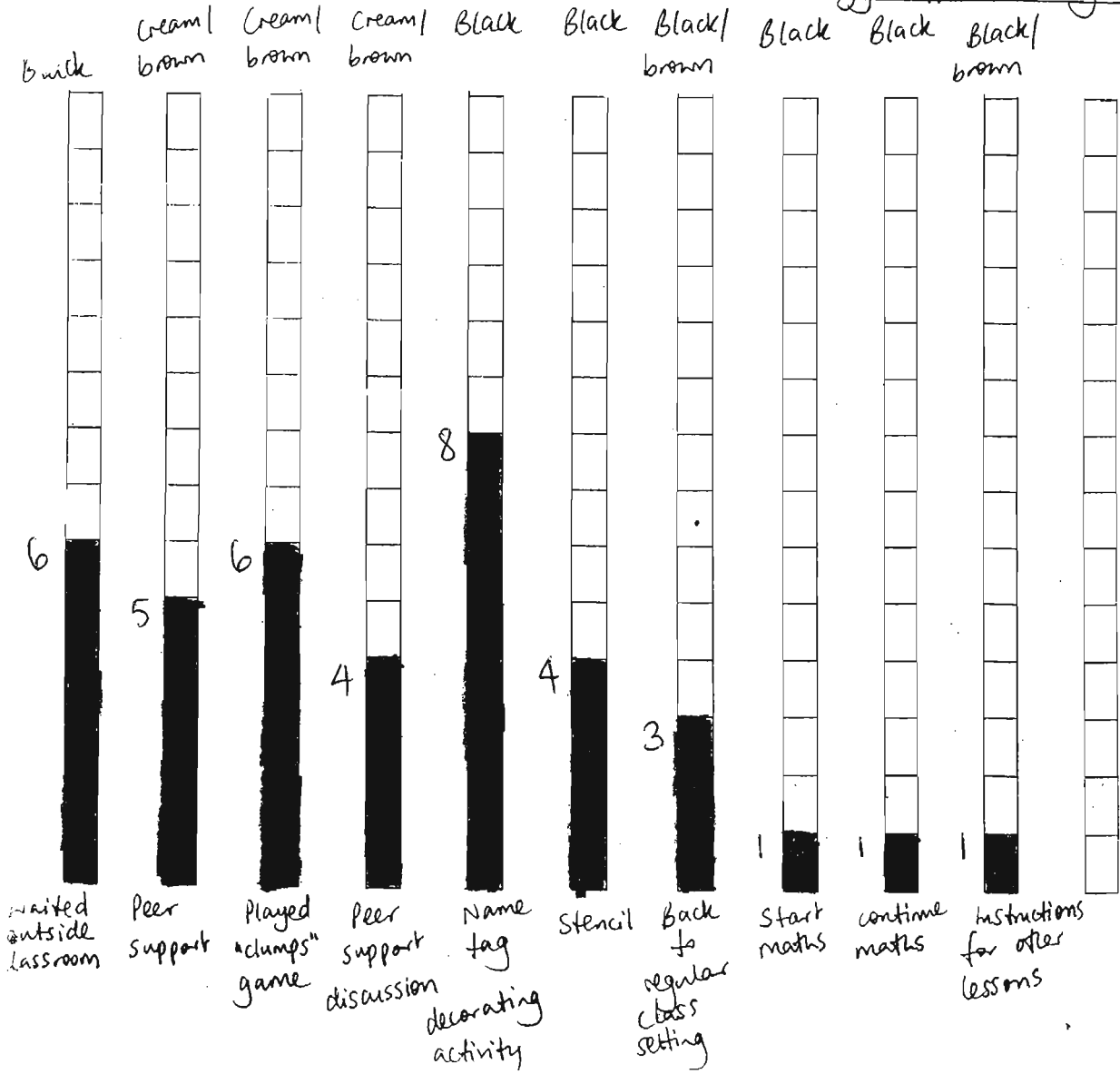
Time	Step	Reasons / Observations	Time	Step	Reasons / Observations
11.15am		↓ Peer Support ↓	12.10pm		didn't join in the stencil activity that everyone else was doing.
11.20am		waited outside room w teacher & other students for peer support to start.	12.15pm		sat fiddling with name tag & not doing anything. told me he'd enjoyed peer support.
11.25am		didn't interact w other students while waiting, other than saying hello to kinesthetic kids who came, & saying "keep your underpants on!" to the waiting kids.	12.20pm		lined up outside w the class. kept asking the boy next to him if he could read his name.
11.30am		sat in circle w other kids. answered name when called.	12.25pm		said he'd lost his sheet. teacher said there were spares but Chris insisted there weren't & refused to get one; sat at desk & fiddled with something instead.
11.35am		joined in 'clumps' game; walked around as music played but joined groups that already had the right no. of students in them.	12.30pm		sat & chewed on clipboard while teacher marked the sheet Chris had lost.
11.40am		looked a bit confused but managed to join in the game.	12.35pm		refused to do reset sheet because he was still looking for the last one. repeatedly flicking clipboard; other students told him to stop it.
11.45am		sat in big circle w other kids; didn't chat to other kids; sat rubbing eyes & frow.	12.40pm		other kids tried to help him. went off at teacher & sat w arms folded.
11.50am		looked overwhelmed by all the noise & confusion around him. sat & drew on name tag.	12.45pm		put head down & muttered to himself. teacher offered him more sheets but Chris said "I'm not doing it".
11.55am		as directed, but on his own, & not interacting w other students. said 'thankyou' to a girl who complimented his work.	12.50pm		Offered him time out w a TA but he yelled "NO WAY!" peeled his sticker off & stuck it to Michael's back.
12.00 noon		followed instructions to put on name tag & sit in circles but sat fairly oblivious to what was happening.	12.55pm		sat banging his chin on his desk. screwed up stencils & threw on floor. told another student quite aggressively to stop moving the desk (which he was actually doing).
12.05pm		did put his hand up when the leaders asked "hands in yr. 5".	1pm		teacher dinged a bell meaning put hands on heads; each time Chris ignored it. sat at desk cutting up a shoelace while the work was marked & then swept the pieces on the floor.

1:05pm
 * Was ripping the toggles of his school bag when I left



- Responded to some positive feedback from a fellow student
- Reported enjoying peer support: looked enthusiastic & tried to join in.
- Followed group instructions for name-tag decorating activity.
- Put his hand up when all Year 5 people were instructed to do so.

- Said some socially inappropriate things
- Couldn't follow the instructions in the "clumps" game.
- Became upset & aggressive upon re-entering the normal class setting.
- Couldn't find maths sheet; refused to get another & became paranoid that casual teacher & Judy were both "lying"; became aggressive to other students.
- Threw sheet on floor
- Cut up a shoe lace & threw on floor.
- Tried to tear toggles off school bag.



APPENDIX 3.3

EXAMPLE OF CHART REVIEW DOCUMENT

PTY LTD [REDACTED] [REDACTED] [REDACTED]	∞ ∞ ∞ strengths	xxxx Parent concerns
NEUROPSYCHOLOGICAL ASSESSMENT REPORT		① ① ① Behaviour
NAME:	[REDACTED]	motor difficulties
ADDRESS:	[REDACTED]	language diff.
D.O.B:	29/12/91	socialisation play
SCHOOL:	[REDACTED] Public School	
DATES ASSESSED:	2/4/02; 6/4/02	cognition perse. norm referenced Ax
ASSESSED BY:	[REDACTED]	strategy use?
METHODS OF ASSESSMENT:	Differential Ability Scales NEPSY (selected subtests) Children's Memory Scale (selected subtests) Achenbach Parent Report Form Conners' Parent Report Form -revised (long) Aspergers' Symptom Screening Questionnaire	unresolved probs ↳ Ax results not fit
DATE OF REPORT:	5/5/02	Academic results

REFERRAL

[REDACTED] was a 10 year old boy with a history of developmental difficulties and social problems. Evaluation was requested regarding the possibility of Asperger's syndrome.

BACKGROUND INFORMATION (Parental report)

[REDACTED] is an only child to [REDACTED] and [REDACTED]. [REDACTED] was born at full term. In the 24 hours prior to birth there was evidence of foetal distress and emergency caesarian was required. He required oxygen at birth and his condition deteriorated with seizures occurring. He required transfer to the Neonatal Intensive Care Unit where he received 100% oxygen for three days. Developmentally, **early motor skills were delayed**. [REDACTED] crawled at 14 months but progressed soon after to walking. He required physiotherapy from approximately 12 months of age. [REDACTED] **hand dominance was slow to develop**. He experienced **fine motor difficulties** and was reported to have a **tremor**. He received occupational therapy from 4 years of age. This was ongoing (see reports) as [REDACTED] had marked **difficulty with handwriting** and did **not appear to have developed a strong hand dominance**. As a result of his motor impairments [REDACTED] was receiving funding at school.

[REDACTED]'s early speech and language milestones were within the normal range. However there were **some speech difficulties** and a speech pathology assessment at 4 years 3 months documented hyper nasal speech and **mild articulation problems** with receptive and expressive language in the normal range. A review assessment at 5 years 1 month suggested **mild receptive language disorder** and **problems with linguistic concepts**. He received intervention and when

reviewed at 5 years 8 months had improved to within normal limits although he continued to be hyper nasal in his speech and to have some articulation problems. At 6 years 10 months further assessment documented difficulties with figurative language. As a result of the current concerns regarding [REDACTED]'s developmental problems it was suggested that he should have a further speech pathology review with further evaluation of pragmatics. The assessment, conducted by [REDACTED] on 8/12/01 was reported to have indicated average receptive and low average expressive language skills but the variability in his scores was considered to indicate semantic and pragmatic problems.

[REDACTED] attended preschool and was assessed and supported by the Early Childhood Services. Fine motor skills were a major issue and there were some problems noted in the development of his socialisation and the development of interactive play.

[REDACTED] had a history of mild asthma but no other medical problems of note. He was managed by Dr [REDACTED], Paediatrician. According to parental report a cerebral CT scan as an infant detected no abnormalities.

[REDACTED] had completed two previous psychometric assessments. The first of these, conducted by the school counsellor in August 2000, was reported to have placed [REDACTED] in the mild range of intellectual disability. This was considered at the time by his parents and teachers not to reflect [REDACTED] everyday performance. An academic assessment was conducted ([REDACTED] Learning Centre) that indicated his reading was above average, spelling average and mathematics skills below average. In both assessments concentration and immaturity were raised as issues. [REDACTED] received a further psychometric assessment at 9 years of age (Advancement Centre, [REDACTED]). Results of that assessment were reported to indicate that [REDACTED] had a significant discrepancy between his Verbal and Performance intellectual abilities with verbal in the average range and Performance in the borderline range.

Current parental concerns for [REDACTED] included difficulty making friends although he had some close friends at school, difficulty making decisions, he tended to get stuck on particular ideas/problems; he had some difficulty coping with changes in routine as well as poor organisational skills. There had also been some problems at school involving refusal to do work although this had decreased over time. [REDACTED] was described as a very affectionate child although at times he was inappropriately affectionate to adults (e.g cuddling teachers). He had some specific interest areas but these were not restricted to one thing. He tended to speak about his interests excessively and had some difficulty with reciprocal interactions. [REDACTED] did not have any repetitive behaviours and no stereotypies. He reportedly had good imagination in his play and could develop complex interactions between the toys/characters. He had a good memory for shows that he had seen and could often recite these verbatim. He had difficulty with spontaneous interactions and demonstrated difficulty with composition of stories. [REDACTED] was reported to have a good sense of humour and was able to appreciate puns. His eye contact had always been appropriate. There was no report of any emotional problems and his mood was usually stable.

XXXX
① ① ①
① ① ①
∞ ∞ ∞
∞ ∞ ∞

According to parental report [REDACTED] father experienced some developmental problems with motor skills including poor handwriting.

CURRENT ASSESSMENT

[REDACTED] history suggested a complex pattern of problems and an unclear diagnostic picture therefore a more detailed neuropsychological assessment was conducted to evaluate various differential diagnoses.

[REDACTED] presented as a pleasant and friendly boy who separated easily for the assessment. He was generally cooperative and applied himself well although there were times when he fatigued and lost concentration. On one particular task which [REDACTED] thought was too demanding he rolled off the chair onto the floor and had to be encouraged to attempt the task. There was no difficulty with bringing [REDACTED] back to a task. [REDACTED] was observed to communicate spontaneously. He had a tendency to persevere on one topic but was able to be diverted. Mannerisms were at times immature such as clapping his hands excitedly and his voice intonation was exaggerated. His speech was also hyper nasal.

Assessment of [REDACTED] intellectual ability rated him in the low average range (14th percentile). His verbal abilities were in the low average range. His nonverbal reasoning abilities were in the average range. His visuo-spatial abilities were in the borderline range. His visuo-spatial skills were significantly below his nonverbal reasoning.

[REDACTED] immediate attention span (amount of information held in mind) for auditory-verbal information was average. He was able to mentally manipulate and sequence auditory-verbal information at an average level. On a measure of visual attention he performed within the average range. [REDACTED] speed of information processing was below average.

Assessment of [REDACTED] new learning indicated that he had problems with acquisition of both verbal and visual information. [REDACTED] immediate recall of information was average (consistent with his immediate attention span). However, on the visual task [REDACTED] was unable to increase his store of information over repeated trials. On the verbal learning task he increased the amount of information recalled over trials but performed below average overall. [REDACTED] immediate recall of narrative (stories) was average. [REDACTED] embellished the information he recalled with some details not in the original story. He did this intentionally and explained why it was needed. [REDACTED] delayed recall of information both verbal and visual was very poor. [REDACTED] was unable to generate the information without cues. Testing of his recognition of the information indicated that he had not lost the information and when provided with questions performed in the average range. Following the recognition test he recalled the story almost verbatim with his additions included. [REDACTED] commented during this task that he could only recall the story if he could start at the beginning and recall in order.

Observations of language skills during testing indicated that [REDACTED] was able to comprehend all test instructions. He demonstrated some difficulty with abstract language concepts performing in the low average range.

[REDACTED] visual perceptual skills were average. Visuo-spatial skills were significantly below average and a clear area of weakness.

Assessment of aspects of executive functions (higher order skills such as planning and organisation, problem solving, abstract reasoning) indicated some variable skills. Nonverbal problem solving was average across a range of tasks. On a measure of verbal fluency [REDACTED] had difficulty generating the words according to set rules and the test was abandoned. On a measure of design fluency [REDACTED] performed below average.

Questionnaires completed by [REDACTED] mother indicated that most behavioural areas evaluated were within the average range. However, the results indicated elevated scores on scales related to attention and social problems (borderline clinical range).

A questionnaire screening symptoms consistent with Asperger's indicated that [REDACTED] has some of the characteristics particularly in areas of social difficulties but his overall score was not at the level for children with Aspergers.

IMPRESSION

[REDACTED] is a 10 years 3 month old boy with a history of developmental problems and inconsistencies on testing that have made his diagnosis unclear. A possible Autistic Spectrum Disorder had been queried by his school and further evaluation was sought to investigate this diagnosis.

summary ↑

[REDACTED] had a complex developmental history including birth trauma and delayed development, particularly in motor areas and social functioning. Speech and language development had been problematic at different stages of his development with pragmatic problems an ongoing issue. His academic progress in reading and spelling was average but mathematics was delayed. Neuropsychological assessment was conducted to clarify [REDACTED] areas of difficulty and to assist with diagnosis.

The current assessment indicated that [REDACTED] intellectual functioning is within the low average range. Aspects of attentional abilities measured on the current assessment were within the average range. However, questionnaire data suggested some problems with sustained attention in the everyday environment. [REDACTED] speed of information processing was reduced. Evaluation of memory and new learning indicated that [REDACTED] immediate recall of visual and verbal information was appropriate for his age but he had difficulty with acquisition of information (increasing his store of information over repeated trials) and significant difficulty with delayed recall without cues (retrieval of information). Measures of recognition indicated that he had retained the information over time with recognition memory in the average range. [REDACTED] demonstrated impairment in visuo-spatial skills. The assessment also suggested deficits in some aspects of executive functioning. It is possible that [REDACTED] marked difficulty organising his retrieval of information is related to executive problems. Executive problems are also implicated in the poor organisational abilities described by his mother.

The ongoing issues in social functioning combined with his difficulties in pragmatic language skills suggest impairment in the area of social cognition.

The pattern of neuropsychological deficits combined with the difficulties in social cognition are

consistent with a learning disorder referred to as nonverbal learning disorder (Rourke 1988; Pennington 1991). The academic profile of this disorder includes delayed mathematical ability at least average word reading and spelling, graphomotor problems, delayed reading comprehension and possible achievement delays in science subjects. Additional neuropsychological features that have been described in this disorder include attentional problems, particularly when dealing with complex material, poor oral motor coordination, as well as difficulties with prosody (speech rhythms) and verbosity.

Whilst nonverbal learning disorder shares some symptoms with Asperger's syndrome there are key features in an autistic spectrum disorder that are not consistent with [REDACTED]'s presentation. The evidence at this stage suggests that [REDACTED] more clearly fits in the nonverbal learning disorder category.

The presence of a nonverbal learning disorder, particularly the level of impairment exhibited by [REDACTED], can have a significant impact on social and academic functioning and the impact may increase over time. [REDACTED] will require ongoing support within the school environment. In addition to the specific problems with handwriting, mathematics and dealing with other spatial material he will experience problems with processing information rapidly and with retrieval of information. He will require modification of his teaching programme and may be unable to demonstrate his knowledge in an examination situation where there are time demands as well as demands on his ability to retrieve information. [REDACTED] will likely always require additional time to complete work and compensatory strategies for such skills as handwriting.

It is recommended that [REDACTED] continue to receive Occupational Therapy and commence the Speech Therapy programme suggested following his last assessment.

[REDACTED]
CLINICAL PSYCHOLOGIST &
NEUROPSYCHOLOGIST

Recommendations

↳ ongoing support within
school

↳ modification teaching prog.

↳ additional time

↳ OT

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↳ SLP

APPENDIX 3.4

NARRATIVE: "BEING TIM'S MUM"

Narrative 1

Parenting a child with special needs is frustrating.

The most difficult area is family and / or friends. They don't often understand the joy you get in reaching a milestone or achieving a particular goal, as their own children did this some time before. Generally, contact with health professionals and teachers is very positive. They take Tim at his own level and work to stimulate and encourage him.

As parents, we can get frustrated with Tim's difficulties. When in holiday we can take the time to remind, encourage, and assist Tim to help himself. When rushing for work it is easier to do things for him or get cross when he doesn't remember something. This generates feelings of guilt.

Narrative 2

Tim is a 12 year old boy who has been diagnosed with Asperger's Syndrome and epilepsy. He has had fine and gross motor coordination problems throughout his life and has also had ongoing occupational therapy to help him with his organisational and other problems.

Tim is my only child.

When he was born we were afraid he was going to die – or that he would be in a permanent vegetative state. Neither happened. He smiled and interacted with us and other people. He grew, and despite the coordination difficulties, developed well.

As Tim is getting older the differences between him and other children is growing more obvious. He has become isolated, and finds it hard to make and keep friends. I

good
hopeful
positive

problems

helpless
guilty
sad
unhappy
frustrated

social

academic

ongoing
increasing
continuing
persisting

lonely
x-friends

worry about this lack of friendships, but feel helpless to assist. He is also falling behind with his schoolwork, despite his obvious intelligence and abilities in some areas.

I have an ongoing fluctuating grief about Tim's problems and my expectations of parenthood have had to constantly adapt to the realities. Nothing has worked out how I expected. It is hard to see Tim as an adult and I don't know where life's path will take him. Other parents talk proudly about their own child's achievements – and my own pride in Tim's achievements cannot be expressed to people who do not fully understand Tim's problems.

Tim can be very frustrating at times and it can be hard to step back and work through each problem.....yet again.....step by step. Having only one child; it can be hard to see which problems are specific to Tim and which happen to every child.

Tim is annoying, frustrating and embarrassing. He is also incredibly affectionate and easily moved to tears by something sad. He loves hugs and praise. He is funny and loves telling jokes. He likes to read and often quotes his favourite parts of the book. He loves music. He is fun to be around. He is my son.

Narrative 3

Some years have passed and Tim is now 16. he has physically matured and is in many ways an adult, but still needs so much support.

Schooling is continuing but is difficult. Tim's entry into high school was a nightmare and as a parent, as a teacher, and as a person, I am appalled at how little I understood the pressures he was under. When a child has difficulty explaining feelings, you have to rely on visual signals, and I underestimated the depth of his trauma.

He is now continuing his education at home and my role has moved from that of parent to that of teacher. I often find it hard to step back into my real role of mum. A lot of the fun is missing from our relationship during the week and that worries me. Friends laugh when I tell them of Tim's oppositional behaviour and regale me with their own 'teenage boy' stories. Tim is actually remarkably obedient, while at the same time being incredibly stubborn and frustrating.

Probably the best thing to have happened in the last four years is that Tim has a best friend. It's easy to look back and see the mistakes and the hardships, and look forward and see only problems but that one fact shows me that something tremendous has happened for Tim. Maybe that's the way our lives will pan out – lots of problems, lots of frustrations, but great things will continue to happen. Progress will be made, and others will get to see the son I still cherish for who he is.


NARRATIVE: "BEING TIM'S CLASS TEACHER"

'Tim is tall, dark haired and the oldest member of a class of 26 children. He is well known to all class members attending this school since Kindergarten. He has a unique personality, and is accepted by all his peers. Tim enjoys adult company and is very friendly, often engaging in a conversation.

In class, Tim's participation is in relative short bursts. Sometimes he comes out with inappropriate timing of compulsive statements which may or not be related to the topic being discussed. Triggers may be a key word or passage. Tim's comments are loudly delivered. Sometimes they are humorous; they are rarely conventional. Some statements are repeated and usually relate to a positive experience when self esteem may have been high. My pleasure and praise is important to Tim.

Tim can be stubborn. When he decides that a task is not for him, a few polite excuses may be given. If they fail – refusal is often followed. Time is the only successful

behaviour technique.....although a change of environment has also assisted. Writing lessons, fine motor activities and group participation discussions are areas where Tim can become stubborn and refuse to work.

I need to assist Tim to organise for each lesson. I need to check for progress, encouraging Tim to continue by giving him loads of prompting. Tim is known to delay and be very pedantic. Tim loves visuals and reading. He will watch and take in  a video. A computer is a valuable tool. Tim tunes out with too much teacher talk during lessons. He likes games in maths – especially dice games. Fine motor and gross motor confidence and self belief in his ability is low.

I am concerned about Tim fitting into his next social situation – secondary school. He may be a possible target due to him being different. His classmates now understand him but the future group of classmates may not. His ability to cope is uncertain. Tim has a genuine sense of unfairness and is hurt emotionally by cruel and senseless actions. Tim's parents are great because they are very aware and very supportive. They have assisted Tim by giving him many skills and understanding. As a class teacher, Tim's smile and sense of humour wins me over. But my hair colour is changing too!

NARRATIVE: 'BEING ME'

'I am 12 years old. I love console games. I have epilepsy.

I have a group of friends but I often play by myself. They don't usually include me in my games. I don't go to find them. I'm quite used to being on my own. I like using my imagination. I don't know if I'd be happier playing with my friends or by myself. One of my hobbies is reading. I remember lots. I like reading at school – I'm good at it.

Sometimes I have a bit of trouble with maths. I have trouble with protractors and compasses. I can't seem to figure them out. I get frustrated. I can ask for help and I do sometimes – or I can ask if I can do a different page. This is OK.

Taking notes is hard. I prefer to watch first.....then write later. It's hard to take good notes but it's easy to remember things I watch. If I'm bored, I don't concentrate.

If I didn't have problems it would be better.

Sometimes I get depressed. I take a tablet to make it better. I don't like to think about it. I think things get too much for me. I'm not sure if the tablet helps or not.

I have an occupational therapist to help me. Sometimes her advice helps – sometimes it doesn't.

I go to martial arts which is good. It's only frustrating when other kids don't cooperate. My teacher makes it easy for me and I like wrestling my opponents on the mat. I don't mind losing. It's fun.

Some good things in my life are my kittens, my Gamecube, sport (even though I'm not very good) and Susan (my occupational therapist) helping me.

Some bad things are my friends, when they don't play with me; having epilepsy; writing (I prefer using my computer) and cranky people'.

APPENDIX 3.5

EXAMPLES OF SEMI-STRUCTURED GROUP INTERVIEW QUESTIONS

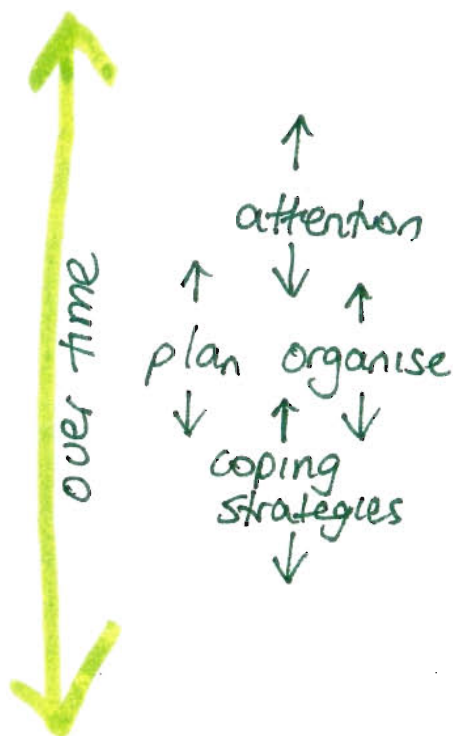
- What does Tim's participation at school look like at the moment?
- What do you think is the biggest hurdle to Tim's participation at the moment?
- What strategies seem to be making a difference? The most difference?
- Can you think of any ways I (*occupational therapist*) could be supporting Tim's participation, that might better hit the "hot spot"?
- Are there any ways that I (*occupational therapist*) could be working differently to better support you (*class room teacher*)?
- What do you think is the biggest challenge that Tim will be facing with his participation at school over the next term?
- I can provide an intensive block of school based intervention. Is this something that you would like to discuss?
- How do you anticipate we could work together with intensive school based OT to improve Tim's participation at school? How would you like that to look?

APPENDIX 3.6

DATA ANALYSIS THEMATIC CODING

Preschool teacher

One on-going area of difficulty for [redacted] is his fine motor skills. Despite occupational therapy and daily practice at home and at preschool, [redacted] still has poor strength and control for fine motor activities. His pencil grip, drawing and writing are quite immature. He needs much encouragement and frequent prompts to help him plan and organize himself and materials through the sequence of steps needed to complete a task. This can take [redacted] a long time and without help, he is likely to have difficulty finishing much of his work at school. [redacted] is also likely to have difficulty getting started on many activities as fear of failure results in avoidance behaviours when [redacted] knows that what he produces on paper will not look as good as he would like or as good as what other children have done. [redacted] will need extra assistance to succeed in classroom activities with fine motor components. Without such assistance, [redacted]'s confidence will suffer and he may present as being academically less competent than is the case.



Yr 4 teacher

[redacted] can be a very kind and caring child but he can also be very defiant and stubborn. [redacted] has attained a satisfactory standard in all Key Learning Areas. He is a competent young man, who has the ability to do well when he remains focussed. However, [redacted] is often slow to commence, is disorganised and requires specific guidance to stay on the task at hand. Even though [redacted] has improved greatly over the past academic year he is still having difficulties with self-anger management and this problem needs to be further addressed through continuing assessment and the building of coping strategies.

Yr 7 speech pathologist

Goal: [redacted] to actively participate in conversations - meaningfully and to stay on topic. [redacted] to listen to verbal directions and

Task: carry them out accurately.

Outcome: [redacted] appeared to struggle to maintain

Homework: focus and to be engaged in activity today.

Queried: [redacted] if he was tired he replied "I'm fine".

APPENDIX 3.7a

PRPP SYSTEM OF TASK ANALYSIS TEACHER RATING SCALE

SHORT FORM

ASSESSMENT of CHILD PARTICIPATION - TEACHER QUESTIONNAIRE (K - 6)

Dear Teacher,

..... is having an assessment on.....
regarding.....

I am asking you to complete this questionnaire

- according to the expectations of your classroom environment
 - because over time you have made observations which are not possible in a structured 1:1 environment
- I know you are very busy - and that this questionnaire is adding to that business - so thank you for your response.

WHAT IS DIFFICULT ? questions

Please tick any skills which concern you as being difficult for this child

Play	Personal care	Gross motor	Fine motor
<input type="checkbox"/> Purposeful play <input type="checkbox"/> Imaginative play <input type="checkbox"/> Cooperative play <input type="checkbox"/> Play with rules	<input type="checkbox"/> Putting on clothes e.g. sweater, raincoat <input type="checkbox"/> Buttons <input type="checkbox"/> Shoelaces <input type="checkbox"/> Managing recess/lunch e.g. lunch box, drink <input type="checkbox"/> Toileting	<input type="checkbox"/> Ball skills <input type="checkbox"/> Running <input type="checkbox"/> Jumping <input type="checkbox"/> Hopping <input type="checkbox"/> Skipping <input type="checkbox"/> Climbing equipment <input type="checkbox"/> Sport <input type="checkbox"/> Balance <input type="checkbox"/> Coordination	<input type="checkbox"/> Puzzles <input type="checkbox"/> Construction activities <input type="checkbox"/> Colouring <input type="checkbox"/> Drawing <input type="checkbox"/> Cutting <input type="checkbox"/> Pasting <input type="checkbox"/> Folding <input type="checkbox"/> Handwriting legibility <input type="checkbox"/> Handwriting speed <input type="checkbox"/> Copying <input type="checkbox"/> Writing - generating ideas <input type="checkbox"/> Writing - organising ideas <input type="checkbox"/> Computer skills - mouse control - typing

If gross motor skills are a concern: Does the child -

Tire quickly after physical activity

Frequently bump into objects

Use clumsy or awkward movements

Kindergarten teachers please list letters and numbers already taught this year

Letters.....

Numbers.....

Please circle on the continuum where your student fits compared to other students in the class

Handwriting: major concern 5 4 3 2 1 no concern

Writing: major concern 5 4 3 2 1 no concern

WHY IS IT DIFFICULT ? questions

Please tick any underlying abilities which concern you as being difficult for this child

Mechanical	Sensory motor	Feelings
<input type="checkbox"/> Consistent use of dominant hand <input type="checkbox"/> Consistent use of efficient pencil grip	<input type="checkbox"/> Establishing and maintaining eye contact <input type="checkbox"/> Eye hand coordination	<input type="checkbox"/> Cooperation <input type="checkbox"/> Confidence <input type="checkbox"/> Motivation <input type="checkbox"/> Willingness to attempt tasks <input type="checkbox"/> Perseverance with difficult tasks <input type="checkbox"/> Enjoyment of fine motor tasks
Attention	Memory	Organisation
<input type="checkbox"/> Actively listen <input type="checkbox"/> listen till instruction finished <input type="checkbox"/> get started on task <input type="checkbox"/> stay focussed long enough to finish task <input type="checkbox"/> finish a task without help <input type="checkbox"/> stay alert <input type="checkbox"/> try hard, exert effort <input type="checkbox"/> shift attention from one task to another <input type="checkbox"/> focus on important details <input type="checkbox"/> focus regardless of motivation, interest <input type="checkbox"/> sit at seat for length of task <input type="checkbox"/> multitask -do more than one thing at a time <input type="checkbox"/> react appropriately to distracting noises <input type="checkbox"/> follow 2 part instructions <input type="checkbox"/> follow 3 part instructions <input type="checkbox"/> follow instructions spoken to whole class	Remember <input type="checkbox"/> where things are kept <input type="checkbox"/> when to do things <input type="checkbox"/> how to do things <input type="checkbox"/> rules <input type="checkbox"/> goal of a task <input type="checkbox"/> instructions to complete a task <input type="checkbox"/> procedure for routine tasks <input type="checkbox"/> Know how long a task should take <input type="checkbox"/> Have a concept of time	<input type="checkbox"/> cope with changes to routine <input type="checkbox"/> set a goal for a task <input type="checkbox"/> understand goal of a task <input type="checkbox"/> think before doing <input type="checkbox"/> ask appropriate questions about how to do a task <input type="checkbox"/> get ready for tasks in an organised way <input type="checkbox"/> think up strategies to carry out a task <input type="checkbox"/> use strategies to carry out a task <input type="checkbox"/> chose the best, most efficient strategy <input type="checkbox"/> make choices <input type="checkbox"/> make decisions <input type="checkbox"/> anticipate consequences <input type="checkbox"/> solve problems <input type="checkbox"/> prepare for next stage of a task <input type="checkbox"/> plan a sequence of small steps in a task <input type="checkbox"/> identify obstacles which might hinder ability to do a task <input type="checkbox"/> assess whether a task has been done well or not <input type="checkbox"/> identify why a task has been done well or not <input type="checkbox"/> question if there are better or different ways to do a task <input type="checkbox"/> complete tasks within an appropriate time frame <input type="checkbox"/> pace self - not too rushed or too slow <input type="checkbox"/> keep desk tidy Please circle: Does your student have an impulsive approach to tasks? Yes No

Is there anything else you want to add about your student's

abilities.....

difficulties.....

What are your main concerns for which you would appreciate guidance from O.T. assessment or intervention?

APPENDIX 3.7b

PRPP SYSTEM OF TASK ANALYSIS PARENT RATING SCALE

SHORT FORM

ASSESSMENT OF PRIMARY SCHOOL CHILD PARTICIPATION: PARENT QUESTIONNAIRE

The purpose of this assessment, in conjunction with formal assessments, is to determine your child's level of participation as a result of your observations. This is a general questionnaire for children of different primary school ages and different needs. It is divided into 2 main sections:

1. Skill section which evaluates **what** activities are age appropriate or difficult
 2. Underlying ability section which evaluates **why** these activities are age appropriate or difficult
- Please complete any questions which are relevant for your child.

Name of child			
Name of parents			
Address			Postcode:
Telephone			
Date of birth	Age:	yrs	mths
School			
Class at school			
Referred by			

Has your child been given a diagnosis or label by any doctors or therapists? If so, what?	
Has your child had a vision assessment? If yes, any problems?	
Has your child had a hearing assessment? If yes, any problems?	
Were your child's developmental milestones (e.g. sitting, crawling, walking) age appropriate?	
Has your child had a normal amount of experience / exposure to gross motor and fine motor activities?	
Will you be using this report to support an application for a Carer's allowance (Centrelink)?	
Why was an occupational therapy assessment recommended?	

WHAT IS DIFFICULT ? questions

Please tick any skills which concern you because they are difficult for your child.

Play / Social	Gross motor	Personal care
<input type="checkbox"/> Playing by self <input type="checkbox"/> Playing alongside other children <input type="checkbox"/> Playing cooperatively with other children <input type="checkbox"/> Playing with purpose <input type="checkbox"/> Playing with rules <input type="checkbox"/> Playing with imagination <input type="checkbox"/> Sharing <input type="checkbox"/> Taking turns <input type="checkbox"/> Initiating games <input type="checkbox"/> Making friends <input type="checkbox"/> Keeping friends <input type="checkbox"/> Coping with changes to routine <input type="checkbox"/> Coping with unfamiliar situations <input type="checkbox"/> Being aware of own feelings and the feelings of others <input type="checkbox"/> Dealing with feelings <input type="checkbox"/> Using appropriate body language <input type="checkbox"/> Other	<input type="checkbox"/> Running <input type="checkbox"/> Jumping <input type="checkbox"/> Hopping <input type="checkbox"/> Skipping <input type="checkbox"/> Climbing <input type="checkbox"/> Catching a ball <input type="checkbox"/> Throwing a ball <input type="checkbox"/> Kicking a ball <input type="checkbox"/> Riding a bike <input type="checkbox"/> Swimming <input type="checkbox"/> Sport <input type="checkbox"/> Balance <input type="checkbox"/> Other <p style="text-align: center;"><u>Fine motor</u></p> <input type="checkbox"/> Puzzles <input type="checkbox"/> Construction activities <input type="checkbox"/> Threading <input type="checkbox"/> Folding <input type="checkbox"/> Colouring <input type="checkbox"/> Drawing <input type="checkbox"/> Cutting <input type="checkbox"/> Pasting <input type="checkbox"/> Handwriting neatness <input type="checkbox"/> Handwriting speed <input type="checkbox"/> Writing <input type="checkbox"/> Typing <input type="checkbox"/> Other	<p><u>Dressing</u></p> <input type="checkbox"/> Putting on clothes <input type="checkbox"/> Taking off clothes <input type="checkbox"/> Turning clothes right side out <input type="checkbox"/> Putting on shoes and socks <input type="checkbox"/> Buttons <input type="checkbox"/> Zippers <input type="checkbox"/> Shoelaces <input type="checkbox"/> Other <p><u>Eating</u></p> <input type="checkbox"/> Using cutlery <input type="checkbox"/> Drinking from cup, popper <input type="checkbox"/> Opening containers, packets <input type="checkbox"/> Other <p><u>Toileting</u></p> <input type="checkbox"/> Adjusting clothing <input type="checkbox"/> Using toilet paper <input type="checkbox"/> Other <p><u>Personal hygiene</u></p> <input type="checkbox"/> Turning taps on and off <input type="checkbox"/> Washing and drying hands <input type="checkbox"/> Blowing nose <input type="checkbox"/> Other <p><u>Organisation for Routines</u></p> <input type="checkbox"/> Getting ready for school <input type="checkbox"/> Getting ready for bed <input type="checkbox"/> Homework <input type="checkbox"/> School projects <input type="checkbox"/> Tidying bedroom <input type="checkbox"/> Other

Please describe in more detail your child's strengths and abilities in any of these, or other, areas:

Please describe in more detail your child's difficulties in any of these, or other areas:

Which areas are a priority concern for you - areas for which you would like occupational therapy help?

WHY IS IT DIFFICULT ? questions

Please tick any abilities which are difficult for your child

Mechanical reasons	Sensory motor reasons	Cognitive reasons (continued)
<input type="checkbox"/> Hand dominance <input type="checkbox"/> Consistent use of efficient pencil grip <input type="checkbox"/> Does your child tire easily after physical activity? <input type="checkbox"/> Other <p style="text-align: center;">Feeling reasons</p> <input type="checkbox"/> Cooperation <input type="checkbox"/> Confidence <input type="checkbox"/> Motivation <input type="checkbox"/> Willingness to attempt tasks <input type="checkbox"/> Perseverance with difficult tasks <input type="checkbox"/> Enjoyment of fine motor tasks <input type="checkbox"/> Does your child avoid indoor or table top activities? <input type="checkbox"/> Does your child avoid outdoor or sport activities? <p style="text-align: center;">Sensory motor reasons</p> <p><u>Processing vision</u></p> <input type="checkbox"/> Does your child have difficulty establishing and maintaining eye contact? <input type="checkbox"/> Does your child reverse letters and words? <input type="checkbox"/> Does your child have difficulty keeping place when reading or copying? <p><u>Processing movement and balance</u></p> <input type="checkbox"/> Does your child frequently bump into objects? <input type="checkbox"/> Does your child fall frequently? <input type="checkbox"/> Is your child clumsy or awkward during movements? <input type="checkbox"/> Does your child become nauseated or vomit after movement experiences e.g. swings, merry go rounds <input type="checkbox"/> Is your child in constant motion.....unable to sit still? <p><u>Processing touch</u></p> <input type="checkbox"/> Is your child overly sensitive to being touched? <input type="checkbox"/> Does your child touch things constantly? <input type="checkbox"/> Does your child avoid messy textures e.g. paste, clay, finger paint? <input type="checkbox"/> Does your child seem unaware of being touched?	<p><u>Processing sound</u></p> <input type="checkbox"/> Does your child appear overly sensitive to loud noises e.g. bells, flushing toilet? <input type="checkbox"/> Is your child easily distracted by sounds which seem to go unnoticed by others? <p style="text-align: center;">Cognitive reasons</p> <p style="text-align: center;"><u>Attention</u></p> <input type="checkbox"/> Actively listen <input type="checkbox"/> Listen till instruction finished <input type="checkbox"/> Get started on task <input type="checkbox"/> Stay focussed long enough to finish task <input type="checkbox"/> Finish a task without help <input type="checkbox"/> Stay alert <input type="checkbox"/> Try hard, exert effort <input type="checkbox"/> Shift attention from one task to another <input type="checkbox"/> Focus on important details <input type="checkbox"/> Focus regardless of motivation, interest <input type="checkbox"/> Sit at seat for length of task <input type="checkbox"/> Multitask - do more than one thing at the same time <input type="checkbox"/> React appropriately to distracting noises <input type="checkbox"/> Follow 2 part instructions <input type="checkbox"/> Follow 3 part instructions Other <p style="text-align: center;"><u>Memory</u></p> <p>Remember</p> <input type="checkbox"/> Where things are kept <input type="checkbox"/> When to do things <input type="checkbox"/> How do things <input type="checkbox"/> Rules <input type="checkbox"/> Goal of a task <input type="checkbox"/> Instructions to complete a task <input type="checkbox"/> Procedure for routine task Know <input type="checkbox"/> How long a task should take <input type="checkbox"/> Have a concept of time	<p style="text-align: center;"><u>Organisation</u></p> <input type="checkbox"/> Cope with changes to routine <input type="checkbox"/> Set a goal for a task <input type="checkbox"/> Understand goal of a task <input type="checkbox"/> Think before doing <input type="checkbox"/> Ask appropriate questions about how to do a task <input type="checkbox"/> Get ready for tasks in an organised way <input type="checkbox"/> Think up strategies to carry out a task <input type="checkbox"/> Use strategies to carry out a task <input type="checkbox"/> Chose the best, most efficient strategy <input type="checkbox"/> Make choices <input type="checkbox"/> Make decisions <input type="checkbox"/> Anticipate consequences <input type="checkbox"/> Solve problems <input type="checkbox"/> Prepare for next stage of a task <input type="checkbox"/> Plan a sequence of small steps in a task <input type="checkbox"/> Identify obstacles which might hinder ability to do a task <input type="checkbox"/> Assess whether a task has been done well or not <input type="checkbox"/> Identify why a task has been done well or not <input type="checkbox"/> Question if there are better or different ways to do a task <input type="checkbox"/> Complete tasks within an appropriate time frame <input type="checkbox"/> Pace self - not too rushed or too slow <input type="checkbox"/> Other <p><u>Please circle:</u></p> Does your child have an impulsive approach to tasks? Yes No

Please describe in more detail your child's difficulties in these, or any other, underlying ability areas:

What is the major thing which you would like this assessment or intervention do for you and your child?

You will be given a written report. Please list details of other people who you would like to receive a copy of the report after you have read the report:

	Name	Address
Teacher		
Special Education Teacher		
School Counsellor		
Psychologist		
Speech Pathologist		
Family Doctor		
Paediatrician		
Other		

Thankyou for answering the questionnaire 😊

APPENDIX 3.8

EXAMPLES OF SCHOOL OCCUPATIONS USED FOR OBSERVATION OF TIM'S COGNITIVE STRATEGY USE

- **Announcements**
- **Tidying the classroom**
- **Scripture lesson**
- **Free play**
- **Dancing**
- **Desk moving**
- **Colouring**
- **Drawing**
- **Maths worksheet**
- **Discussion**
- **Making a title page**
- **Spelling**
- **Library**
- **Explanation of the day**
- **Listening to speeches**
- **Watching a debate**
- **Reading**
- **Taking notes on Vietnam video**
- **Handwriting: copying from the board**
- **Sport**
- **Computer**

APPENDIX 5.1a

PRPP@SCHOOL- VERSION 1 (TEACHER QUESTIONNAIRE)

The questionnaire is comprised of Section 1 and Section 2.

Section 1 is not included in the current research for this thesis.

Only Section 2 is included in the current research for this thesis.

TEACHER RATING SCALE

CHILD _____ YEAR _____

TEACHER _____ DATE _____

This rating scale is concerned with your student's participation at school. It has 2 sections:

SECTION 1 asks **WHAT** questions: What skills are, or are not, difficult?

Occupational therapists at Skills for Kids work with children who have difficulty in a number of skill areas including fine motor (e.g. handwriting), gross motor (e.g. ball skills), personal care (e.g. dressing) and play / social (e.g. friendship). The assessment session with the occupational therapist will test in detail the specific skills which were identified at referral to be difficult participation skills for your student.

SECTION 2 asks **WHY** questions: Why are these skills difficult?

The assessment session with the occupational therapist will test many contributing factors. This questionnaire section only addresses attention, memory and organisation factors for participation at school.

The rating scale is lengthy but only takes a short time to complete.....about 20 minutes including reflection time.

This rating scale is being developed in order to describe and to measure functional participation regardless of any diagnosis or label.

Our goal at Skills for Kids is to increase the independent participation of children with their activities and with other people in the shared learning environment of their school.

SECTION 1 – What skills are / are not difficult for participation?

If fine motor is an issue: Please tick any **fine motor** skills which you believe to be difficulty participation skills for your student **compared to your expectations for this age:**

- | | | |
|---|--|--|
| <input type="checkbox"/> Puzzles | <input type="checkbox"/> Construction and manipulative activities | <input type="checkbox"/> Folding |
| <input type="checkbox"/> Colouring | <input type="checkbox"/> Cutting and pasting | <input type="checkbox"/> Drawing |
| <input type="checkbox"/> Handwriting legibility | <input type="checkbox"/> Copying from the blackboard | <input type="checkbox"/> Task completion speed |
| <input type="checkbox"/> Writing – generating ideas | <input type="checkbox"/> Writing – organising | <input type="checkbox"/> Writing – expanding ideas |
| <input type="checkbox"/> Computer | Does your student avoid indoor or desktop activities? <input type="checkbox"/> Yes <input type="checkbox"/> No | |

Please circle on the continuum where your student fits compared to other students in the class

Handwriting: major concern 5 4 3 2 1 no concern

Writing: major concern 5 4 3 2 1 no concern

Other skill difficulties?

Any comments or further detail?

If gross motor is an issue: Please tick any **gross motor** skills which you believe to be difficult participation skills for your student **compared to your expectations for this age:**

- | | | | |
|--|---|---|-----------------------------------|
| <input type="checkbox"/> Running | <input type="checkbox"/> Jumping | <input type="checkbox"/> Hopping | <input type="checkbox"/> Skipping |
| <input type="checkbox"/> Ball skills | <input type="checkbox"/> Climbing equipment | <input type="checkbox"/> Strength | <input type="checkbox"/> Balance |
| <input type="checkbox"/> Coordination | <input type="checkbox"/> Sports | <input type="checkbox"/> Bike riding | <input type="checkbox"/> Swimming |
| <input type="checkbox"/> Other skills? | Does your student tire easily after physical activity? <input type="checkbox"/> Yes <input type="checkbox"/> No | Does your student avoid outdoor or sport activities? <input type="checkbox"/> Yes <input type="checkbox"/> No | |

Any comments or further detail?

If personal care is an issue: Please tick any **personal care** skills which you believe to be difficult participation skills for your student **compared to your expectation for this age:**

<input type="checkbox"/> Putting on clothes e.g. sweater shoes socks	<input type="checkbox"/> Taking off clothes	<input type="checkbox"/> Turning clothes right side out	<input type="checkbox"/> Shoelaces
<input type="checkbox"/> Buttons	<input type="checkbox"/> Toileting e.g. adjusting clothing, using toilet paper	<input type="checkbox"/> Blowing nose	<input type="checkbox"/> Using cutlery
<input type="checkbox"/> Managing recess or lunch e.g. lunch box, drink	<input type="checkbox"/> Opening packets or containers	<input type="checkbox"/> Turning taps on and off	<input type="checkbox"/> Other skills?

Any comments or further detail?

If attitude is an issue: Please comment on any **'attitude' abilities** which you believe to be difficult participation skills for your student **compared to your expectations for this age:**

<input type="checkbox"/> Cooperation	<input type="checkbox"/> Confidence	<input type="checkbox"/> Motivation	<input type="checkbox"/> Willingness to attempt tasks
<input type="checkbox"/> Perseverance with difficult tasks	<input type="checkbox"/> Enjoyment		

Please comment on any **play / social** skills which you believe to be difficult participation skills for your student **compared to your expectations for this age:**

SECTION 2 – Why is / is not participation difficult?

Please answer every question by ✓ ticking inside one box in every row. Do not put any ticks on a line – only inside boxes.

Not age appropriate	I don't believe this ability is required at my student's age
Always	When presented with a situation, my student responds in this manner, 100% of the time
Frequently	When presented with a situation, my student responds in this manner, 75% of the time
Occasionally	When presented with a situation, my student responds in this manner, 50% of the time
Seldom	When presented with a situation, my student responds in this manner, 25% of the time
Never	When presented with a situation, my student responds in this manner, 0% of the time
Don't know	Not sure; I'm only guessing; the statement is confusing or difficult to understand

Information processing ability for:

Compared to expectations for children this age.....		Not age appropriate	100% Always	75% Frequently	50% Occasionally	25% Seldom	0% Never	Don't know
		A	F	O	S	N		
	Attention: <i>My student is able to</i>							
A1	React to what is happening by looking (eye contact), listening							
A2	Appear to listen and make an effort to understand what has been said							
A3	Listen till an instruction is finished							
A4	Sit at seat for length of activity							
A5	Stay with group activity							
A6	Find what is needed for an activity							
A7	Focus regardless of motivation and interest							
A8	Try hard, exert effort, maintain physical effort							
A9	React appropriately to distracting sound or movement							
A10	Stay focused long enough to complete an activity or for the time required by the activity							
A11	Finish an activity without help or redirection to the task							
A12	Narrow or broaden attention in order to focus on important details							
A13	Divide attention in order to multitask (do more than one thing at a time)							
A14	Switch or shift attention from one thing to another							
A15	Notice change							
A16	Stay alert							
A17	Be aware of other people's feelings by searching for facial expression, tone of voice, body language etc							

My student's performance at school is consistent from day to day
 My student makes careless errors

Yes No
 Yes No

Compared to expectations for children this age.....

Not age appropriate
Always 100%
Frequently 75%
Occasionally 50%
Seldom 25%
Never 0%
Don't know

	Recall / Remember: <i>My student is able to:</i>	A	F	O	S	N	
R1	Know when to do things						
R2	Know where things should be done						
R3	Remember the procedure or rules for routine activities						
R4	Know what 'finished' looks like						
R5	Follow 2 part instructions directed to the child						
R6	Follow 3 part instructions directed to the child						
R7	Follow instructions spoken to a small group or whole class without needing individual prompts						
R8	Remember where things are kept						
R9	Remembers all of the habitual steps which are required in order to finish a familiar and known activity						
R10	Remember to bring required materials e.g. library bag, sports clothes						
R11	Deal with group pressure						
R12	Know the difference between what is important and not						
R13	Remember the specific goal of an activity and keep it in mind						
R14	Remember how to do things						
R15	Have a concept of time						
R16	Know how long an activity should take						
R17	Be aware of own feelings						
R18	Use words to express feelings						
R19	Use non verbal or body language to express feelings						
R20	Express own feelings in an appropriate way						
R21	Use acceptable ways to express anger						
R22	Deal with teasing in ways which allow him / her to stay in control						
R23	Use acceptable ways to express own excitement						
R24	Manage own anxiety or fears in an appropriate way e.g. being able to relax when tense						
R25	Has a healthy self esteem						
R26	Be confident						
R27	Manage appropriately if left out of an activity						
R28	Be polite e.g. say Thankyou, please						
R29	Share						
R30	Greet others appropriately						
R31	Begin and end a conversation appropriately						
R32	Play fairly with sportsmanship – no cheating or disputing decisions made by referee						
R33	Encourage others e.g. give compliment						
R34	Express affection appropriately e.g. stay in own personal space, use appropriate body language with appropriate people						
R35	Ask permission – no grabbing						
R36	Manage clothing – buttons, laces						
R37	Remember quickly and precisely						

Compared to expectations for children this age.....

Not age appropriate
Always 100%
Frequently 75%
Occasionally 50%
Seldom 25%
Never 0%
Don't know

	PLANNING: My student is able to:	A	F	O	S	N	
P1	Think before doing						
P2	Assess whether an activity has been done well or not						
P3	Keep belongings tidy, keep desk tidy						
P4	Get self and objects ready for activities in an organised way						
P5	Make correct choices, choose everything needed for an activity						
P6	Make safe and informed decisions						
P7	Stay away from situations which may get him / her into trouble						
P8	Accept consequences without becoming overly defensive or upset						
P9	Choose to disregard what is irrelevant						
P10	Complete activities within an appropriate time frame						
P11	Cope with changes to routine						
P12	Pace or regulate self – not too rushed, not too slow						
P13	Ask appropriate and useful questions; or ask for help when appropriate about how to do an activity						
P14	Understand the goal of an activity and keep that goal in mind during the activity						
P15	Set a realistic and specific goal or objective for an activity						
P16	Think up strategies or plans in order to achieve the goal; think up ideas						
P17	Plan the next step in an activity; or plan a sequence of steps in an activity so that the activity flows						
P18	Anticipate consequences						
P19	Solve problems by thinking of alternatives, choosing an alternative, and then evaluating how well this alternative solved the problem						
P20	Figure out problems or obstacles which might get in the way or hinder ability to do an activity						
P21	Identify why an activity has been done well or not						
P22	Stop every now and again to check performance (Am I doing it right? Should I do it different?)						
P23	Question if there are better or different ways to do an activity (How could I do it better or different?); question own performance as the activity progresses						
P24	Use strategies to do an activity in a systematic and purposeful way (not random and haphazard)						
P25	Choose the best, most efficient plan or strategy						
P26	Respond to self esteem issues in socially appropriate ways						
P27	Be motivated						
P28	Make corrections or changes when asked without getting overly frustrated, accept constructive feedback, complete work without frustration						
P29	Enjoy activities						
P30	Accept losing						
P31	Accept 'No'						
P32	Be supportive of other people's feelings						
P33	Cooperate						
P34	Take turns in activities and in social relationships e.g. no interrupting						
P35	Offer help at appropriate times and in an appropriate manner						
P36	Join in an ongoing group or activity						
P37	Apologise if he / she has hurt someone (accidentally or on purpose)						

P38	Deal with somebody else's anger appropriately by not getting angry him / her self							
P39	Negotiate – be willing to give and take in order to reach a compromise							
P40	Control talkativeness							
P41	Control being fidgety							
P42	Cope with new situations							
P43	Independently organise own work, time, routine							
P44	Use appropriate spatial layout for work							
P45	Be willing to attempt activity, to 'have a go'							

Compared to expectations for children this age.....

		Not age appropriate	Always 100%	Frequently 75%	Occasionally 50%	Seldom 25%	Never 0%	Don't know
Motor execution: My student is able to:			A	F	O	S	N	
D1	Get started on an activity within an appropriate time frame							
D2	Get started on an activity without extra help							
D3	Recommence an activity after there has been an interruption							
D4	Make easy and smooth transitions between activities							
D5	Stop when required or requested							
D6	Maintain posture for activity							
D7	Coordinate movements for physical activity							
D8	Manipulate small items							
D9	Persevere , keep going and try hard when obstacles arise or when effort is required							

What do you feel are your student's priority or main difficulties?

What do you feel are your student's main strengths?

Additional comments if you choose:

APPENDIX 5.1b

PRPP@SCHOOL-VERSION 1 (PARENT QUESTIONNAIRE)

The questionnaire is comprised of Section 1 and Section 2.
Section 1 is not included in the current research for this thesis.
Only Section 2 is included in the current research for this thesis.

CHILD _____ YEAR _____

PARENT _____ DATE _____

This rating scale is concerned with a child's participation at home. It has 2 sections:

SECTION 1 asks **WHAT** questions: What skills are, or are not, difficult?

Occupational therapists at Skills for Kids work with children who have difficulty in a number of skill areas including fine motor (e.g. handwriting), gross motor (e.g. ball skills), personal care (e.g. dressing) and play / social (e.g. friendship). The assessment session with the occupational therapist will test in detail the specific skills which were identified at referral to be difficult participation skills for your child.

SECTION 2 asks **WHY** questions: Why are these skills difficult?

The assessment session with the occupational therapist will test many contributing factors. This questionnaire section only addresses attention, memory and organisation factors for participation at school.

The rating scale is lengthy but only takes a short time to complete.....about 20 minutes including reflection time.

This rating scale is being developed in order to describe and to measure functional participation regardless of any diagnosis or label.

Our goal at Skills for Kids is to increase the independent participation of children with their activities and with other people in the shared learning environment of their school.

BACKGROUND INFORMATION

Name of child		
Name of parents	Parent	
	Parent	
Telephone	Home	
	Work	
	Mobile	
Address		
	Postcode	
Email		
Date of birth		
Age	Years	Months
School		
Year at school		
Referred by		
Has your child been given a diagnosis or label by any doctors or therapists?	Yes	No
If yes, please give details		
Has your child had a vision assessment?	Yes	No
If your child has a vision difficulty please give details		
Has your child had a hearing assessment?	Yes	No
If your child has a hearing difficulty please give details		
Were your child's developmental milestones (e.g. sitting, crawling, walking) age appropriate?	Yes	No
Has your child had a normal amount of exposure to gross motor and fine motor activities?	Yes	No

Will you be using this report to support an application for a Carer's allowance (Centrelink)	Yes No
---	--------------------

After the assessment you will be given a written report. After you have read and discussed the report with the occupational therapist copies can be sent to other people who are working with your child. Please list the names and addresses of these people.

	Name	Address
Teacher		
Education Support Teacher		
School Counsellor		
Psychologist		
Speech Pathologist		
Family Doctor		
Paediatrician		
Other		

Attached to this rating scale is a consent form giving us permission to communicate with people regarding your child. Please also complete this consent form and return with the rating scale. If you do not receive a consent form please ask for one.

What do you feel are your child's priority or main difficulties?

What do you feel are your child's main strengths?

SECTION 1 – What skills are / are not difficult for participation?

Please tick any **fine motor** skills which you believe to be difficulty participation skills for your child **compared to your expectations for this age**:

- | | | |
|---|--|--|
| <input type="checkbox"/> Puzzles | <input type="checkbox"/> Construction and manipulative activities | <input type="checkbox"/> Folding |
| <input type="checkbox"/> Colouring | <input type="checkbox"/> Cutting and pasting | <input type="checkbox"/> Drawing |
| <input type="checkbox"/> Handwriting legibility | <input type="checkbox"/> Copying from the blackboard | <input type="checkbox"/> Task completion speed |
| <input type="checkbox"/> Writing – generating ideas | <input type="checkbox"/> Writing – organising | <input type="checkbox"/> Writing – expanding ideas |
| <input type="checkbox"/> Computer | Does your child avoid indoor or desktop activities? <input type="checkbox"/> Yes <input type="checkbox"/> No | |

Other skills?

Any comments or further detail?

Please tick any **gross motor** skills which you believe to be difficult participation skills for your child **compared to your expectations for this age**:

- | | | | |
|--|---|---|-----------------------------------|
| <input type="checkbox"/> Running | <input type="checkbox"/> Jumping | <input type="checkbox"/> Hopping | <input type="checkbox"/> Skipping |
| <input type="checkbox"/> Ball skills | <input type="checkbox"/> Climbing equipment | <input type="checkbox"/> Strength | <input type="checkbox"/> Balance |
| <input type="checkbox"/> Coordination | <input type="checkbox"/> Sports | <input type="checkbox"/> Bike riding | <input type="checkbox"/> Swimming |
| <input type="checkbox"/> Other skills? | Does your child tire easily after physical activity? <input type="checkbox"/> Yes <input type="checkbox"/> No | Does your child avoid outdoor or sport activities? <input type="checkbox"/> Yes <input type="checkbox"/> No | |

Any comments or further detail?

Please tick any **personal care** skills which you believe to be difficult participation skills for your child **compared to your expectation for this age**:

<input type="checkbox"/>	Putting on clothes e.g. sweater shoes socks	<input type="checkbox"/>	Taking off clothes	<input type="checkbox"/>	Turning clothes right side out	<input type="checkbox"/>	Shoelaces
<input type="checkbox"/>	Buttons	<input type="checkbox"/>	Toileting e.g. adjusting clothing, using toilet paper	<input type="checkbox"/>	Blowing nose	<input type="checkbox"/>	Using cutlery
<input type="checkbox"/>	Managing recess or lunch e.g. lunch box, drink	<input type="checkbox"/>	Opening packets or containers	<input type="checkbox"/>	Turning taps on and off	<input type="checkbox"/>	Other skills?

Any comments or further detail?

Eating and Mealtime Routines:

Some children who come to Skills for Kids have significant difficulty with issues related to eating – limited food tastes and textures – and mealtimes. This difficulty can impact on a child's attention and energy for participation. If your child has a difficulty and you would like us to address this please use this space to describe your child's difficulty or ask your therapist for our Eating and Mealtime Questionnaire.

Sleeping and Night Time Routines:

Some children who come to Skills for Kids have significant difficulty with issues related to sleeping with night time routines, going to sleep and staying asleep. This difficulty can impact on a child's attention and energy for participation during the day. If your child has a difficulty and you would like us to address this please use this space to describe your child's difficulty.

.
.

Please comment on any **'attitude' abilities** which you believe to be difficult participation skills for **your child compared to your expectations for this age:**

Cooperation

Confidence

Motivation

Willingness to attempt tasks

Perseverance with difficult tasks

Enjoyment

Please comment on any **play / social** skills which you believe to be difficult participation skills for your child **compared to your expectations for this age:**

Please answer 'yes' or 'no' regarding and sensory abilities which you believe to be difficult participation skills for your child compared to your expectations for this age Does your child

Processing vision

	Yes	No
Have difficulty establishing and maintaining eye contact		
Reverse letter, numbers or words		
Have difficulty keeping place when reading or copying		

Processing movement and balance

	Yes	No
Frequently bump into objects		
Fall frequently		
Have clumsy or awkward movements		
Become nauseated or vomit after movement experiences e.g. swings		
Have difficulty being still when required i.e. constantly moving		

Processing touch

	Yes	No
Have an oversensitivity to touch e.g. hates having hair washed or cut, wearing clothes with tags		
Touch things constantly		
Avoid messy textures e.g. paste, finger paint		
Seem unaware of being touched		

Processing sound

	Yes	No
Appear overly sensitive to loud noises e.g. bells, flushing toilet		
Become easily distracted by sounds which seem to go unnoticed by others		

SECTION 2 – Why is / is not participation difficult?

Please answer every question by ✓ ticking inside one box in every row. Do not put any ticks on a line – only inside boxes.

Not age appropriate	I don't believe this ability is required at my child's age
Always	When presented with a situation, my child responds in this manner, 100% of the time
Frequently	When presented with a situation, my child responds in this manner, 75% of the time
Occasionally	When presented with a situation, my child responds in this manner, 50% of the time
Seldom	When presented with a situation, my child responds in this manner, 25% of the time
Never	When presented with a situation, my child responds in this manner, 0% of the time
Don't know	Not sure; I'm only guessing; the statement is confusing or difficult to understand

Information processing ability for:

Compared to expectations for children this age.....

		Not age appropriate	100% Always	75% Frequently	50% Occasionally	25% Seldom	0% Never	Don't know
	Attention: My child is able to		A	F	O	S	N	
A1	React to what is happening by looking (eye contact), listening							
A2	Appear to listen and make an effort to understand what has been said							
A3	Listen till an instruction is finished							
A4	Sit at seat for length of activity							
A5	Stay with group activity							
A6	Find what is needed for an activity							
A7	Focus regardless of motivation and interest							
A8	Try hard, exert effort, maintain physical effort							
A9	React appropriately to distracting sound or movement							
A10	Stay focused long enough to complete an activity or for the time required by the activity							
A11	Finish an activity without help or redirection to the task							
A12	Narrow or broaden attention in order to focus on important details							
A13	Divide attention in order to multitask (do more than one thing at a time)							
A14	Switch or shift attention from one thing to another							
A15	Notice change							
A16	Stay alert							
A17	Be aware of other people's feelings by searching for facial expression, tone of voice, body language etc							

My child's performance at home is consistent from day to day
 My child makes careless errors

Yes No
 Yes No

Compared to expectations for children this age.....

Not age appropriate
Always 100%
Frequently 75%
Occasionally 50%
Seldom 25%
Never 0%
Don't know

	Recall / Remember: <i>My child is able to:</i>	A	F	O	S	N	
R1	Know when to do things						
R2	Know where things should be done						
R3	Remember the procedure or rules for routine activities						
R4	Know what 'finished' looks like						
R5	Follow 2 part instructions directed to the child						
R6	Follow 3 part instructions directed to the child						
R7	Follow instructions spoken to a small group or whole class without needing individual prompts						
R8	Remember where things are kept						
R9	Remembers all of the habitual steps which are required in order to finish a familiar and known activity						
R10	Remember to bring required materials e.g. library bag, sports clothes						
R11	Deal with group pressure						
R12	Know the difference between what is important and not						
R13	Remember the specific goal of an activity and keep it in mind						
R14	Remember how to do things						
R15	Have a concept of time						
R16	Know how long an activity should take						
R17	Be aware of own feelings						
R18	Use words to express feelings						
R19	Use non verbal or body language to express feelings						
R20	Express own feelings in an appropriate way						
R21	Use acceptable ways to express anger						
R22	Deal with teasing in ways which allow him / her to stay in control						
R23	Use acceptable ways to express own excitement						
R24	Manage own anxiety or fears in an appropriate way e.g. being able to relax when tense						
R25	Has a healthy self esteem						
R26	Be confident						
R27	Manage appropriately if left out of an activity						
R28	Be polite e.g. say Thankyou, please						
R29	Share						
R30	Greet others appropriately						
R31	Begin and end a conversation appropriately						
R32	Play fairly with sportsmanship – no cheating or disputing decisions made by referee						
R33	Encourage others e.g. give compliment						
R34	Express affection appropriately e.g. stay in own personal space, use appropriate body language with appropriate people						
R35	Ask permission – no grabbing						
R36	Manage clothing – buttons, laces						
R37	Remember quickly and precisely						

Compared to expectations for children this age.....

Not age appropriate
Always 100%
Frequently 75%
Occasionally 50%
Seldom 25%
Never 0%
Don't know

		A	F	O	S	N	
	PLANNING: My child is able to:						
P1	Think before doing						
P2	Assess whether an activity has been done well or not						
P3	Keep belongings tidy, keep desk tidy						
P4	Get self and objects ready for activities in an organised way						
P5	Make correct choices, choose everything needed for an activity						
P6	Make safe and informed decisions						
P7	Stay away from situations which may get him / her into trouble						
P8	Accept consequences without becoming overly defensive or upset						
P9	Choose to disregard what is irrelevant						
P10	Complete activities within an appropriate time frame						
P11	Cope with changes to routine						
P12	Pace or regulate self – not too rushed, not too slow						
P13	Ask appropriate and useful questions; or ask for help when appropriate about how to do an activity						
P14	Understand the goal of an activity and keep that goal in mind during the activity						
P15	Set a realistic and specific goal or objective for an activity						
P16	Think up strategies or plans in order to achieve the goal; think up ideas						
P17	Plan the next step in an activity; or plan a sequence of steps in an activity so that the activity flows						
P18	Anticipate consequences						
P19	Solve problems by thinking of alternatives, choosing an alternative, and then evaluating how well this alternative solved the problem						
P20	Figure out problems or obstacles which might get in the way or hinder ability to do an activity						
P21	Identify why an activity has been done well or not						
P22	Stop every now and again to check performance (Am I doing it right? Should I do it different?)						
P23	Question if there are better or different ways to do an activity (How could I do it better or different?); question own performance as the activity progresses						
P24	Use strategies to do an activity in a systematic and purposeful way (not random and haphazard)						
P25	Choose the best, most efficient plan or strategy						
P26	Respond to self esteem issues in socially appropriate ways						
P27	Be motivated						
P28	Make corrections or changes when asked without getting overly frustrated, accept constructive feedback, complete work without frustration						
P29	Enjoy activities						
P30	Accept losing						
P31	Accept 'No'						
P32	Be supportive of other people's feelings						
P33	Cooperate						
P34	Take turns in activities and in social relationships e.g. no interrupting						
P35	Offer help at appropriate times and in an appropriate manner						
P36	Join in an ongoing group or activity						
P37	Apologise if he / she has hurt someone (accidentally or on purpose)						

P38	Deal with somebody else's anger appropriately by not getting angry him / her self						
P39	Negotiate – be willing to give and take in order to reach a compromise						
P40	Control talkativeness						
P41	Control being fidgety						
P42	Cope with new situations						
P43	Independently organise own work, time, routine						
P44	Use appropriate spatial layout for work						
P45	Be willing to attempt activity, to 'have a go'						

Compared to expectations for children this age.....

		Not age appropriate	Always 100%	Frequently 75%	Occasionally 50%	Seldom 25%	Never 0%	Don't know
	Motor execution: My child is able to:		A	F	O	S	N	
D1	Get started on an activity within an appropriate time frame							
D2	Get started on an activity without extra help							
D3	Recommence an activity after there has been an interruption							
D4	Make easy and smooth transitions between activities							
D5	Stop when required or requested							
D6	Maintain posture for activity							
D7	Coordinate movements for physical activity							
D8	Manipulate small items							
D9	Persevere , keep going and try hard when obstacles arise or when effort is required							

Additional comments if you choose:

APPENDIX 5.2

ITEMS RATED BY PARENTS IN THE “SELDOM” OR “NEVER”
CATEGORIES WHICH SCORE HIGHER THAN ITEMS RATED BY
TEACHERS USING THE PRPP@SCHOOL-1 (TQ & PQ)

Items in this list are equivalent to 12% of the total number of items

Item number	Item description	Parent frequency percentage	Teacher frequency percentage
Planning 28	Manage change, not be overly frustrated	41	26
Recall 10	Remember to bring required equipment	30	15
Planning 8	Accept consequences	39	26
Recall 24	Manage anxiety	45	38
Recall 36	Manage clothing, buttons, laces	19	13
Planning 30	Accept losing	28	22
Planning 11	Manage change to routine	27	23
Recall 11	Deal with group pressure	40	36
Recall 27	Manage if left out of activity	31	27
Recall 22	Deal with teasing	39	37
Planning 31	Accept 'no'	20	18
Planning 3	Keep belongings tidy	42	41
Planning 26	Respond to self esteem issues	30	29

APPENDIX 5.3

PERCENTAGE OF STUDENTS REPORTED TO “SELDOM” OR NEVER” DEMONSTRATE COGNITIVE STRATEGY USE

SEPARATE TEACHER AND PARENT RATINGS

Teacher			Parent		
Item	Item description	%	Item	Item description	%
A13†	Divide attention to multitask	70	A13†	Divide attention to multitask	60
P23†	Question if better way to do activity	69	P43†	Organise own work, time, routine	53
P22†	Stop frequently to check Performance	60	P12†	Pace self	49
P43†	Organise own work, time, routine	58	P23†	Question if better way to do activity	47
P25†	Choose best strategy	56	P10†	Finish within appropriate time	46
P12†	Pace self	56	R24†	Manage anxiety	45
P19†	Solve problems	54	A11†	Finish activity without redirection	44
P20†	Identify obstacles hindering activity	53	R16†	Know how long an activity takes	43
P10†	Finish within appropriate time	51	A7†	Focus regardless of motivation	42
A12†	Focus on important detail	51	P3†	Keep belongings/desk tidy	42
A11†	Finish activity without redirection	50	P28	Manage change, not be overly Frustrated	41
P17†	Plan sequence of steps in activity	50	P24†	Use strategies in systematic way	41
P24†	Use strategies in systematic way	49	P44†	Use organisation for bookwork	40
P15†	Set realistic/specific goal for activity	48	P25†	Choose best strategy	40
P16	Think up strategies to achieve goal	46	R11†	Deal with group pressure	40
P44†	Use organisation for bookwork	45	R22†	Deal with teasing	39
P21†	Identify why activity is, is not, successful	45	P8	Accept consequences	39
R16†	Know how long an activity takes	45	P22†	Stop frequently to check performance	38
A7†	Focus regardless of motivation	45	P19†	Solve problems	37
P2	Assess whether activity is, is not, Successful	43	A12†	Focus on important detail	36
P18†	Anticipate consequences	43	P41†	Control being fidgety	34
P9†	Choose to disregard what is Irrelevant	41	P18†	Anticipate consequences	34
A10†	Stay focused long enough to finish	41	R15	Have a concept of time	34
P3†	Keep belongings/desk tidy	41	P9†	Choose to disregard what is irrelevant	33
R7†	Follow instructions to whole class	40	P20†	Identify obstacles hindering activity	33
P4†	Get self/objects ready	40	P4†	Get self/objects ready	33
R6	Follow 3 part instructions	40	D9	Persevere when obstacles arise	32
P14	Understand goal, keep goal in mind	38	P17†	Plan sequence of steps in activity	32
A14	Switch attention	38	D2†	Get started without redirection	31
R24†	Manage anxiety	38	R7†	Follow instructions to whole class	31
D2†	Get started without redirection	37	R27	Manage if left out of activity	31
R22†	Deal with teasing	37	R10	Remember to bring required equipment	30
R11†	Deal with group pressure	36	P26	Respond to self esteem issues appropriately	30
P41†	Control being fidgety	36	P15†	Set realistic/specific goal for activity	29
A9	React appropriately to distractions	35	P21†	Identify why activity is, is not, successful	29
P13	Ask appropriate questions/ask for help	35	A10†	Stay focused long enough to finish	28

Teacher			Parent		
Item	Item description	%	Item	Item description	%
D1‡	Get started within appropriate Time	35	R6	Follow 3 part instructions to student	28
R15	Have a concept of time	35	R21‡	Use acceptable ways to show anger	28
R37	Remember details quickly, precisely	35	P30	Accept losing	28
R13‡	Remember specific goal and keep it in mind	34	P11	Manage change to routine	27
D9	Persevere when obstacles arise	34	R12‡	Know difference between what is, is not, important	26
R21‡	Use acceptable ways to show anger	33	D3‡	Recommence activity after interruption	26
A8	Try hard, exert effort	33	P40‡	Control talkativeness	26
P27‡	Be motivated	33	P7‡	Stay away from situations which get him/her into trouble	25
P40‡	Control talkativeness	32	P1‡	Think before doing	25
R33	Encourage others	32	R13‡	Remember specific goal and keep it in mind	25
R12‡	Know difference between what is, is not, important	32	D1‡	Get started within appropriate time	25
P39‡	Negotiate and compromise	31	P5‡	Make correct choices, choose everything needed for activity	24
D3‡	Recommence activity after interruption	31	P14	Understand goal, keep goal in mind	24
P5‡	Make correct choices, choose everything needed for activity	31	P16	Think up strategies to achieve goal	24
P1‡	Think before doing	29	P2	Assess whether activity, is not, successful	23
P35	Offer help appropriately	29	D6‡	Maintain posture for activity	22
A17	Be aware of other's feelings by searching for non-verbal body language	29	A4	Stay at seat for length of activity	22
P26	Respond to self esteem issues appropriately	29	R20‡	Express own feelings appropriately	22
R18‡	Use words to express feelings	28	P6‡	Make safe and informed decisions	22
P7‡	Stay away from situations which get him/her into trouble	28	P38	Deal with other's anger appropriately	22
D6‡	Maintain posture for activity	28	D4‡	Make smooth and easy transitions between activities	21
D4‡	Make smooth and easy transitions between activities	27	P39‡	Negotiate and compromise	21
P6‡	Make safe and informed decisions	27	P31	Accept 'no'	20
A5	Stay with group activity	27	A14	Switch attention	20
R27	Manage if left out of activity	27	P36‡	Join in ongoing activity	20
A3‡	Listen till instruction finished	27	R26‡	Be confident	20
R20‡	Express own feelings appropriately	26	A3‡	Listen till instruction finished	20
P28	Manage change, not be overly Frustrated	26	P27‡	Be motivated	20
P8	Accept consequences	26	R36	Manage clothing, buttons, laces	19
R26‡	Be confident	26	R25	Has a healthy self esteem	19
P45	Be willing to attempt activity	25	P34‡	Take turns	19
P36‡	Join in ongoing activity	25	A9	React appropriately to distractions	18
A6	Find what is needed for activity	25	P42	Manage new situations	18
R4	Know what finished looks like	24	P13	Ask appropriate questions/ask for help	17
P34‡	Take turns	24	R18‡	Use words to express feelings	17

Teacher			Parent		
Item	Item description	%	Item	Item description	%
R25	Has a healthy self esteem	24	R37	Remember details quickly, precisely	17
P38	Deal with other's anger Appropriately	24	R33	Encourage others	16
P11	Manage change to routine	23	P45	Be willing to attempt activity	16
R5±	Follow 2 part instructions to student	23	A5	Stay with activity	15
A16±	Stay alert	22	R1±	Know when to do things	15
A4	Stay at seat for length of activity	22	R31±	Begin and end conversation appropriately	14
P30	Accept losing	22	A17	Be aware of other's feelings by searching for non-verbal body language	14
A1±	React to what is happening by looking, listening	22	D5±	Stop when needed	13
P37±	Apologise	22	A8	Try hard, exert effort	13
P42	Manage new situations	21	R34±	Express affection appropriately	13
P32±	Be supportive of other's feelings	21	R35±	Ask permission	12
R9±	Remember all habitual steps required to finish familiar activity	18	R32±	Play fairly with sportsmanship	12
A15±	Notice change	18	D7±	Coordinate movement for physical activity	12
P31	Accept 'no'	18	A6	Find what is needed for activity	12
D5±	Stop when needed	18	P35	Offer help appropriately	12
A2±	Appear to listen	18	R8±	Remember where things are kept	11
R31±	Begin and end conversation appropriately	18	R4	Know what finished looks like	11
R34±	Express affection appropriately	18	R5±	Follow 2 part instructions to student	11
D7±	Coordinate movement for physical activity	18	A16±	Stay alert	11
R23±	Show excitement appropriately	17	P37±	Apologise	11
R1±	Know when to do things	17	R23±	Show excitement appropriately	10
P33±	Cooperate	17	P32±	Be supportive of other's feelings	10
R35±	Ask permission	16	A1±	React to what is happening by looking, listening	10
R3±	Remember rules	16	R2±	Know where things should be done	9
R32±	Play fairly with sportsmanship	16	R29±	Share	9
D8±	Manipulate small items	15	R30±	Greet others appropriately	9
R10	Remember to bring required equipment	15	P33±	Cooperate	9
R14±	Remember how to do things	15	A2±	Appear to listen	8
R19±	Use non-verbal language to express feelings	15	R14±	Remember how to do things	8
R29±	Share	14	R19±	Use non-verbal language to express feelings	8
R17±	Be aware of own feelings	13	R3±	Remember rules	8
R36	Manage clothing, buttons, laces	13	R17±	Be aware of own feelings	7
R2±	Know where things should be done	13	D8±	Manipulate small items	7
R8±	Remember where things are kept	13	R9±	Remember all habitual steps required to finish familiar activity	7
P29±	Enjoy activities	13	A15±	Notice change	6
R30±	Greet others appropriately	9	P29±	Enjoy activities	2
R28±	Be polite	7	R28±	Be polite	2

† = Teacher and parent items both located in highest 1/3 of the total number of items

‡ = Teacher and parent items both located in middle 1/3 of the total number of items

± = Teacher and parent items both located in lowest 1/3 of the total number of items

A=Attention category, R=Recall category, P=Planning category, D=Doing category

APPENDIX 5.4

PERCENTAGE OF STUDENTS REPORTED TO “SELDOM” OR NEVER” DEMONSTRATE COGNITIVE STRATEGY USE

COMBINED TEACHER AND PARENT RATINGS

Hierarchy order	Item	Item description	%
1	A13	Divide attention in order to multitask	64
2	P23	Question if better way to do activity	57
3	P43	Organise own work, time, routine	54
4	P12	Pace self	52
5	P22	Stop frequently to check performance	48
6	P10	Finish within appropriate time	48
7	A11	Finish activity without redirection	47
8	P25	Choose best strategy	47
9	P24	Use strategies in systematic way	44
10	P19	Solve problems	44
11	R16	Know how long an activity takes	44
12	A7	Focus regardless of motivation	43
13	A12	Focus on important detail	43
14	P44	Use organisation for bookwork	42
15	R24	Manage anxiety	41
16	P20	Identify obstacles hindering activity	41
17	P3	Keep belongings/desk tidy	41
18	P17	Plan sequence of steps in activity	39
19	R22	Deal with teasing	38
20	R11	Deal with group pressure	38
21	P18	Anticipate consequences	37
22	P15	Set realistic/specific goal for activity	37
23	P21	Identify why activity is, is not, successful	36
24	P9	Choose to disregard what is irrelevant	36
25	P4	Get self/objects ready	35
26	R7	Follow instructions to whole class	35
27	P41	Control being fidgety	35
28	P28	Manage change, not be overly frustrated	34
29	R15	Have a concept of time	34
30	A10	Stay focused long enough to finish task	34
31	D2	Get started without redirection	34
32	R6	Follow 3 part instructions	34
33	P16	Think up strategies to achieve goal	33
34	P8	Accept consequences	33
35	P2	Assess whether activity is, is not successful	33
36	D9	Persevere when obstacles arise	32
37	P14	Understand goal, keep goal in mind	30
38	R21	Use acceptable ways to show anger	30
39	P26	Respond to self esteem issues appropriately	29

40	R13	Remember specific goal and keep it in mind	29
41	R27	Manage if left out of activity	29
42	D1	Get started within appropriate time	29
43	R12	Know difference between what is, is not, important	29
44	P40	Control talkativeness	29
45	A14	Switch attention	28
46	D3	Recommence activity after interruption	28
47	P5	Make correct choices, choose everything needed for activity	27
48	P1	Think before doing	27
49	A9	React appropriately to distractions	26
50	P7	Stay away from situations which get him/her into trouble	26
51	P27	Be motivated	25
52	P39	Negotiate and compromise	25
53	P13	Ask appropriate questions/ ask for help	25
54	D6	Maintain posture for activity	25
55	P30	Accept losing	25
56	P11	Manage change to routine	25
57	R37	Remember details quickly and precisely	24
58	P6	Make safe and informed decisions	24
59	R33	Encourage others	24
60	D4	Make smooth and easy transitions between activities	23
61	R10	Remember to bring required equipment	23
62	A3	Listen till instruction finished	23
63	P36	Join in ongoing activity	23
64	P38	Deal with other's anger appropriately	23
65	R20	Express own feelings appropriately	23
66	A4	Stay at seat for length of activity	22
67	R26	Be confident	22
68	R18	Use words to express feelings	22
69	A8	Try hard, exert effort	22
70	P34	Take turns	21
71	R25	Has a healthy self esteem	21
72	A17	Be aware of other's feelings by searching for non-verbal body language	21
73	A5	Stay with group activity	21
74	P45	Be willing to attempt activity	20
75	P35	Offer help appropriately	20
76	P42	Manage new situations	19
77	P31	Accept 'no'	19
78	A6	Find what is needed for activity	18
79	R4	Know what finished looks like	17
80	R36	Manage clothing, buttons, laces	17
81	R5	Follow 2 part instructions to student	17
82	A16	Stay alert	16
83	R31	Begin and end conversation appropriately	16
84	P37	Apologise	16
85	A1	React to what is happening by looking and listening	16

86	R1	Know when to do things	16
87	D5	Stop when needed	16
88	P32	Be supportive of other's feelings	15
89	R34	Express affection appropriately	15
90	D7	Coordinate movement for physical activity	15
91	R35	Ask permission	15
92	R32	Play fairly with sportsmanship	14
93	R23	Show excitement appropriately	13
94	A2	Appear to listen	13
95	P33	Cooperate	13
96	R9	Remember all habitual steps required to finish familiar activity	12
97	R8	Remember where things are kept	12
98	R3	Remember rules	12
99	R29	Share	12
100	R14	Remember how to do things	11
101	A15	Notice change	11
102	R19	Use non-verbal language to express feelings	11
103	D8	Manipulate small items	11
104	R2	Know where things should be done	11
105	R17	Be aware of own feelings	10
106	R30	Greet others appropriately	9
107	P29	Enjoy activities	7
108	R28	Be polite	4

A=Attention category, R=Recall category, P=Planning category, D=Doing category



APPENDIX 6.1

ETHICS CONSENT FORM FOR TEST-RETEST

Address for all correspondence:
Level 6, Jane Foss Russell Building - G02
The University of Sydney
NSW 2006 AUSTRALIA

RELIABILITY OF PRPP@SCHOOL-1(PQ)

Ref: SJA/PR

15 June 2010

Dr Christine Chapparo
Discipline of Occupational Therapy
Faculty of Health Sciences
Cumberland Campus - C42
The University of Sydney
Email: chris.chapparo@sydney.edu.au

Dear Dr Chapparo

Thank you for your correspondence dated 4 June 2010 addressing comments made by the Human Research Ethics Committee (HREC). The Executive Committee of the HREC, at its meeting of 9 June 2010, considered this information and approved the protocol entitled "**Test-retest reliability of the PRPP@SCHOOL assessment**".

Details of the approval are as follows:

Protocol No.: 12815
Approval Period: June 2010 to June 2011
Authorised Personnel: Dr Christine Chapparo
Mrs Susan Lowe
Dr Rob Heard

Documents approved:

Participant Information Statement, Version 1, 9th April 2010, updated
Participant Consent Form, Version 1, 9th April 2010
Questionnaire, Version 1, 9th April 2010

The HREC is a fully constituted Ethics Committee in accordance with the National Statement on Ethical Conduct in Research Involving Humans-March 2007 under Section 5.1.29.

The approval of this project is conditional upon your continuing compliance with the National Statement on Ethical Conduct in Research Involving Humans. NB. A report on this research must be submitted every 12 months from the date of the approval, or on completion of the project, whichever occurs first. Failure to submit reports will result in the withdrawal of consent for the project to proceed. Your report will be due on **30 June 2011**, please put this in your diary.

Chief Investigator / Supervisor's responsibilities to ensure that:

1. All serious and unexpected adverse events should be reported to the HREC within 72 hours for clinical trials/interventional research.
2. All unforeseen events that might affect continued ethical conduct of the project should be reported to the HREC as soon as possible.

Human Ethics Secretariat:

Ms Portia Richmond T: +61 2 8627 8171 E: portia.richmond@sydney.edu.au
Ms Patricia Engelmann T: +61 2 8627 8172 E: patricia.engelmann@sydney.edu.au
Ms Kala Retnam T: +61 2 8627 8173 E: kala.retnam@sydney.edu.au

3. Any change to the protocol must be approved by the HREC before the research project can proceed.
4. All research participants are to be provided with a Participant Information Statement and Consent Form, unless otherwise agreed by the Committee. The following statement must appear on the bottom of the Participant Information Statement: *Any person with concerns or complaints about the conduct of a research study can contact the Manager, Research Integrity (Human Ethics), University of Sydney on +61 2 8627 8176 (Telephone); + 61 2 8627 8177 (Facsimile) or ro.humanethics@sydney.edu.au (Email).*
5. Copies of all signed Consent Forms must be retained and made available to the HREC on request.
6. It is your responsibility to provide a copy of this letter to any internal/external granting agencies if requested.
7. The HREC approval is valid for four (4) years from the Approval Period stated in this letter. Investigators are requested to submit a progress report annually.
8. A report and a copy of any published material should be provided at the completion of the Project.

Please do not hesitate to contact Research Integrity (Human Ethics) should you require further information or clarification.

Yours sincerely



Dr Stephen Assinder
Deputy Chair
Human Research Ethics Committee

cc: Susan Lowe, email: slow9206@usyd.edu.au

APPENDIX 6.2

Participant Information Statement For Test-Retest Reliability



THE UNIVERSITY OF
SYDNEY

Discipline of Occupational Therapy
Faculty of Health Sciences

ABN 15 211 513 464

DR CHRISTINE CHAPPARO
SENIOR LECTURER

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Web: <http://www.usyd.edu.au/>

EVALUATING RELIABILITY OF THE PRPP@SCHOOL PARTICIPANT INFORMATION STATEMENT

You are invited to take part in a research study that evaluates reliability of the PRPP@SCHOOL questionnaire. The object is to discover whether people who complete the parent version of this questionnaire respond in similar ways over time.

The study is being conducted by Susan Lowe and will form the basis for the award of PhD at the University of Sydney under the supervision of Dr Christine Chapparo.

If you agree to participate in this study, you will be asked to answer questions in writing in a parent questionnaire on two occasions separated by a time period of two weeks. It will take about 20 minutes to complete. You will be able to do this while your child is attending his/her usual occupational therapy sessions.

All aspects of the study, including results, will be strictly confidential and only the investigators named above will have access to information on participants, except as required by law. A report of the study may be submitted for publication, but individual participants will not be identifiable in such a report.

While we intend that this research study furthers knowledge about children's participation at school, it may not be of direct benefit to you.

Participation in this study is entirely voluntary: you are not obliged to participate. If you do participate, you can withdraw at any time. You are aware that Susan Lowe is the owner of Skills for Kids, and that if you choose not to participate, your decision will not affect your relationship with Skills for Kids at any level including the therapy provided to your child or your relationship with the researcher or other staff at Skills for Kids.

When you have read this information, Susan Lowe is available to discuss it with you further and answer any questions you may have. If you would like to know more at any stage, please feel free to contact Susan Lowe T: 02 47390267 or E: info@skillsforkids.com.au; Christine Chapparo T: 93519206 or E: chris.chapparo@sydney.edu.au

Any person with concerns or complaints about the conduct of a research study can contact the Deputy Manager, Human Ethics Administration, University of Sydney on +61 2 8627 8176 (Telephone); +61 2 8627 8177 (Facsimile) or ro.humanethics@sydney.edu.au (Email).

This information sheet is for you to keep.

APPENDIX 6.3

PARTICIPANT INSTRUCTIONS AND QUESTIONNAIRE FOR TEST-RETEST

RELIABILITY OF PRPP@SCHOOL-1 (TQ & PQ)

Evaluating reliability of the PRPP@SCHOOL INSTRUCTIONS

Dear parent / carer

Please answer this questionnaire on 2 separate occasions in regard to your child who is receiving occupational therapy intervention. **Once today** during your child's session and **once more in 2 week's time** during your child's session.

When you have finished, put this information sheet in the envelope provided together with the questionnaire and give the envelope back to the Office Manager at the front desk. She will keep a record of when you need to complete the second questionnaire.

You have been assigned a number which replaces your name or the name of your child. This number simply allows the researchers to put all the data connected with your child together.

It is important that

1. the same parent/carer completes the questionnaire each of the 2 times
2. the child is a client receiving intervention at Skills for Kids
3. the child is in one of the primary school years: Kindergarten through to Year 6

MANY THANKS, *Susan Lowe and Chris Chapparo*

PARTICIPANT NUMBER: _____

Year of your child at school (tick) K YR1 YR2 YR3 YR4 YR5 YR6

Gender of your child (tick) M F

Reason for my child's referral to occupational therapy

Date of completion of questionnaire (time 1) (time 2): _____

Please answer every question by ✓ ticking inside one box in every row. Do not put any ticks on a line – only inside boxes.

- Not age appropriate I don't believe this ability is required at my child's age
- Always When presented with a situation, my child responds in this manner, 100% of the time
- Frequently When presented with a situation, my child responds in this manner, 75% of the time
- Occasionally When presented with a situation, my child responds in this manner, 50% of the time
- Seldom When presented with a situation, my child responds in this manner, 25% of the time
- Never When presented with a situation, my child responds in this manner, 0% of the time
- Don't know Not sure; I'm only guessing; the statement is confusing or difficult to understand

Cognitive strategy use ability for:

		Not age appropriate	100% Always	75% Frequently	50% Occasionally	25% Seldom	0% Never	Don't know
	Attention: <i>When my child is doing school-related activities he/she is able to:</i>		A	F	O	S	N	
A1	React to what is happening by looking (eye contact), listening							
A2	Appear to listen and make an effort to understand what has been said							
A3	Listen till an instruction is finished							
A4	Sit at seat for length of activity							
A5	Stay with group activity							
A6	Find what is needed for an activity							
A7	Focus regardless of motivation and interest							
A8	Try hard, exert effort, maintain physical effort							
A9	React appropriately to distracting sound or movement							
A10	Stay focused long enough to complete an activity or for the time required by the activity							
A11	Finish an activity without help or redirection to the task							
A12	Narrow or broaden attention in order to focus on important details							
A13	Divide attention in order to multitask (do more than one thing at a time)							
A14	Switch or shift attention from one thing to another							
A15	Notice change							
A16	Stay alert							
A17	Be aware of other people's feelings by searching for facial expression, tone of voice, body language etc							

		Not age appropriate	100% Always	75% Frequently	50% Occasionally	25% Seldom	0% Never	Don't know
	Recall: <i>When my child is doing school-related activities he/she is able to:</i>		A	F	O	S	N	
R1	Know when to do things							
R2	Know where things should be done							
R3	Remember the procedure or rules for routine activities							
R4	Know what 'finished' looks like							
R5	Follow 2 part instructions directed to the child							
R6	Follow 3 part instructions directed to the child							
R7	Follow instructions spoken to a small group or whole class without needing individual prompts							
R8	Remember where things are kept							
R9	Remembers all of the habitual steps which are required in order to finish a familiar and known activity							
R10	Remember to bring required materials e.g. library bag, sports clothes							
R11	Deal with group pressure							
R12	Know the difference between what is important and not							
R13	Remember the specific goal of an activity and keep it in mind							
R14	Remember how to do things							
R15	Have a concept of time							
R16	Know how long an activity should take							
R17	Be aware of own feelings							
R18	Use words to express feelings							
R19	Use non verbal or body language to express feelings							
R20	Express own feelings in an appropriate way							
R21	Use acceptable ways to express anger							
R22	Deal with teasing in ways which allow him / her to stay in control							
R23	Use acceptable ways to express own excitement							
R24	Manage own anxiety or fears in an appropriate way e.g. being able to relax when tense							
R25	Has a healthy self esteem							
R26	Be confident							
R27	Manage appropriately if left out of an activity							
R28	Be polite e.g. say Thankyou, please							
R29	Share							
R30	Greet others appropriately							
R31	Begin and end a conversation appropriately							
R32	Play fairly with sportsmanship – no cheating or disputing decisions made by referee							
R33	Encourage others e.g. give compliment							
R34	Express affection appropriately e.g. stay in own personal space, use appropriate body language with appropriate people							
R35	Ask permission – no grabbing							
R36	Manage clothing – buttons, laces							
R37	Remember quickly and precisely							

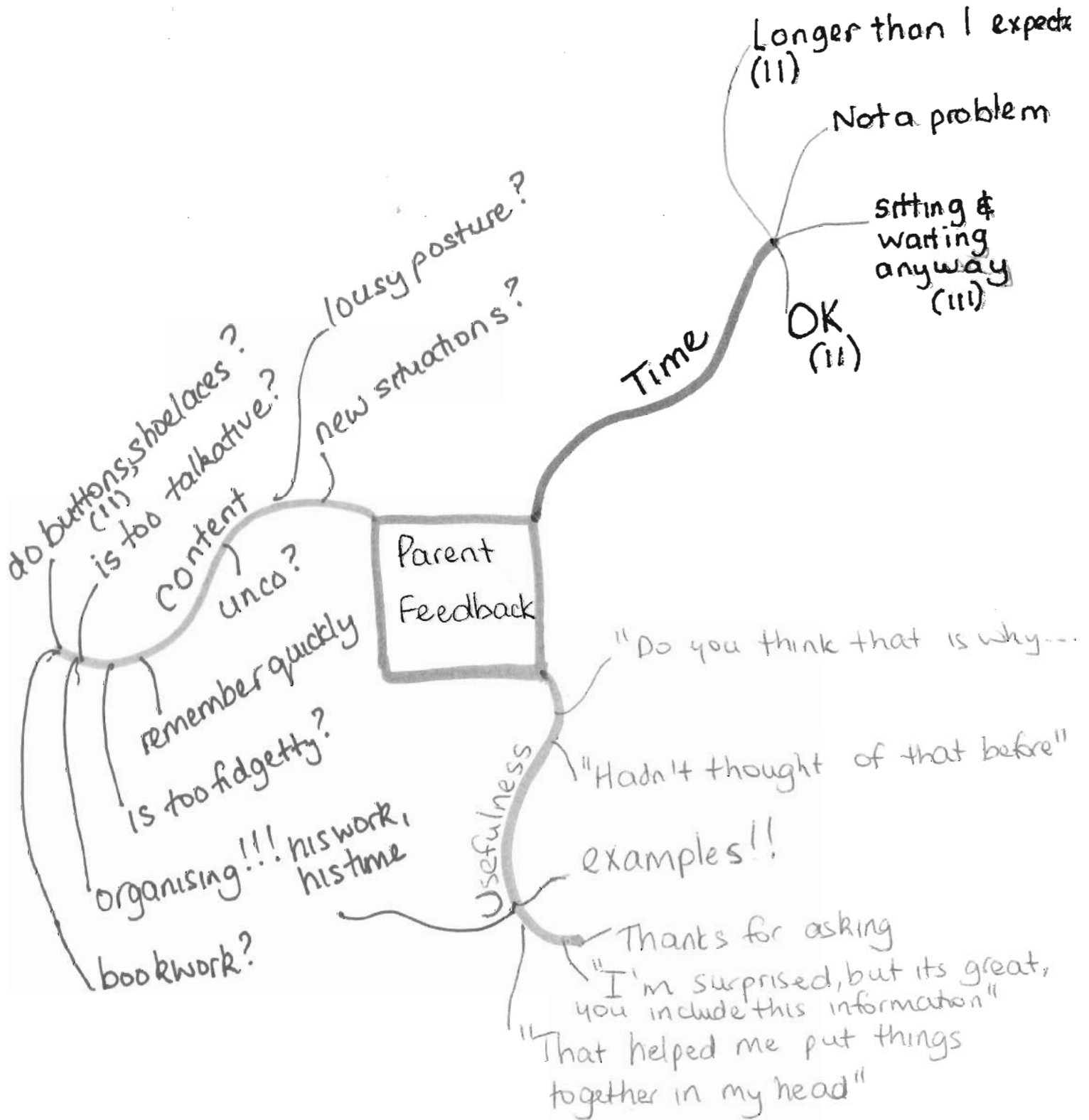
		Not age appropriate	Always 100%	Frequently 75%	Occasionally 50%	Seldom 25%	Never 0%	Don't know
	PLANNING: <i>When my child is doing school-related activities he/she is able to:</i>		A	F	O	S	N	
P1	Think before doing							
P2	Assess whether an activity has been done well or not							
P3	Keep belongings tidy, keep desk tidy							
P4	Get self and objects ready for activities in an organised way							
P5	Make correct choices, choose everything needed for an activity							
P6	Make safe and informed decisions							
P7	Stay away from situations which may get him / her into trouble							
P8	Accept consequences without becoming overly defensive or upset							
P9	Choose to disregard what is irrelevant							
P10	Complete activities within an appropriate time frame							
P11	Cope with changes to routine							
P12	Pace or regulate self – not too rushed, not too slow							
P13	Ask appropriate and useful questions; or ask for help when appropriate about how to do an activity							
P14	Understand the goal of an activity and keep that goal in mind during the activity							
P15	Set a realistic and specific goal or objective for an activity							
P16	Think up strategies or plans in order to achieve the goal; think up ideas							
P17	Plan the next step in an activity; or plan a sequence of steps in an activity so that the activity flows							
P18	Anticipate consequences							
P19	Solve problems by thinking of alternatives, choosing an alternative, and then evaluating how well this alternative solved the problem							
P20	Figure out problems or obstacles which might get in the way or hinder ability to do an activity							
P21	Identify why an activity has been done well or not							
P22	Stop every now and again to check performance (Am I doing it right? Should I do it different?)							
P23	Question if there are better or different ways to do an activity (How could I do it better or different?); question own performance as the activity progresses							
P24	Use strategies to do an activity in a systematic and purposeful way (not random and haphazard)							
P25	Choose the best, most efficient plan or strategy							
P26	Respond to self esteem issues in socially appropriate ways							
P27	Be motivated							
P28	Make corrections or changes when asked without getting overly frustrated, accept constructive feedback, complete work without frustration							
P29	Enjoy activities							
P30	Accept losing							
P31	Accept 'No'							
P32	Be supportive of other people's feelings							

P33	Cooperate							
P34	Take turns in activities and in social relationships e.g. no interrupting							
P35	Offer help at appropriate times and in an appropriate manner							
P36	Join in an ongoing group or activity							
P37	Apologise if he / she has hurt someone (accidentally or on purpose)							
P38	Deal with somebody else's anger appropriately by not getting angry him / her self							
P39	Negotiate – be willing to give and take in order to reach a compromise							
P40	Control talkativeness							
P41	Control being fidgety							
P42	Cope with new situations							
P43	Independently organise own work, time, routine							
P44	Use appropriate spatial layout for work							
P45	Be willing to attempt activity, to 'have a go'							

		Not age appropriate	Always 100%	Frequently 75%	Occasionally 50%	Seldom 25%	Never 0%	Don't know
	Doing: <i>When my child is doing school-related activities he/she is able to:</i>		A	F	O	S	N	
D1	Get started on an activity within an appropriate time frame							
D2	Get started on an activity without extra help							
D3	Recommence an activity after there has been an interruption							
D4	Make easy and smooth transitions between activities							
D5	Stop when required or requested							
D6	Maintain posture for activity							
D7	Coordinate movements for physical activity							
D8	Manipulate small items							
D9	Persevere , keep going and try hard when obstacles arise or when effort is required							

APPENDIX 7.1

PARENT FEEDBACK CONCEPT MAP



APPENDIX 7.2

LIST OF ITEMS ADDED TO PRPP@SCHOOL-1(TQ & PQ) IN RESPONSE TO CONSUMER REVIEW

R36	Manage clothing – buttons, laces
R37	Remember quickly and precisely
P40	Control talkativeness
P41	Control being fidgety
P42	Cope with new situations
P43	Independently organise own work, time, routine
P44	Use appropriate spatial layout for work
D6	Maintain posture for activity
D7	Coordinate movements for physical activity
D8	Manipulate small items

APPENDIX 7.3

DATA ANALYSIS OF OCCUPATIONAL THERAPIST REVIEW

This appendix presents

- the questionnaire which was provided to six recruited occupational therapists
- the number of responses provided by the therapists for each item

Please consider every question and ✓ tick inside one box in every row if

IC This item is critical for individual participation in class work

GC This item is critical for group participation in class work

P This item is critical for interaction in the playground

R This item is critical to retain in the questionnaire in the event of item reduction at a future stage

Cognitive strategy use ability for:

	Attention:	IC	GC	P	R
A1	React to what is happening by looking (eye contact), listening	//			////
A2	Appear to listen and make an effort to understand what has been said				
A3	Listen till an instruction is finished	///	/		////
A4	Sit at seat for length of activity	//			///
A5	Stay with group activity		///		//
A6	Find what is needed for an activity				
A7	Focus regardless of motivation and interest	//	/		///
A8	Try hard, exert effort, maintain physical effort				
A9	React appropriately to distracting sound or movement	////			////
A10	Stay focused long enough to complete an activity or for the time required by the activity	//	//		////
A11	Finish an activity without help or redirection to the task	///			
A12	Narrow or broaden attention in order to focus on important details	///	//		////
A13	Divide attention in order to multitask (do more than one thing at a time)	//	//		////
A14	Switch or shift attention from one thing to another	//	//		////
A15	Notice change				
A16	Stay alert	///			////
A17	Be aware of other people's feelings by searching for facial expression, tone of voice, body language etc			///	///

	Recall:	IC	GC	P	R
R1	Know when to do things	/			/
R2	Know where things should be done	/	/		
R3	Remember the procedure or rules for routine activities	//	/		////
R4	Know what 'finished' looks like	///			//
R5	Follow 2 part instructions directed to the child	//	/		///
R6	Follow 3 part instructions directed to the child	///			////
R7	Follow instructions spoken to a small group or whole class without needing individual prompts	///			/////
R8	Remember where things are kept				
R9	Remembers all of the habitual steps which are required in order to finish a familiar and known activity				///
R10	Remember to bring required materials e.g. library bag, sports clothes	/	/		/
R11	Deal with group pressure			///	
R12	Know the difference between what is important and not	////			///
R13	Remember the specific goal of an activity and keep it in mind	/	//		/////
R14	Remember how to do things	/	/		
R15	Have a concept of time	//			//
R16	Know how long an activity should take	//			
R17	Be aware of own feelings		/		
R18	Use words to express feelings			////	///
R19	Use non verbal or body language to express feelings			////	/
R20	Express own feelings in an appropriate way				/
R21	Use acceptable ways to express anger		//	//	/
R22	Deal with teasing in ways which allow him / her to stay in control			///	
R23	Use acceptable ways to express own excitement				
R24	Manage own anxiety or fears in an appropriate way e.g. being able to relax when tense		//	//	
R25	Has a healthy self esteem				
R26	Be confident				
R27	Manage appropriately if left out of an activity		/	//	/
R28	Be polite e.g. say Thankyou, please				
R29	Share		/	//	
R30	Greet others appropriately			////	/
R31	Begin and end a conversation appropriately			////	/
R32	Play fairly with sportsmanship – no cheating or disputing decisions made by referee			////	/
R33	Encourage others e.g. give compliment			///	/
R34	Express affection appropriately e.g. stay in own personal space, use appropriate body language with appropriate people			///	/
R35	Ask permission – no grabbing		/	//	/
R36	Manage clothing – buttons, laces				
R37	Remember quickly and precisely	///			//

	PLANNING:	IC	GC	P	R
P1	Think before doing		///		////
P2	Assess whether an activity has been done well or not	/	/		///
P3	Keep belongings tidy, keep desk tidy	///			
P4	Get self and objects ready for activities in an organised way	//			/
P5	Make correct choices, choose everything needed for an activity		///	/	
P6	Make safe and informed decisions			//	/
P7	Stay away from situations which may get him / her into trouble			///	
P8	Accept consequences without becoming overly defensive or upset	/	//		/
P9	Choose to disregard what is irrelevant	/	/		
P10	Complete activities within an appropriate time frame	////			/
P11	Cope with changes to routine		//	/	//
P12	Pace or regulate self – not too rushed, not too slow	///			///
P13	Ask appropriate and useful questions; or ask for help when appropriate about how to do an activity	///			/
P14	Understand the goal of an activity and keep that goal in mind during the activity	//	//		/////
P15	Set a realistic and specific goal or objective for an activity	/	/		
P16	Think up strategies or plans in order to achieve the goal; think up ideas	/	//		////
P17	Plan the next step in an activity; or plan a sequence of steps in an activity so that the activity flows	//	//		///
P18	Anticipate consequences		/		
P19	Solve problems by thinking of alternatives, choosing an alternative, and then evaluating how well this alternative solved the problem	/	///		/////
P20	Figure out problems or obstacles which might get in the way or hinder ability to do an activity	/	//		///
P21	Identify why an activity has been done well or not	/	/		
P22	Stop every now and again to check performance (Am I doing it right? Should I do it different?)	/	//		///
P23	Question if there are better or different ways to do an activity (How could I do it better or different?); question own performance as the activity progresses	/	//		/
P24	Use strategies to do an activity in a systematic and purposeful way (not random and haphazard)	//	//		/
P25	Choose the best, most efficient plan or strategy	/	///		////
P26	Respond to self esteem issues in socially appropriate ways			///	
P27	Be motivated		//		////
P28	Make corrections or changes when asked without getting overly frustrated, accept constructive feedback, complete work without frustration	/	//		/
P29	Enjoy activities				
P30	Accept losing			///	/
P31	Accept 'No'		///	/	/
P32	Be supportive of other people's feelings			///	/
P33	Cooperate		//		
P34	Take turns in activities and in social relationships e.g. no interrupting		///		/
P35	Offer help at appropriate times and in an appropriate manner				
P36	Join in an ongoing group or activity		//	/	/
P37	Apologise if he / she has hurt someone (accidentally or on purpose)			///	/
P38	Deal with somebody else's anger appropriately by not getting angry him / her self			///	
P39	Negotiate – be willing to give and take in order to reach a compromise		/	/	//
P40	Control talkativeness				/

P41	Control being fidgety	///			/
P42	Cope with new situations		//	/	//
P43	Independently organise own work, time, routine	///	/		/
P44	Use appropriate spatial layout for work	///			
P45	Be willing to attempt activity, to 'have a go'	/	///		////

	Doing:	IC	GC	P	R
D1	Get started on an activity within an appropriate time frame	///			////
D2	Get started on an activity without extra help	////			/
D3	Recommence an activity after there has been an interruption	///			//
D4	Make easy and smooth transitions between activities		//		/
D5	Stop when required or requested		///		/
D6	Maintain posture for activity				
D7	Coordinate movements for physical activity				
D8	Manipulate small items				
D9	Persevere , keep going and try hard when obstacles arise or when effort is required	/	///		////

APPENDIX 7.4

Glossary

PERCEIVE	<p style="text-align: center;"><u>Attending</u></p> <p>Notices Spontaneously reacts by head turning or looking, reaching, body position or listening.</p> <p>Modulates Spontaneous narrowing and broadening of focus, shifting attention from one part of the task to another.</p> <p>Maintains Sustaining attention long enough for task completion.</p>	<p style="text-align: center;"><u>Sensing</u></p> <p>Searches Active and systematic seeking of sensory information by looking, listening, feeling, smelling.</p> <p>Locates Finds body parts, objects and parts of the environment that are needed for the task.</p> <p>Monitors When required, responds by action to sensory changes of the body of environment during task performance - either central or peripheral to the task.</p>	<p style="text-align: center;"><u>Discriminating</u></p> <p>Discriminates Differentiates between</p> <p>Matches Fits together, associates same size, shape, objects and body parts</p>
RECALL	<p style="text-align: center;"><u>Recalling facts ("WHAT")</u></p> <p>Recognises Shows recognition of objects, body parts and the task environment.</p> <p>Labels Names objects, body parts and the task environment. Understands and uses labels and language. (linguistic labels)</p> <p>Categorises Groups objects of body parts according to the task.</p>	<p style="text-align: center;"><u>Recalling schemes ("WHERE")</u></p> <p>Contextualises to time Knows when a task occurs. Now –not now</p> <p>Contextualises to place Knows where a task occurs. Here –not here</p> <p>Contextualises to duration Knows how long a task takes. This long –that long</p>	<p style="text-align: center;"><u>Recalling procedures "HOW"</u></p> <p>Uses objects Interacts with and uses known objects appropriately.</p> <p>Uses body Demonstrates the general and specific body movements necessary to place self in known positions.</p> <p>Recall steps Performs the general and specific procedures and steps needed for known tasks and routines.</p>
PLAN	<p style="text-align: center;"><u>Mapping</u></p> <p>Knows goal Has an outcome. Formulates an outcome. Keeps out in mind.</p> <p>Identifies obstacles Examines scheme for action. Explores and identifies potential constraints to task completion.</p> <p>Organises Arranges objects and body to begin task. Rearranges environment as task progresses.</p>	<p style="text-align: center;"><u>Programming</u></p> <p>Chooses Selects appropriate items and body parts. Selects one location. Selects strategy. Selects actions and steps for a specific task environment.</p> <p>Sequences Performs task in logical progression. Makes smooth transitions from one part of a task to another</p> <p>Calibrates Regulates or grades the force, speed and extent of movements in performing an action or step.</p>	<p style="text-align: center;"><u>Evaluating</u></p> <p>Questions Verbally inquires about the location of missing items. Hesitate, looks or examines aspects of the task momentarily prior to making appropriate changes.</p> <p>Analyses Stops to evaluate a specific constraint.</p> <p>Judges Makes safe and informed decisions. Takes into consideration her/his physical capabilities and the limitations of task environment.</p>
PERFORM	<p style="text-align: center;"><u>Initiating</u></p> <p>Starts Begins expected performance Restarts after interruption or stopping</p> <p>Stops Stops when desired: stops at times appropriate to expected performance</p>	<p style="text-align: center;"><u>Continuing</u></p> <p>Flows Smooth, even performance. Easy transitions between tasks and parts of tasks. NO stop/ start variations or inconsistency.</p> <p>Continues Completes task to expected level without undue prompting to finish.</p> <p>Persists Keeps going with response when obstacles arise, or when performance is difficult or wrong.</p>	<p style="text-align: center;"><u>Controlling</u></p> <p>Times Correct and even speed as demanded by the task. Performs within expected or functional time frame.</p> <p>Coordinates Smooth musculoskeletal performance. Freedom from tremor or dyskinesia.</p> <p>Adjusts Makes small or large musculoskeletal adjustments to: match the plan (top down), automatic adjustment to muscle stretch (bottom up)</p>

APPENDIX 7.5

(A)

LIST OF PRPP@SCHOOL-1(TQ & PQ) ITEMS INDICATING TO WHICH PRPP SYSTEM OF TASK ANALYSIS DESCRIPTOR THE PRPP@SCHOOL-1 (TQ & PQ) ITEM IS LINKED

	Attention:	PRPP System of Task Analysis descriptor suggested by researcher	If "no" then PRPP System of Task Analysis descriptor indicated by expert panel
A1	React to what is happening by looking (eye contact), listening	Notices	
A2	Appear to listen and make an effort to understand what has been said	Searches	No link
A3	Listen till an instruction is finished	Continues	Searches
A4	Sit at seat for length of activity	Continues	
A5	Stay with group activity	Continues	
A6	Find what is needed for an activity	Locates	
A7	Focus regardless of motivation and interest	Maintains	
A8	Try hard, exert effort, maintain physical effort	Persists	
A9	React appropriately to distracting sound or movement	Maintains	No link
A10	Stay focused long enough to complete an activity or for the time required by the activity	Maintains	
A11	Finish an activity without help or redirection to the task	Continues	
A12	Narrow or broaden attention in order to focus on important details	Modulates	
A13	Divide attention in order to multitask (do more than one thing at a time)	Modulates	No link
A14	Switch or shift attention from one thing to another	Modulates	
A15	Notice change	Notices	No link
A16	Stay alert	Maintains	Notices
A17	Be aware of other people's feelings by searching for facial expression, tone of voice, body language etc	Searches	

	Recall:	PRPP System of Task Analysis descriptor suggested by researcher	If "no" then PRPP System of Task Analysis descriptor indicated by expert panel
R1	Know when to do things	Contextualises to time	
R2	Know where things should be done	Contextualises to place	
R3	Remember the procedure or rules for routine activities	Recalls steps	
R4	Know what 'finished' looks like	Knows goal	
R5	Follow 2 part instructions directed to the child	Sequences	No link
R6	Follow 3 part instructions directed to the child	Sequences	No link
R7	Follow instructions spoken to a small group or whole class without needing individual prompts	Sequences	No link
R8	Remember where things are kept	Contextualises to place	
R9	Remembers all of the habitual steps which are required in order to finish a familiar and known activity	Recalls steps	
R10	Remember to bring required materials e.g. library bag, sports clothes	Recalls steps	Organises
R11	Deal with group pressure	Judges	No link
R12	Know the difference between what is important and not	Discriminates	Knows goal
R13	Remember the specific goal of an activity and keep it in mind	Knows goal	
R14	Remember how to do things	Uses body	No link
R15	Have a concept of time	Contextualises to duration	No link
R16	Know how long an activity should take	Contextualises to duration	
R17	Be aware of own feelings	Recognises	No link
R18	Use words to express feelings	Labels	
R19	Use non verbal or body language to express feelings	Labels	
R20	Express own feelings in an appropriate way	Chooses	No link
R21	Use acceptable ways to express anger	Judges	No link
R22	Deal with teasing in ways which allow him / her to stay in control	Judges	No link
R23	Use acceptable ways to express own excitement	Chooses	No link
R24	Manage own anxiety or fears in an appropriate way e.g. being able to relax when tense	Analyses	No link
R25	Has a healthy self esteem	Analyses	No link
R26	Be confident	No link	
R27	Manage appropriately if left out of an activity	No link	
R28	Be polite e.g. say Thankyou, please	Matches	Recalls steps
R29	Share	No link	
R30	Greet others appropriately	Matches	Recalls steps
R31	Begin and end a conversation appropriately	Matches	Recalls steps
R32	Play fairly with sportsmanship – no	Analyses	No link

	cheating or disputing decisions made by referee		
R33	Encourage others e.g. give compliment	No link	Recalls steps
R34	Express affection appropriately e.g. stay in own personal space, use appropriate body language with appropriate people	Categorises	No link
R35	Ask permission – no grabbing	No link	Recalls steps
R36	Manage clothing – buttons, laces	Coordinates	No link
R37	Remember quickly and precisely	Contextualises to duration	

	PLANNING:	PRPP System of Task Analysis descriptor suggested by researcher	If “no” then PRPP System of Task Analysis descriptor indicated by expert panel
P1	Think before doing	Stops	No link
P2	Assess whether an activity has been done well or not	Analyses	
P3	Keep belongings tidy, keep desk tidy	Organises	
P4	Get self and objects ready for activities in an organised way	Organises	
P5	Make correct choices, choose everything needed for an activity	Chooses	
P6	Make safe and informed decisions	Judges	
P7	Stay away from situations which may get him / her into trouble	Contextualises to place	
P8	Accept consequences without becoming overly defensive or upset	Calibrates	
P9	Choose to disregard what is irrelevant	Discriminates	No link
P10	Complete activities within an appropriate time frame	Times	
P11	Cope with changes to routine	Monitors	Adjusts
P12	Pace or regulate self – not too rushed, not too slow	Calibrates	
P13	Ask appropriate and useful questions; or ask for help when appropriate about how to do an activity	Questions	
P14	Understand the goal of an activity and keep that goal in mind during the activity	Knows goal	
P15	Set a realistic and specific goal or objective for an activity	Knows goal	
P16	Think up strategies or plans in order to achieve the goal; think up ideas	Chooses	No link
P17	Plan the next step in an activity; or plan a sequence of steps in an activity so that the activity flows	Sequences	
P18	Anticipate consequences	Analyses	
P19	Solve problems by thinking of alternatives, choosing an alternative, and then evaluating how well this alternative solved the problem	Judges	
P20	Figure out problems or obstacles which might get in the way or hinder ability to do an activity	Identifies obstacles	Chooses
P21	Identify why an activity has been done well or not	Analyses	
P22	Stop every now and again to check	Questions	

	performance (Am I doing it right? Should I do it different?)		
P23	Question if there are better or different ways to do an activity (How could I do it better or different?); question own performance as the activity progresses	Questions	Judges
P24	Use strategies to do an activity in a systematic and purposeful way (not random and haphazard)	Sequences	
P25	Choose the best, most efficient plan or strategy	Chooses	
P26	Respond to self esteem issues in socially appropriate ways	No link	
P27	Be motivated	No link	
P28	Make corrections or changes when asked without getting overly frustrated, accept constructive feedback, complete work without frustration	Calibrates	
P29	Enjoy activities	No link	
P30	Accept losing	Calibrates	Knows goal
P31	Accept 'No'	Calibrates	Stops
P32	Be supportive of other people's feelings	No link	
P33	Cooperate	Calibrates	No link
P34	Take turns in activities and in social relationships e.g. no interrupting	Sequences	
P35	Offer help at appropriate times and in an appropriate manner	No link	Contextualises to time
P36	Join in an ongoing group or activity	No link	Recalls steps
P37	Apologise if he / she has hurt someone (accidentally or on purpose)	No link	Recalls steps
P38	Deal with somebody else's anger appropriately by not getting angry him / her self	No link	
P39	Negotiate – be willing to give and take in order to reach a compromise	Calibrates	No link
P40	Control talkativeness	Contextualises to time	Stops
P41	Control being fidgety	No link	Stops
P42	Cope with new situations	Monitors	Adjusts
P43	Independently organise own work, time, routine	Organises	
P44	Use appropriate spatial layout for work	Contextualises to place	
P45	Be willing to attempt activity, to 'have a go'	Chooses	Starts

	Doing:	PRPP System of Task Analysis descriptor suggested by researcher	If "no" then PRPP System of Task Analysis descriptor indicated by expert panel
D1	Get started on an activity within an appropriate time frame	Starts	
D2	Get started on an activity without extra help	Starts	
D3	Recommence an activity after there has been an interruption	Starts	
D4	Make easy and smooth transitions between activities	Flows	
D5	Stop when required or requested	Stops	
D6	Maintain posture for activity	Adjusts	
D7	Coordinate movements for physical activity	Coordinates	
D8	Manipulate small items	Adjusts	
D9	Persevere , keep going and try hard when obstacles arise or when effort is required	Persists	

APPENDIX 7.5 (B)

DESCRIPTORS IN THE PRPP SYSTEM OF TASK ANALYSIS REPRESENTED BY ITEMS IN THE PRPP@SCHOOL-1.

Descriptors in bold font and shaded are not represented by the PRPP@SCHOOL-1

PRPP descriptor	PRPP@SCHOOL-1 items										
Notices	A1	A16									
Modulates	A12	A14									
Maintains	A7	A10									
Searches	A3	A17									
Locates	A6										
Monitors											
Discriminates											
Matches											
Recognises	P32										
Labels	R18	R19									
Categorises											
Contextualises	R1	P35									
to time											
Contextualises	R2	R8	P7	P44							
to place											
Contextualises	R16	R37									
to duration											
Uses objects											
Uses body											
Recalls steps	R3	R9	R28	R29	R30	R31	R33	R34	R35	P36	P37
Knows goal	R4	R12	R13	P14	P15	P30					
Identifies	P20										
obstacles											
Organises	R10	P3	P4	P43							
Chooses	R20	R23	R24	R27	P5	P16	P25	P42			
Sequences	P17	P24	P34								
Calibrates	P8	P12	P28	P33							
Questions	P13	P22									
Analyses	P2	P18	P19	P21							
Judges	P6	P23									
Starts	A11	P45	D1	D2	D3	D5					
Stops	P31	P40	P41								
Flows	D4										
Continues	A4	A5									
Persists	A8	D9									
Times	P10										
Coordinates	R36	D7	D8								
Adjusts	P11	P42	D6								

APPENDIX 7.6

LIST OF ITEM NUMBERS FOR EACH FACTOR IN

FACTOR ANALYSIS

Item No.	Factor 1	Item No.	Factor 2	Item No.	Factor 3	Item No.	Factor 4	Item No.	Factor 5
P30	.78	P23	.81	D1	.69	R2	.67	A3	.64
P31	.78	P25	.81	P10	.69	R3	.67	A4	.62
P38	.76	P20	.80	D2	.65	R9	.65	A2	.58
P34	.74	P24	.77	D3	.62	R1	.59	P41	.57
P39	.74	P19	.77	A10	.60	R8	.59	P40	.53
P8	.73	P17	.75	A11	.59	R14	.57	A1	.50
P32	.73	P22	.75	D4	.52	R5	.56	A5	.50
R29	.73	P16	.73	D9	.51	R4	.48	A9	.44
R32	.73	P21	.73	P12	.47	R10	.46		
P37	.73	P15	.69	A7	.47				
P33	.70	P14	.64	P43	.45				
R27	.68	P18	.62	P27	.41				
R35	.66	R13	.57						
R21	.65	P2	.55						
R22	.65	A13	.54						
P28	.62	R6	.53						
P35	.61	P13	.52						
P26	.60	A12	.52						
R34	.59	P44	.50						
P36	.59	P9	.49						
R24	.58	R37	.48						
R30	.58	R16	.47						
R20	.58	R7	.47						
R11	.57	R12	.46						
R33	.57	P1	.46						
P7	.55	P5	.45						
R23	.54	R15	.44						
R28	.52								
D5	.52								
P42	.52								
A17	.52								
P11	.50								
R31	.48								
P6	.48								
P45	.43								
Eigenvalue	46.32		7.20		3.79		2.65		2.31
% of variance	42.89		6.67		3.51		2.45		2.14
% of cumulative variance	42.89		49.56		53.06		55.52		57.65

APPENDIX 7.7

LIST OF ITEM DESCRIPTIONS IN EACH FACTOR

FACTOR 1

Item number	Item description	Rotated component matrix
P30	Accept losing	.78
P31	Accept 'No'	.78
P38	Deal with somebody else's anger appropriately by not getting angry him / her self	.76
P34	Take turns in activities and in social relationships e.g. no interrupting	.74
P39	Negotiate – be willing to give and take in order to reach a compromise	.74
P8	Accept consequences without becoming overly defensive or upset	.73
P32	Be supportive of other people's feelings	.73
R29	Share	.73
R32	Play fairly with sportsmanship – no cheating or disputing decisions made by referee	.73
P37	Apologise if he / she has hurt someone (accidentally or on purpose)	.73
P33	Cooperate	.70
R27	Manage appropriately if left out of an activity	.68
R35	Ask permission – no grabbing	.66
R21	Use acceptable ways to express anger	.65
R22	Deal with teasing in ways which allow him / her to stay in control	.65
P28	Make corrections or changes when asked without getting overly frustrated, accept constructive feedback, complete work without frustration	.62
P35	Offer help at appropriate times and in an appropriate manner	.61
P26	Respond to self esteem issues in socially appropriate ways	.60
R34	Express affection appropriately e.g. stay in own personal space, use appropriate body language with appropriate people	.59
P36	Join in an ongoing group or activity	.59
R24	Manage own anxiety or fears in an appropriate way e.g. being able to relax when tense	.58
R30	Greet others appropriately	.58
R20	Express own feelings in an appropriate way	.58
R11	Deal with group pressure	.57
R33	Encourage others e.g. give compliment	.57
P7	Stay away from situations which may get him / her into trouble	.55
R23	Use acceptable ways to express own excitement	.54
R28	Be polite e.g. say Thankyou, please	.52

D5	Stop when required or requested	.52
P42	Cope with new situations	.52
A17	Be aware of other people's feelings by searching for facial expression, tone of voice, body language etc	.52
P11	Cope with changes to routine	.50
R31	Begin and end a conversation appropriately	.48
P6	Make safe and informed decisions	.48
P45	Be willing to attempt activity, to 'have a go'	.43

FACTOR 2

Item number	Item description	Rotated component matrix
P23	Question if there are better or different ways to do an activity (How could I do it better or different?); question own performance as the activity progresses	.81
P25	Choose the best, most efficient plan or strategy	.81
P20	Figure out problems or obstacles which might get in the way or hinder ability to do an activity	.80
P24	Use strategies to do an activity in a systematic and purposeful way (not random and haphazard)	.77
P19	Solve problems by thinking of alternatives, choosing an alternative, and then evaluating how well this alternative solved the problem	.77
P17	Plan the next step in an activity; or plan a sequence of steps in an activity so that the activity flows	.75
P22	Stop every now and again to check performance (Am I doing it right? Should I do it different?)	.75
P16	Think up strategies or plans in order to achieve the goal; think up ideas	.73
P21	Identify why an activity has been done well or not	.73
P15	Set a realistic and specific goal or objective for an activity	.69
P14	Understand the goal of an activity and keep that goal in mind during the activity	.64
P18	Anticipate consequences	.62
R13	Remember the specific goal of an activity and keep it in mind	.57
P2	Assess whether an activity has been done well or not	.55
A13	Divide attention in order to multitask (do more than one thing at a time)	.54
R6	Follow 3 part instructions directed to the child	.53
P13	Ask appropriate and useful questions; or ask for help when appropriate about how to do an activity	.52
A12	Narrow or broaden attention in order to focus on important details	.52
P44	Use appropriate spatial layout for work	.50
P9	Choose to disregard what is irrelevant	.49
R37	Remember quickly and precisely	.48
R16	Know how long an activity should take	.47
R7	Follow instructions spoken to a small group or whole class without needing individual prompts	.47
R12	Know the difference between what is important and not	.46
P1	Think before doing	.46
P5	Make correct choices, choose everything needed for an activity	.45
R15	Have a concept of time	.44

FACTOR 3

Item number	Item description	Rotated component matrix
D1	Get started on an activity within an appropriate time frame	.69
P10	Complete activities within an appropriate time frame	.69
D2	Get started on an activity without extra help	.65
D3	Recommence an activity after there has been an interruption	.62
A10	Stay focused long enough to complete an activity or for the time required by the activity	.60
A11	Finish an activity without help or redirection to the task	.59
D4	Make easy and smooth transitions between activities	.52
D9	Persevere, keep going and try hard when obstacles arise or when effort is required	.51
P12	Pace or regulate self – not too rushed, not too slow	.47
A7	Focus regardless of motivation and interest	.47
P43	Independently organise own work, time, routine	.45
P27	Be motivated	.41

FACTOR 4

Item number	Item description	Rotated component matrix
R2	Know where things should be done	.67
R3	Remember the procedure or rules for routine activities	.67
R9	Remembers all of the habitual steps which are required in order to finish a familiar and known activity	.65
R1	Know when to do things	.59
R8	Remember where things are kept	.59
R14	Remember how to do things	.57
R5	Follow 2 part instructions directed to the child	.56
R4	Know what 'finished' looks like	.48
R10	Remember to bring required materials e.g. library bag, sports clothes	.46

FACTOR 5

Item number	Item description	Rotated component matrix
A3	Listen till an instruction is finished	.64
A4	Sit at seat for length of activity	.62
A2	Appear to listen and make an effort to understand what has been said	.58
P41	Control being fidgety	.57
P40	Control talkativeness	.53
A1	React to what is happening by looking (eye contact), listening	.50
A5	Stay with group activity	.50
A9	React appropriately to distracting sound or movement	.44

APPENDIX 7.8

LIST OF ITEMS NOT LOADED ONTO FIRST FIVE FACTORS

i.e. items with <.4 correlation

Item Number	Item Description
A6	Find what is needed for an activity
A8	Try hard, exert effort, maintain physical effort
A14	Switch or shift attention from one thing to another
A15	Notice change
A16	Stay alert
R17	Be aware of own feelings
R18	Use words to express feelings
R19	Use non verbal or body language to express feelings
R25	Has a healthy self esteem
R26	Be confident
R36	Manage clothing – buttons, laces
P3	Keep belongings tidy, keep desk tidy
P4	Get self and objects ready for activities in an organised way
P29	Enjoy activities
D6	Maintain posture for activity
D7	Coordinate movements for physical activity
D8	Manipulate small items

APPENDIX 7.9

LIST OF ITEMS WITH CORRESPONDING RATINGS FROM CROSS TABULATIONS, FACTOR ANALYSIS, AND OCCUPATIONAL THERAPIST PEER REVIEW

	Cross-tabulation		Factor analysis				Occupational therapist peer review				
	P	T	1	2	3	4	5	IC	GC	P	R
A1							✓	✓✓			✓✓✓
A2							✓				✓
A3							✓✓	✓✓✓	✓		✓✓✓
A4							✓✓	✓✓			✓✓✓
A5							✓		✓✓✓		✓✓
A6											
A7	✓✓	✓✓			✓			✓✓	✓		✓✓✓
A8											
A9	✓	✓✓					✓	✓✓✓			✓✓✓
A10	✓✓	✓✓			✓✓			✓✓	✓✓		✓✓✓
A11	✓✓	✓✓			✓			✓✓✓			
A12	✓✓	✓✓		✓				✓✓✓	✓✓		✓✓✓
A13	✓✓	✓✓		✓				✓✓	✓✓		✓✓✓
A14	✓	✓✓						✓✓	✓✓		✓✓✓
A15											
A16								✓✓✓			✓✓✓
A17	✓		✓							✓✓✓	✓✓✓
R1						✓		✓			✓
R2						✓✓		✓	✓		✓
R3						✓✓		✓✓	✓		✓✓✓
R4						✓		✓✓✓			✓✓
R5						✓		✓✓	✓		✓✓✓
R6	✓✓	✓✓		✓				✓✓✓			✓✓✓
R7	✓✓	✓✓		✓				✓✓✓			✓✓✓
R8						✓					
R9						✓✓					✓✓✓
R10	✓✓					✓		✓	✓		✓
R11	✓✓	✓✓	✓							✓✓✓	
R12				✓				✓✓✓			✓✓✓
R13	✓	✓		✓				✓	✓✓		✓✓✓
R14						✓		✓	✓		
R15	✓✓	✓		✓				✓✓			✓✓
R16	✓✓	✓✓		✓				✓✓			
R17									✓		
R18										✓✓✓	✓✓✓

R19										✓✓✓	✓
R20			✓								✓
R21	✓	✓	✓✓						✓✓	✓✓	✓
R22	✓✓	✓✓	✓✓							✓✓✓	
R23			✓								
R24	✓✓	✓✓	✓						✓✓	✓✓	
R25											
R26											
R27	✓✓	✓	✓✓						✓	✓✓	✓
R28			✓								
R29			✓✓						✓	✓✓	
R30			✓							✓✓✓	✓
R31			✓							✓✓✓	✓
R32			✓✓							✓✓✓	✓
R33	✓	✓	✓							✓✓✓	✓
R34	✓		✓							✓✓✓	✓
R35			✓✓						✓	✓✓	✓
R36											
R37				✓				✓✓✓			✓✓
P1				✓					✓✓✓		✓✓✓
P2	✓	✓✓		✓				✓	✓		✓✓✓
P3	✓✓	✓✓						✓✓✓			
P4	✓✓	✓✓						✓✓			✓
P5				✓					✓✓✓		
P6	✓	✓	✓							✓✓	✓
P7	✓✓	✓	✓✓							✓✓✓	
P8	✓✓	✓	✓✓					✓	✓✓		✓
P9	✓✓	✓✓		✓				✓	✓		
P10	✓✓	✓✓			✓✓			✓✓✓			✓
P11	✓	✓	✓						✓✓	✓	✓✓
P12	✓✓	✓✓			✓			✓✓✓			✓✓✓
P13	✓	✓✓		✓				✓✓✓			✓
P14	✓	✓✓		✓✓				✓✓	✓✓		✓✓✓
P15	✓	✓✓		✓✓				✓	✓		
P16	✓	✓✓		✓✓				✓	✓✓		✓✓✓
P17	✓✓	✓✓		✓✓				✓✓	✓✓		✓✓✓
P18	✓✓	✓✓		✓✓					✓		
P19	✓✓	✓✓		✓✓				✓	✓✓✓		✓✓✓
P20	✓✓	✓✓		✓✓				✓	✓✓		✓✓✓
P21	✓✓	✓✓		✓✓				✓	✓		
P22	✓✓	✓✓		✓✓				✓	✓✓		✓✓✓
P23	✓✓	✓✓		✓✓				✓	✓✓		✓
P24	✓✓	✓✓		✓✓				✓✓	✓✓		✓
P25	✓✓	✓✓		✓✓				✓	✓✓✓		✓✓✓
P26	✓✓	✓	✓✓							✓✓✓	
P27	✓✓		✓✓		✓				✓✓		✓✓✓
P28	✓✓	✓	✓✓					✓	✓✓		✓
P29											
P30	✓		✓✓							✓✓✓	✓

P31	✓		✓✓					✓✓✓	✓	✓
P32			✓✓						✓✓✓	✓
P33	✓		✓✓					✓✓		
P34	✓	✓	✓✓					✓✓✓		✓
P35			✓✓							
P36			✓					✓✓	✓	✓
P37			✓✓						✓✓✓	✓
P38	✓	✓	✓✓						✓✓✓	
P39	✓	✓	✓✓					✓	✓	✓✓
P40						✓				✓
P41	✓✓	✓✓				✓	✓✓✓			✓
P42	✓		✓					✓✓	✓	✓✓
P43	✓✓	✓✓			✓		✓✓✓	✓		✓
P44	✓✓	✓✓		✓			✓✓✓			
P45			✓				✓	✓✓✓		✓✓✓
D1	✓	✓			✓✓		✓✓✓			✓✓✓
D2	✓✓	✓✓			✓✓		✓✓✓			✓
D3	✓	✓			✓✓		✓✓✓			✓✓
D4					✓			✓✓		✓
D5			✓					✓✓✓		✓
D6										
D7										
D8										
D9	✓✓	✓			✓		✓	✓✓✓		✓✓✓

Note: Refer to next page for explanation of codes

Cross-tabulations

- P = Cross-tabulation score calculated from parent ratings
- T = Cross-tabulation score calculated from teacher ratings
- ✓✓ = Item scored in the top third of items most often rated in the “seldom” or “never” scoring category
- ✓ = Item scored in the middle third of items most often rated in the “seldom” or “never” scoring category

Factor analysis

- 1 = Factor 1, Social interaction
- 2 = Factor 2, Goal setting and problem solving
- 3 = Factor 3, Managing time and effort
- 4 = Factor 4, Remembering rules and procedures
- 5 = Factor 5, Getting ready
- ✓✓ = Item scored >.6
- ✓ = Item scored >.4

Occupational therapist peer review

- IC = Therapist indicated item critical for individual participation in classroom
- GC = Therapist indicated item critical for group participation in classroom
- P = Therapist indicated item critical for participation in playground
- R = Therapist indicated item critical to be retained in the questionnaire
- ✓ = Item received a score from one of six recruited therapists
- ✓✓ = Item received a score from two of six recruited therapists
- ✓✓✓ = Item received a score from three of six recruited therapists
- ✓✓✓✓ = Item received a score from four of six recruited therapists
- ✓✓✓✓✓ = Item received a score from five of six recruited therapists
- ✓✓✓✓✓✓ = Item received a score from six of six recruited therapists

APPENDIX 7.10

THE RATIONALE FOR RETAINING, COLLAPSING, REWORDING, MOVING TO A DIFFERENT SECTION OF THE QUESTIONNAIRE OR REMOVING ITEMS

Rationale for retaining items

Rationale included a combination of the following factors.

- Item loaded onto one of the first five factors
- Item scored in the top two thirds of the cross-tabulations
- Item considered critical by occupational therapist review
- Item considered to match a PRPP System of Task Analysis descriptor by expert panel review

Rationale for retaining but collapsing items

Rationale included a combination of the following factors.

- Item considered to reflect the same cognitive strategy as another item by the expert panel review
- Item loaded onto one of the first five factors
- Item scored in the top two thirds of the cross-tabulations
- Item considered critical by occupational therapist review
- Item considered to match a PRPP System of Task Analysis descriptor by expert panel review

Rationale for retaining but rewording items

Rationale included a combination of the following factors.

- Item considered to be awkward or verbose
- Item loaded onto one of the first five factors
- Item scored in the top two thirds of the cross-tabulations
- Item considered critical by occupational therapist review
- Item considered to match a PRPP System of Task Analysis descriptor by expert panel review

Rationale for retaining but moving items to Section One of the questionnaire

Rationale included a combination of the following factors.

- Item indicated to match several PRPP System of Task Analysis descriptors by expert panel review and is therefore considered to be a global item
- Item loaded onto one of the first five factors
- Item scored in the top two thirds of the cross-tabulations
- Item considered critical by occupational therapist review

Rationale for removing items

Rationale included a combination of the following factors.

- Item did not load onto one of the first five factors
- Item scored in the bottom third of the cross-tabulations
- Item considered not critical by occupational therapist review
- Item considered to not match a PRPP System of Task Analysis descriptor by expert panel review

APPENDIX 7.11

LIST OF ITEMS WHICH ARE RETAINED, COLLAPSED, REWORDED, MOVED TO A DIFFERENT SECTION OF THE QUESTIONNAIRE OR REMOVED.

List of 76 items to be retained in Section Two of PRPP@SCHOOL-1

Attention:	
A1	React to what is happening by looking (eye contact), listening
A3	Listen till an instruction is finished
A4	Sit at seat for length of activity
A5	Stay with group activity
A6	Find what is needed for an activity
A7	Focus regardless of motivation and interest
A8	Try hard, exert effort, maintain physical effort
A10	Stay focused long enough to complete an activity or for the time required by the activity
A11	Finish an activity without help or redirection to the task
A12	Narrow or broaden attention in order to focus on important details
A14	Switch or shift attention from one thing to another
A16	Stay alert
A17	Be aware of other people's feelings by searching for facial expression, tone of voice, body language etc

Recall:	
R1	Know when to do things
R2	Know where things should be done
R3	Remember the procedure or rules for activity
R4	Know what 'finished' looks like
R8	Remember where things are kept
R9	Remembers all of the habitual steps which are required in order to finish a familiar and known activity
R10	Remember to bring required materials e.g. library bag, sports clothes
R12	Know the difference between what is important and not
R13	Remember the specific goal of an activity and keep it in mind
R16	Know how long an activity should take
R18	Use words to express feelings
R19	Use non verbal or body language to express feelings
R28	Be polite e.g. say Thankyou, please
R30	Greet others appropriately
R31	Begin and end a conversation appropriately
R33	Encourage others e.g. give compliment
R35	Ask permission – no grabbing
R37	Remember quickly and precisely

PLANNING:	
P2	Assess whether an activity has been done well or not
P3	Keep belongings tidy, keep desk tidy
P4	Get self and objects ready for activities in an organised way
P5	Make correct choices, choose everything needed for an activity
P6	Make safe and informed decisions
P7	Stay away from situations which may get him / her into trouble
P8	Accept consequences without becoming overly defensive or upset
P10	Complete activities within an appropriate time frame
P11	Cope with changes to routine
P12	Pace or regulate self – not too rushed, not too slow
P13	Ask appropriate and useful questions; or ask for help when appropriate about how to do an activity
P14	Understand the goal of an activity and keep that goal in mind during the activity
P15	Set a realistic and specific goal or objective for an activity
P17	Plan the next step in an activity; or plan a sequence of steps in an activity so that the activity flows
P18	Anticipate consequences
P19	Solve problems by thinking of alternatives, choosing an alternative, and then evaluating how well this alternative solved the problem
P20	Figure out problems or obstacles which might get in the way or hinder ability to do an activity
P21	Identify why an activity has been done well or not
P22	Stop every now and again to check performance (Am I doing it right? Should I do it different?)
P23	Question if there are better or different ways to do an activity (How could I do it better or different?); question own performance as the activity progresses
P24	Use strategies to do an activity in a systematic and purposeful way (not random and haphazard)
P25	Choose the best, most efficient plan or strategy
P28	Make corrections or changes when asked without getting overly frustrated, accept constructive feedback, complete work without frustration
P30	Accept losing
P31	Accept 'No'
P32	Be supportive of other people's feelings
P34	Take turns in activities and in social relationships e.g. no interrupting
P35	Offer help at appropriate times and in an appropriate manner
P36	Join in an ongoing group or activity
P37	Apologise if he / she has hurt someone (accidentally or on purpose)
P40	Control talkativeness
P41	Control being fidgety
P42	Cope with new situations
P43	Independently organise own work, time, routine
P44	Use appropriate spatial layout for work
P45	Be willing to attempt activity, to 'have a go'

Doing:	
D1	Get started on an activity within an appropriate time frame
D2	Get started on an activity without extra help
D3	Recommence an activity after there has been an interruption
D4	Make easy and smooth transitions between activities
D5	Stop when required or requested
D6	Maintain posture for activity
D7	Coordinate movements for physical activity
D8	Manipulate small items
D9	Persevere , keep going and try hard when obstacles arise or when effort is required

List of 33 items to be retained but reworded

	Attention: Current wording	Improved wording
A1	React to what is happening by looking (eye contact), listening	Be alert and react to what is happening
A4	Sit at seat for length of activity	Stay with activity or group
A5	Stay with group activity	Stay with activity or group
A6	Find what is needed for an activity	?
A10	Stay focused long enough to complete an activity or for the time required by the activity	Stay focused long enough to finish
A11	Finish an activity without help or redirection to the task	Finish activity without redirection
A12	Narrow or broaden attention in order to focus on important details	Focus on important detail
A13	Divide attention in order to multitask (do more than one thing at a time)	Divide attention to multitask
A14	Switch or shift attention from one thing to another	Switch attention
A17	Be aware of other people's feelings by searching for facial expression, tone of voice, body language etc	Looks for, listens for other people's feelings

	Recall: Current wording	Improved wording
R1	Know when to do things	Know when to do things, when things happen
R3	Remember the procedure or rules for routine activities	Remember steps or rules
R5	Follow 2 part instructions directed to the child	Understands and remembers individual instructions
R6	Follow 3 part instructions directed to the child	Understands and remembers individual instructions
R7	Follow instructions spoken to a small group or whole class without needing individual prompts	Understands and remembers group instructions
R10	Remember to bring required materials e.g. library bag, sports clothes	Remember to bring required equipment
R11	Deal with group pressure	Chooses best strategy to deal with peer pressure
R12	Know the difference	Recognises the difference between what is and is not important
R18	Use words to express feelings	Uses words or body language
R20	Express own feelings in an appropriate way	Expresses own feelings e.g., anger, anxiety...
R22	Deal with teasing in ways which allow him / her to stay in control	Chooses best strategy to deal with teasing
R32	Play fairly with sportsmanship – no cheating or disputing decisions made by referee	Chooses best strategy to deal with playing fairly
R36	Manage clothing – buttons, laces	Demonstrates sufficient coordination to manipulate small items

	PLANNING: Current wording	Improved wording
P5	Make correct choices, choose everything needed for an activity	Make best choices
P6	Make safe and informed decisions	Make safe decisions
P11	Cope with changes to routine	Adjust to changes in routine
P14	Understand the goal of an activity and keep that goal in mind during the activity	Know goal of activity
P17	Plan the next step in an activity; or plan a sequence of steps in an activity so that the activity flows	Plan the next step in an activity; or plan a sequence of steps in an activity
P19	Solve problems by thinking of alternatives, choosing an alternative, and then evaluating how well this alternative solved the problem	Evaluate how well an alternative solves a problem
P35	Offer help at appropriate times and in an appropriate manner	Offer help at appropriate times
P42	Cope with new situations	Adjust to new situation
P43	Independently organise own work, time, routine	Organise own work, time, routine

	Doing: Current wording	Improved wording
D4	Make easy and smooth transitions between activities	Make easy transitions between activities

List of items to be retained but collapsed

A1	React to what is happening by looking (eye contact), listening
A16	Stay alert

A4	Sit at seat for length of activity
A5	Stay with group activity

A7	Focus regardless of motivation and interest
A10	Stay focused long enough to complete an activity or for the time required by the activity

R3	Remember the procedure or rules for routine activities
R9	Remembers all of the habitual steps which are required in order to finish a familiar and known activity

R5	Follow 2 part instructions directed to the child
R6	Follow 3 part instructions directed to the child
R37	Remember quickly and precisely

R18	Use words to express feelings
R19	Use non verbal or body language to express feelings

R20	Express own feelings in an appropriate way
R23	Use acceptable ways to express own excitement
R24	Manage own anxiety or fears in an appropriate way e.g. being able to relax when tense
R27	Manage appropriately if left out of an activity
R34	Express affection appropriately e.g. stay in own personal space, use appropriate body language with appropriate people

R28	Be polite e.g. say Thankyou, please
R29	Share
R30	Greet others appropriately
R31	Begin and end a conversation appropriately
R33	Encourage others e.g. give compliment
R35	Ask permission – no grabbing

R36	Manage clothing- laces, buttons
D8	Manipulate small items

P14	Understand the goal of an activity and keep that goal in mind during the activity
P15	Set a realistic and specific goal or objective for an activity

D1	Get started on an activity within an appropriate time frame
D2	Get started on an activity without extra help

List of 19 items to be retained but moved to a different section of questionnaire

Attention:	
A13	Divide attention in order to multitask (do more than one thing at a time)

Recall:	
R5	Follow 2 part instructions directed to the child
R6	Follow 3 part instructions directed to the child
R7	Follow instructions spoken to a small group or whole class without needing individual prompts
R11	Deal with group pressure
R20	Express own feelings in an appropriate way
R22	Deal with teasing in ways which allow him / her to stay in control
R23	Use acceptable ways to express own excitement
R24	Manage own anxiety or fears in an appropriate way e.g. being able to relax when tense
R26	Be confident
R27	Manage appropriately if left out of an activity
R29	Share
R32	Play fairly with sportsmanship – no cheating or disputing decisions made by referee
R34	Express affection appropriately e.g. stay in own personal space, use appropriate body language with appropriate people

PLANNING:	
P16	Think up strategies or plans in order to achieve the goal; think up ideas
P26	Respond to self esteem issues in socially appropriate ways
P33	Cooperate
P38	Deal with somebody else's anger appropriately by not getting angry him / her self
P39	Negotiate – be willing to give and take in order to reach a compromise

List of 13 items to be deleted from PRPP@SCHOOL-1

Attention:	
A2	Appear to listen and make an effort to understand what has been said
A9	React appropriately to distracting sound or movement
A15	Notice change

Recall:	
R14	Remember how to do things
R15	Have a concept of time
R17	Be aware of own feelings
R21	Use acceptable ways to express anger
R25	Has a healthy self esteem
R36	Manage clothing – buttons, laces

PLANNING:	
P1	Think before doing
P9	Choose to disregard what is irrelevant
P27	Be motivated
P29	Enjoy activities

APPENDIX 7.13

Draft version of PRPP@SCHOOL-2

PRPP@SCHOOL-2(TQ)

TEACHER QUESTIONNAIRE

for occupational therapy assessment

STUDENT _____ SCHOOL YEAR _____

TEACHER _____ DATE _____

The purpose of the questionnaire, as part of a comprehensive assessment, is to gather information about **your observations** of this student's use of cognitive strategies for participation in academic and social activities at school.

Please complete the questionnaire by measuring your student's performance against the **criteria/expectations/standards for this class/year/stage**.

The questionnaire has 2 sections:

SECTION 1 asks **WHAT** questions: What skills are, or are not, difficult?

SECTION 2 asks **WHY** questions: Why are these skills difficult?

The outcome of the assessment is to guide programming relevant to the school context.

Our vision at Skills for Kids, in partnership with teachers and parents, is to support the successful participation of students during activities and with other people within the school context.

This questionnaire is a first step in working together to guide occupational therapy involvement in educationally relevant goals.

Thank you for sharing your observations by completing the questionnaire.

PRPP@SCHOOL, July 2010
S.Lowe and C.Chapparo
Copy only with permission from the authors

SECTION 1 – What skills are, are not, difficult?

Please any skill which is difficult for this student compared to the criteria/expectations/standard for this class/year/stage.

Fine motor

<input type="checkbox"/> Construction and manipulative activities	<input type="checkbox"/> Folding	<input type="checkbox"/> Computer skills
<input type="checkbox"/> Colouring	<input type="checkbox"/> Cutting and pasting	<input type="checkbox"/> Drawing
<input type="checkbox"/> Handwriting legibility speed	<input type="checkbox"/> Copying from board	<input type="checkbox"/> Task completion
<input type="checkbox"/> Writing: generating ideas	<input type="checkbox"/> Writing: organising ideas	<input type="checkbox"/> Writing: expanding ideas

Please circle on the continuum where your student fits compared to your classroom expectations:

Handwriting: major concern 5 4 3 2 1 no concern

Writing: major concern 5 4 3 2 1 no concern

Does your student avoid/have a minimalist approach to desktop activities? Yes No

Gross motor

<input type="checkbox"/> Running	<input type="checkbox"/> Jumping	<input type="checkbox"/> Hopping	<input type="checkbox"/> Skipping
<input type="checkbox"/> Ball skills	<input type="checkbox"/> Climbing equipment		
<input type="checkbox"/> Coordination	<input type="checkbox"/> Strength	<input type="checkbox"/> Balance	

Does your student avoid outdoor or sport activities? Yes No

Does your student tire easily after physical activity? Yes No

Personal care:

<input type="checkbox"/> Putting on clothes e.g. paint shirt	<input type="checkbox"/> Taking off clothes e.g. sweater	<input type="checkbox"/> Shoelaces	<input type="checkbox"/> Buttons
<input type="checkbox"/> Toileting	<input type="checkbox"/> Blowing nose	<input type="checkbox"/> Using bubbler	<input type="checkbox"/> Taps

Managing recess/lunch e.g. opening lunch box, drink bottle, packets

Play/behaviour/emotional/social skills:

<input type="checkbox"/> Cooperation	<input type="checkbox"/> Sharing	<input type="checkbox"/> Motivation	<input type="checkbox"/> Enjoyment
<input type="checkbox"/> Perseverance with difficult tasks	<input type="checkbox"/> Sportsmanship	<input type="checkbox"/> Confidence	<input type="checkbox"/> Willingness to attempt tasks
<input type="checkbox"/> Personal space	<input type="checkbox"/> Self esteem	<input type="checkbox"/> Negotiation, compromise	

Choosing best strategy to deal with peer pressure teasing being left out

Choosing best strategy to express anxiety anger

SECTION 2 – Why are these skills difficult? in terms of this student's cognitive strategies for participation

This section contains 34 rows. Each row represents a cognitive strategy or behaviour.

Each row includes examples of cognitive strategies teachers have told us are important for school participation.

HOW TO COMPLETE THIS QUESTIONNAIRE: You can choose **PLAN A** or **PLAN B** 😊

PLAN A to complete the questionnaire:

Does your student's performance of this behaviour

- ▶ meet criteria/expectations/standards for this class/stage?
- ▶ within an appropriate time?
- ▶ without assistance or prompting?

THEN ✓ **COLUMN 3**

Does your student's performance of this behaviour

- ▶ meet criteria/expectations/standards for this class/stage?
- BUT.....**

Performance is not within a reasonable time
Requires assistance or prompting.

THEN ✓ **COLUMN 2**

Does your student's performance of this behaviour

NOT MEET criteria/expectations/standards for this class/stage?

THEN ✓ **COLUMN 1**

Cognitive ability	Example of ability	3	2	1
Starts	3 2 1 - attempt activity, "has a go" 3 2 1 - start within an appropriate time frame 3 2 1 - recommence activity after there has been an interruption 3 2 1 - finish activity without redirection		✓	

What do you do if you cannot give the same score for all the examples in a row? Use Plan B
Mark the number which best fits for individual examples

PLAN B to complete the questionnaire:

Cognitive ability	Example of ability	3	2	1
Starts	3 2 1 - Attempts activity, "has a go" 3 2 1 - Starts within an appropriate time frame 3 2 1 - Recommences activity after there has been an interruption 3 2 1 - Finishes activity without redirection			

		Cognitive ability	Examples of abilities	3	2	1
1	PERCEIVE	Notices	3 2 1 - Is alert and switched on 3 2 1 - Notices what is happening by looking or listening			
2		Modulates	3 2 1 - Switches attention from one thing to another 3 2 1 - Focuses on important detail			
3		Maintains	3 2 1 - Stays focused long enough to finish			
4		Searches	3 2 1 - Pays attention to all of an instruction to Gather information 3 2 1 - Pays attention to people's facial expression, tone of voice, body language to discover what they are feeling 3 2 1 - Looks for, listens for other people's feelings 3 2 1 - Listens with eye and ears 3 2 1 - Is inquisitive, wanting to find out more			
5		Locates	3 2 1 - Finds whatever is needed 3 2 1 - Finds correct page in book			
6		Monitors	3 2 1 - Keeps an eye on what is going on in the classroom and is responsive			
7		Discriminates	3 2 1 - Differentiates between things e.g. false and true friends			
8		Matches	3 2 1 - Matches same e.g. patterns			
9	RECALL	Recognises	3 2 1 - Recognises what is familiar and has already been taught			
10		Labels	3 2 1 - Uses words/body language to communicate thoughts/feelings			
11		Categorises	3 2 1 - Knows, remembers and uses knowledge of categories			
12		Contextualises to time	3 2 1 - Knows when things happen or when to do things			
13		Contextualises to place	3 2 1 - Knows where things happen, where to do things, where to put things, where to be 3 2 1 - Knows places, situations and people where "not to be", avoiding trouble 3 2 1 - Knows where to write on the page for "neat bookwork"			
14		Contextualises to duration	3 2 1 - Knows how long an activity should take			
15		Uses objects	3 2 1 - Uses tools and equipment			
16	Uses body	3 2 1 - Manoeuvres self in and around students, between desks, 3 2 1 - Positions body in relation to tools and equipment				
17		Recalls steps	3 2 1 - Understands and remembers individual instructions 3 2 1 - Understands and remembers group instructions 3 2 1 - Remembers rules/steps for familiar activities 3 2 1 - Knows how to join in an activity or conversation 3 2 1 - Remembers to be polite (please, thank you, hello, goodbye, ask permission-no grabbing) 3 2 1 - Remembers how to offer physical help or verbal encouragement			

18	PLAN	Knows goal	<ul style="list-style-type: none"> 3 2 1 - Knows "what to do" 3 2 1 - Knows the specific goal of an activity and keeps it in mind 3 2 1 - Sets a realistic specific goal for an activity 3 2 1 - Knows what "finished" looks like 3 2 1 - Recognises the difference between what is, is not, important 3 2 1 - Recognises the "higher goal" of games and sports (i.e. joining in and having fun) and subsequently accepts losing 			
19		Identifies obstacles	<ul style="list-style-type: none"> 3 2 1 - Figures out what problem is getting in the way of doing things 3 2 1 - Anticipates consequences 			
20		Organises	<ul style="list-style-type: none"> 3 2 1 - Organises self and things 3 2 1 - Remembers to bring required items (library, sport, homework) 3 2 1 - Keeps things tidy (clothes, work space, work tub) 3 2 1 - Maintains neat bookwork 3 2 1 - Gets self and things ready to start activity 3 2 1 - Organises own work, time, routine 			
21		Chooses	<ul style="list-style-type: none"> 3 2 1 - Makes best choices 3 2 1 - Expresses own feelings (anger, excitement, anxiety..) in best way 3 2 1 - Chooses everything needed for an activity 3 2 1 - Chooses the best (most efficient) plan or strategy 3 2 1 - Chooses between right and wrong 			
22		Sequences	<ul style="list-style-type: none"> 3 2 1 - Plans the next step in activity 3 2 1 - Plans a sequence of steps in an activity 3 2 1 - Puts steps of activity in best order 3 2 1 - Takes turns 			
23		Calibrates	<ul style="list-style-type: none"> 3 2 1 - Accepts consequences, corrections or constructive feedback without becoming overly defensive or frustrated 3 2 1 - Paces self (not too rushed or too slow) 3 2 1 - Paces self (not too gentle or too rough) 			
24		Questions	<ul style="list-style-type: none"> 3 2 1 - Asks useful questions 3 2 1 - Asks for help when needed 			
25		Analyses	<ul style="list-style-type: none"> 3 2 1 - Assesses whether an activity has, has not, been done well 3 2 1 - Identifies why an activity has, has not been done well 3 2 1 - Thinks of alternatives to solve problems 			
26		Judges	<ul style="list-style-type: none"> 3 2 1 - Questions self ("Could I do this better/different?") 3 2 1 - Makes safe decisions 3 2 1 - Evaluates how well something has been done 			
27		PERFORM	Starts	<ul style="list-style-type: none"> 3 2 1 - Attempts activity, "has a go" 3 2 1 - Starts within an appropriate time frame 3 2 1 - Recommences activity after there has been an interruption 3 2 1 - Finishes activity without redirection 		
28	Stops		<ul style="list-style-type: none"> 3 2 1 - Stops when requested 3 2 1 - Stops when told "no" 3 2 1 - Stops talking, if too talkative 3 2 1 - Stops moving, if too fidgety 			
29	Flows		<ul style="list-style-type: none"> 3 2 1 - Makes easy transition between activities 			

			3 2 1 - Makes easy transition between playground and classroom after recess or lunch			
30		Continues	3 2 1 - Stays at desk for duration of activity 3 2 1 - Stays with group for duration of activity			
31		Persists	3 2 1 - Tries hard, exerts effort 3 2 1 - Perseveres, keep going, tries again, even when obstacles arise			
32		Times	3 2 1 - Completes activity in appropriate time frame			
33		Coordinates	3 2 1 - Demonstrates sufficient fine motor coordination i.e. buttons, coins, manipulatives 3 2 1 - Demonstrates sufficient gross motor coordination i.e. sport			
34		Adjusts	3 2 1 - Adjusts to new, unfamiliar or different places, situations or people 3 2 1 - Adjusts to change in routine 3 2 1 - Maintains upright posture for activities			

Overall, do you observe your student

Thinking up strategies to achieve a goal Yes No

Dividing attention to do more than one thing at a time (multitasks) Yes No

Solving problems: thinking of alternatives, choosing best alternative Yes No

Overall, what do you observe to be your student's priority or main difficulties?

Overall, what do you observe to be your student's main strengths?

Are there any additional comments you wish to make about any aspect of your student's cognitive behaviours or strategies, participation, performance or learning?

APPENDIX A

CO-AUTHOR STATEMENT: CHAPTER 3 PART B


As co-authors of the paper “Lowe, S & Chapparo, C. Learning difficulty and school participation: A longitudinal case study of one student’s experience. *Australian Occupational Therapy Journal* (Under review: submitted June 2010)” I confirm that Susan Lowe has made the following contributions:

- Concept and design of the research
- Data collection, analysis and interpretation of the findings
- Writing the paper and critical appraisal of the content
- Corresponding author for communication with journal

My contribution to the paper was as follows:

Christine Chapparo

- Critical appraisal of content
- Editing and discussion consistent with the supervisory process

Signed..........Date. 31/8/10.....

APPENDIX B

CO-AUTHOR STATEMENT: CHAPTER 4 PART B


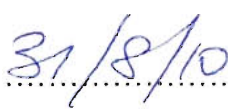
As co-authors of the paper “Lowe, S. & Chapparo, C. (2010). Work at school: Teacher and parent perceptions about children’s participation. *Work: A Journal of Prevention, Assessment and Rehabilitation*. (36) 2, 249-256”, I confirm that Susan Lowe has made the following contributions:

- Concept and design of the research
- Data collection, analysis and interpretation of the findings
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My contribution to the paper was as follows:

Christine Chapparo

- Critical appraisal of content
- Editing and discussion consistent with the supervisory process

Signed..........Date..........

APPENDIX C

EXAMPLES: TEACHER AND PARENT DESCRIPTIONS FROM SURVEY

1. Are you a class teacher?

Yes

No

Please circle which class you are teaching this year.

K 1 2 3 4 5 6

Please answer this survey in regard to the students who you are teaching this year.

2. Are you an education support teacher?

Yes

No

Please answer this survey in regard to the range of students who you are teaching this year.

3. The word PARTICIPATION means different things to different people. What does this word mean to you when you think about the children you are teaching?

Children are taking part in the
activity - joining in with others -
being involved - group work
- own individual work

definition

thinking

work

contributing ↔

hard to change

what makes
the difference

require high level
particip. ⁴³⁰

4. Can you describe what participation looks like as you observe

a. Your students who are participating?

Answering questions - asking questions
Working on the task at hand.
Involved and listening

b. Your students who are having difficulty participating?

- Inattentive - maybe day dreaming
- fiddling
- trying to catch others attention

5. Given the fact that students have different personalities and different intellectual abilities - what do you think are the indicators of

a. a student who is participating fully and consistently?

- alert
- interested
- listen
- ask questions - answer questions
- involved

b. a student who is participating adequately?

- listen
- show interest
- only answer questions when asked
- does what asked to do.

c. a student who is having difficulty participating?

- short attention
- switch on and off listening
- easily distracted
- child could have physical problem

d. a student who is not participating?

- short attention span
- fiddling
- mind elsewhere not on task
- talking
- distracting others
- doing own 'thing'

6. There are many reasons why children have difficulty with participation. These include physical, attention, organisation, social, and emotional factors. In your classroom which of these factors are frequently inhibiting your students' participation?

- Physical
- Attention
- Organisation
- Social
- Emotional
- Other

Please describe other

7. In the life of your classroom which activities require a high level of participation?

- lots of group activities
- discussions
- story writing

8. Teachers have fabulous strategies which increase a student's participation. What strategies have you used which you have found to successfully change the level of your student's participation?

- short sharp group times
- good topics - high motivation
- giving rewards
- lots of praise.

9. What aspects of a student's non-participation or poor participation have you found the most difficult to address or change in your classroom?

- untidy/unorganised children
- children who offer 'smart' comments to distract others
- short attention span
- a child who finishes work quickly (not with thought or effort) then wants instant attention

1. Is one of your children a child with education support needs ?

Yes

No

If you have a child with education support needs please circle which class your child is in this year.

K 1 2 3 4 5 6

Please circle which classes any of your other children are in this year (pre school and high school children are not being considered for the purpose of this survey). N/A

K 1 2 3 4 5 6

Please answer this survey in regard to all of your K - 6 aged children.

✓ 2. The word PARTICIPATION means different things to different people. What does this word mean to you when you think about your children?

That he is involved in the class by actually being asked questions & working with others as well as doing things on his own.

3. Can you describe what participation looks from your insights when you think about

a. Your child (children) who are participating?

✓ Focused behaviour. Asks questions & enthusiastically interacts. Follows the course of debate going on.

b. Your child (children) who are having difficulty participating?

✓ They are nervous when spoken to, easily flustered, no confidence that their opinion is important or correct. Reluctant to speak.

4. Given the fact that children have different personalities and different intellectual abilities - how would you describe

a. a child who is participating fully and consistently?

✓ enthusiastic desire to be involved, wanting to talk about topics & smiling interaction with teacher & class +ve

b. a child who is participating adequately?

✓ someone who is able to answer questions, looks comfortable about attention.

c. a child who is having difficulty participating?

✓ no eye contact, hopes to be overlooked in class. Avoids answering questions -ve

d. a child who is not participating?

✓ Distracting behaviour, may actually be disruptive. Doesn't attempt to follow lessons.

5. There are many reasons why children have difficulty with participation. These include physical, attention, organisation, social, and emotional factors. In your family which of these factors are frequently inhibiting your child's participation?

- Physical
- Attention
- Organisation
- Social
- Emotional
- Other

He is sensitive ~~apart~~ about his appearance & other opinions of the way he looks & thinks

Please describe other

His literacy delay has made him feel different & apart from others

6. In the life of your child at school which activities do you think require a high level of participation?

literacy,
listening to instructions by the teacher

7. Parents use fabulous strategies to improve their child's participation. What strategies have you used which you have found to successfully change the level of your child's participation?

Pause by refocussing his attention to what is at hand. That is speak of its importance and/or his terrific abilities in that area & how much they are improving

8. What part of your child's non-participation or poor participation have you found the most difficult to change with regard to their life at school?

He doesn't want to go in the morning. Needs to be told he is going to school. Says he is ill etc. He sees school as negative before he even gets there