An Investigation into the Impact of a Cooperative Learning Intervention on the Social Interaction Behaviours of Students with a Mild Intellectual Disability in Secondary School Inclusive Physical Education

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An Investigation into the Impact of a Cooperative Learning Intervention on the Social Interaction Behaviours of Students with a Mild Intellectual Disability in Secondary School Inclusive Physical Education

WENDY ANN DOWLER

Bachelor of Education (Physical and Health Education)
Masters Business Administration

A thesis submitted in fulfilment of the requirements for the award of the degree

DOCTOR OF PHILOSOPHY

Supervisors:
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Dr Gregg Rowland
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UNIVERSITY OF WOLLONGONG
SCHOOL OF EDUCATION, FACULTY OF SOCIAL SCIENCE
September 2017
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This research has been conducted with the support of an Australian Government Research Training Program Scholarship.
Certification

I, Wendy Dowler, declare that this thesis, submitted in fulfilment of the requirements of the award of Doctor of Philosophy, in the Faculty of Social Sciences – School of Education, University of Wollongong, is wholly my own work unless referenced or acknowledged. The document has not been submitted for qualifications at any other academic institution.

____________________

1 September, 2017
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While my name appears on this thesis, it is the support and encouragement from many along the way that has brought it to realisation. To my husband, Brendan, and my two children, Ainslie and Jacob, I say thank you with all my heart for giving me the opportunity to follow my passion. To my friend, Loren Gurtner, thank you for being there all the way and offering words of encouragement.

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Finally, thank you also to Leanne Windsor for her support in preparing my thesis and Dr Russell Walton for his editing advice and expertise.
Abstract

This thesis presents the results of a mixed method study conducted in Australia investigating the impact of a cooperative learning intervention on the social interaction behaviours between three 14yr old students with a mild intellectual disability (SMID) and peers without a disability (PWOD) in inclusive secondary school physical education classes. Considering the importance of social interaction for inclusion, friendship and health, the study was designed to address the problem of limited social interaction between SMID and PWOD in the above setting. Cooperative learning has been considered a promising pedagogical approach for teaching and the promotion of social interactions in the inclusive physical education setting but research to date has not provided empirical evidence to support this.

This evidence was gathered to address the four research questions. Research Question One quantitatively examined what was the impact of a cooperative learning intervention on the social interaction between SMID and PWOD in secondary school physical education classes. Research Questions Two, Three and Four, qualitatively investigated of the impact of roles, social and person factors, the provision of feedback and the flow of resources respectively on the social interactions between SMID and PWOD to help explain the quantitative results.

By using a single-subject-multiple-baseline design across three inclusive secondary school Personal Development, Health and Physical Education (PDHPE) classes a substantial functional relationship between the cooperative learning intervention and some of the social interaction behaviours between SMID and PWOD was established. The results indicated that the cooperative learning intervention was responsible for the increase in the frequency of interaction and the improvement in some of the quality measures of interactions between SMID and PWOD.

Furthermore, by using a case study design to further explain this increase and improvement in interactions as a result of the cooperative learning intervention, several layers of themes emerged. Overall, the first distinguishing theme was the impact of the group dynamic on interactions through the additional roles, the membership of the group and the additional range of personal attributes. The second theme was the impact on interactions of the provision of more frequent and focused feedback to the group. The third theme was the impact on interactions of the availability of more resources with improved access to and control of the social, knowledge and physical resources.

By interpreting the results through the theoretical framework of identity theory and contact theory, it appears that the cooperative learning intervention can provide several opportunities for identity verification and equal status. Considering the link between identity
verification and continued interactions; and equal status and favourable interactions, it is important for educators and teachers to consider the use of cooperative learning as a teaching approach for the promotion of social interactions between SMID and PWOD in secondary school inclusive physical education classes. Additionally, within this approach educators and teachers should also strive to build the resources of both students in order to maximise the interaction opportunities between them.
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Chapter 1 Introduction

1.1 Background

The inclusion of students with a disability in secondary school classes in Australia has become more prevalent in recent years with an estimated 66.3% increase in the number of students with a disability enrolled in mainstream classes in Australia from 1981 to 2003 (Australian Institute of Health and Welfare (AIHW), 2008). While there has been some variability in enrolment since this time, by 2009 65.9% of students with a disability were enrolled in regular classes as opposed to special classes or special schools (Australian Bureau of Statistics, 2012). The latest 2012 data, while not separating for educational class option, found that 86% of school students with a disability were enrolled in mainstream schools (Australian Bureau of Statistics, 2014). The majority of students with a disability being educated in mainstream schools and classes have been driven by the inclusion movement, which has been marked by historic international philosophies and agreements, national legislation and the policy of the New South Wales Department of Education.

Internationally, the move towards inclusion was motivated by the principle of normalisation and social role valorisation (Wolfensberger, 1972). The theory is based on the idea that society tends to identify groups of people as fundamentally ‘different’, and of less value than everyone else (Flynn & Lemay, 1999). Developed originally for people with intellectual disabilities, the principle of social role valorisation espoused that people with a disability should be able to live a life as normal as possible (Wolfensberger, 1972). These concepts are still very influential in Australian education today.

The United States of America led the move towards more inclusive educational environments by ensuring the rights of children with a disability through legislation (Education for All Handicapped Children Act 1975; Individuals with Disabilities Education Act 1990). There was also support for inclusion internationally through the Salamanca Statement and Framework for Action. Within Pledge 2 of the agreement it is proclaimed that students with special education needs should be accommodated “within a child-centred pedagogy” (UNESCO., 1994 p. viii) that was capable of meeting their needs. By 2007 the United Nations Convention on the Rights of Persons with Disabilities (UN CRPD) “recognised the right of persons with a disability to education” (UN General Assembly, 2007, p. 14). Taking Wolfensberger (1972) principle further, Article 24 of the convention went further to suggest that people with disabilities should be able to “access an inclusive, quality and free education on an equal basis with others in the communities in which they live … [and that] reasonable
accommodation of the individuals requirements is provided” (UN General Assembly, 2007 p. 14).

These global events strongly influenced legislation and policy direction in Australia in regards to providing education for people with a disability, with the Australian Government passing the Disability Discrimination Act (DDA) and the associated Commonwealth Disability Standards (Commonwealth of Australia, 2006, 2016). The standards (revised in 2011) were “binding upon education providers in all Australian states and territories” (Dickson, 2006, p. 26). It became the responsibility of the educational institution to make reasonable adjustments, including curriculum changes, for each individual student with a disability so that they can participate in the educational environment on the same basis as students without disabilities (Commonwealth of Australia, 2006). There was also a move in 2010 towards developing a national ‘inclusive’ curriculum which provided the opportunity to embed inclusion within the learning framework (Australian Curriculum Assessment and Reporting Authority, 2012).

However, although there has been philosophical and policy support for social role valorisation and the philosophy of inclusion for over 20 years, inclusive practice in schools, particularly secondary schools (ages 12–18), has not had significant implementation in Australia and there exists a policy/practice divide (Dixon, Woodcock, Tanner, Woodley, & Webster, 2017; Forlin, 2006; Sharma & Deppeler, 2005; Xu, 2012). This divide is further widened, as not all state education departments within Australia have adopted the national inclusive curriculum outright, including New South Wales, the state within Australia where the research was conducted.

The lack of support for inclusion coupled with a lack of financial support (Australian Institute of Health and Welfare, 2008; Commonwealth of Australia, 2002; Dempsey, Foreman, & Jenkinson, 2002; New South Wales Department of Education and Training, 2008) has meant that support for both students and teachers of students with an intellectual disability is lacking. This is particularly felt by the Personal Development Health Physical Education (PDHPE) key learning area (KLA) as they are considered to be a place where there can be good practice in the provision of the many educational outcomes for students with an intellectual disability (Block, 2007; Board of Studies., 2003; Commonwealth of Australia, 2002; Murphy & Carbone, 2008; Sherrill, 2004). Whilst all KLAs have a role to play in the development of students with an intellectual disability, the KLA of PDHPE is considered an important area where students with an intellectual disability can be included and many of the social aims of education are realised (Bailey, 2005; Block, 2007; Sherrill, 2004). Given the opportunities that PDHPE may provide, research has highlighted several factors within the KLA that may impact the implementation of inclusive practices. In the USA Block (1999) reported that students with an intellectual
disability were being “dumped” (p.30) into physical education classes without support. Teachers have reported that the long-standing focus of physical education on team games and competitive activities are not suitable for inclusion (Smith & Green, 2004). Additionally, internationally and in Australia pre-service training of teachers in inclusive practice in physical education is limited or non-existent (O’Brien, Kudlacek, & Howe, 2009). Therefore, in practice, students with an intellectual disability may be experiencing difficulty as they find the regular class environment intimidating, unwelcoming and unable to meet their needs if support is not adequately provided (Gresham & MacMillan, 1997; Pearce & Forlin, 2005).

1.2 Statement of the Problem

While academic, vocational, behavioural and, specifically, motor skills in physical education are all considered as important dimensions to develop for SMID, the social interaction skills of these students are consistently reported as an area of difficulty in their daily life (Carter, Sisco, Chung, & Stanton-Chapman, 2010; Cole & McLeskey, 1997; Hughes et al., 2012; Leffert & Siperstein, 2002). This is even more highlighted when they are at school, with the Australian Institute of Health and Welfare finding in 2003 that 41% of students with an intellectual disability reported experiencing difficulty fitting in socially, which was the second highest difficulty for these students, behind learning difficulties (Australian Institute of Health and Welfare (AIHW), 2008).

Despite the legislation and the strong commitment to a policy of inclusion there seems to be a discrepancy between theory and practice (Forlin, 2006; Sharma & Deppeler, 2005; Xu, 2012). In secondary physical education there is a growing body of research highlighting that interactions between SMID and PWOD in the secondary setting are occurring infrequently (Block & Obrusnikova, 2007; Butler & Hodge, 2004; Carter & Hughes, 2005; Hodge, Ammah, Casebolt, LaMaster, & O’Sullivan, 2004). Concurrently, SMID have been found to be less accepted and more frequently rejected than PWOD (Brown, Ouellette-Kuntz, Lysaght, & Burge, 2011; Cutts & Sigafoos, 2001; de Boer, Pijl, & Minnaert, 2012; Gresham & MacMillan, 1997).

Even though lack of funding and support for teachers and students have been reported as reasons for the limited development of social interaction skills, other student and teaching factors play a role and compound the problem (O’Brien et al., 2009; Pavri & Monda-Amaya, 2001; Tant & Watelain, 2016). Students with intellectual disabilities experience significant limitations in social interaction skills and teenage PWOD have difficulty knowing how to interact with students with a disability (Carter & Hughes, 2005; Carter et al., 2010; Copeland et al., 2004; Cutts & Sigafoos, 2001; Pavri & Monda-Amaya, 2001).
Additionally, physical education teaching strategies are also creating environments that lead to limited interactions between students with and without disabilities (Block & Obrusnikova, 2007). For example, not only are direct teaching approaches which are commonly used by many teachers not creating an appropriate environment, there is evidence that some schools and teachers double the general education classes into one large physical education class hindering attempts at interaction (Block, 1999; Cole & McLeskey, 1997; Cothran & Kulinna, 2008; Kirk, 2010). Block (1999) argued that benefits of inclusion can only be realised when an inclusive physical education program is conducted properly and an environment is created where “everyone belongs, is accepted, supports, and is supported by his/her peers and other members of the school community in the course of having his/her educational needs met” (Stainback & Stainback, 1990, p. 3). More specifically, Hughes et al. (2012) suggested that “both social interaction instruction and opportunities for social interaction” (p. 305) be provided to students with an intellectual disability and their peers to combat their limited opportunities for interaction. Finding teaching strategies that foster inclusion, specifically social interaction between SMID and their PWOD is therefore essential to address the problem of limited interactions.

Empirical research has identified teaching strategies that support inclusion including peer tutoring (DeVroey, Struyf, & Petry, 2016; Klavina & Block, 2008; Klavina, Jerlinder, Kristén, Hammar, & Soulie, 2014; Temple & Lynnes, 2008) and cooperative learning (DeVroey et al., 2016; Grenier, 2006; Mitchell, 2014). Peer tutoring is where “one child instructs another child” (Temple & Lynnes, 2008, p. 11) and cooperative learning is where “students work together in small structured heterogeneous groups to master the content of the lesson” (Dyson & Rubin, 2003, p. 48). The latter has been considered promising as an approach for inclusion with a range of studies demonstrating improvements in academic and social skills for a variety of students with a disability when the approach is used (Casey & Goodyear, 2015; Cohen, 1994; Dowler, 2014; Grenier, 2006; Johnson & Johnson, 1982; Kaufman, Agard, & Semmel, 1985; Nyit & Hsieh, 2004). More specifically some studies focusing on different cultural groups and more significant disabilities have demonstrated that interactions increase using the cooperative learning approach as compared to more traditional methods of teaching (Eichinger, 1990; Shachar & Sharan, 1994). There is, however, limited recent evidence-based practice to support the claim that cooperative learning can increase and improve interactions for SMID in mainstream physical education settings. More recently researchers focusing on cooperative learning in physical education tentatively redefined cooperative learning emphasising the ability of the approach to enhance interactions alongside other factors (Dyson & Casey, 2012). Considering this proposed ability to enhance interactions, yet the lack of evidence to support the claim for students with an intellectual disability in inclusive physical education environments
there is merit in investigating its impact on SMID and to address the identified problem of limited interactions for SMID.

To support this investigation and to provide a framework to guide the study and interpret the findings the common elements of identity theory and contact theory were explored. Identity theory makes several propositions as to why people do and do not interact in a social situation (Burke & Stets, 2009). In addition the field of adapted physical education research has called on contact theory (Allport, 1954) to explain how social interactions may be improved in the physical education setting (Butler & Hodge, 2004; Klavina & Block, 2008; Slininger, Sherrill, & Jankowski, 2000). The equal status principles, shared experiences and common goals put forward by contact theory align closely with the elements of a cooperative learning approach (Allport, 1954; Dyson, Griffin, & Hastie, 2004; Johnson & Johnson, 2009). Exploring these theories with the results of the study enriched the findings and provided valuable interpretations of the themes that emerged from the research questions.
1.3 Purpose of the Study

This study addressed the problem of limited social interactions between SMID and PWOD by designing and evaluating the impact that a cooperative learning intervention had on the social interaction behaviours between SMID and PWOD in inclusive physical education classes in Wollongong, NSW Australia. Additional information gathered from teachers and PWOD provided valuable insight into their perceptions of the cooperative learning intervention as an effective teaching and learning strategy to improve social interactions. Furthermore, video observation aided in understanding the roles each participant played in the interaction process.

The study employed a single-subject-multiple-baseline design to determine whether a functional relationship existed between the cooperative learning intervention and the social interaction behaviours between SMID and PWOD (Cook, Tankersley, Cook, & Landrum, 2008; Horner et al., 2005). Single subject research has been utilised for over 50 years and is a “rigorous, scientific methodology used to define basic principles of behaviour and establish evidence-based practices” (Horner et al., 2005, p. 165). This approach is widely used in special education research because it provides the researcher a “practical methodology for testing educational and behavioural interventions” that focus on the individual or a small number of individuals (Horner et al., 2005, p. 174).

1.4 Research Questions

The major research questions related to this study are:

**Question 1**

*What is the impact of a cooperative learning intervention on the social interaction behaviours between SMID and their PWOD in inclusive secondary school physical education classes?*

**Question 2**

*How does the presence of role, social or person factors in inclusive secondary school physical education classes impact the social interaction behaviours between SMID and PWOD when using a cooperative learning intervention?*

**Question 3**

*How does the provision of feedback received and given in inclusive secondary school physical education classes impact the social interaction behaviours between SMID and PWOD when using a cooperative learning intervention?*
**Question 4**

*How does the flow of resources in inclusive secondary school physical education classes impact on the social interaction behaviours between SMID and PWOD when using a cooperative learning intervention?*

**1.5 Significance of the Study**

The disparity between the promoted social benefits of inclusion and the actual practice of inclusion, where social interactions between SMID and PWOD are limited, warrants more attention. This situation, also noted by Block and Obrusnikova (2007) as disappointing and troublesome, highlights the need for research on how physical education teachers’ can provide opportunities for SMID and PWOD to interact more freely and favourably in the physical education setting. Cooperative learning approaches can be seen as a way of improving this situation but research combining both quantitative and qualitative methods is needed to provide teachers with a strategy that is based on solid evidence in the inclusive physical education setting (Horner et al., 2005; McDuffie & Scruggs, 2008; Mertens, 2010; Nyit & Hsieh, 2004).

With only one extant study, conducted in 2004, there is a lack of previous research on cooperative learning strategies to improve the social interaction behaviours between SMID and PWOD in the secondary school physical education setting both internationally and in Australia (Nyit & Hsieh, 2004). This lack of research on the social outcomes of cooperative learning has also been highlighted in reviews of physical education and inclusive physical education (Tant & Watelain, 2016; Ward & Lee, 2005; Wilhelmsen & Sorensen, 2017). This study is significant by being the first of its kind to combine quantitative data with qualitative insights from various PDHPE teachers and students on the impact of a cooperative learning intervention on the social interaction behaviours between SMID and PWOD in a secondary school inclusive physical education setting.

Given the diversity of literature in the different areas of this thesis, it is not uncommon to find different ideas on what constitutes inclusion and social interaction. Additionally, there are unique terms used in the Australian context that may not be understood or used internationally. Some terms have also been given specific meanings for this study and for clarity within the study, the following definitions of key terms are utilised in this study.

**1.6 Definition of Key Terms**

*Cooperative learning approach* – “Cooperative learning is an instructional format in which students work together in small structured heterogeneous groups to master the content of the lesson” (Dyson & Rubin, 2003, p.48). The elements of a cooperative learning approach
include promotive face-to-face interactions, interpersonal and small group social skills, positive interdependence, individual accountability and group processing (Johnson & Johnson, 1999).

**Cooperative Learning Verification Tool (CLVT)** “a tool that serves to ascertain model fidelity” of the cooperative learning approach (Casey, Goodyear, & Dyson, 2015)

**Inclusion** – “Inclusion is seen as a process of addressing and responding to the diversity of needs of all learners through increasing participation in learning, cultures and communities, and reducing exclusion within and from education. It involves changes and modifications in content, approaches, structures and strategies, with a common vision which covers all children of the appropriate age range and a conviction that it is the responsibility of the regular system to educate all children” (UNESCO., 2005).

**Inclusive physical education**- This refers to inclusion within the context of physical education classes

**Mild Intellectual Disability** – The New South Wales Department of Education (2003) defines SMID as those who have

“a full-scale IQ score of approximately two to three standard deviations below the mean on an approved individual test of intelligence. There must be information on the assessment of adaptive skills and school performance (where applicable) consistent with, or below this range of scores” (New South Wales Department of Education and Training, 2003, p. 1).

**Personal Development Health & Physical Education (PDHPE)**- “Personal Development, Health and Physical Education (PDHPE) is an integrated area of study that provides for the intellectual, social, emotional, physical and spiritual development of students. It involves students learning about and practising ways of maintaining active, healthy lifestyles and improving their health status. It is also concerned with social and scientific understandings about movement, which lead to enhanced movement potential and appreciation of movement in their lives” (Board of Studies., 2003, p. 6)

**Peer assisted learning (PAL)** – “teaching strategies that use peers… [with a further classification] into teaching strategies that use peers as a component of direct instruction” (Rosenshine (1979) cited in Ward & Lee, 2005, p. 205) of which cooperative learning and peer tutoring are part of.

**Peer tutoring** – “Peer tutoring is when one child instructs another child” (Temple & Lynnes, 2008, p. 11).
Peers Without a Disability (PWOD) - For the purposes of this study PWOD refers to students without a disability in the same year level and class to the student with an intellectual disability.

Regular – A term used to describe the educational experience of typically developing children. Can be used interchangeably with ‘general education’

Social Interaction – A student producing verbal or non-verbal behaviour directed toward another within the context of a mutual activity. For example: gestures, facial expressions, speech, conversational topic, greeting, smiling (Cutts & Sigafoos, 2001; Hughes et al., 2002). Beauchamp and Anderson (2010) define social interactions as “events in which people attach meaning to a situation, interpret what others are meaning and respond accordingly” (p. 40).

Social Interaction Data Collection Instrument (SIDCI)- An instrument developed for this study to measure interaction of SMID in the inclusive physical education setting.

It is noted that at times throughout the thesis different terms are used to explain the target group/s. As stated above students with a mild intellectual disability will be referred to as SMID and peers without a disability will be referred to as PWOD. There will be instances where students with a disability, students with a physical disability and students with intellectual disability will be mentioned as the literature is only referring to this general group. In these instances, the full term will be written and no acronym will be used.
Chapter 2 Literature Review

2.1 Introduction

The shift towards the inclusion of SMID into mainstream classes has created many positive opportunities for these students, however, there is a growing body of literature suggesting that the social interactions of SMID in these inclusive environments maybe limited. Considering that social interactions are an important part of gaining acceptance by PWOD and feeling a sense of belonging in the secondary school setting this review will focus on four main areas that emerge from the literature in relation to the problem of limited interactions for SMID.

Firstly, the discussion will focus on understanding the problem of limited interactions further by examining the literature on the place and importance of social interaction. Secondly, social interactions in an inclusive environment with a focus on the interactions of SMID in these inclusive environments will be discussed. Thirdly, the discussion will focus on the strategies to address this problem by synthesising the literature on promoting interactions for SMID thereby specifically targeting the research on social interaction and cooperative learning approaches. Fourthly, different theories related to social interactions will be examined to gain an understanding of why people do or do not interact in social situations and how these interactions can be more favourable with connections made to the cooperative learning approach. Although the literature presents these fields of research in a range of educational contexts this review will primarily focus on the inclusive physical education literature with some references made to the regular education literature.

2.2 The Importance of Social Interaction

Social skills and interactions are considered important to everyone’s life as they are vital in enabling people to participate and function within their communities, develop long-lasting relationships and maintain a quality of life (Cacioppo, 2002). They begin to emerge during the early development of a child between the individual and their environments and become more sophisticated during adolescence and adulthood (Cacioppo, Bernston, Sheridan, & McClintock, 2000; Rubin et al., 2004). Considering that children and adolescents spend significant time in the school environment, the development of these social skills and interactions will be influenced by their teachers and peers. While research has suggested that peer interactions are important and critical in everyone’s life (Hay, Payne, & Chadwick, 2004; Rubin, Bukowski, & Parker, 1998), it is during the secondary school years that social interactions with peer groups and friends increase with a need for these interactions to be more sophisticated than the primary years (Rubin et al., 2004; Tipton, Christensen, & Blacher, 2013).
When a student socially interacts with another student within the context of a mutual activity they produce both verbal and non-verbal behaviours that can vary immensely (Cutts & Sigafoos, 2001; Hughes et al., 2002). These behaviours can include: maintaining eye contact and appropriate personal space, understanding and using gestures and facial expressions, resolving conflicts, taking turns, learning how to begin and end conversations, determining appropriate topics for conversation and interacting with authority figures (Canney & Byrne, 2006). Studies have found that students who display positive verbal and non-verbal behaviours in their social interactions with their peers enjoy the benefits of long lasting supportive social relationships (Beauchamp & Anderson, 2010). These benefits include: acceptance by peers, friendships, positive self-concept and subjective well-being and positive effects on physical and mental health feeling a sense of belonging, satisfaction with the school experience, academic achievement and successful employment (Darnis & Lafont, 2015; Elksnin & Elksnin, 2000; Moffett, Alexander, & Dummer, 2006; Nijs, Maes, & K., 2014; Rubin et al., 2004; Wentzel, Barry, & Caldwell, 2004). Students who struggle to display appropriate verbal and non-verbal behaviours in their social interactions with their peers can find themselves socially isolated or ostracised from their peers, have difficulty forming and maintaining friendships, poorer academic achievement and less satisfaction with school (Bossaert, Colpin, Pijl, & Petry, 2013; Nowicki, Brown, & Stephen, 2014). In fact, research has suggested that isolation can, in the longer term, impact on a person’s physical health and can be a risk factor for morbidity and mortality (Cacioppo & Hawkley, 2003; House, Robbins, & Metzner, 1982; Uchino, Uno, & Holt-Lunstad, 1999).

To avoid these negative outcomes, it is important to provide opportunities for positive social interaction experiences during the secondary school years for all students. One of these opportunities can be found in physical education classes that focus on the development of movement skills (O'Brien et al., 2009; Qi & Ha, 2012). According to Australian Curriculum Assessment and Reporting Authority (2012) “movement is considered a powerful medium for learning through which students can acquire and practise a range of personal, interpersonal, behavioural, social and cognitive skills” (p. 2). Socially, as students participate in team-based environments they engage in and develop face-to-face social interactions with their peers that are frequent and varied (Lafont, 2012; Tjeerdsma, 1999). This opportunity for developing positive social interactions is seen as an important outcome for all students as well as students with a disability who are included in inclusive physical education classes (Australian Curriculum Assessment and Reporting Authority [ACARA], 2015; Block, 2007; Board of Studies., 2003; Grenier, 2006; Sherrill, 2004).
2.3 Social Interaction and Inclusion

When the literature concerning reasons for the inclusion of students with a disability is examined, it is clear that an important goal of inclusion is frequent and positive interactions between students with a disability and their PWOD (Block & Zeman, 1996; Slininger et al., 2000; Stainback & Stainback, 1990; Vogler, Koranda, & Romance, 2000). Early advocates of inclusion anticipated that these interactions would result in academic and social benefits for students with a disability (Stainback & Stainback, 1990; Wolfensberger, 1972). Academically, it was expected and purported that students with a disability would still be able to achieve in inclusive environments. An early review of three meta-analysis by Baker, Wang, and Walberg (1994) that looked at effective special educational settings confirmed this, finding that students with a disability were doing better academically and socially than in non-inclusive settings.

There were also other high expectations for social inclusion by educational systems when justifying inclusive practices in secondary schools. The highest expectation was that there would be increased social benefits leading to students with a disability being more accepted and therefore given greater opportunities for them to make new friends (Block, 1999, 2007; Sherrill, Heikinaro-Johansson, & Slininger, 1994; Stainback, Stainback, & Jackson, 1992). There is evidence to suggest that some students with a disability in inclusive settings are experiencing academic and social successes beyond those that would be seen in segregated environments (Baker et al., 1994; Peetsma, Vergeer, Roeleveld, & Karsten, 2001). In contrast, however, when studies that examined the experiences of students with a physical and intellectual disability, they found that teachers’ perspectives and practices of inclusion consistently highlighted that social interactions are limited in the secondary school setting for students with a disability (Block & Obrusnikova, 2007; Butler & Hodge, 2004; Carter & Hughes, 2005; Cutts & Sigafoos, 2001; Hodge et al., 2004; Hughes et al., 2012).

Several studies focused on the social experiences of students with a physical disability in physical education settings (Blinde & McCallister, 1998; Goodwin & Watkinson, 2000; Hutzler, Fliess, Chacham, & Auweele, 2002; Place & Hodge, 2001). These studies reported that there was a mix of positive and negative experiences for students with a disability in the physical education setting. Although there are some promising results for this group of students, it was noted that interactions were still occurring infrequently.

When studies are examined that relate specifically to SMID, they too indicate that interactions with PWOD are infrequent and they are less accepted by PWOD than other students in the class (Brown et al., 2011; Butler & Hodge, 2004; Cutts & Sigafoos, 2001; de Boer et al., 2012; Gresham & MacMillan, 1997; Hughes et al., 2012; Tripp, French, & Sherrill, 1995). Although these results are similar to students with a physical disability, it is important to note
that SMID experience cognitive deficits, therefore the reason for their infrequent interactions may be different to students with a physical disability (Brown et al., 2011; Gresham & MacMillan, 1997). These same cognitive deficits could also impact how SMID experience these interactions with their PWOD.

To this end, a review conducted by Hughes et al. (2012) on increasing social interaction skills of secondary school students with autism and/or intellectual disability initially identified a number of social skill difficulties that these specific students were experiencing in the school context. The review included 13 studies and 36 students (12–21 yrs of age) with 19 of these students IQ scores provided (range 32–101). In ten of the studies, the most common social skill difficulty experienced by the majority of the students was “rarely initiating to or engaging in social interaction with peers” (p. 290), while “engaging in limited eye contact” (p. 290) was also found across nine of the studies.

The above difficulties were similar when considering the four studies within the Hughes et al. (2012) review that identified IQ scores that put students in the mild range of intellectual disability. This review highlighted that students with mild intellectual disabilities were continuing to experience limited interactions in the school setting. The review did not identify specifically in what settings these difficulties were being experienced but the consistency of the social interaction difficulties across the students in the study might suggest they are being experienced in a range of settings including physical education.

In a case study conducted in a physical education setting in a rural middle school in the USA by Butler and Hodge (2004) the social interaction experiences of two students with a disability, one being a sixth grade girl with a mild intellectual disability (Down syndrome), were described. The study was conducted in an inclusive setting with 16 classmates without a disability. The study used the Analysis of Inclusion Practices in physical education (AIPE) observation system to provide quantifiable instances of social behaviour across eight categories.

Butler and Hodge (2004) found that the female student with the intellectual disability had limited social interactions with her classmates reporting an average of no interactions 71.7% of the time. On the whole, though, the infrequent social contact was mostly positive but tended to be one-way (unidirectional) emanating from the PWOD. The study also observed that the teacher did not consistently provide opportunities for the student with an intellectual disability to interact with her classmates. However, the analysis of this was restricted due to the initial focus of the study being on the students not the teacher. The Butler and Hodge (2004) study, although in the physical education environment, was conducted in a primary level setting where contact with the same peers is more consistent than the secondary setting where contact with the same peers can be intermittent.
Whilst not in a physical education context, an Australian study of playground interactions by Cutts and Sigafoos (2001) provided a more-explicit account of peer interactions for nine students with a mild or moderate intellectual disability in an inclusive secondary school setting. Observations conducted in the playground at lunchtime showed different patterns of peer interactions with the majority tending toward more frequent interactions with other students with an intellectual disability with only 34% of interactions with PWOD. In a similar finding to Butler and Hodge (2004), these interactions were mainly initiated by the student without a disability (69%) and were short and positive in nature 90% of the time. These two studies and the Hughes et al. (2012) study indicate that findings on interactions in the physical education setting resemble the findings on interactions in other school environments for SMID.

It is noted that in the studies by Butler and Hodge (2004) and Cutts and Sigafoos (2001) the social interactions between SMID and their PWOD were generally positive in nature. These results, however, are not always the case with other research identifying that students with an intellectual disability are less accepted by PWOD than other students (Brown et al., 2011; de Boer et al., 2012; Gresham & MacMillan, 1997; Tripp et al., 1995). In the physical education setting, Tripp et al. (1995) measured the attitudes of 9–12yr olds without disabilities toward students with physical disabilities and students with intellectual disabilities. They found more-negative attitudes toward students with behavioural and intellectual disabilities than students with physical disabilities. This was later confirmed by Gresham and MacMillan (1997) in a review of social competence and affective characteristics of students with mild disabilities. They found that these students, which included SMID “are more poorly accepted and more often rejected … than their non-disabled peers” (p. 400). Both the Gresham and MacMillan (1997) and Tripp et al. (1995) studies were conducted in the 1990s, and it could be argued that the results today may be different considering the longer-term placement of SMID in inclusive educational settings.

This, however, was not the case when the results of a review conducted by de Boer et al. (2012) that examined 20 studies on the attitudes of primary school aged students without a disability toward their peers with a disability were similarly problematic. They found that students with intellectual disabilities were more likely, alongside those with behavioural problems, to receive negative attitudes from their peers than other types of disability. Three of the studies examined the relationship between these attitudes and the social participation of these students and found that less social participation was associated with more negative attitudes. Caution must be exercised generalising this association to other students with a disability due to the limited number of studies, however, it is important to consider this possible link when interpreting any results. Additionally, the studies included in the review were looking at attitudes on a primary school level and results in the physical education setting could differ.
In the secondary school setting, a study by Brown et al. (2011), comparing the behavioural intentions of 319 Year 9 and Year 12 students without disabilities to students with intellectual disabilities and students with physical disabilities, found similar results to Gresham and MacMillan (1997), de Boer et al. (2012) and Tripp et al. (1995). They found more negative behavioural intentions to students with an intellectual disability than those with physical disabilities, due mainly to discomfort, and were less willing to interact with both students on activities that were of a personal nature. Brown et al. (2011) suggested that there was a larger role for teachers to provide opportunities for meaningful social interactions to occur and to support the interactions between students with and without disabilities that encourage each to play a valuable role. Furthermore, they suggest the need to assist students “without a disability to find commonalities between themselves and students with intellectual disabilities” (p. 329).

Despite the discrepancy between some of the above studies on the prevalence of negative attitudes toward SMID and the positive nature of interactions in some settings, the overall problematic evidence on both interaction and acceptance has suggested that interactions between SMID and PWOD warrants attention.

2.4 Strategies for Promoting Social Interactions for Students with Mild Intellectual Disabilities in Inclusive Classes

The results of these previously discussed studies from a variety of school perspectives (whole school, classroom, playground and physical education) strongly indicate that the goal of more frequent interactions for SMID in inclusive environments is not being realised in practice. What is common to many of the studies is that they concluded with the need for effective and structured teaching strategies to improve the social interactions of students with a disability in the physical education setting. In all cases, the teacher and at times the support personnel were not able to or did not provide an environment where social interactions between students with a disability and PWOD were promoted. This need for effective and structured teaching strategies is evident in a study by Hughes et al. (2002) where PWOD were simply given a verbal directive to be friends with a student with an intellectual disability across a variety of settings including physical education. They claimed that unless this verbal directive was given, interaction rarely occurred and concluded that unless teachers and support personnel provide specific programming opportunities, social interaction will likely not occur. Considering the need for structured teaching strategies and the benefits that positive social interactions provide for students with an intellectual disability, the following discussion describes the literature that has examined how educators can create environments that are more inclusive where social interaction is more frequent.
Two broad interventions have been the subject of a major focus to increase social interactions: skill-based interventions that provide training to the students with a disability; and support-based interventions that provide training and structures for peers, teachers and support personnel (Carter & Hughes, 2005). In a later review of 13 studies by Hughes et al. (2012) on increasing social interaction skills of secondary school students with autism and/or intellectual disability, both types of interventions were used either on their own or together across a number of settings. These included the special education classroom, regular education classrooms, school cafeterias, hallways, school gymnasiums or courtyards.

The interventions fell into two groups: those that provided social skill instruction and those that focused on social problem solving instruction. Across the social skill instruction interventions a variety of social skill training, social interaction training, social skills instruction and peer interaction networks were offered alone or in combination. The social problem solving interventions involved students being exposed to conversational skills training and social problem solving scenarios or techniques either alone or in combination. They found that across the 13 studies included in the review, the interventions employed were generally effective under the training conditions in producing change in social behaviours such as increasing interactions. The review suggested that to address the problem of limited interaction opportunities for students with intellectual disabilities and students with autism “both social interaction instruction and opportunities for social interaction to occur [with their peers] must be provided” (Hughes et al., 2012, p. 305). Based on this twofold approach to increasing social interaction skills and taking into account that teamwork and peer support becomes a greater focus in the secondary physical education setting, interventions that provide these two opportunities needed to be considered.

One such study by Haring and Breen (1992) examined the social interactions between two students with a disability (autism and intellectual disability) and nine of their PWOD during lunch breaks and transition times between classes prior to and during a social network intervention in a high school context. The intervention was designed to assist both the students with a disability and the PWOD to interact by meeting once a week to discuss the social interactions that occurred and ways to promote and sustain these interactions going forward. Utilising a multiple-baseline design the study found “a greater number of single- and multiple-turn interactions between members of the peer network” (p. 330). In addition, “interactions with appropriate social responding” (p. 330) were also found following the social network intervention. While this study was not conducted in the physical education setting it demonstrates the power of a peer-involved intervention to increase and improve interactions between students with a disability and PWOD.
When examining the literature in the inclusive physical education setting, both peer tutoring and cooperative learning approaches have been considered as the most effective teaching approaches. Whilst there has been limited research on social interaction outcomes when using cooperative learning in inclusive physical education settings, there has been some research devoted to the study of peer tutoring as a tool for providing more inclusive environments for students with a disability in the physical education setting (Klavina & Block, 2008; Klavina et al., 2014; Temple & Lynnes, 2008). In a recent review of inclusion in physical education it was noted that peer tutoring could improve motor performance, motor engagement and interactions between tutors and tutees (Qi & Ha, 2012). Even though the results from the Klavina and Block (2008) study was promising for physical and instructional interactions, the frequency and quality of social interactions were still not strong under peer tutoring conditions. While the students with a disability did interact with a wider groups of peers the interaction was mainly between the tutor and tutees. Peer tutoring also involved the students with a disability being highlighted as needing support and this may have been stigmatising in the secondary school setting (Church, Alisanski, & Amanullah, 2000). This raises the need to create less visible support structures that can create more frequent equal and higher quality social interactions between a wider and diverse group of students with and without disabilities (Bennett & Gallagher, 2013).

2.5 Social Interaction and Cooperative Learning

One such strategy or pedagogical model, cooperative learning, where students work together in small groups to master the content of the lesson could provide the support structures that produce more frequent higher quality social interactions with a wider and diverse group of peers (Gillies & Cunnington, 2014; Johnson & Johnson, 2009). Many of the prominent researchers in cooperative learning consider that the knowledge gained through social interaction is the strength of the pedagogical model despite the different cooperative learning approaches they advocate (Cohen, 1994; Cohen, Lotan, Scarloss, & Arellano, 1999; Johnson & Johnson, 2009; Kagan & Kagan, 2009; Slavin, 1990). Johnson and Johnson (2009) conceptual approach emphasizes the use of all five elements of cooperative learning (promotive face-to-face interactions, interpersonal and small group social skills, positive interdependence, individual accountability and group processing) when structuring activities. Their research has found that the conceptual approach to cooperative learning not only relies on social interactions but it has the ability to have an effect on socialisation and social skill development (Johnson & Johnson, 2002). Kagan and Kagan (2009) structural approach is based on the use of a variety of different structures in a lesson chosen specifically for their ability to meet cognitive, physical and social goals. On a social level, structures are designed to “maximize student interaction
with other” (Kagan & Kagan, 2009, p 6.1). Slavin’s (1990) curricular approach where students work toward group goals and rewards while working on content related to their ability, advocates that socially students who cooperate tend to like each other more. Cohen (1999) in her complex instruction approach and colleagues (Cohen et al., 1999), found that social development is enhanced and student interaction is maximized when students work in heterogeneous small groups and take on roles within open-ended discovery or problem solving tasks that utilize higher order thinking.

In relation to the recommendation by Hughes et al. (2012), cooperative learning, if implemented correctly, meets the twofold approach of providing social skill instruction and opportunities for social interaction to occur. The strategy achieves this through the elements (face-to-face promotive interaction, interpersonal and small group social skills, positive interdependence, individual accountability and group processing) and structures (e.g., Jigsaw) of the approach. This strategy generally involves a preparation component focusing on developing the social skills of working with others in a group followed by practice and application of working in groups with their PWOD (Johnson & Johnson, 2009). Additionally, this can all occur without highlighting the need for specific support for the SMID reducing the stigma of needing support for the SMID. As limited research exists on cooperative learning in the secondary school setting in relation to SMID and physical education combined, research in both the non-physical education classroom and regular physical education setting will also be analysed.

In the regular education literature a meta-analysis by Johnson and Johnson (2002) involving 111 studies across a range of settings examined the effects of cooperative learning against competitive and individual learning on a variety of academic, personal and social dependent variables. The results of this meta-analysis found that cooperative learning has a significant effect on the achievement, socialisation, motivation and personal self-development compared to competitive or individualistic learning. A later meta-analysis by Roseth, Johnson, and Johnson (2008) focused on the effects of cooperative learning compared to competitive and individualistic goal structures and found that higher achievement and more-positive peer relationships were associated with cooperative rather than competitive or individualistic goal structures. Furthermore, the group context enables social support for its members compared to individualistic learning. In a later discussion on the interrelationship of relationships and achievement through cooperative learning in middle schools, the same authors claim that students who are “socially isolated and withdrawn will learn more social skills and engage in them more frequently within cooperative rather than individualistic situations” (Johnson, Johnson, & Roseth, 2010, p. 8).
When focusing on interaction as a social skill, a study by Shachar and Sharan (1994), in the Geography and History classroom setting within a junior secondary school in Israel, examined the nature of social interactions in 27 six person groups using cooperative learning as compared to those being taught via a whole-class method. They found that all students in the cooperative learning group “expressed themselves more frequently and used more words per turn of speech than their peers from classrooms taught with the traditional Whole-Class method” (p. 313).

Both the meta-analysis and the other studies above refer to the social benefits that cooperative learning can offer in comparison to other methods of learning, thereby providing a promising approach for improving interactions between SMID and PWOD. Furthermore, Hattie (2009) reviewed the above meta-analyses indicating that the results from these were noticeable and could create a difference in educational settings (Hattie, 2009). When examining the regular inclusive education literature, a recent publication by Mitchell (2014) that synthesises the evidence on what really works in inclusive education, found that cooperative learning was rated as one of the main teaching strategies to positively impact inclusion outcomes.

When examining the specific research on cooperative learning and physical education, the latest review of cooperative learning in physical education by Casey and Goodyear (2015) concluded that the research on cooperative learning shows evidence that the strategy can promote the achievement of learning in the four learning domains: physical, cognitive, social and affective. From the social perspective, outcomes such as: the development of interpersonal skills; interpersonal relations and the ability to listen to team members; and beliefs, the sharing of ideas and constructing new understandings together were the main areas of social learning identified in the research to date.

To demonstrate the ability of cooperative learning to improve social skills in the physical education setting a range of studies have been conducted (Casey, Dyson, & Campbell, 2009; Dyson, 2001, 2002; Dyson & Strachan, 2000; Goudas & Magotsiou, 2009). A group of these studies over a period of three years by Dyson and his colleagues examined the perspectives of a teacher’s and a student’s experience of cooperative learning at three different schools. While there were some differences in the findings across the studies, all studies found that cooperative learning improved social skills. The teacher in the Dyson and Strachan (2000) study conducted in a secondary school physical education setting believed that a cooperative learning structure could facilitate social skill development. A similar finding was Dyson (2001) found when cooperative learning formats in an elementary physical education program was studied with improved motor skills, social skills, teamwork and student responsibility for all ability levels. They did note, however, that interpersonal skills within the groups can be slow to


develop. The extension to this study by (Dyson, 2002) with a teacher and a younger student supported these findings but suggested that difficulties can be experienced in the early stages of implementing a cooperative learning strategy. A further study by Goudas and Magotsiou (2009), examining the effects of a cooperative learning program on the social skills of four six grade classes, pointed to the potential of cooperative physical education programs to enhance students’ social skills. Further, they emphasised the need to structure the teaching environment towards a cooperation aim.

When focusing on social interaction, a study by Casey et al. (2009) in the secondary school physical education setting found that social interaction between students was an important feature of the cooperative learning approach. The study used action research to report on the pedagogical changes a teacher experienced when implementing cooperative learning for the first time for 67 boys in their first year of secondary school. They found that whilst the teacher and the adult observers overlooked the importance of the social interactions between the students, the students themselves commented on the enjoyment they gained from these interactions. This group of studies on cooperative learning in physical education offers promise for the ability of the approach to impact interactions, however, SMID were not included or specifically identified as being included in all of the studies.

In the regular education literature early research by Johnson and Johnson (1982) in the USA provided some insight into the benefits of cooperative learning for students with a disability. They compared the effects of cooperative learning and individualistic instruction on interpersonal attraction of students with and without disabilities in a secondary school maths class. All students were randomly assigned to the two conditions stratifying for sex and ability with three students with a disability assigned to each condition (three were classified as [intellectual disability] and three classified as having severe learning and behavioural problems). The results indicated that the use of cooperative learning experiences compared to individualistic ones promoted more interaction during instruction between SWID and PWOD, more interpersonal attraction between SWID and PWOD and higher achievement on the part of both SWID and PWOD. These initial findings lend support to the use of cooperative learning approaches as a teaching strategy to enhance social interactions and acceptance of students with a disability.

A later and more-extensive study by Kaufman et al. (1985) examined what factors produced better outcomes for students with an intellectual disability and found that cooperative learning promoted these students interactions with their peers. Although this study and the Johnson and Johnson (1982) study have yielded promising results for the power of cooperative learning to impact interactions for SMID with their peers, both were conducted over 20 years
ago. Additionally, the same results may not be repeated outside the classroom setting in the physical education class environment.

To this end, a later study by Wong (2008) in a Hong Kong secondary school found that the competitive and achievement nature of their school culture, which is comparable to the individualistic condition identified in the Johnson and Johnson (1982) study, posed a barrier to successful inclusive practices and positive attitudes of PWOD toward students with a disability. Included in the study were five students with a variety of disabilities. With the study receiving 389 responses from PWOD it was conducted over a year and examined the effect of mainstreaming on the attitudes of PWOD in a secondary school toward people with disabilities.

Their main findings did not support their hypothesis that attitude change towards people with disabilities who are also in the same class as the PWOD will be significantly more positive. Whilst the results may not have been significant, they did however, find that cooperative activities in the physical and adventure settings lead to positive interactions and experiences that are more meaningful between students with and without a disability. They also emphasised the importance of the guidance and supervision of the teacher in fostering this reaction but concluded that these results were short lived once they returned to the classroom.

Similar findings in the primary physical education setting were discussed in a study by Grenier (2006), where a third grade physical education class, including a child with cerebral palsy, was observed over a six-month period. The teacher interviewed in the study commented that cooperative learning although successful most of time had its challenging days. This qualitative study utilising interviews, observations, document review and journals uncovered three themes related to inclusion: the teacher’s belief in the development of social skills for all students is important; the teacher’s use of purposeful strategies to accommodate students with disabilities must be ongoing; and student learning is shaped by personal experience. The use of a case study approach allowed the researcher to understand the thoughts and beliefs of the teacher in an inclusive physical education setting and further support the need for purposeful teaching strategies such as cooperative learning to promote social interaction. The study, however, was confined to the primary school setting, as with the two studies by Dyson (2001); (2002). Considering that the student in the study had a physical disability, findings may be difficult to generalise to the secondary setting for SMID.

The strongest support for using cooperative learning strategies to improving the social interactions between SMID and PWOD was reported in a Taiwanese study by Nyit and Hsieh (2004). The study investigated the effects of cooperative learning on teacher-student interactions and peer relationships of a student with mild intellectual challenges in a fifth grade inclusive physical education class. A single-subject withdrawal design was used over nine weeks with 18
x 40-minute lessons observed. Data were collected through checklists, observation and questionnaires and the results found that cooperative learning: could increase the teacher–student interactions of the students with intellectual challenges; could increase the social status and peer relationships of the student with intellectual challenges; could increase the initiative and passive behaviour of teacher–student interactions and peer relationships of the students with intellectual challenges; and was accepted by the students, physical educator and special educator and mentor as an effective instructional strategy. The results were promising as to the impact of cooperative learning on social interaction, with more research with older students in secondary settings now needed to examine whether this successful strategy would lead to similar positive results.

Despite the research just discussed that demonstrates that many academic and social benefits can be attributed to cooperative learning, teachers have been reluctant to utilise this approach. This is because of the dominance of direct teaching pedagogy in PDHPE classrooms. A study conducted by Cothran and Kulinna (2008) found that physical education teachers reported using predominantly the direct instruction teaching style dependent mainly on factors such as control, time and knowledge. This adherence to one main teaching approach further emphasised in Kirk (2010), who discussed the perceived need of physical educators to use a more directive or command style of teaching. This need to control the teaching and learning environment, considered by Chambers (2011) as a behaviourist approach, has been a dominant and long-standing teaching approach for physical educators (Harris, 2000; Jess, 2011). Further, Kohn (1992) found that teachers were threatened by cooperative learning as a teaching strategy because it reduced control and predictability, demanded attention to social goals, challenged a commitment to individualism and challenged teachers’ commitment to the value of competition. Similar results were found by Cohen (1994), who reported that teachers were reluctant to delegate responsibility to students in cooperative learning as they were afraid of losing control. Later research by Dyson (2002) in the elementary physical education setting found that while cooperative learning was a promising strategy in physical education, it’s implementation may not always be “smooth or trouble free” (p. 69). It could be argued therefore that they may not be realising the potential of cooperative learning for promoting inclusive environments and increasing social interaction between SMID and PWOD.

Advocates of cooperative learning suggest that these attitudes from teachers can be the result of unsuccessful group work experiences in the past. Dyson (2002) and Slavin (1999) consider that this may have been due to a lack of student preparation to work together in cooperative learning groups and incorrect teacher implementation of cooperative learning activities. The reported negative experiences in the physical education setting include students displaying social skill deficits, students not participating in the learning or dominating other
group members, time taken for students to understand their role in activities with subsequent lower amounts of activity, and personality clashes (Dyson & Rubin, 2003; Grenier, Dyson, & Yeaton, 2005; Killen, 2007). Other reasons for the slow take up of cooperative learning may have been research from the early 1990s indicating that placing students with a disability and PWOD in the same classroom and in groups does not necessarily promote social interactions (Gillies & Ashman, 1996; Grineski, 1991). If such results were indeed reported in the academic literature it may have filtered into pedagogical approaches during teacher training, resulting in the default to direct teaching strategies. Combating these concerns and to realise the benefits of improved social interaction for SMID in physical education settings, planning and preparation of students for cooperative learning is recommended.

It is generally accepted by researchers that thorough planning in the preparation of students for cooperative learning is essential for the success of the approach. Johnson and Johnson (1994), both early advocates of cooperative learning emphasised the importance of teaching students social skills to improve group dynamics with both authors continuing to advocate this development (Johnson & Johnson, 2009). This was supported by Sapon-Shevin (1994), who proposed that students need to be taught social skills such as listening, negotiating, problem solving and providing appropriate feedback to each other to be able to contribute positively to cooperative learning activities. Added to this, teaching skills such as leadership, decision-making, trust building, communication and conflict management have also been proposed as important to making cooperative learning work (Gillies & Cunnington, 2014; Johnson & Johnson, 1999; Stevahn, Johnson, Johnson, & Schultz, 2002).

A study by Gillies and Ashman (1996) found that children trained in social skills were more cooperative and helpful to each other than the untrained group. The students who were trained in small group procedures and interpersonal and small-group skills to promote group collaboration (e.g., listening, feedback, sharing) were found to use more inclusive language and provided more explanations to assist their peers. A later study conducted by the same authors confirmed these results finding that children who were trained in interpersonal and small group skills “exhibited more cooperative behaviours” (Gillies & Ashman, 1998, p. 755) than those in the untrained group. A return by Gillies (1999,Gillies (2002) to these same peers after one and two years to determine maintenance and long term effects of the training found that the trained group continued to “engage in more interactions” (p. 35) than the untrained group.

When comparing the difference between students who were trained and not trained Terwel, Gillies, Eeden, and Hock (2001) found similar results. They reported that students trained in interpersonal and collaborative skills were more cooperative and gave more
explanations to each other than their peers in the untrained classes. It was noted, however, that better results were obtained for higher ability students.

When examining the literature on physical education and the training of students, Deline (1991) suggested that when referring to primary school-aged students they may not have the skills to successfully negotiate the complexities of social interaction and they need the opportunity to learn and practice these skills to avoid communication problems arising. He provided support for the teaching of social skills in physical education by suggesting that students participate in a cooperative social skills unit at the start of a school year in order to be more able to apply these skills throughout the year. More specifically, in the secondary physical education setting, Dyson (2002) later studied the perspectives of teachers and students when implementing cooperative learning over a two-year period. In relation to preparing students for cooperative learning, the teacher in the study emphasised the need to explicitly teach and reinforce to the students the skills required for their role in cooperative learning activities. A later action research study by Casey et al. (2009) in the secondary school physical education setting with 67 Year 7 boys, confirmed the need to plan and prepare students social skills so they can work together.

Taking into account that SMID have been considered to exhibit limited social interaction skills, it would be important to ensure that training be provided before cooperative learning is implemented in the physical education setting (Carter & Hughes, 2005). There is, however, limited research on the impact of training SMID for participating in cooperative learning in such a setting. Grenier et al. (2005) and Grenier (2006) do provide some support for the teaching of social skills in a case study of inclusive physical education where a student with a physical disability was included alongside PWOD. It emerged that the need for teaching interpersonal skills was necessary for success and that the development of these skills directed the teacher’s practices.

When studies are examined that relate specifically to SMID in the regular education literature, a strong case emerges for the teaching of social skills. Asher (1983) emphasised the importance of providing opportunities for the development of collaborative skills and constructive interaction with peers to improve the social status of socially rejected and withdrawn students. Thirteen years later, Putnam et al. (1996) conducted a study in a primary school of 48 fifth graders including 16 students with moderate to severe intellectual disabilities. They found that more-positive relationships developed between the students with a disability and PWOD in the groups that had received collaborative skill training than the untrained group. Based on the need for the twofold approach of providing social skill instruction and opportunities for interaction with peers suggested by Hughes et al. (2012) earlier, these results
are promising for addressing the problem of limited social interaction between SMID and PWOD. While the studies were conducted over 20 years ago, they do point to a trend for the need to conduct social skill training for students with and without disabilities in inclusive education environments.

A more recent study by Nowicki et al. (2014) utilised interviewing and concept mapping to identify the thoughts of Canadian children in grades five and six on the social exclusion of peers with intellectual or learning disabilities. The school had a policy of inclusion and it was noted by the researchers that every student who participated in the study would have had at least one child with intellectual or learning disabilities in their class. A recommendation from the results of the study was the “need to teach proactive social skills to all children in inclusive classrooms so that positive and supportive interactions can be realised” (p. 356). Although this study was conducted in the primary school setting it did capture the thoughts of students who would soon be attending the secondary school setting. Considering that this study and the great majority of the studies on preparing students for cooperative learning have been conducted in primary schools, there is a need for these concerns to be addressed in secondary school, which is a completely different social environment.

The research discussed clearly demonstrates evidence for the need to train all students to develop their social skills in order to promote positive interactions between students with a disability and their PWOD. Considering the reported benefits that are derived from these positive interactions between students in the secondary setting, more research is required to find teaching strategies that create the environment where social skills are taught, practiced and promoted. The research on cooperative learning has suggested that this approach has the potential to achieve this social outcome in the inclusive physical education setting, however, a review of peer assisted learning (PAL) in physical education by Ward and Lee (2005) found that there is a lack of reported student learning and social skill development outcome measures from cooperative learning in physical education. In their review, Ward and Lee (2005) define peer assisted learning as “teaching strategies that use peers … [with a further classification] into teaching strategies that use peers as a component of direct instruction” (Rosenshine (1979) cited in Ward & Lee, 2005, p. 205). This further classification meant that the latest review of peer assisted learning in physical education by Jenkinson, Naughton, and Benson (2013) excluded studies using cooperative learning.

When focusing on the teacher’s perspective in the inclusive physical education literature, a systematic review of the literature 1975–2015 by Tant and Watelain (2016) identified that there were a small number of studies on the impact of inclusive practices, including cooperative learning with only one selected in the review. Further, the latest review on
inclusive physical education from 2009 to 2015 by Wilhelmsen and Sorensen (2017) included only four studies on the impact of cooperative learning in inclusive physical education. Only two of the studies identified, measured interaction variables and they both focused on using peer tutoring as a cooperative strategy rather than cooperative learning (Klavina & Block, 2008; Klavina et al., 2014). Both inclusive physical education reviews highlighted the need for more research on the impact of teaching practices and social mechanisms. Indeed, there is no research measuring the social outcomes of cooperative learning for SMID in the inclusive physical education setting. To this end, research that is more specific is required to examine how cooperative learning can promote positive interactions between SMID and their PWOD in order to combat the problem of limited interactions and rejection of SMID.

To investigate the potential of the cooperative learning approach to positively impact social interaction behaviours between SMID and their PWOD, it is necessary to firstly understand the phenomenon of human social interactions and what factors influence it occurring between individuals. More specifically, understanding why and how social interactions occur between individuals and how to make these interactions positive, will enable a more rigorous analysis of how the cooperative learning approach impacts interactions between SMID and their PWOD.
Chapter 3 Theoretical Framework

Introduction

An examination of literature from the field of social psychology identifies two major theories with which to understand human social interactions, namely the symbolic interactionists’ identity theory (Burke & Stets, 2009; McCall & Simmons, 1966; Reynolds & Herman-Kinney, 2003) and Allport’s (1954) contact theory. Although other social theories such as Homans (1961) social exchange theory of interaction offer insights into the how and why of human social interactions through the benefits and risks associated with social relationships, the synergy between identity theory and contact theory was considered more favourable for this research. More specifically the interaction focus of identity theory and the ingroup and outgroup focus of contact theory portrayed a framework to offer explanations for and provide suggestions to investigate the research problem of limited interactions between SMID and PWOD.

The following discussion will begin with an explanation of identity theory, focusing on the components of the identity process and how they impact social interactions through the goal of identity verification. Further discussion on identity verification will highlight the conditions related to the components of the identity process that make identity verification and interaction between people more likely. Secondly, an explanation of the principles of contact theory related to creating favourable interactions will be made with connections developed between identity theory and contact theory. Thirdly, with respect to both identity theory and contact theory a framework for observation of interactions will be developed in order to examine the interactions between SMID and PWOD in the inclusive physical education environment, specifically when using a cooperative learning intervention. Finally, emerging from the above discussions will be the research questions that will be used to guide the research.

3.1 Identity Theory

Based on the early work and influence of Cooley, Thomas and Mead in the 1900s to 1930s, the concept of symbolic interactionism developed with a focus on the nature of human interaction and how “humans handle the problem of establishing their significance for one another” (McCall cited in Reynolds & Herman-Kinney, 2003, p. 209). Another symbolic interactionist, McCall (2003) later referred to interaction as “at least two agents acting upon one” (p. 327) another in either a reciprocal or mutual form. This process of interacting with others is seen by symbolic interactionists as an essential component of forming an individual identity (Blumer, 1969; Karpov, 2006). McCall further contends that interaction is “centrally a matter of negotiating identities and roles” (McCall cited in Reynolds & Herman-Kinney, 2003,
p. 329), while Tajfel and Turner (1986) through their social identity theory contend that social identity unfolds in naturally occurring interaction. Although there are a number of different concepts from different authors that explain this connection between interaction and identity, the latest version of identity theory by Burke and Stets (2009) “pulls together and systematically explicates the cumulative theoretical research tradition of identity theory” (McCall cited in Burke & Stets, 2009, p. xiii). Stets & Burke (2014) also acknowledge the link between identity theory and other social psychological theories such as: affect control theory (Smith-Lovin & Robinson, 2006); expectations states theory (Burke, 2008; Stets & Harrod, 2004); network exchange theory (Burke, 1997); justice theories (Stets & Osborn, 2008); legitimation theory (Burke, Stets, & Cerven, 2007); social comparison theory (Stets & Burke, 2013); and social movements theory (Stryker, Owens, & White, 2000). By acknowledging and incorporating other identity theorist’s research into identity theory, a more comprehensive view of the meanings of identities and behaviour is offered that could not be provided by other theorists in isolation. Whilst this version of identity theory will form the basis of the following explanation of the theory, other authors’ ideas in relation to interaction and identity will be called upon intermittently to contribute further understanding to the discussion.

Identity theory has in the past called upon research examples from the fields of gender, marginalised groups, crime and law, students, family, married couples, environment and race/ethnicity but there has been no research in the field of education and students with a disability using identity theory as a lens (Burke & Stets, 2009; McCall, 2003; Stets & Burke, 2014). The literature however, does suggest that identity formation is a process that increases during adolescence and is believed to be central to the formation of an adult identity (Erikson, 1994). Kroger 2004 p7. Whilst the application of identity theory in this research is unique, the theories ability to consider this link and provide insight into why a person may or may not interact in a social setting is worth exploring in order to inform the continued and long-standing problem of limited social interactions between adolescent SMID and PWOD. To understand these insights it is important to firstly establish the place of social interactions within identity theory.

3.1.1 The Identity Process. Identity theory, which is focused on the meanings of identities and behaviours, explains that social interactions contribute to and are a potential product of the identity process (Burke & Stets, 2009; McCall & Simmons, 1966). Whilst the contribution of interactions to the process is important, it is the potential of interactions as a product of the process that is of interest for the purposes of this research. Considering that the purpose is to find teaching strategies that increase and improve the interactions between SMID and PWOD, understanding how the identity process works and more importantly how it can produce interactions is necessary when deciding which teaching strategies to implement. Figure
3.1 and the following discussion illustrates and describes the identity process and its influence on interactions (Burke & Stets, 2009).

The identity process developed by Burke and Stets (2009) has four components as illustrated in Figure 3.1. These four components are the: 1) self-meanings of an identity (identity standard), the 2) perceptual input associated with these meanings that each individual is regularly receiving and interpreting from a variety of sources in the social situation including “how one sees oneself [direct appraisal] and the meaningful feedback that the self obtains from others (reflected appraisals)” (p. 50). Further there is a 3) “process that compares the perceptual input with the identity standard (comparator)” (p. 50) and when this comparison occurs the individual produces 4) meaningful behaviour based on the difference (error) between the

*Figure 3.1 The Identity Model adapted from Burke and Stets (2009, p. 62)*
perceptual input and the identity standard (Burke & Stets, 2009). These components, which exist in a continuous loop as illustrated in Figure 3.1, allow the individual to cognitively interpret their place/identity in the social situation. The result of this process of interpretation leads to the individual manipulating their behaviour and/or the shaping the social situation in an attempt to verify their identity. That is, they are attempting to be “the person that [their] identity standard indicates” (Burke & Stets, 2009, p. 68). It is important to note that there are times after the comparison process where a person’s identity is not verified as a result of disturbances in the social situation, termed identity non-verification. For the purposes of this research, identity theory contends that interactions will continue with those people who verify their identity and will be avoided with those that do not verify their identity, if those involved in the social situation do not adjust their behaviour to enable identity verification to occur (Burke, 2008; Burke & Stets, 2009).

This contention, that links identity non-verification with avoidance of interactions, is significant to the problem driving this research as it not only alludes to a reason why interactions between SMID and PWOD might be limited in the current school setting, but it also offers a possible pathway for combatting this problem. In relation to why interactions are limited, it may be possible that either or both SMID and PWOD are not having their identity verified with each other in the secondary school setting leading to interactions being avoided between them. Conversely, it could be suggested that if both SMID and PWOD can have their identities verified when they are interacting with each other, then interactions between them are likely to continue. In the cases where SMID are being rejected by their PWOD, identity verification may even enable interactions to begin providing opportunities for both SMID and PWOD to enjoy the benefits of increased interactions. Therefore, considering that the presence or not of identity verification in a social setting has the potential to impact interactions both negatively and positively, the need to further breakdown the identity verification process is important. Additionally, considering that this research will be conducted in the authentic school environment and the need for sensitivity is required, those factors of the identity process that are observable will be focused on. These observable factors include: the different bases of identities found in the identity standard; the potential sources of input that are being received and used in the social situation. For example, feedback and resources; and the social behaviour produced as an output or product to the process such as interactions. The following discussion will begin with an explanation of the three bases of identities that a person may assume in a social situation.

3.1.2 Bases of Identities. From Figure 3.1 and the corresponding description, it is illustrated that identities play a major role in the identity verification process and indeed the need to have these identities verified for all parties in a social situation is driving the
interactions between the individuals who are present. Identity theory suggests that there are many identities at play in any one social situation and the theory has in the past focused mainly on the influence of role identities in the identity verification process. Although role identities are still the major focus, Burke and Stets (2009) with influences from other social theories and theorists, have suggested that other identities are also at play in any one social setting, namely social identities (Abrams & Hogg, 1990; Stets & Burke, 2000) and person identities (Stets, 1995; Stets & Burke, 2000, 2014; Stets & Carter, 2011). To understand how these identities influence the identity verification process and interaction it is firstly necessary to explain what is meant by role, social and person identities.

3.1.2.1 Role Identities. Explaining role identities requires firstly an understanding of the concept of social positions and roles. Social positions are categories in society that an individual occupies (Burke & Stets, 2009). Examples can include male, female, mother, father, child, wife and husband. Depending on the setting, additional social positions may emerge. For example in a learning environment such as a school, the student and teacher positions may be in play. As described by Burke and Stets (2009) the “set of expectations tied to [these] social position[s] that guide people’s attitudes and behaviour” (p. 114) are known as roles. For example, the set of expectations (roles) tied to being a student may involve learning new knowledge and skills, passing subjects, acquiring an end of school leaving certificate. The “internalised meanings of [these] role[s] which an individual applie[s] to themselves” are known as role identities and “different individuals may have different meanings for the same role identity” (Burke & Stets, 2009, p. 115). For example, Burke and Stets (2009) explain that “for one person a student identity may mean being academic and taking one’s school work seriously while for another person it may mean being sociable and having fun with peers at school” (p. 115). While these are just some examples of meanings, an individual may have a large set of these identity meanings for a role and they serve to define the identity for the person, known as the identity standard (Burke & Stets, 2009).

In the identity process there is “correspondence between the meaning individuals apply to an identity while in a role and their behaviour” (Burke & Stets, 2009, p. 115). Similar to the description provided by Burke and Stets (2009), the behaviour that corresponds to the student identity meaning of being academically responsible might be attending class, being attentive in class, doing homework and passing exams. The development of the expectations, meanings and corresponding behaviours of the identity standard is influenced by wider community social norms, individuals own understandings as to what the roles mean to them and individual interactions and reactions with others when enacting these roles (Burke, 2008; Burke & Stets, 2009). These influences highlight that the role identity for an individual is not just occurring in isolation, indeed the interactions with others is part of and vital to the development of identities.
In fact, “for every role that is played out in a situation, there is a counterrole to which it is related” (Burke & Stets, 2009, p. 115) and this relationship guides the interactions between them. This notion of role and counter-role is known as the “principle of role reciprocity … [and by] extension identities are related to counteridentities” (Burke & Stets, 2009, p. 115). For the student role identity, the counter-role identity would be the teacher and this teacher role identity would have its own expectations and meanings attached. The existence of different role expectations and meanings for the teacher and the student necessitates the need to make compromises in their interaction behaviours in order for both parties to successfully carry out their role and meet their goals. To add further complexity, while the student and teacher role identities may be present in the school situation, any one person can have multiple roles or role identities that can be activated in a situation that may compete and demand their own behaviours (Burke & Stets, 2009 p. 114). For example, the existence of the male and female role or the peer role identities in the social setting of the school may be more important to the student, influencing how interactions will occur between the student, the teacher, the opposite sex and their peers. While role and counter-role identities are ever present in a setting there are other bases of identity that could emerge in a social situation.

3.1.2.2 Social Identities. There are contexts where individuals come together in a group situation with social identities emerging. Social Identities “are based on a person’s identification with a social group” (Hoggs and Abrams (1988) cited in Burke & Stets, 2009, p. 118). This “social group is a set of individuals who share the view that they are members of the same social category” (Burke & Stets, 2009, p. 118). Members of one social category are part of the ingroup while other people outside this group are considered part of the outgroup (Burke & Stets, 2009). Continuing on from the example of student and teacher roles, the students can come together as part of a student social group and the teachers can come together as part of a teacher’s social group. Additionally, in the school setting the existence of peers and friends are other important social groups that are likely to emerge. Despite this separation there are times where both students, teachers, peers and friends can come together in the wider school group (Burke & Stets, 2009). By being part of this school group the students, teachers and all other people connected with this school are members of the ingroup of the school, with another school being considered part of the outgroup. Those in the ingroup have a particular social identity and this “means being like others in the group and seeing things from the group’s perspective” (Burke & Stets, 2009, p. 118). This similarity means behaving in a way that fosters the group beliefs or goals over and above individual beliefs and goals that are present in role identity. The group is therefore a collective “we” while role identity is focused on the “I” (Burke & Stets, 2009). Burke and Stets (2009) “maintain [however] that roles are embedded in groups” (p. 122) and in terms of a person’s behaviour in a group situation it is important to
consider when someone is acting in a role, based on role identity or is part of the collective or group and acting on the basis of the social identity. Regardless of whether a person is enacting their role identities and/or social identities in a setting, they bring with them their own individual characteristics or person identities that can “shape what roles they take on and groups they join” (Burke & Stets, 2009, p. 125).

3.1.2.3 Person Identity. Person identities are those individual characteristics that “are based on a view of the person as a unique identity, distinct from other individuals … [with a] focus on the qualities or characteristics individuals internalize as their own” (Burke & Stets, 2009, p. 112). These characteristics may include how masterful, dominant, controlling, moral or sociable they are and/or what the person values (Burke & Stets, 2009). For example, students could be more (or less) controlling or more (or less) sociable. Additionally a person identity travels with the person and operates across roles and situations (Burke & Stets, 2009). This means that a student who is more sociable will be the same when enacting their role identity as when enacting their social identity in a group. Although the literature on person identity in identity theory is limited, Burke and Stets (2009) in their latest version suggest that person identities can be prominent in interactions because they are constantly activated and therefore more salient (important) to the person. Earlier, Burke (2004) considered that person identities are the master identities in most situations influencing the roles we play and the groups we join. This ranking of identities assumes that we have a choice, however, Burke and Stets (2009) notes that there are times where we are not given a choice of the role we play and the groups we join and in this case person identity will be influenced by the nature of the roles we take on and groups we are a part of.

Considering that both the interactions between SMID and PWOD are limited and the SMID experiences cognitive difficulties, it could be that the role, social and person identities of the SMID are underdeveloped as they have less access to or understanding of the social norms that inform each of the identities. This may lead to a perception by PWOD that the SMID is displaying behaviour that is not in accordance with the role, the social group and the acceptable person characteristics. Furthermore, in any one social setting an individual, through interaction with others is attempting to verify these role, social and person identities and if interactions are limited then verification is less likely. To complicate the process further for SMID who experience cognitive difficulties, depending on the setting and the person there is usually a hierarchy of identities that a person is attempting to verify (Burke & Stets, 2009). For example, as a student in a class the most important identity that is being activated may be the student role identity. While in the playground, the social identity activated in a friendship group may be more important. In both situations, the person as a student and a friend may have a strong controlling person identity that is activated and becomes necessary to verify. At times
disturbances (as illustrated in Figure 3.1) can occur and a person has to decide between the competing identities. For example, in the class where the student’s role identity is more salient, their friend may talk to them while the teacher is talking and the person must decide which identity to verify. In some cases, compromises in behaviour will be made to ensure both identities are being verified in some way and in other cases the persons controlling identity may dominate and they dismiss their friend to continue to listen to the teacher. To make these decisions and to understand how to behave in these situations a person looks at the information inherent in the environment (Brown, 2006; Burke & Stets, 2009). This information forms part of the input component of the identity process and can come from within the person themselves or from the meaningful feedback they receive from others (Burke & Stets, 2009). To understand how this information and feedback in the social setting can influence the identity process and the person’s subsequent interaction behaviours it is firstly important to understand the place of this information and feedback in the identity process.

3.1.3 Information and Feedback. The information and feedback received in the input component of the identity process (illustrated in Figure 3.1) is influenced by the existence of signs and symbols in the environment that produce meaning for the individual that they use to determine whether they are activated or a more-salient identity is being verified or not (Burke & Stets, 2009). Since this study is interested in identity verification as a means to promoting interaction between SMID and PWOD, it is important to consider the information and feedback through signs and symbols that an individual could be receiving and how it may impact identity verification and in turn interactions. Firstly, it is worth understanding what signs and symbols are and secondly the contribution they make to the identity verification process.

Signs and symbols are indications to an individual of what is happening in the environment and they both allow meaning to develop that influences the identity verification process (Burke & Stets, 2009). The general concept of a sign can be divided into two categories, a natural sign and a conventional sign (Burke & Stets, 2009). A natural sign, also known as just a ‘sign’ is a “common reaction to some stimulus in the environment” (Burke & Stets, 2009, p. 22) and is acquired through direct experience. A conventional sign, also known as a ‘symbol’ is different to a natural sign in that the “source of the stimulus is the person rather than the environment” (Burke & Stets, 2009, p. 22). Symbols are socially shared and consensual and can vary from one culture or social group to another (Blumer, 1969; Burke, 2008; Burke & Stets, 2009). Examples of symbols can include such things as words, gestures and the status of individuals (Blumer, 1969; Burke, 2008). In a particular culture, the shared meaning or response to a symbol allows language, communication and interaction to happen between individuals (Burke & Stets, 2009). Firstly, gestures were identified in this research as important to consider
based on the results of the pilot project conducted prior to this research, which found that gestures could have an impact on the interactions between SMID and PWOD.

Gestures, therefore, are an overt symbol that are ever present in the interactions between individuals, with Burke and Stets (2009) referring to the idea that gestures are an “important unit in communication and interaction” (p. 22) as it has meaning for the person who uses it and to whom it is directed. Gestures are considered to be the beginning of the act of an individual who is trying to convey meaning to others (Burke & Stets, 2009; Mead, 1934). Burke and Stets (2009) provide an example of the shaking of a fist in someone's face as the beginning of an act. This gesture becomes a symbol when the meaning of it calls up the same response in both individuals. That is, they both see the hostile attitude, the threat and the intention of the person giving the gesture. To understand this intention requires role taking, where an individual “is putting oneself in the position of the other to understand [their] intentions” (p. 23) and to guide their own behaviour to fit in with these lines of action. Understanding this role taking process, the gesture itself, the meaning behind it and our own behaviour in relation to it allows people to cooperate in interaction “communication and interaction therefore become a conversation of gestures between individuals to share and coordinate meanings and expectations” (Burke & Stets, 2009, p. 23). While these gestures as symbols are immediate in the environment there are other symbols that are present and are acting on the interactions with others (Burke, 2008).

One such symbol that is worth discussing for the purposes of this research is the status of individuals. Although present in a situation and acting on the interactions with others, status as opposed to gestures, is not overtly obvious at first glance. According to Burke (2008) there are two types of status characteristics; those that are achieved and those that are ascribed. Achieved status is generally inferred by education or occupational position while racial categories can signal ascribed status. Status can be derived from the wider community or can be developed in the smaller social situation leading to different levels of status among individuals (Oldmeadow, 2007; Webster, Whitmeyer, & Rashotte, 2004). Research shows that students with special education needs and specifically students with intellectual disabilities have less social status compared to their mainstream peers (Solish, Perry, & Minnes, 2010; Wiener & Schneider, 2002). According to Burke and Stets (2009) those with lower status such as a young child compared to those with higher status such as a parent, can have their identity shaped by the higher status individual, especially when a person first comes into a position where an identity may exist. It has also been determined that those people with lower status will possess less identities. Difference in status is likely in an inclusive school environment or class where there may be a mix of more or less-educated students and students, with and without disabilities. Research by Nowicki (2011) found that lower social status in a group of students with and without disabilities was associated with the presence of students with intellectual and learning
disabilities. This difference in status of a person relative to the status of another person in a social setting (status inconsistency) can trigger an identity conflict impacting both the identity process and the interactions between them (Burke & Stets, 2009).

Burke and Stets (2009) emphasise that these symbols such as words, gestures and status alongside numerous other signs and symbols are important to the input component of the identity process as they provide valuable information and feedback. They are used by an individual to perceive meaning from the situation to not only identify themselves but also identify the other person in the social situation in order to know how to behave with respect to each other. To identify themselves they use the information from the signs and symbols to carry out two tasks, self-appraisal and reflected appraisals. Self-appraisal is how they see their own behaviour in relation to their identity standard. For example, when the student identity is activated the person may view putting their hand up to answer a question in class as matching their identity standard as an academic student. When they answer the question successfully and receive praise from the teacher this praise is classed as reflected appraisal. This form of reflected appraisal is the feedback they receive from others about one’s own behaviour in relation to their own identity standard (Burke & Stets, 2009).

Sometimes these signs and symbols may produce meaning that verifies an identity such as praise, cheers, clapping, smiling and looking at a person when talking. At other times, these signs and symbols may produce meaning that does not verify an identity such as rolling of eyes, having their back to a person while they are talking, negative comments about a person, or lower academic or physical ability. This whole process of interpreting the meaning of signs and symbols for the purposes of identity verification may be complicated for a SMID who experiences cognitive difficulties. They may incorrectly interpret what a peer is saying or the gestures they are using, they may miss these signs and symbols or not recognise what they mean and they may be unable to counter the status difference or resulting identity conflict that emerges between themselves and the PWOD (Burke & Stets, 2009). These potential difficulties with interpretation may lead to the SMID behaving in a way that does not match the social situation. This could cause the PWOD to withdraw from interacting with the SMID as their behaviour is not enabling identity verification for the PWOD.

Whilst the information and feedback received through the meanings of signs and symbols in a social situation is important to the identity process and interactions, there are other factors at play in the social situation that are designed to support interactions and need to be considered. These factors are tied to signs and symbol meanings and involve the transfer and transformation of resources.
3.1.4 Resources. Freese and Burke (1994) define resources “as anything that supports and sustains individuals, groups or interactions” (p. 153), with two types of resources, active and potential, identified. Burke and Stets (2009) explain that active resources are those currently functioning in the situation to sustain persons or the interaction. Examples in a school setting might include pens, paper, a ball, the teacher. Potential resources are not currently functioning but can be of use in the future. Examples in a school setting might include a discussion with the teacher, knowledge from the book and the rules for a game. To demonstrate the relationship between resources and signs and symbols, signs are indicators of resources currently experienced in the situation whether actual or potential. Symbols are generally indicators of potential resources in which individuals do not have direct experiential contact in the situation. Taking the school example further, where a student is having a conversation with the teacher about an assignment, is writing notes with a pen on the paper and leaning on the desk in the classroom, the pen, paper, desk and classroom are all active resources currently being used in the situation, indicated by signs. The content of the conversation and the writing are facilitating the interaction between the student and teacher and are considered potential resources that are symbolic and ready to be used later for the completion of the assignment. These examples of resources whether “material or intangible have no function until they are… flowing in a connected manner” (Burke & Stets, 2015, p. 155) as described in the example above. “The accomplishments of identities… are the transfer and transformation of [these resources]” (Burke & Stets, 2015, p. 149). Burke (2008) also claims that “connecting these resource flows is the fundamental goal of interaction” (p. 79). Considering that interaction is the phenomenon to be observed, identifying what resources and resource flows are supporting interactions and identities in an inclusive school environment between SMID and PWOD are important.

These resources, alongside the information and feedback through signs and symbols and the bases of identities, are all part of the identity process illustrated in Figure 3.1. Considering that the goal of the identity process is to verify one’s identity in a social situation, understanding how they contribute to identity verification is important to this research because of the link between identity verification and continued interactions.

3.1.5 Identity Verification. According to Burke and Stets (2009), identity verification is a product of the identity process and it occurs when the meanings about oneself gathered from the social situation match the ideal meanings held in one’s own identity standard. Once one of the bases of identities (role, social or person identity) is activated in a social situation, a person will attempt to behave in accordance with the ideal meanings of this identity held in their identity standard. To help achieve a match between their behaviour and the ideal meanings held in the identity standard, the person will use and manipulate resources to support their activated identity and their interactions. While this is occurring, the person is also
receiving information and feedback through signs and symbols that indicate to them how others in the social situation perceive their behaviour as well as how they perceive their own behaviour. The person then compares the actual meanings from the social situation with the ideal meanings that they hold in the identity standard. If these meanings match, they will experience identity verification and they will continue to interact with those in the social setting. If the meanings do not match, an error is said to occur and the person will experience identity non-verification. This may manifest itself in a range of related emotions from uneasiness, discomfort, sadness, disappointment and embarrassment to annoyance, anger, fear, shame and hostility depending on why the identity was not verified (Stets & Burke, 2014). The person will then try to bring the actual meanings of their behaviour in the social situation back into alignment with the ideal meanings in the identity standard by attempting to change their behaviour and/or shape the social situation so they can verify their identity. If they are unable to achieve this alignment and identity non-verification continues to occur they may withdraw and interactions will be avoided with those in the social setting. Considering that the main aim of this research through the cooperative learning approach was to increase interactions between SMID and PWOD, it would be worthwhile understanding under what conditions identity verification is more likely.

Table 3.1 outlines several conditions where identity verification is more likely in relation to: the three bases of identities (role, social, person); the information and feedback received through signs and symbols; and the resources used in the social setting. Considering that the identity verification process is the same for role, social and person identities, (Burke & Stets, 2009) assert that the insights obtained from studying role identity can be applied to social and person identities as well. Based on this assertion, Conditions 1, 2 and 3 in Table 3.1, although developed initially for role identity can also be applied to social and person identities. This application is described and highlighted in the Table 3.1.
Table 3.1 Role, social, person, feedback and resource conditions that make identity verification more likely

(adapted from Burke and Stets (2009))

<table>
<thead>
<tr>
<th>Identity Process Component</th>
<th>Condition No.</th>
<th>Conditions</th>
</tr>
</thead>
</table>
| **Bases of Identity**      | 1             | - The more roles a person can play and master,  
| Roles, Social & Person     |               | - The more social groups a person can join and identify with,  
|                            |               | - The more person characteristics a person can choose from, the more likely they are to derive meaning from the social situation and have their **identity verified** (Brown, 2006) |
| **Bases of Identity**      | 2             | - When there is successful performance of a role that is coordinated with the successful performance played by another person in a counter-role (role reciprocity),  
| Roles, Social & Person     |               | - In a social group when all parties work together and are similar to each other in thought and action,  
|                            |               | - When distinguishing oneself as unique and identifiable with qualities (person identities) that other individuals can count on and use to verify their own person identities, the more likely there will be mutual identity verification of all parties in the social situation |
| **Bases of Identity**      | 3             | A person is more likely to verify their identity if an individual can adopt different role, social and person identities for different social situations |
| Roles, Social & Person     |               |           |
| **Person Bases of Identity** | 4           | Verifying one’s person identities is important as it is likely to figure more prominently in interactions than role and social identities |
| **Information & Feedback** | 5             | When interaction is happening between individuals there are two things happening, the use of signs and symbols and more specifically the control of the meanings of signs and symbols in order to verify identities. When the information perceived in the environment matches the actual behaviour with the ideal behaviour in the identity standard the more likely there will be identity verification. |
| **Information & Feedback** | 6             | People with more status (more educated) are more likely to have their identities verified |
| **Resources**              | 7             | The more resources a person can control, the more status they are likely to assume and the better able they are to verify their identities and adjust their behaviour to the social situation. |
In an environment where these conditions from Table 3.1 occur or are enabled, identity verification is more likely to occur. When one has verified their identity in a social situation, whether it be role, social or person identity, they will feel good about themselves and are more likely to continue to interact with others in the social setting. These positive feelings are supported by Cast and Burke (2002) who contend that self-esteem is a result of identity verification. If, however, they consistently do not verify their identity in the social situation they will not feel good about themselves and are likely to withdraw from or avoid the interaction with others (Burke & Stets, 2009). Considering the goal of this research was to increase interactions between SMID and PWOD it is worth clarifying further the conditions outlined in Table 3.1 in relation to the bases of identities, information and feedback and resources. Conversely, highlighting how identity non-verification can occur in relation to these conditions is also important as it relates to the problem of limited interaction between SMID and PWOD driving this research. It is noted also that while this research is not specifically looking at the feelings of the SMID and the PWOD it is important that these reactions are not dismissed as they may signal to the observer identity verification or non-verification.

3.1.6 Identity Verification and Identity Non-Verification. According to Burke and Stets (2009) identity theory and in relation to the bases of identity, if the role identity conditions of more roles, mastery of these roles, mutual identity verification and appropriate selection of role identity outlined in Table 3.1 can be achieved, a person will feel a sense of competency. This feeling of being competent in many roles, otherwise known as self-efficacy, means that the person will continue to play the roles and have the opportunity to interact with more people in different social situations. Furthermore, if mutual role identity verification can also occur then all parties will feel competent and interaction between them will continue. If, however, a person cannot adopt and master more role identities (Condition 1), cannot coordinate their successful performance of a role with others (Condition 2) and cannot apply different roles to different situations (Condition 3) they may not experience role identity verification and the confidence to continue interacting with others in a social setting.

Further to the bases of identities and according to Burke and Stets (2009) if the social identity conditions of identification with more social groups, mutual identity verification and selecting appropriate social identities outlined in Table 3.1 can be achieved a person will feel a general sense of being found “worthy and valuable” (p. 117). Based on a person’s desire for this feeling of self-worth an individual will search for social categories or groups that they feel they fit or identify with. If a person does not feel that they fit in a category or group, they will turn to other social categories or groups until they find one that
fits and that enables social identity verification to occur. Based on Condition 1 from Table 3.1, the more social groups a person identifies with the more chance for social identity verification and the opportunity to interact with others in those groups. An important and potentially positive note here, according to identity theory is that just being categorised as a “member of a group is sufficient to identify with that group” (Burke & Stets, 2009, p. 119).

Furthermore, if mutual social identity verification (where each person is attempting to verify their identities at the same time) is to occur and for the group to work together to accomplish tasks all members must have shared interpretations of behaviour. That is, each person must perceive the other group members behaviours as the other group members perceive their own behaviours (Burke & Stets, 2009). When this uniformity of perception is achieved, where “one is a member of a group and is similar to others in thought and action, their social identity as a group member will be verified [Condition 2] and in turn, they will experience positive feelings” of self-worth alongside others in the group (Burke & Stets, 2009, p. 121). Combined with Condition 1 and 2, if a person can also adopt different social identities for different groups (Condition 3) then they are likely to remain in the social group or groups and continue to interact with the members.

However, caution must be exercised as other factors can disrupt this process of social identity verification and increased interaction. Firstly, Burke and Stets (2009) revealed “that for individuals to take on a social identity, they need not even interact with other ingroup members” (p. 119). This finding is relevant to this research in that situation where there is strong social identity verification, the goal of increased interactions between SMID and PWOD may be hindered. Secondly, if being placed in a group arbitrarily without consideration for one’s fit within the group, conflict between group members may occur and the feelings of acceptance and self-worth derived from being part of a group will be diminished (Burke & Stets, 2009). Considering these conflicting ideas about social identity verification and interaction, finding environments that can enhance an individual’s self-worth through the group context but avoids such strong identification with the group whereby interactions are not required, should be sought to overcome the problem of limited interaction between SMID and PWOD.

To conclude the discussion on the bases of identities, when the person identity conditions of being able to choose from a range of characteristics, mutual identity verification and appropriate selection of person identity as outlined in Table 3.1 can be achieved, a person will feel a sense that one is being one’s true self (Burke & Stets, 2009). Burke and Stets (2009) and Stets and Burke (2014) consider that this feeling of being one’s true self through the many unique characteristics that they can adopt for different social
situations, otherwise known as self-authenticity, is important to overall identity verification for a person. As Condition 4 from Table 3.1 highlights, person identities are likely to figure more prominently than role and social identity in interactions. Additionally, giving others in the social situation the ability to rely on that person and in turn contribute to mutual person identity verification (Condition 2) for both in the social situation means that interactions with each other will likely continue. If a person does not have many unique characteristics to adopt (Condition 1), does not implement them consistently enough for a another person to rely on (Condition 2) and does not choose the relevant one for different social situations (Condition 3) they may not experience person identity verification and the desire to continue interacting with others in a social setting.

In relation to information and feedback, in order to negate the negative feelings and associated avoidance of interactions with others brought on by identity non-verification and to promote the positive feelings and continuation of interactions brought on by identity verification, a person needs to achieve the situation identified in Condition 5. Within the identity verification process, the person has to not only use the sign and symbol meanings in the environment but they need to control these meanings that are being perceived in order to match the ideal sign and symbol meanings in the identity standard (Burke & Stets, 2009). According to Burke and Stets (2009) a person can achieve this control of signs and symbols and potential identity verification by manipulating the environment or shaping their behaviour in the social setting or both. For example, to manipulate the environment they may display a certain appearance, they may choose certain people as opposed to others with which to interact or they may provide a signal to others on how they should behave towards them. To shape their behaviour they may or may not be as controlling or sociable. If they are consistently unable to manipulate the environment or shape their behaviour to control the perceived meanings from signs and symbols, identity non-verification may occur and they may withdraw from interacting with others and others may avoid interacting with them. This is particularly relevant to this research as SMID may not have the cognitive or social ability to either manipulate the environment and shape their behaviour or recognise the need to do both (Brown et al., 2011; Carter et al., 2010).

Additionally, if the sign and symbol meaning of lower status is acting on the interactions with others as could be the case for SMID, then Condition 6 outlined in Table 3.1 and originally put forward by Stets and Harrod (2004) in their work on social status, may be more difficult to achieve. In order to raise the status of SMID and to offer more opportunities for identity verification and continued interactions, strategies to raise the SMID status need to be employed. Condition 7, in relation to resources, outlined in Table 3.1 offers one possible pathway to raise status levels through the control of resources. For example,
this control could mean providing the SMID important information that is necessary for PWOD to complete a task and then giving the SMID the responsibility (with support if needed) to disseminate this information. Controlling resources has another benefit to SMID in that it can impact the ability of the person to shape their behaviour in the social situation. Continuing on from the above example then, by being in control of disseminating the information, the SMID may feel more competent and valuable, and thereby be encouraged to interact more with their PWOD. If, however, a person is unable to control the resources and continues to assume lower status their ability to manipulate the environment and shape their behaviour will also be diminished leading to the likelihood of identity non-verification, negative feelings and avoidance of interactions with others.

Concluding this discussion on the conditions for identity verification and identity non-verification is the interaction focus of this research. Interaction behaviours form part of the output component of the identity process (as illustrated in Figure 3.1) and because this process is a continuous feedback loop, they in turn impact the social situation and the perceived input meanings to the identity standard and future identity verification. Identity verification results in positive feelings and the desire to continue to interact with others in the social setting leading to more likelihood of identity verification in the future and continued interactions. Conversely, identity non-verification results in negative feelings and the avoidance or withdrawal of interactions with others in the social setting leading to less identity verification in the future and continued avoidance of interactions. Considering that the goal of this research was to find strategies to increase interactions between SMID and PWOD and to overcome the problem of limited interactions between them, finding ways to meet the conditions for identity verification as outlined in Table 3.1 and avoid identity non-verification is important. However, just increasing interactions may not be enough if these interactions are not positive and SMID are still being rejected by their PWOD. Therefore, in order to improve interactions between SMID and PWOD other frames of reference will need to be explored as well.

3.2 Contact Theory

Complementing identity theory and offering further opportunities to increase and improve interactions between individuals in a social situation are the principles that frame contact theory (Allport, 1954). Contact theory’s focus on intergroup contact was initially hypothesised as a way of reducing prejudice between different racial and ethnic groups and more recently has focused on other target groups such as the elderly and people with a disability to name a few (Pettigrew & Tropp, 2006). In the educational context, several studies have called upon contact theory to guide their investigations into attitudes, barriers
and practices in the inclusive physical education setting (Block & Obrusnikova, 2007; Butler & Hodge, 2004; Klavina & Block, 2008; Slininger et al., 2000). More specifically, Klavina and Block (2008) utilised contact theory to frame their study, which investigated interactions in the inclusive physical education setting. They particularly were looking at whether there was a “generalisation of interactions arising out of contact situations between peer tutors and students with severe and multiple disabilities” (Klavina & Block, 2008, p. 134). Their findings support the premise that contact between these two groups can increase and generalise some interaction behaviours. These studies demonstrate contact theories ability to be applied in the school context and more specifically the inclusive physical education context where students with and without disabilities are present.

Although identity theory focused on why interactions may or may not happen, the value of also including contact theory in this current study is its focus on ensuring that interactions, if present, are favourable. This creation of favourable interactions could be important in combating the rejection that SMID experience from their PWOD and in turn could foster more interactions between them as there is more chance for their identities to be mutually verified. For these favourable interactions to occur between two different groups of people, contact theory provides a set of principles that Allport (1954) contends need to be present in a social situation. Table 3.2 summarises these principles and the following discussion explains each principle and provides links to identity theory through the components of the identity process and the conditions that make identity verification more likely.

Table 3.2 The Principles of Contact Theory
(adapted from Allport (1954))

<table>
<thead>
<tr>
<th>Number</th>
<th>Principle</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Equal status contact is present in the interactions between participants</td>
</tr>
<tr>
<td>2</td>
<td>The community involved sanctions and supports the equal status interactions</td>
</tr>
<tr>
<td>3</td>
<td>Individuals should not compete against each other, rather they should be involved in the pursuit of common goals</td>
</tr>
<tr>
<td>4</td>
<td>Common interests and common humanity is perceived between members of the two groups</td>
</tr>
</tbody>
</table>
The first of these principles is the presence of equal status contact in the interactions between participants (Allport, 1954). Drawing on the discussion of the symbol of status in identity theory the evidence suggests that SMID could be perceived to have less status compared to their PWOD in the school setting (Solish et al., 2010; Wiener & Schneider, 2002). This perception of less status could lead to less-than-favourable responses and interactions toward the SMID from PWOD, including rejection and isolation. Considering the impact of isolation on individuals physical, mental and social health, finding ways in the inclusive school setting to raise the status of SMID is, therefore, important if contact theory’s contention of equal status and subsequent favourable interactions is to be realised between SMID and their PWOD (Cacioppo & Hawkley, 2003). The presence of equal status contact, however, is not enough to ensure favourable interactions between participants.

Allport’s (1954) second principle contends that the community involved must sanction and support these equal status interactions. Linking back to identity theory, supporting equal status interactions is beneficial for the community involved in the social situation as it could lead to more mutual identity verification. In the school environment, this community may include teachers, school staff, parents, friends and peers. Overarching this school community there are currently sanctions in place in the Australian community that legislate for equality such as the Disability Discrimination Act (Commonwealth of Australia, 2016). The subsequent and related Disability Standards for Education specifically targets the school setting giving clear guidelines to the school and school personnel about equality (Commonwealth of Australia, 2006). While state Departments of Education have inclusive policies in place, how this is used by the individual schools, teachers and students is not always clear. Similarly, while state education departments provide support funding for schools for students with a disability, how this manifests itself as support for equal status interactions in the classroom is also not clear. Considering that Allport (1954) puts importance on these and other sanctions and supports being in place for favourable interactions to occur, observing how they are implemented and provided to SMID in their interactions with PWOD in the classroom setting would be beneficial. While sanctions and supports are one way to ensure equal status interactions, Allport (1954) contends there are further principles that need to be followed to ensure equal status interactions.

The third of Allport’s (1954) principles proposes that individuals should not compete against each other, rather they should be involved in the pursuit of common goals. This notion of common goals also connects well to the mutual identity verification situation in identity theory whereby all people involved in a social setting are attempting to fulfil the same goal, that of identity verification (Burke & Stets, 2009). While identity verification is a
process that is occurring continually in the social situation without being consciously aware of it, this third principle requires more concrete and obvious common goals to be established in a setting. It is important here to note that while challenging people toward common goals is important this must be complemented by the absence of direct competition between these people if interactions are to be of equal status and favourable. Observing the presence or not of common goals and competition and their impact on interactions between SMID and PWOD would, therefore, be beneficial.

Continuing this theme of commonality and to complete the requirements for favourable equal status interactions is Allport’s (1954) final principle. He emphasises in this principle that “common interests and common humanity [must be] perceived between members of the two groups” of people (Allport, 1954, p. 281) if favourable interactions are to occur. While each individual has a set of different interests with which to ascertain commonalities with others, common humanity may not be so easy to achieve. Whether this common humanity involves behaving and thinking like others as can be found in social identity or having a kind or sympathetic attitude to others as can be found in person identity, its existence involves the development of skills such as role taking, respect and empathy of both parties involved for it to occur (Allport, 1954; Burke & Stets, 2009). Creating environments that allow these skills to develop would therefore be preferable, however, the actual perception of individuals of the existence of common humanity in a setting must also be considered if favourable interactions are to exist.

3.3 Framework for Observation

The favourable interactions expected when these four principles of contact theory are met complement the contention, processes and conditions from identity theory that explain why interactions occur in the first place and how they can continue. The four principles from Table 3.2 and the seven conditions from Table 3.1 combined with Identity Theories contention that links identity verification with continued interactions, creates a framework with 12 possible means with which to observe, analyse and interpret the interactions between SMID and PWOD, which is central to this research.

Considering the links between the conditions for identity verification in identity theory and the principles of contact theory and to firstly guide the observations and the analysis, these 12 possible means will be examined through three focus areas: the presence of role, social and person factors; the provision of feedback; and the flow of resources. Secondly, the results gained from the examination of these three focus areas will then be interpreted utilising the 12 possible means in the wider framework. The three focus areas and the framework will be used initially to observe interactions between SMID and PWOD in the
current inclusive physical education setting to understand why these interactions may be limited. Subsequently, the three focus areas and the framework will be used to compare these insights with an investigation of the impact of a specific teaching approach on the interactions between SMID and PWOD, such as cooperative learning. While research has hinted at cooperative learning showing promise for increasing and improving interactions in the indoor classroom and physical education setting, there is currently no research that has examined the impact of cooperative learning on interaction behaviours between SMID and PWOD in inclusive physical education settings (Dyson & Dryden, 2014; Gillies, 2002; Grenier, 2006; Shachar, 2003). More specifically, these interactions have not been observed through the lens of both identity theory and contact theory. Chapter Four, therefore, will outline the methodology employed to conduct such an investigation.
Chapter 4 Methodology

4.1 Introduction

This chapter describes the mixed methods methodology employed to collect and analyse both quantitative and qualitative data that was deemed necessary to understand and address the problem of limited interactions between SMID and PWOD in the secondary school inclusive physical education setting. This complex problem necessitated the use of a Convergent Parallel Mixed Method strategy employing both a single-subject-multiple-baseline across people design and a case study design (Creswell, 2015; Horner et al., 2005; McDuffie & Scruggs, 2008). The following chapter will outline how each of these different research designs were used in the study to answer the research questions and justifies their use. This is followed by a description of the site, participants, the approval process, the stages involved in the collection of data, the instruments employed and the techniques used to analyse the data. Following these descriptions the measures that were demonstrated to ensure the quality of the data for each research design will be outlined. A description of the ethical considerations that influenced the study and how they were addressed are provided throughout.

4.2 Research Design

This study addresses the problem of limited interactions between SMID and PWOD in inclusive secondary school physical education classes. The specific purpose of this study was to examine the impact of a cooperative learning intervention on the interactions behaviours between SMID and PWOD in inclusive secondary physical education classes. To achieve this purpose a mixed method research design employing both quantitative and qualitative methods was used.

4.2.1 Mixed Method Design. The reason for using mixed method research to address the problem of limited interactions between SMID and PWOD in inclusive secondary school physical education settings is based on the “complex educational and social context” (Mertens, 2010 p. 294) in which the problem exists (Teddlie & Tashakkori, 2009). The context of the problem as outlined in the literature review and theoretical framework involves many factors, namely the educational context of the teaching approaches being used and the specific physical education setting as well as the social context of the many participants involved and the phenomenon of social interaction. Adding another dimension to this already complex context was the purpose of the research, that is, to evaluate a specific teaching Approach (cooperative learning) as a means to addressing the
The involvement of all these factors means that one research approach alone will not capture the evidence needed in order to address the complex context of the problem. In order to gather this evidence, a Convergent Parallel Mixed Method strategy was employed. Figure 4.1 provides a visual model of how the research was implemented using the Convergent Parallel strategy followed by a description of how it was employed in this study (Creswell, 2015).

**Figure 4.1 The Convergent Parallel Design used in this study**

Figure 4.1 illustrates that both the quantitative and qualitative data were collected and analysed separately before comparisons, relationships and final interpretations were made. A quantitative description of the interaction behaviours of SMID in inclusive secondary physical education classes both pre and post a cooperative learning intervention was achieved by collecting data via a single-subject multiple-baseline-across-people design (Horner et al., 2005; Mertens, 2010). To complement this description, a qualitative explanation of the interaction behaviours in the same setting was achieved using a case study design (McDuffie & Scruggs, 2008; Yin, 2009). The themes generated from this qualitative explanation combined with the quantitative description were merged with a final interpretation made through the lens of identity theory and contact theory to provide a richer understanding of the problem of limited interaction and to answer the following research questions (Creswell, 2015).

The research questions that guided the study were:
**Question 1:**

*What is the impact of a cooperative learning intervention on the social interaction behaviours between SMID and their PWOD in inclusive secondary school physical education classes?*

**Question 2:**

*How does the presence of role, social or person factors in inclusive secondary school physical education classes impact the social interaction behaviours between SMID and PWOD when using a cooperative learning intervention?*

**Question 3:**

*How does the provision of feedback received and given in inclusive secondary school physical education classes impact the social interaction behaviours between SMID and PWOD when using a cooperative learning intervention?*

**Question 4:**

*How does the flow of resources in inclusive secondary school physical education classes impact on the social interaction behaviours between SMID and PWOD when using a cooperative learning intervention?*

### 4.2.1.1 The Quantitative Design

To answer Research Question One and to understand the impact of a cooperative learning intervention on the interaction behaviours between SMID and PWOD in secondary school physical education classes a single-subject-multiple-baseline-across-people-design was employed (Cook, Tankersley, Cook, et al., 2008; Richards, Taylor, Ramasamy, & Richards, 1999). Single-subject designs typically involve the study of single individuals or a small number of individuals, an observation over a baseline period, the implementation of an intervention followed by another observation after the intervention to determine if the intervention affected the outcome (Creswell, 2015). This approach is widely used in special education research because it provides the researcher a “practical methodology for testing educational and behavioural interventions” (Horner et al., 2005, p. 174) that focus on the individual or a small number of individuals. This approach was considered favourable for this research as students in low-incidence disability categories such as SMID can therefore still benefit from research that provides quality outcomes (Cakiroglu, 2012). The single-subject design was employed in this research to test the effectiveness of a cooperative learning intervention (independent variable) in changing the
social interactions behaviours (dependent variable) between three SMID and PWOD in inclusive secondary school physical education classes.

In order to more accurately determine whether a functional relationship existed between a cooperative learning intervention and the social interaction behaviours of SMID, the type of single-subject design used was a multiple-baseline-across-people design (Horner et al., 2005). This design allows for replication of the study across different people enabling greater confidence in determining a functional relationship (Mertens, 2010). The multiple-baseline design is also used when the intervention cannot be reversed or taken away as was the case in this study where once the students learnt about how to work cooperatively, this learning could not be reversed (Creswell, 2015).

4.2.1.2 The Qualitative Design. To answer Research Questions Two, Three and Four, and to understand the impact of a cooperative learning intervention on the interaction behaviours between SMID and PWOD in secondary school physical education classes, a case study design was employed. McDuffie and Scruggs (2008) describe this design as an “in-depth exploration of a single-case … of the phenomenon under study” (p 92). For the purposes of this study a collective case study design was utilised where the three SMID chosen for the multiple-baseline design were examined to contribute to understanding how and why their social interactions with PWOD are impacted when using a cooperative learning intervention (Creswell, 2015). The exploration and comparison of three cases, through the lens of identity theory and contact theory, enabled a more-complete understanding of the factors that impacted social interactions both positively and negatively (Allport, 1954; Burke & Stets, 2009).

4.3 Site and Participants

4.3.1 Participants. The target participants for the multiple-baseline design and the case study included three secondary school SMID that were included independently in three Year 8 Personal Development, Health and physical education classes (PDHPE). To give more perspective on the case study, the five PDHPE teachers and the other 63 students in these three classes, although not the main target of the research, were also considered valuable participants because of their presence in the inclusive physical education class. In order to find all these participants to be included in the research, an initial selection of the site of the research was undertaken.

4.3.2 Choice of site. Three inclusive physical education classes from three secondary schools on the south coast of New South Wales, Australia served as the research sites for this study. For accessibility reasons a convenience sampling technique was
employed to choose the secondary schools and the classes that were willing and available and included SMID in their physical education classes (Creswell, 2015). Schools that conducted inclusive PDHPE concurrently every week were sought in order to allow for effective implementation of the cooperative learning training and intervention. The inclusive class in the school was also chosen based on the willingness of the PDHPE teacher and the other students of this class to participate in the study in the time frame specified. The researcher also chose teachers that currently conducted inclusive physical education programs without the cooperative learning approach, therefore providing the necessary environment for testing a different teaching approach. While these schools and classes were required to include SMID for the purposes of this research, further criteria for selection of the target SMID was used.

4.3.3 Target Participants. To select the three SMID a purposeful criterion sampling technique was used that utilised three criteria. Participants were: a) representative of SMID identified through the NSW Department of Education diagnosis of having a mild intellectual disability (IQ testing and/or support requirements); b) currently attending an inclusive physical education class; and c) identified as requiring social support through their Individual Education Plan (IEP) or other assessment of needs. Based on these criteria, descriptions of the three students Ian, John and Peter (pseudonyms) are provided alongside descriptions of their teachers and their class.

4.3.3.1 Target student 1 (Ian). Ian was a 14-year-old student with a learning disability and diagnosed as functioning in the mild range of intellectual disability with an IQ score of 78 on the Wechsler Intelligence Scale for Children Fourth Edition (WISC IV). He was identified by the school and teacher as having limited social interaction within his PDHPE class, with the teacher providing some accommodation for his disability in the health education class, particularly related to written work. He was included in a Year 8 mainstream PDHPE class with 23 other male students of the same or similar age with the class graded as a lower ability class within the year. The teacher of the class, Mr L had eight years teaching experience and while he did not use cooperative learning as his substantive teaching strategy, he did nominate that at times he used group work in some classes. Mr L noted in his interview that he had not received any specific training in cooperative learning as a teacher or as a pre-service teacher. He did note that he has used some similar strategies in his lessons to the cooperative learning structures used in the study.

4.3.3.2 Target student 2 (John). John was a 14-year-old student diagnosed as functioning in the mild range of intellectual disability with an IQ score of 70 on the WISC IV. He was also diagnosed with Attention Deficit Hyperactivity Disorder and was identified
by the school and teacher as having difficulties with social interaction within his PDHPE classes. The teacher provided some accommodation for his disability through the application of specific behaviour management strategies. He was included in a Year 8 mixed-gender PDHPE class with 17 other students of the same or similar age with the class graded as a lower ability class of students with behaviour difficulties. The research started with one teacher Mrs O who was the Head Teacher PDHPE with 15 years of teaching experience. After the first lesson in the intervention, Mrs F took over the classes as Mrs O took another position in the school. Mrs F had been a casual teacher at the school and was given a block of teaching when Mrs O transferred. Mrs F had two years of teaching experience and did not use cooperative learning as her substantive teaching strategy. Mrs F noted in her interview that she had limited training in cooperative learning both as a teacher and a pre-service teacher, noting some intermittent pre-service training on small group work mainly connected to small sided games.

4.3.3.3 Target Student 3 (Peter). Peter was a 14-year-old student with Aspergers (term used at time of the research) who received academic support from a support teacher in some of his classes (not in PDHPE) commensurate with functioning in the mild range of intellectual disability. He was identified by the school and teacher as having limited social interaction within his PDHPE classes. He was included in a Year 8 mixed-gender PDHPE class with 23 other students of the same or similar age and the class was graded as a mixed-ability class. The teaching of the class was shared at the beginning of the study with Mr M, who was a part-time teacher starting the study. After the third Baseline lesson Mr B took over the classes. Mr B was the Acting Head Teacher PDHPE with 5 years of teaching experience. Mr B did not use cooperative learning as his substantive teaching strategy and noted in his interview that he had no training in cooperative learning. He did note, however, that techniques such as Think-Pair-Share and Jigsaw were used at his school and during his pre-service training but they were not specifically identified as being cooperative learning techniques or structures.

4.3.4 Gaining Ethical Approval and Permission to Conduct the Study. In order to gain access to all the participants in the study permission was obtained from different organisations and different people taking into account ethical considerations related to the study. Firstly, the researcher gained ethics approval from the University of Wollongong to conduct the study and gained permission to approach schools from the Department of Education and Training in New South Wales, Australia. Following these approvals, the Principal of several schools on the south coast of New South Wales were contacted by phone to explain the purpose of the study and to ascertain if the school was eligible to participate in the study based on having a number of SMID included in Year 8
PDHPE classes. Once this eligibility and initial interest was ascertained, a formal letter was sent to the Principal outlining the purpose of the study, the amount of time to be at the school to collect data, the time required of the participants and how the results will be used (see Appendix A). On approval from the Principal, the Head Teacher of the PDHPE faculty and the identified teacher of the class, who also received the formal letter, were met by the researcher to further explain the process of the research and to ensure eligibility of the identified SMID. The teacher of the class was then provided with a formal letter of invitation and an informed consent form outlining the research process, their rights as a participant, the potential benefits of the study and researcher contact details (see appendices B and C).

Once permission from the teacher was gained the parent of the identified SMID was contacted by the teacher to gather initial interest for their child to participate in the study and permission was granted for the researcher to call the parents to further explain the study and their child’s involvement. A follow up letter and informed consent forms were then sent to the parent providing the details of the study (see appendices D and E). Once permission was granted by the parent of the SMID, the class that the SMID was included in was visited by the researcher to explain the study and gather interest for the class to be part of the study. A formal letter and informed consent forms were provided to each child to be signed by their parent with an option to not be included in the study (see appendices F and E). Follow-up forms were sent when the original consent forms were not returned to prompt return of consent forms (see Appendix G). Two students who did not have a disability across the three schools nominated that they did not want to be videoed in the research so these students were avoided and not reported on. Once all permissions were gained the research commenced.

It is important to note that during the approval process, ethical approval was granted from the University of Wollongong, the Department of Education and Training, the school and the parent of the SMID for non-disclosure of parts of the research to the SMID and their PWOD. This meant that the SMID and the PWOD and their parents were not informed that the SMID was the target of the research in order to protect the privacy and the welfare of the SMID. All students were informed that the research was about social interaction in inclusive physical education environments (see Appendix F).

Once the approval process, the selection of the site and the participants was complete the collection of the data were able to proceed. Figure 4.2 illustrates the stages in the collection of data for both the quantitative and qualitative methods.
Figure 4.2 Stages of the study
4.4 Stages in the Collection of Data

Figure 4.2 illustrates that the single-subject-multiple-baseline-across-people data (quantitative) and the case study data (qualitative) were collected across three stages over the course of the study with all Research Questions addressed within each stage. Stage One, Pre-intervention, involved the collection of the quantitative Baseline Phase data and the qualitative observational data in the regular physical education environment. Stage Two, intervention, began with the training of the teachers in the cooperative learning approach and the intervention. This training was followed by the implementation of the cooperative learning intervention, which involved collection of the quantitative Preparation and Application Phase data and the qualitative interview and observational data. Stage Three involved the collection of the quantitative social validity data with the qualitative data, collected through the conduct of the teacher interviews, individual interviews and the focus groups. Each of these three stages will be described in the order it was carried out outlining how the two different design approaches were utilised in the collection of the data and the instruments and procedures used to collect this data. The intervention introduced in Stage Two will also be described.

4.4.1 Stage One – Pre-intervention

4.4.1.1 The design approach. In Stage One, the three SMID were observed in their regular physical education classes prior to the implementation of the intervention to establish a description of existing social interaction behaviours utilising both quantitative and qualitative design approaches. The quantitative single-subject-multiple-baseline-across-people design established this description through the Baseline Phase across three (John), four (Peter) and five (Ian) sequential physical education lessons for John, Peter and Ian respectively (Horner et al., 2005). Each student was observed for the entire lesson (ranging 40–80 mins) with data recorded on their social interaction behaviours. The qualitative case study design established this description by observing and recording chronologically what was happening for the three SMID within the context of the lessons (Creswell, 2015). Each of these design approaches collected different types of data.

4.4.1.2 Data collection and instrumentation in Stage One. The two types of data gathered in Stage One were quantitative observation of individual behaviour and qualitative field notes (Creswell, 2015). The quantitative observation of individual behaviour type data were based on observing the three SMID social interaction behaviours across four variables of social interaction, namely frequency, length, initiation and type. The field notes recorded chronologically what was happening for the three SMID in their lessons in relation to their social interaction with others and their participation in the lessons. Particular note was taken
of who they interacted with, how they interacted, how they were located in relation to the class, what was happening in the class at the time, their participation in the lesson activities, the context of the lesson and other information deemed important to the SMID (Creswell, 2015). Each type of data were collected simultaneously employing a variety of methods and procedures.

4.4.1.2.1 Procedure for Data Collection. Quantitative and qualitative data in Stage One was collected through video observation and recording of the social interaction behaviours of the three SMID. Two video cameras were set up on the fringes of the lesson environment with one video operated by the researcher specifically focused on getting close up video footage of the SMID and their interactions with the immediate environment. In order to protect the privacy of the SMID this close-up footage was abandoned if it was deemed that it was obvious whom the camera was being directed at. The other camera, therefore, took wider footage of the entire lesson environment in order to capture events that may be missed by the other video camera and to observe what other factors were at play that may have impacted the interactions of the SMID. While this video footage formed the basis of data collection for this stage, different methods were used based on the quantitative and qualitative designs employed.

4.4.1.2.1.1 Quantitative data collection. The quantitative Baseline Phase data were collected by observing the three SMID on the videos and recording these observations using the Social Interaction Data Collection Instrument (SIDCI) (see Appendix H). A second observer was used to observe and record data using this same instrument in 41% of the observations across the three schools in order to eliminate bias and reduce instrument error. The second observer attended and practiced coding some lessons at the school to get a feel for the students before both the researcher and second observer completed all final coding from the video at the same time using the same audio recording. Percentage of agreement for the four different social interaction variables were calculated on an interval by interval basis by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100% (Mertens, 2010). The inter-observer agreement means calculated for this study exceeded minimum standards of 80% for each variable. Table 4.1 presents the inter-observer agreement mean and range scores for the three SMID across the variables of social interaction.

<p>| Table 4.1 Inter-observer agreement means and ranges for the four social interaction variables for Ian, John and Peter |</p>
<table>
<thead>
<tr>
<th>Variable</th>
<th>Ian</th>
<th>John</th>
<th>Peter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency of Interaction</td>
<td>97.5 (90–100)</td>
<td>96.75 (92–100)</td>
<td>99.8 (99–100)</td>
</tr>
<tr>
<td>Length of Interaction</td>
<td>93.5 (78–100)</td>
<td>94.25 (85–100)</td>
<td>99.1 (98–100)</td>
</tr>
<tr>
<td>Initiation of Interaction</td>
<td>93 (78–100)</td>
<td>92.25 (83–100)</td>
<td>99.3 (98–100)</td>
</tr>
<tr>
<td>Type of Interaction</td>
<td>88 (70–99)</td>
<td>92.5 (85–98)</td>
<td>98.2 (95–100)</td>
</tr>
</tbody>
</table>

The length of the Baseline Phase for each student was different, that is: three (John), four (Peter) and five (Ian) lessons. This length was influenced by a number of factors: the requirement of needing a staggered (or time lagged) baseline when using more than one student in multiple-baseline design; the need for baseline data to be either stable or displaying a trend in the opposite direction to what was expected before proceeding (e.g., decreasing trend for frequency of interaction); and the availability of the lessons in the school (Horner et al., 2005). It is noted that the limitations of lessons and time at the school meant that the decision to move out of the Baseline Phase was based on the frequency of interaction data alone.

4.4.1.2.1.2 Qualitative data collection. The qualitative data were collected by utilising an observational format. The researcher took on a non-participant observer role at the site in Stage One while operating the video camera to record footage of the lesson and the SMID (Creswell, 2015). The researcher later observed the video of each of the lessons in Stage One and recorded descriptive notes of what was happening for the three SMID in their lessons. To achieve this, the researcher watched the video footage and verbally recorded a chronological description of the interactions and participation of the SMID within the context of the lesson. Reflective notes about the researcher’s personal thoughts were also recorded (Creswell, 2015). This recording was then transcribed and these transcriptions formed the basis for the qualitative analysis of data.
4.4.1.3 Instrumentation – the Social Interaction Data Collection Instrument. The SIDCI was developed specifically for this research as a measure of the social interaction behaviours of SMID in the inclusive physical and health education setting (see Appendix H). The development, format and trialling of the instrument alongside other literature on social interaction behaviours informed the choice of the four variables of social interaction used in this study. The instrument was developed after examination of the literature on social interaction and two instruments already established and validated as social interaction and/or inclusion instruments. The Analysis of Inclusion Practices in physical education (AIPE-S), developed by Hodge et al. (2000) and used in Place and Hodge (2001), assessed the social inclusion of students with both physical and intellectual disabilities in inclusive physical education. Hughes et al. (2002) used an instrument to describe the social interaction of students with an intellectual disability. Social validity of this instrument was determined in an earlier study by Hughes (1999) where conversational behaviours of general secondary school students were identified and validated as being essential skills to target when observing social interaction for students with an intellectual disability in inclusive settings. Additionally, the definition of social interaction used by Hughes in her research was also used for this study.

Social Interaction was defined as the SMID and another person in the class producing verbal or non-verbal behaviour (e.g., nodding, smiling or calling) directed toward the other within the context of the lesson or activity (Kennedy et al., 1997 cited in Hughes et al., 2002).

4.4.1.3.1 Variables of social interaction. In order to assess the three SMID verbal and non-verbal behaviours and based on the examination of the above instruments, other literature on social interaction behaviours and the pilot project, four variables of social interaction were identified as important. These four variables were classified under the headings of Frequency of interaction and the Quality of interaction. Frequency referred to the number of interactions in the lesson whilst Quality was determined by the: length of interaction (short, medium and long); who initiated the interaction (PWOD, SMID or teacher); and type of interaction (speech, facial expressions, gesture or a combination of two or three of these). A further variable, the topic of interaction was not used in this study (see trialling the SIDCI on p. 59). In order to provide a context for these variables, the lesson components (either instruction, management, cooperative learning activity, transition or non-cooperative learning activity) in which the interaction occurred was also identified as important. Clear descriptions and definitions of these variables and components to be measured were developed (Horner et al., 2005) (see Appendix H).
4.4.1.3.2 Format of the SIDCI. The format and structure of the SIDCI used in this study was adapted from the SOFIT – system for observing fitness instruction time (McKenzie, Sallis, & Nadar, 1991). The format of the SIDCI involved a combination of an observational checklist and a tally sheet whereby the different variables of social interaction were repeatedly observed and recorded over 20-second observe/20-second record intervals for the entire lesson (Creswell, 2015). For each 20-second interval, the recording sheet had its own checklist of abbreviated codes for each social interaction variable across one line. Recording involved circling the appropriate abbreviated code for each social interaction variable that was observed. Each social interaction variable within the lesson was then tallied to develop a quantifiable description of the social interaction behaviours of the individual SMID for the lesson (Horner et al., 2005). A comments section was included at the end of each line to record other information that was deemed important for the person recording.

4.4.1.3.3 Trialling the SIDCI. The SIDCI was trialled and refined through the pilot project and modifications to the format, social interaction variables and their definitions were made (see Appendix I). Several practice attempts of these modifications were then conducted by the main researcher and the assistant responsible for administering the SIDCI by using video recordings of lessons from the pilot project with final recommendations put in place for this study. While the topic of interaction was still considered important it was clear in the pilot project and the practice attempts that several factors such as the noisy physical education environment and the need to protect the privacy of the SMID prevented collection of this variable of social interaction even after broadening the definitions of the variable. It was decided to remove the ‘topic’ variable from this study, as it was too difficult to collect accurately. Length of the interactions using a five-point Likert scale was also difficult with disagreements occurring specifically between the extremes of the scale in the pilot project. The scale was modified to include short, medium and long as options with clear definitions developed for each option and after several successful practice attempts these new codes were adopted in the main study. Results from the pilot project also found that the responses of the SMID and the PWOD had an impact on interactions when video observation of the lessons was later undertaken. It was decided to include a code under initiation of interaction that recorded whether a response was made to an initiation of interaction and the use of a negative symbol if the response was negative with the option of including comments at the end of the line on this response.

4.4.2 Stage Two – The Intervention.

4.4.2.1 The design approach. In Stage Two, the cooperative learning intervention was implemented across the three different SMID to establish whether there was a pattern of
change in their social interaction behaviours as a result of the intervention. The thoughts of
the students in the class were also gathered as they participated in the intervention. Prior to
the implementation of the intervention and directly after the Baseline Phase lessons the three
teachers were given a one-day training session in the cooperative learning approach and the
intervention. The teachers were then provided with a program (the intervention) to
implement in their subsequent lessons. The intervention was separated into two Phases, the
first being the Preparation Phase where the students in the class were trained to participate in
cooperative learning via eight alternating classroom-based health and physical education
lessons. The second Phase of the intervention was the Application Phase where the students
applied more independently what they had learnt in the Preparation Phase in four (John),
three (Peter) and five (Ian) subsequent physical education lessons. During Stage Two both
the quantitative and qualitative design approaches were utilised to gather the data.

The quantitative single-subject-multiple-baseline-across-people design continued to
establish a description of the social interaction behaviours of the SMID with an additional
approach utilised to monitor the implementation of the cooperative learning intervention as
discussed below. The qualitative case study design description was established by continuing
to observe and record chronologically what was happening for the three SMID within the
context of these intervention lessons. An additional approach was designed to gain the
perspectives of the different students in the class as the intervention progressed. As a result
of these additional quantitative and qualitative approaches other types of data were collated
in Stage Two.

4.4.2.2 Data collection and instrumentation in Stage Two. While the observation of
individual behaviour and field notes collected in Stage One continued to be collected in
Stage Two, other types of data for each design was introduced. The type of data for the
quantitative design was observation of teaching behaviour, designed to ascertain the fidelity
of the intervention implementation (Horner et al., 2005). The type of data collected for the
qualitative design was transcriptions of audiotaped interviews designed to gather the
perspectives of the students in the class.

While the methods and procedures employed to collect the quantitative and
qualitative description of social interaction behaviours generally remained the same as in
Stage One, that is, the SIDCI and the qualitative description, there were some differences
noted in this Stage. These differences were in relation to the time at the site, the types of
classes observed, the main researcher’s observational roles and the different data collection
approaches introduced in this stage.
4.2.2.2.1 Procedure for data collection. As in Stage One, the quantitative and qualitative data in Stage Two was collected through video observation and recording of the social interaction behaviours of the three SMID. The same video footage was used to observe and record the fidelity of the intervention implementation. The qualitative data were collected via audio recordings of different students’ perspectives throughout this stage. The procedures used for capturing video footage remained the same as in Stage One with one video camera capturing close up footage of the SMID and the other camera capturing wider footage of the class. One of the video cameras was used at the end of some lessons to record the different students’ perspectives. This video camera was turned around and only recorded audio recordings of the students.

While the same procedures were employed when gathering the video footage as in Stage One, the researcher’s role during this Stage changed to that of assuming an observational role, alternating between a nonparticipant observer to a participant observer based on the circumstances at each school (Creswell, 2015). These circumstances included the teacher at times seeking assistance from the researcher about the conduct of the activity, the students in the class asking questions of the researcher about an activity and the research itself. When asked by the teacher to assist, the researcher either provided verbal one-on-one advice to the teacher on the activity at the side of the class or on request, occasionally conducted or assisted in explaining and demonstrating the activity to the class. Depending on the students’ proximity to the researcher in the lessons some students asked the researcher for clarification of an activity. It is important to note that the researcher took on a greater assistant role in John’s class compared to Ian’s and Peter’s class, as requested by the teacher. To alleviate bias due to this changing role a second observer was used when collecting the quantitative social interaction data.

4.2.2.2.1.1 Quantitative data collection. The quantitative intervention stage data began when the cooperative learning intervention was introduced to the class, which was in the first classroom-based health lesson directly after the Baseline Phase. The intervention was introduced at different times for each student: John’s class after three Baseline lessons; Peter’s class after four Baseline lessons; and Ian’s class after five Baseline lessons. As in Stage One, the data were collected by observing the SMID on the videos and recording these observations using the SIDCI. A second observer was used to observe and record the data using the SIDCI. In contrast to Stage One, the data in Stage Two was collected across two Phases, the Preparation Phase and the Application Phase. The Preparation Phase data were collected across the eight Preparation lessons of the intervention with Peter’s school requiring nine lessons to complete the content of the Preparation lessons. The Application
Phase data were collected across four (John), three (Peter) and five (Ian) subsequent physical education lessons.

Alongside this collection of data on the social interaction behaviours of the three SMID, data were collected on how the cooperative learning intervention was being implemented. This involved observing video footage of each lesson and completing the cooperative learning Verification Tool to ascertain how accurately cooperative learning was being implemented in each class.

4.2.2.1.2 Qualitative data collection. The qualitative data were collected by utilising an observational and interview format (Creswell, 2015). As in Stage One, the researcher observed the video and recorded descriptive and reflective notes of what was happening for the three SMID in their lessons. In addition, interviews were conducted directly after some of the lessons in this stage with a focus group of students. Overall a total of 52 students including two of the SMID were part of the after-lesson focus groups conducted across the three schools.

4.4.2.3 Instrumentation.

4.4.2.3.1 After lesson focus group. The after-lesson focus group interviews were developed specifically for this research as a way of gathering the thoughts of the different students in the class including the SMID as the intervention progressed. To achieve these progressive perspectives initial plans were to conduct interviews and focus groups with a variety of students half way through the intervention. However, after discussion with the teacher at the first school it was decided that perspectives gathered immediately after a lesson would be more accurate and reliable rather than having to recall opinions and perspectives of activities at a later date.

4.4.2.3.1.1 Sampling. An opportunistic sampling strategy was employed to select participants for the after lesson focus groups where the researcher was guided by the teacher and the students at the time of selection (Creswell, 2015). This flexibility meant that the decision on which students were involved in each focus group was made prior to the lesson or at the completion of the lesson. The teacher would either ask specific students if they were interested or would call for volunteers to be involved with the aim of selecting different students after each lesson to gather a variety of perspectives. All consent forms were checked prior to the study and those students who did not consent to be interviewed were not asked to be part of the focus group.

4.4.2.3.1.2 Format and conduct. A semi-structured focus group format was used for the after lesson focus groups with the aim of gathering in-depth information in a short space
of time (Creswell, 2015; Mertens, 2010). It was decided to use this format to stimulate interaction between group members and allow students to consider and respond to new ideas presented from their peers (Twinn, 2000). It was also considered that the students in the class may be reluctant to be involved on their own (Creswell, 2015). Approximately two to five students were involved in each focus group and they were conducted directly after the lessons in this stage in either the classroom, the gym or the sports field. They were conducted on an average of 62% of the lessons across the three schools. Considering that the focus group interviews were conducted directly after the lessons and time was limited a short format was used with an average of eight minutes per focus group (range 2–26 mins). This influenced the number and types of questions to be asked.

While some questions were predetermined, overall flexibility was employed by asking questions related to the lesson and by following the conversation of the interviewee(s) (Mertens, 2010). To avoid some students being overwhelmed by the process, questions were modified at times to aid understanding (Bouma, 2000). To manage the focus groups each student was encouraged by the researcher to have their say on each question by referring to them specifically. They were informed, however, that they did not have to reply to each question. When necessary, probes were used to clarify responses or to encourage the students to elaborate (Creswell, 2015).

The questions were developed to collect data that could answer Research Questions Two, Three and Four and were also designed to contribute to the social validity of the cooperative learning intervention and cooperative learning approach into the future (Horner et al., 2005). The questions were designed as a mixture of predetermined and flexible close and open ended questions (Creswell, 2015). The predetermined questions focused on: what the students liked and did not like in the lesson; interaction between the students; and any suggestions or comments. While these ideas were the focus, they were asked in different ways depending on the circumstance and the response from the students. The flexible questions were developed by the researcher at the time of the focus group in response to events that happened in the class and to follow the conversations of the students (Creswell, 2015). For example, “Why do you think it becomes easier?” (in response to a PWOD who felt that working with different people became easier over time) and “What is it about your group that you are not sure about?” (in response to a student who wanted to work in a group with friends rather than other peers in the class). Questions were not asked about the SMID in order to maintain the privacy of the student and to follow equal status principles of contact theory (Allport, 1954; Punch, 2006).
4.4.2.3.2 The intervention. The cooperative learning intervention was designed specifically for this study and consisted of a teacher training session; eight student Preparation lessons and a minimum of three to a maximum of five Application lessons (see Appendix J). The dominant teaching strategy used in the Preparation and Application lessons was cooperative learning with a format that was in the main based on Johnson and Johnson (1999) conceptual approach and to a lesser extent the Kagan and Kagan (2009) structural and Cohen et al. (1999) complex instruction approach. All activities were designed to meet Johnson and Johnson (1999) five elements of cooperative learning and this was highlighted in each of the activity descriptions given to the teachers (see Appendix K). Group members also chose from a variety of roles every lesson such as, but not limited to, group organizer, scribe/recorder, motivator and equipment manager. Whilst the Johnson and Johnson (1999) approach guided the design of all the activities several of Kagan and Kagan (2009) activity structures were chosen in order to meet the cognitive, social and physical goals of the lesson. At times, but limited in their use, Cohen et al. (1999) complex instruction approach was visible when tasks focused on higher order thinking when solving problems.

When developing the cooperative learning intervention used in this study expert opinion on the first version was sought by an expert panel comprising of six leaders in the field of cooperative learning in physical education, physical education pedagogy, intellectual disability, special education and inclusion (Barlow & Hersen, 1984; Kazdin, 1982). Based on these opinions, the second version of the intervention was developed and tested in the pilot project with recommendations from the teachers and students implemented in the final modified version of the intervention to be used in this study. The recommendations were: teacher training being longer and paid for; a longer preparation component; and alternating Health and physical education lessons in the Preparation lessons to give students the opportunity to apply what was learnt in the classroom-based health lessons to the physical education environment. A detailed description of the intervention for each school in this study outlining sequencing, procedures, timing and duration, training of teachers and supervision is provided (see Appendix J).

4.4.2.3.2.1 Teacher training. The PDHPE teacher from each school was provided with a one-day individual training session by the researcher that focused on learning about the cooperative learning approach and how to implement the intervention in their lessons. Funding was provided to cover the cost of a casual teacher at the school while the teacher attended the training. Prior to the training the teacher was asked to read an information package which outlined: the reason for the research; why cooperative learning was being used and the importance of preparation for the cooperative learning approach; the theory behind the study; and the Research Questions. They were also asked to rank every student in
their class based on their ability physically and intellectually under the categories of low ability, middle ability and high ability.

On the day of the training, the teacher was trained in the cooperative learning approach focusing on: what is cooperative learning and the five elements; tips to managing the cooperative learning environment and; how to use the cooperative learning Verification Instrument (see Appendix L for an agenda of the training day). The teacher was also provided with the intervention program which included lesson plans, detailed activity descriptions, worksheets and tasks sheets for each Preparation and Application lesson and they were trained in how to use the program in the lessons to follow (see Appendix K for an example of an activity description). Towards the end of the training session the teacher was asked to form groups of four students within the class using the rankings they had developed prior to the training. The teacher was also asked to complete a small journal throughout the study and they were informed that they had full access to the researcher at any time during the intervention to discuss ideas and concerns as they arose.

4.4.2.3.2.2 Preparation lessons. The eight Preparation lessons were designed to prepare students to work together in cooperative learning groups by learning and developing interpersonal and group work skills. The eight lessons were broken into four theory lessons and four practical lessons. Interpersonal skills were introduced in the health (theory) class and immediately followed up and practiced in the physical education (practical) lessons. The interpersonal skills developed were linked to the New South Wales PDHPE syllabus through Stage 4, Strand 1, Self and Relationships (Board of Studies., 2003). They included listening skills, how to provide encouragement, how to make consensus decisions, how to work in and solve conflicts within the group, how to give explanations, feedback and ask for assistance and how finally to reflect on group performance. The content of the practical lessons was dependent on the unit of work from the PDHPE Syllabus that the school was working on at the time of the study (see Appendix J).

The grouping of the students in the Preparation lessons varied between working in pairs and working in groups of four. Students worked in pairs with different partners in the first four lessons in order to observe interactions between different students before placing students in groups of four in lesson five. Groups consisted of one higher ability student, two middle-range ability students and one lower ability student (SMID). Students were placed with at least one student they were friendly with, not specifically their best friend (Dyson, 2002). The student with an intellectual disability was placed in a group of supportive students. Groups consisted of two males and two females when there was a mixed class (Dyson & Rubin, 2003; Lou et al., 1996).
4.4.2.3.2 Application lessons. In the application lessons the students remained in the same cooperative learning groups and applied what they had learnt and practiced in the Preparation lessons more independently. The number of lessons was different for each school and was dependent on how many lessons each school could provide. The lessons were practical in nature (i.e. in the physical education setting) and the content was dependent on the schools scheduled program from the NSW BOS PDHPE Syllabus through Stage 4, Strand 2, Movement Skill and Performance and Strand 4, Lifelong Physical Activity (Board of Studies., 2003) (see Appendix J).

4.4.2.3.3 The Cooperative Learning Verification Tool. The Cooperative Learning Verification Tool (CLVT) developed by Dyson (2010) was designed to ascertain how the elements of the cooperative learning approach are applied in a lesson (Horner et al., 2005; McDuffie & Scruggs, 2008) (see Appendix M). An international community of scholars and teachers involved in research and the teaching of cooperative learning assessed the content validity of the CLVT prior to this study (Brewer & Jones, 2002; Dyson, 2010). Subsequent to this study further face and content validity of the CLVT was obtained by Casey et al. (2015). The tool provided a checklist of 16 criteria related to the elements and structures of the cooperative learning approach with three observation options for each (observed, partial, not observed). Two summary items are also provided which focus on the level of academically focused class time and student attention/interest and engagement with observation options of low, moderate and high. The tool was used in this study to monitor the use of cooperative learning in order to provide information to the researcher when analysing the data and as a measure of the fidelity of implementation of cooperative learning (McDuffie & Scruggs, 2008). To achieve this, the researcher viewed the video footage and completed the CLVT for each lesson. A summary of the results for each school are provided (see appendices N, O and P).

4.4.3 Stage Three – Interviews and Focus Groups.

4.4.3.1 The design approach. In Stage Three, the perspectives of a variety of participants in the study were gathered in order to: ascertain the perspectives of the physical education teachers when implementing a cooperative learning intervention in a secondary school physical education setting that includes a SMID; ascertain interest in the longer term use of the cooperative learning approach in inclusive physical education lessons; and understand the experiences of the students in the class, including the three SMID when participating in physical education lessons utilising a cooperative learning approach. This Stage was predominantly qualitative in nature and was conducted in order to collect data that could assist in explaining the how and why of the quantitative data through the lens of
identity theory and contact theory. A smaller quantitative component was included when gathering perspectives for social validity purposes.

**4.4.3.2 Data collection and instrumentation in Stage Three.** The type of data collected in Stage Three was from the transcriptions of audiotaped interviews. Two interview formats were used to collect this data from a variety of participants. One-on-one interviews were conducted with the three teachers and the eight students in the target groups, which included the SMID. One final focus group was also conducted at each school with a variety of other participants (18 in total) from the three classes (Creswell, 2015). To select the participants for the interviews and final focus groups different sampling strategies were used.

**4.4.3.2.1 Procedure for data collection.**

**4.4.3.2.1.1 Sampling.** Two different sampling strategies were used to select participants for each interview format. A purposive homogeneous sampling technique was used to select participants for the one-on-one interviews, where the participants were part of the same sub-group in each school (Creswell, 2015). These sub-groups included the teachers at each school and each of the students in the target group including the SMID. A purposive maximal variation sampling technique was used to select participants for the final focus groups based on each of the students possessing different characteristics (Creswell, 2015). These characteristics, which included different genders, confidence levels and interest levels, were designed to capture a variety of perspectives. These criteria were applied when choosing one to two students from each of the other cooperative learning groups in the class (not the target group) to be part of the final focus groups. Once students were chosen, consent from these participants to be part of both interview formats was checked.

**4.4.3.2.1.2 Consent.** While both the teachers and the students gave permission to be part of the study prior to the study commencing, not all students gave permission to be part of interviews. Therefore, all consent forms were checked prior to approaching the students for permission to be part of interviews. Each student in the target group and those chosen for the final focus group were then approached after the final lesson in Stage Three and asked if they were willing to be interviewed. It is noted that the students in the target group at John’s school were not keen to be interviewed so the SMID (John) from this school was included in the final focus group for that school. The researcher confirmed that the teacher was still willing to be interviewed, considering that initial consent was given many months prior.

**4.4.3.2.1.3 Timing and location.** While the conduct of the both the one-on-one interviews and the focus groups were similar, there were some differences. Some of these differences were planned prior to the study; others were as a result of the circumstances at each school. Both the one-on-one interviews and the focus groups were conducted in a room.
in the library of each school which was free from distractions and they were audiotaped using an MP3 recorder (Creswell, 2015). The target group individual interviews and the focus groups were conducted on the first day after the completion of the final lesson in Stage three to ensure the intervention was fresh in the minds of the students. The teacher interview at John’s school was conducted on the same day as the focus group from that school with the other two teacher interviews conducted on the day following the student interviews and focus groups from their schools. The length of the student individual interviews ranged 15–30 mins, the focus groups ranged 52–74 mins and the teacher interviews ranged 75–130 mins.

4.4.3.2.1.4 Conduct and format. An interview protocol was followed to guide the conduct of the one-on-one interviews and the final focus groups. It focused on the purpose and structure of the interview, the student’s privacy and respect of others and the plans to use their thoughts in the future (Creswell, 2015). A semi-structured format was used for both types of interviews where general and more-specific predetermined questions were asked in a relaxed conversational style (Mertens, 2010; Yin, 2009). To collect the data for social validity purposes, specific questions were included in the teacher interviews (refer to instrumentation). Flexibility was employed at times by following the conversations of the teachers and students and, when necessary, probes were used to clarify responses or to encourage the teachers and students to elaborate (Creswell, 2015). To avoid some students being overwhelmed by the process, questions were modified at times to aid understanding and the researcher also helped students to recall events if necessary (Bouma, 2000). To manage the larger student numbers in the focus groups, each student was encouraged by the researcher to have their say on each question by referring to them specifically. They were informed, however, that they did not have to reply to each question. Each individual interview was transcribed and returned to the student or teacher for member checking before being used in the analysis (Mertens, 2010). The same member checking was used for the students in the focus group but for ethical and privacy purposes each student received a transcription of their thoughts only with other students’ thoughts deleted.

4.4.3.3 Instrumentation

4.4.3.3.1 One-On-One interviews and final focus groups. Both the one-on-one interview questions and the final focus groups’ interview questions were developed specifically for this research as a way of gathering the thoughts of the different teachers and students in the class including the SMID. For the teachers, the one-on-one interview was designed to capture their experiences and opinions related to the cooperative learning intervention, its implementation, future use and the social interaction behaviours of the target student and the class (see Appendix Q). For the students, the one-on-one interviews and the
focus groups were designed to capture the thoughts and experiences of the students in relation to the cooperative learning intervention and their social interactions within this Approach (see Appendix R). Gathering these thoughts was in response to the focus groups conducted at the end of the pilot project where valuable information about the experiences of the teacher and students when using and participating in a cooperative learning intervention was collected.

To gather the thoughts of the teachers and students a semi-structured format was used for both the one-on-one interviews and the final focus groups where general and more-specific predetermined close and open-ended questions were asked with options for open-ended comments (Creswell, 2015; Yin, 2009). These questions were developed to collect data that could answer Research Questions Two, Three and Four and were also designed to ascertain the social validity of the cooperative learning intervention and Approach into the future (Horner et al., 2005). The questions developed for the student one-on-one interviews and the focus groups were the same with different questions developed for the teacher interviews.

Twenty questions were asked in the student one-on-one interviews and the final focus groups. After the initial interview introduction, the students were asked a recall question about the activities in the lessons to assist them to remember and understand what the remaining questions would be related to. Questions were related to the likeability or not of activities and working in groups, their learning and roles within the cooperative learning group format, the inclusive nature of their group, their interactions with others in the group, what types of helping behaviours or problems were involved in their group and the effect of the group folder. Students were finally asked to provide any ideas and suggestions for others. In these interviews and focus groups, questions were not asked about the SMID in order to maintain the privacy of the student (Allport, 1954; Punch, 2006).

The questions developed for the teacher interviews were broken into three sections: twelve questions were asked about the cooperative learning intervention and its implementation; eight questions were asked about the interaction behaviours of the SMID and the class when using the cooperative learning intervention; and six questions were asked about the future use of the cooperative learning approach (see Appendix Q). For social validity purposes, specific questions were included in the teacher interviews that focused on any changes noted in the interaction behaviours of the SMID as a result of the intervention and the future use of a cooperative learning approach.
The one-on-one interviews and the final focus groups concluded the data collection process at the three schools. During and after this data collection process the data were processed and analysed in order to begin to answer the research questions.

4.5 Data processing and Analysis

While the data collected from each design format in this mixed method study were given equal importance during the processing and analysis phase of the research different techniques were used for each design (Creswell, 2015). The single-subject-multiple-baseline-across people design utilised a visual inspection of the graphic representation of the specific interaction behaviours measured (Barlow & Hersen, 1984; Horner et al., 2005; Kazdin, 1982; Zhan & Ottenbacher, 2001) to answer Research Question One. The qualitative case-study design utilised an explanation building technique utilising the transcriptions of observations, interviews and focus groups to answer Research Questions Two, Three and Four (Brantlinger, Jimenez, Klinger, Pugach, & Richardson, 2005; Yin, 2009).

4.5.1 Quantitative processing and analysis.

4.5.1.1 Processing the data. The processing of the quantitative data from the SIDCI and the CLVT began immediately after the first Baseline lesson in Stage One and continued after every lesson in the study. For the SIDCI once the data were collected, each occurrence of the different social interaction variables were tallied and divided by the total number of observations for that lesson to produce a percentage score. Once the percentages were calculated they were entered into an MS Excel spreadsheet to create line and bar graphs and tables to represent the four social interaction variables and the lesson components across all the lessons in the study.

Considering that all of the social interaction variables and lesson components measured several elements, more than one percentage was produced for each variable and this influenced the choice of graphical representation. Line graphs were used to present frequency of interaction, length of interaction and initiation of interaction and were developed in accordance with line graphs produced for multiple-baseline designs (Dixon et al., 2009). The bar graphs were produced for the components of the lesson and type of interaction was presented in a table format. Once each SMID had line and bar graphs for all lessons a multiple-baseline-across-people line graph was also created across the three SMID for the frequency of interaction, length of interaction and initiation of interaction to aid in the analysis of the data. Inter-observer agreement was calculated on each variable using the percent agreement method as explained on page 57. Alongside the processing of the SIDCI
When ascertaining to what extent the cooperative learning approach was applied in a lesson the CLVT was completed after every intervention lesson. The information from each lesson was then tabulated together to arrive at a percentage of observation for each of the cooperative learning criteria for the combined intervention phases for each school (see appendices M, N and O). A final statement was produced on the extent to which the cooperative learning approach was applied across the intervention for each school for fidelity of intervention implementation purposes and to assist the analysis of the data (see Appendices N, O and P).

4.5.1.2 Analysing the data. Research Question One was addressed by analysing the quantitative data using visual analysis of the graphic representation of the specific interaction behaviours within and across the Phases of the study (Horner et al., 2005). This analysis of the data collected on the SIDCI was conducted at the end of each Phase and at times during the different Phases for each student. A final comparison across the three SMID was conducted when the third SMID results were complete.

Within each Phase of the research the visual inspection of the graphs and tables determined the level, trend and variability of performance by calculating mean, median, range and best-fit straight line (Horner et al., 2005). The trend was calculated immediately after the Baseline Phase to determine the stability and predictability of the social interaction behaviours before the intervention was implemented in accordance with the single-subject-multiple-baseline-across-people design (Horner et al., 2005). This trend was established by calculating the line of best-fit for each of the Baseline Phases. Additional evaluation linking the occurrence of the variables of social interaction to the lesson components was also established for explanatory purposes within each Phase. When reporting the level of the data, five levels will be used. Table 4.2 displays the recommended levels to be used within visual analysis of graphs, indicating the percentage range for each level (Cooper, Heron, & Heward, 2007).
Table 4.2 Percentage ranges for the level of data

<table>
<thead>
<tr>
<th>Level</th>
<th>Percentage Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Level</td>
<td>0–20%</td>
</tr>
<tr>
<td>Low-to-Moderate Level</td>
<td>21–40%</td>
</tr>
<tr>
<td>Moderate Level</td>
<td>41–60%</td>
</tr>
<tr>
<td>Moderate-to-High Level</td>
<td>61–80%</td>
</tr>
<tr>
<td>High Level</td>
<td>81–100%</td>
</tr>
</tbody>
</table>

Across the phases of the study other visual inspection strategies were employed. They included: the immediacy of effect following the onset of the cooperative learning intervention; the strength of the effect through the proportion of data points in adjacent Phases that overlap in level; the magnitude of changes in the social interaction behaviours of the SMID across conditions; and the consistency of data patterns across the three presentations of the intervention (Horner et al., 2005; Tankersley, Harjusola-Webb, & Landrum, 2008). These four strategies employed across the Phases combined with the strategies employed within the Phases were integrated to determine if a functional relationship existed between the intervention and social interaction behaviours (Horner et al., 2005; Kazdin, 1982; Tankersley et al., 2008).

While subjecting the data to inferential statistics was considered within and across the Phases, the requirement of needing five or more data points in each Phase to conduct these statistics was unable to be met due to the time on site being limited (Todman & Dugard, 2001). Horner et al. (2005), however, considers that descriptive statistics or visual analysis of data is sufficient to “determine if a functional relationship between the dependent and independent variable” (p. 171).

After the visual inspection of the graphs and tables were recorded, the main findings from each of the students were established. Once the findings from the three SMID were compared the findings common across the three SMID were developed and recorded. A final statement was made on the functional relationship between the cooperative learning intervention and the social interaction behaviours of the three SMID (Horner et al., 2005).
4.5.2 Qualitative analysis.

4.5.2.1 Processing the data. As with the quantitative design, the processing of the qualitative data from the observations, after lesson focus groups, one-on-one interviews and final focus groups began immediately after the first Baseline lesson in Stage One. This processing continued after every lesson in the study and was completed after Stage Three. While the audiotapes of the different focus groups and one-on-one interviews were transcribed directly from the audio, the video footage of each lesson was observed by the researcher who verbally described onto an MP3 recorder what was happening. This was done chronologically in relation to social interaction and participation for the SMID, which was later transcribed. Once this transcribing was complete, all documents were imported into the NVivo software package which was set up with different folders for each SMID ready for analysis.

4.5.2.2 Analysis of the data. Research Questions Two, Three and Four were addressed through analysis of the qualitative data that explained the ‘how’ and ‘why’ of the cooperative learning intervention and subsequent social interaction impacts using an explanation building technique (Brantlinger et al., 2005; Yin, 2009). To build an explanation of the data, analysis of the data collected via observations, after lesson focus groups, one-on-one interviews and final focus groups occurred within, alongside and at the completion of the four data collection stages. Initially the data from each source was reduced by systematically sorting and coding the data using the NVivo software package for each student separately (Brantlinger et al., 2005; McDuffie & Scruggs, 2008; Rice & Ezzy, 1999). This initial coding phase coded the words, lines, segments and events from the data sources under labels that conceptually hung together (Mertens, 2010). A more focused coding was then conducted by identifying the most significant and frequent coding across the three SMID to establish themes in relation to the research questions with outlier themes still considered and recorded as unexpected results (Mertens, 2010). These themes were considered the findings from the qualitative design.

4.5.3 Interpretation of the Mixed Method Findings. Both quantitative and qualitative datasets and findings were given equal importance in the final interpretation of results. The mix of data findings made separately from both the quantitative and qualitative datasets were merged and interpreted through the theoretical framework (Creswell, 2015). To achieve this, firstly the quantitative findings were discussed in relation to whether or not a functional relationship was established between the social interaction behaviours of three SMID and the cooperative learning intervention with connections to the literature. The qualitative findings were then presented and merged with the quantitative results where
appropriate to provide an explanation with a final interpretation made through the lens of both identity theory and contact theory (Allport, 1954; Burke & Stets, 2009; Creswell, 2015).

4.6 Quality Indicators

To ensure the quality of the data and findings in this study, several measures were demonstrated within both the quantitative and qualitative design approaches. Within the single-subject-multiple-baseline-across-people design indicators of internal, external and social validity, reliability and objectivity were demonstrated (Creswell, 2015; Horner et al., 2005). Within the qualitative case study design indicators of credibility, transferability, dependability, confirmability and authenticity were demonstrated (Mertens, 2010). These quality indicators were demonstrated across the study through the selection of participants, the data collection related to the two research designs, the instrumentation, the data analysis and the interpretation of results.

4.6.1 Quantitative indicators of validity, reliability and objectivity.

4.6.1.1 Internal Validity. Internal validity was maintained by exercising experimental control within the single-subject-multiple-baseline-across-people design. To begin with the baseline of existing behaviours collected in Stage One, acted as a control with each of the three participant’s social interaction behaviours becoming their own control (Creswell, 2015). Further control was established by staggering the introduction of the intervention across the three SMID after the predictable pattern of existing social interactions behaviours was established through the Baseline Phase. Further, when collecting the data, the social interaction behaviours (dependent variable) were operationally defined and repeatedly measured to allow valid and consistent measurement of the social interaction behaviours of the three SMID (Horner et al., 2005).

When analysing the data, internal validity was maintained within and across the Phases. Firstly, the minimum requirement of three data points within each Phase was achieved by recording observations of the four social interaction variables across three or more lessons (Horner et al., 2005). Secondly, the visual analysis of graphs methods within and across the Phases was utilised. More specifically, descriptive statistics of trend, level and variability were calculated to establish an overall pattern of social interaction behaviour for each SMID within each Phase. Similarly, calculating immediacy of effect, level and magnitude of change and overlap was calculated across the Phases for each student to provide information about whether the cooperative learning intervention did indeed result in any change in the social interaction behaviours (Horner et al., 2005). Internal validity was further maintained by paying attention to fidelity of implementation of the cooperative
learning intervention. To allow valid interpretation of the results a detailed description of the intervention was provided and the fidelity of implementation of the intervention was established through continuous direct measurement of the use of cooperative learning in each lesson via the CLVT (Horner et al., 2005).

All these internal validity measures ensured that any inferences made about the functional relationship between the social interaction behaviours of the three SMID and the cooperative learning intervention were valid and that any changes in social interactions after the intervention was introduced, was attributed solely to the intervention and other competing explanations were eliminated (Horner et al., 2005).

4.6.1.2 External validity. External validity was maintained through the participants, the conditions present in the study, the measurement of the social interaction behaviours and the cooperative learning intervention. In relation to the participants, external validity was maintained by replicating the effects of the cooperative learning intervention on social interaction behaviours across three different SMID in three different inclusive physical education classes (Cook, Tankersley, & Harjusola-Webb, 2008; Horner et al., 2005). Further, a purposeful criterion sampling technique was used to select the three SMID with further details of age, gender and the type of class the three SMID were included in provided (Horner et al., 2005; Mertens, 2010). Detailed descriptions were also provided when the study was conducted in relation to the conditions present and measurement of the social interaction behaviours (Horner et al., 2005). The external validity of the findings of this study were further enhanced by developing, testing, modifying and describing in detail the cooperative learning intervention.

All these external validity measures ensured that any inferences made about the functional relationship between the social interaction behaviours of the three SMID and the cooperative learning intervention could be generalised to other SMID in inclusive physical education environments (Horner et al., 2005; Mertens, 2010). They also allow others to replicate the study or the intervention in other inclusive physical education environments (Horner et al., 2005).

4.6.1.3 Reliability. Reliability was maintained by managing and assessing the consistency of the data collected through the SIDCI. Each of the social interaction variables were clearly defined so they could be counted accurately and reliably (Horner et al., 2005). To eliminate bias and reduce instrument error, the main researcher and a second observer were used with IOA calculated on 41% of observations ensuring the IOA met and exceeded minimum standards.
4.6.1.4 Objectivity. Objectivity was maintained by employing multiple visual analysis measures to describe the social interaction behaviours of the three SMID rather than relying on one or two measures alone (Horner et al., 2005). The combination of these measures was then used to make a decision about the functional relationship between social interaction behaviours and the cooperative learning intervention (Horner et al., 2005).

4.6.1.5 Social validity. Social Validity of the study was determined through several means with the main pathway obtained through the opinions of the teachers, the three SMID and the PWOD. Opinions were sought in the interviews and focus groups in Stage Two and Three about: the importance of any changes in social interactions for the three SMID as a result of the cooperative learning intervention; the acceptability, feasibility and effectiveness of the intervention; and their choice to use cooperative learning in the future. This was complemented by documenting: the high importance of the problem and the need to combat its impacts; the importance and relevance of the social interaction variables; the fidelity of implementation of the cooperative learning intervention; and if the intervention had an effect on the problem. All these measures were designed to determine the social importance and practicality of the procedures and findings of the research in typical PDHPE environments.

4.6.2 Qualitative indicators of credibility, transferability, dependability, confirmability and authenticity.

4.6.2.1 Credibility. Credibility was maintained in the case study design through several measures. Firstly, the researcher spent prolonged and persistent engagement at the site during all of the Stages, being present at the school for all the PDHPE lessons regardless of whether the SMID was present or not (Mertens, 2010). Secondly, data were triangulated by checking information across: 1) the teacher interviews, 2) the student interviews and focus groups; and 3) the researcher’s observations (Mertens, 2010). Thirdly, technical member checks with the teachers and students were obtained by providing transcripts of the interviews so they could be checked for accuracy and truth (Mertens, 2010). Finally, peer debriefing sessions with other researchers not present at the school were conducted regularly throughout the research (Mertens, 2010).

4.6.2.2 Transferability. Transferability was maintained by firstly providing a ‘thick description’ (Mertens, 2010, p. 310) of all the participants, the cooperative learning intervention and the conditions under which the study was conducted, allowing others to find relevance to their own situations and contexts and to “select individuals with similar characteristics” (Horner et al., 2005, p. 174). Secondly, the relevance of the findings to others was also strengthened by observing three different SMID in three different physical education sites (Mertens, 2010).
4.6.2.3 Dependability and confirmability. Dependability and confirmability were obtained by conducting audits to establish an audit trail of the collected data and a clear chain of evidence from the research questions through to the final findings (Brantlinger et al., 2005; Mertens, 2010).

4.6.2.4 Authenticity. Authenticity was maintained through several measures in the case study design. Firstly, and most importantly, the study was conducted in an authentic PDHPE environment. Secondly, fairness was maintained in the interview and focus groups through the use of a variety of purposeful selection techniques meaning that a variety of viewpoints were gathered including those for and against the intervention (Mertens, 2010). Thirdly, through the after lesson focus groups and the final focus groups ontological authenticity was obtained by documenting changes in individual and class viewpoints about the intervention (Mertens, 2010). Fourthly, a “sense of trust and mutuality” (Mertens, 2010 p 261) with the students and the teachers at the three schools was established by the researcher being available to support the teacher and the students throughout the study. Trust was further established by protecting the privacy of all students through the protocols of the focus groups and interviews. Mutuality was encouraged by the researcher asking for and discussing suggestions from the students in the focus groups and interviews. At times the researcher and the teacher encouraged different students who were quieter to be part of the focus groups ensuring “attention to voice” (Mertens, 2010, p. 261).

4.6.3 Mixed method indicators of quality. While the conduct of both the quantitative single-subject-multiple-baseline-across-people design and the qualitative case-study designs demonstrated quality measures, additional measures were present when mixing the two designs in the convergent parallel design. Firstly, in line with recommendations for mixed method design by Mertens (2010), triangulation was demonstrated in the discussion chapter by integrating: 1) the results from the quantitative method; 2) the results from the qualitative method; and 3) the interpretation of results through the theoretical framework to develop final conclusions. Secondly, when integrating the results, any conflicting results that emerged were explained. Thirdly, the privacy and welfare of the three SMID was assured by not disclosing they were the subject of the research and being careful when collecting the data on site for each method to avoid highlighting the SMID. Fourthly, making any necessary changes to the intervention to ensure it was responsive to the needs of the three SMID, the PWOD and the teachers.

4.7 Conclusion

The convergent parallel mixed method design and the extensive quality measures employed in this study ensured that the results obtained would provide sufficient insight into
the identified problem. The multiple, rigorous and proven strategies utilised in the single-subject-multiple-baseline-across people design ensured that the decisions about whether there was a functional relationship between the social interactions behaviours of the SMID and the cooperative learning intervention were valid and reliable. By utilising a collective case study design in the authentic secondary school environment and allowing themes to emerge from triangulation of the data it was ensured that the results would be credible and transferable to other similar environments. The following chapters will report on the results of the study with Chapters Five through Seven reporting on the quantitative results of each SMID individually, followed by Chapter Eight, a multiple-baseline comparison chapter. Chapter Nine will report on the qualitative results for Research Questions Two, Three and Four.
Chapter 5 Results – Ian

5.1 Introduction

This chapter will begin to examine the results that answer Research Question One: What is the impact of a cooperative learning intervention on the social interactions between SMID and their PWOD in inclusive secondary school physical education classes?

Chapter Five will examine the results for Ian, Chapter Six for John and Chapter Seven for Peter. This will be followed by a multiple-baseline comparison of the three students in Chapter Eight. To provide a clear description of how the results will be reported, Figure 5.1 provides a framework for the presentation of the results.

Figure 5.1 illustrates that for each of the students with an intellectual disability (SMID) the results will be provided within each Phase in the study (Baseline, Preparation and Application) separately before a Between Phase comparison is conducted. The Within Phase results will firstly establish the contextual factors of the Phase. This includes the content of the lessons and how the lessons were conducted followed by a breakdown of the lesson components (either instruction, management, cooperative learning activity, transition or non-cooperative learning activity). Secondly, visual inspection of the graphs for each Phase will provide the quantitative results for the four variables of: 1) frequency of interaction and the quality of interaction, the latter determined by, 2) length of the interaction, 3) initiation of the interaction and 4) type of interaction, respectively. The Between Phase comparison will then examine whether changes occurred in each of the above variables across the Phases for the target student.
Figure 5.1 A framework for the presentation of results
On completion of the examination of the three individual SMID students, a comparison across the three target students will be conducted. Utilising the multiple-baseline design and highlighting similarities and differences between the students, conclusions will be drawn on whether a functional relationship exists between the cooperative learning intervention and the interaction behaviours of the three SMID in inclusive physical education classes. To begin the analysis of each student, a brief description of the target student, class, teacher and school will be revisited for student one – Ian.

5.2 Target Student 1 (Ian)

Ian was a 14-year-old student with a learning disability and diagnosed as functioning in the mild range of intellectual disability with an IQ score of 78. He was identified by the school and teacher as having limited social interaction within his PDHPE class with the teacher providing some accommodation for his disability in the Health class, particularly related to written work. He was included in a Year 8 mainstream physical education class with 23 other male students of the same or similar age with the class graded as a lower ability class within the year. The teacher of the class, Mr L, had eight years teaching experience.

5.3 Within Phase Analysis – Baseline Phase results for Ian

As described in Figure 5.1 the first contextual factor to be described in the Within Phase analysis is the content and conduct for the Baseline Phase. This Phase included five physical education lessons focusing on the content of fitness and athletics from the NSW PDHPE Syllabus Strand 2 and 4 (Board of Studies., 2003). The first two lessons involved the beep test and a fitness circuit to conclude the unit on fitness. The following three lessons introduced the unit on athletics and involved learning to throw the javelin and shot put. Baseline lessons were conducted by the regular teacher using their traditional teaching style, which was in the main a direct teaching approach.

Data were collected on the components of the five lessons – Figure 5.2 provides the percentage of class time devoted to instructional, managerial cooperative learning activity, transitional and other type of activity (not classed as cooperative learning).
Figure 5.2 Percentage of class time devoted to class activities in the Baseline Phase

Figure 5.2 illustrates that the cooperative learning approach was not used in these lessons with the majority of time devoted to the non-cooperative learning activity. A major finding was that the time devoted to giving instruction increased over the course of the five lessons. When this was combined with the time taken for transitions within the class, the last three lessons displayed a substantial drop in activity time as compared to the first three lessons.

5.3.1 Frequency of interactions. The first variable to be examined was Ian’s Frequency of Interaction with his PWOD and the teacher in each lesson. To understand how Ian interacted with others within the Baseline lessons, data were collected on a 20-second observe/20-second record cycle and represented as a percentage. Ian’s percentage of interaction frequency for each of the five Baseline lessons was then recorded as five data points on a line graph (Figure 5.3).
An analysis of Figure 5.3 revealed that Ian’s scores for interaction frequency were variable with a moderate mean of 50%, a low-to-moderate range of 32–67 and a decreasing trend. This trend was more obvious in the final three lessons and it is noted from Figure 5.2 that in these lessons there was a decrease in activity and transition time and an increase in instruction time. Considering that 59% of the interactions occurred during the non-cooperative learning activity and 27% occurred during the transition time of the lesson the deteriorating trend may be expected.

5.3.2 Quality of interactions. The Baseline lessons were also examined to gain an understanding of the quality of Ian’s interactions through the examination of their length, who initiated the interaction and the type of interaction. For each incidence of interaction, data were firstly collected on the length of interaction, whether it was short, medium or long within the 20-second observe time window. Secondly, data were collected on who initiated the interaction (Ian, his PWOD or the teacher) and was there a response. Finally, data were collected on what type of interaction was used, being either speech, gesture, facial expression or a combination of these.

The first variable of quality is the length of interactions and Figure 5.4 displays the data on the percentage of Ian’s interactions devoted to short, medium and long interactions.
Figure 5.4 Percentage of Ian’s length of interactions and mean, median and ranges in the Baseline Phase

<table>
<thead>
<tr>
<th>Length of Interactions</th>
<th>Mean</th>
<th>Median</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short</td>
<td>73</td>
<td>74</td>
<td>(52–90)</td>
</tr>
<tr>
<td>Medium</td>
<td>24</td>
<td>21</td>
<td>(10–44)</td>
</tr>
<tr>
<td>Long</td>
<td>3</td>
<td>4</td>
<td>(0–5)</td>
</tr>
</tbody>
</table>

Figure 5.4 illustrates that Ian’s interactions were predominantly short in length with limited incidences of him participating in long interactions. Ian’s short interactions were variable, at a moderate-to-high level and a slightly increasing trend. Medium interactions were also variable, at a low-to-moderate level and a slightly decreasing trend. Long interactions were stable, at a low level and a zero trend. Although medium-length interactions were higher in Lesson 2, this was unusual compared to the rest of the Baseline lessons. It was noted that in Lesson 2, that Ian was participating in a fitness circuit alongside his best friend, with this scenario not repeated in the other Baseline lessons.

The second variable of quality was who initiated the interaction and the existence of a response by the student. The results relating to initiation of interaction are displayed in Figure 5.5.
Examination of data from Figure 5.5 indicated that Ian generally initiated the same amount of interactions as his PWOD, with a mean 44% and 47% respectively. Ian’s initiating of interactions was slightly variable, at a low-to-moderate level and with a decreasing trend. The PWOD’s was also slightly variable, at a low-to-moderate level and an increasing trend. The teacher was stable, at a low level and a very slightly decreasing trend. The results also show that the range of scores for who initiated interaction over the lessons did, however, vary and Figure 5.5 illustrated this with a large decline in Ian initiating them in the last lesson of the Baseline compared to the first lesson. An in-depth analysis of the above results was conducted and revealed that Ian only initiated 21% of the interactions with the teacher. When Ian’s responses to interactions were examined for both the teacher and his PWOD combined, it was found that he did not respond to others initiating interactions with him 10% of the time. The same analysis also indicated that Ian interacted with seven...
students throughout the Baseline lessons with the majority of these interactions with his best friend only.

The final variable examined related to the quality of interactions was the type of interaction. Table 5.1 displays the mean, median and ranges for the Baseline lessons for each of the interaction types and combination of types used.

Table 5.1 Types of interactions by Ian in the Baseline Phase
(percentage mean, median and ranges)

<table>
<thead>
<tr>
<th>Type of Interactions</th>
<th>Mean</th>
<th>Median</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech</td>
<td>33</td>
<td>28</td>
<td>(15–66)</td>
</tr>
<tr>
<td>Gesture</td>
<td>11</td>
<td>9.5</td>
<td>(0–25)</td>
</tr>
<tr>
<td>Facial Expression (FE)</td>
<td>12</td>
<td>15</td>
<td>(3–21)</td>
</tr>
<tr>
<td>Speech &amp; Gesture</td>
<td>21</td>
<td>21</td>
<td>(10–35)</td>
</tr>
<tr>
<td>Speech &amp; FE</td>
<td>9</td>
<td>9.5</td>
<td>(0–19)</td>
</tr>
<tr>
<td>FE &amp; Gesture</td>
<td>2</td>
<td>3</td>
<td>(0–5)</td>
</tr>
<tr>
<td>Speech, Gesture &amp; FE</td>
<td>2</td>
<td>0</td>
<td>(0–11)</td>
</tr>
</tbody>
</table>

Across the Baseline lessons, Table 5.1 demonstrates that Ian did use all types of interaction and combinations of types but to a varying degree. Predominantly, Ian used a higher percentage of speech alone when interacting with his PWOD and the teacher, followed by a combination of speech and gesture together. Ian only used the three types of communications (speech, gesture and facial expressions) together on limited occasions.

5.4 Within Phase Analysis – Preparation Phase results for Ian.

The content and conduct for the Preparation Phase where the cooperative learning intervention was introduced included eight lessons with a mix of health education (classroom based) and physical education. The content of the health-based lessons focused on the NSW syllabus strand of Self and Relationships (Board of Studies., 2003). Students were given the opportunity to learn the social skills necessary to work together such as: active listening, non-verbal communication, how to explain and give feedback, decision making, problem solving, learning group roles and group bonding activities. In the physical education lessons the students practised these skills while participating in athletics and striking and fielding games through the NSW PDHPE syllabus Strand 2 and 4 (Movement Skill & Performance and Lifelong Physical Activity) (Board of Studies., 2003). The content of the first two physical education lessons involved learning about running technique, principles of throwing.
for distance and how to throw a discus to conclude the unit on athletics. The remaining two physical education lessons introduced the concepts of fielding and teamwork in a modified softball throwing game. The first four lessons were conducted where students worked with different pairs and the groups were formed in the fifth lesson and continued for the rest of the Preparation lessons. All learning opportunities utilised cooperative learning structures during the Preparation Phase which included round robin, Jigsaw, co-op play, learning teams, team windows and inside outside circle.

Figure 5.6 provides the percentage of class time devoted to the components of these eight lessons across instructional, managerial, cooperative learning activity, transitional and other type of activity (not classed as cooperative learning).

![Graph showing the percentage of class time devoted to class activities in the Preparation Phase](image)

*Figure 5.6 Percentage of class time devoted to class activities in the Preparation Phase (classroom-based health lessons were 6, 7, 10 and 12)*

Figure 5.6 illustrates that the cooperative learning approach was used in these lessons confirmed by the Cooperative Learning Verification Instrument applied to each lesson (see Appendix N). Figure 5.6 illustrated that as the Preparation Phase continued, the amount of time devoted to cooperative learning activities increased overall with no distinct pattern. Specifically, less time was spent in cooperative learning in the first lesson (Lesson 6) and the fifth lesson (Lesson 10) when they first formed groups. Although the time increased in the final three lessons compared to the first five lessons, there was still some decrease in time spent in cooperative learning in lessons 12 and 13, compared to the highs of Lesson 11. This variability may be explained by examining the other components of the lesson. For example, more class management was required in the first two lessons (lessons 6 and 7) and again when they formed groups in the fifth lesson (Lesson 10). It was also noted that the amount of time devoted to instruction was high, more so in the first five lessons as they were
learning the cooperative learning approach. In addition when instruction time increased slightly in lessons 12 and 13, there was a subsequent decrease in the amount of time devoted to cooperative learning. Transition time was also higher in the physical education lessons during this time (lessons 8, 9, 11 and 13) than the health education (classroom-based) lessons.

**5.4.1 Frequency of Interactions.** The first variable to be analysed was Ian’s percentage of interaction frequency for the Preparation lessons. Each of the eight Preparation lessons was recorded as eight data points on a line graph (Figure 5.7).

![Figure 5.7 Percentage of Ian’s frequency of interactions in the Preparation Phase (classroom-based health lessons were 6, 7, 10 and 12)](image)

The analysis of Figure 5.7 revealed that Ian’s scores for interaction frequency were slightly variable with a moderate mean of 59%, range 36–79 and an increasing trend. This trend continued over the Preparation lessons despite time being dedicated to instruction, management and in some lessons, transition as mentioned previously. The variability is evident with the small decline in interactions in Lesson 10 where the students were placed in groups of four for the first time and this was then followed by a large increase in interactions in the next lesson (Lesson 11) to the highest level of the Preparation Phase. It is important to note from Figure 5.6, the increased time devoted to the cooperative group activity and the decrease in instruction time in Lesson 11. Considering 70% of the interactions occurred during the cooperative learning activities of the Preparation lessons this increase in interactions for Lesson 11 could be expected.
**5.4.2 Quality of Interactions.** Further analysis of the above interactions revealed more information relating to the quality of Ian’s interactions within the Preparation lessons. The first variable of quality is the length of interactions and Figure 5.8 displays the data on the percentage of Ian’s interactions devoted to short, medium and long interactions.

![Percentage of Ian’s length of interactions and mean, median and ranges in the Preparation Phase](image)

*Figure 5.8 Percentage of Ian’s length of interactions and mean, median and ranges in the Preparation Phase (classroom-based health lessons were 6, 7, 10 and 12)*

When examining the length of Ian’s interactions, Figure 5.8 illustrates that there was a substantial change over the course of the Preparation lessons. Specifically, although the majority of interactions were short over the first four lessons of the Preparation Phase (with the exception of Lesson 7), medium and long interactions were far more prevalent in the last four lessons when the students participated in their cooperative learning groups. Ian’s short interactions were variable, at a low-to-moderate level and a decreasing trend. Medium interactions were also variable, at a low-to-moderate level and a very slight decreasing trend. Long interactions were variable, at a low-to-moderate level and an increasing trend. Of note is the increase in the amount of long interactions that Ian participated in from Lessons 10 to 13. The unusual increase in long interactions in Lesson 7 can be explained by the content of
the lesson, which was focused on how to explain and give feedback to their partner fostering more medium and long interactions.

The second variable of quality of interactions was who initiated the interaction and the existence of a response. The results relating to initiation of interaction are displayed in Figure 5.9.

<table>
<thead>
<tr>
<th>Initiation of Interactions</th>
<th>Mean</th>
<th>Median</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>PWOD</td>
<td>55</td>
<td>52</td>
<td>(47-77)</td>
</tr>
<tr>
<td>Ian (SMID)</td>
<td>38</td>
<td>40</td>
<td>(19-49)</td>
</tr>
<tr>
<td>Teacher</td>
<td>8</td>
<td>7</td>
<td>(4-18)</td>
</tr>
<tr>
<td>No response</td>
<td>3</td>
<td>2</td>
<td>(0-10)</td>
</tr>
</tbody>
</table>

*Figure 5.9 Percentage of who initiated the interactions by Ian, PWOD or teacher and mean, median and ranges in the Preparation Phase (classroom-based health lessons were 6, 7, 10 and 12)*

Over the course of the Preparation Phase, Ian initiated fewer interactions than his PWOD with a mean of 38%. Ian’s initiating of interactions was variable, at a low-to-moderate level and a very slight decreasing trend. The PWOD’s was slightly variable, at a moderate-to-high level and a very slight increasing trend. The teacher was slightly variable, at a low level and a zero trend. Of note is the large decrease in Ian initiating interactions in Lesson 10 when the groups were formed for the first time. However, Figure 5.9 also illustrates that his initiation of interactions recovered to usual levels in the following lessons in the Preparation Phase overtaking PWOD in Lesson 13. This was the final lesson in the
Preparation Phase where he took on the role of group organiser. When the in-depth analysis was applied to who Ian initiated interactions with, it was found that he initiated 36% of interactions with the teacher. When Ian’s responses to interactions were examined for both the teacher and his PWOD combined, it was found that he did not respond to others initiating interactions with him 3% of the time, compared to 10% in the Baseline Phase. The same analysis revealed that he interacted with 13 students throughout the Preparation lessons and although he did interact with his best friend on occasions, the majority of interactions were with his group members.

The final variable analysed relating to the quality of interactions was the type of interaction. Table 5.2 displays the mean, median and ranges for the Preparation lessons for each of the interaction types and combination of types used.

Table 5.2 Types of interactions by Ian in the Preparation Phase

<table>
<thead>
<tr>
<th>Type of Interactions</th>
<th>Mean</th>
<th>Median</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech</td>
<td>27</td>
<td>25</td>
<td>(13–47)</td>
</tr>
<tr>
<td>Gesture</td>
<td>6</td>
<td>6.</td>
<td>(0–10)</td>
</tr>
<tr>
<td>Facial Expression (FE)</td>
<td>14</td>
<td>15</td>
<td>(6–23)</td>
</tr>
<tr>
<td>Speech &amp; Gesture</td>
<td>17</td>
<td>18</td>
<td>(3–32)</td>
</tr>
<tr>
<td>Speech &amp; FE</td>
<td>23</td>
<td>23</td>
<td>(6–47)</td>
</tr>
<tr>
<td>FE &amp; Gesture</td>
<td>4</td>
<td>4</td>
<td>(0–9)</td>
</tr>
<tr>
<td>Speech, Gesture &amp; FE</td>
<td>7</td>
<td>7</td>
<td>(0–11)</td>
</tr>
</tbody>
</table>

Table 5.2 demonstrates that Ian used all types of interactions and combinations of interactions. Of note is that he used speech alone and speech and gesture together relatively evenly over the course of the Preparation Phase when interacting with his PWOD and the teacher. He did use speech, gesture and facial expressions together 8% of the time over the Preparation lessons and most of these incidences were found in the last four lessons when the students were placed in the groups of four.

5.5 Within Phase Analysis - Application Phase results for Ian

The content and conduct for the Application Phase of the intervention consisted of five physical education lessons focusing mainly on the content of striking and fielding games from the NSW PDHPE syllabus Strand 2 and 4 (Movement Skill & Performance and Lifelong Physical Activity) (Board of Studies., 2003). These lessons linked to the final two
physical education lessons from the Preparation Phase by adding a new component to each lesson culminating in a combined softball/cricket game at the end of the unit. The first lesson (14) added the scoring of runs, Lesson 16 added batting (both cricket and softball), Lesson 17 added technique with bowling and pitching and Lesson 18 asked the groups combined to conduct the final game with all components. Due to time pressures in the Preparation Phase, Lesson 15 was added and was based around problem solving in physical education lessons focusing on the game of Keeping Up. During the Application Phase cooperative learning structures such as co-op play, learning teams, Jigsaw and performer coach were used to deliver the above content. Students were asked to apply what they had learnt in the Preparation Phase more independently during these lessons. Figure 5.10 provides the percentage of class time devoted to the components of these five lessons across instructional, managerial cooperative learning activity, transitional and non-cooperative learning activity.

Figure 5.10 Percentage of class time devoted to class activities in the Application Phase

Figure 5.10 illustrates the limited amount of time devoted to instruction as the lessons progressed. Time devoted to cooperative learning increased substantially in the last three lessons in the Application Phase with a subsequent decrease in transition time and minimal time devoted to management. It is interesting to note that non-cooperative learning activities were part of the Application lessons to a small degree even though they were not planned for.
5.5.1 Frequency of Interactions. The first variable to be analysed was Ian’s percentage of interaction frequency for the Application lessons. Each of the five Preparation lessons was recorded as five data points on a line graph (Figure 5.11).

![Figure 5.11 Percentage of Ian’s frequency of interactions in the Application Phase](image)

An analysis of Figure 5.11 revealed that Ian’s scores for interaction frequency were slightly variable with a moderate-to-high mean of 70% and a slightly increasing trend. Although the amount of time devoted to cooperative learning increased in the last three lessons Ian’s interaction frequency during these lessons remained stable. When considering the components of the lessons 67% of his interactions occurred during the cooperative learning activities and 20% occurred during transition time.

5.5.2 Quality of Interactions. Further analysis of the above interactions revealed more information relating to the quality of Ian’s interactions within the Application lessons. The first variable of quality is the length of interactions and Figure 5.12 displays the data on the percentage of Ian’s interactions devoted to short, medium and long interactions.
The examination of Figure 5.12 reveals Ian’s short interactions were variable, at a low-to-moderate level and a decreasing trend. Medium interactions were also variable, at a moderate level and a slightly decreasing trend. Long interactions were variable, at a low-to-moderate level and an increasing trend. Although short interactions dominated the first lesson with very few long interactions recorded, long interactions recovered to the highest level of the Application Phase in Lesson 16 and remained relatively stable throughout the remaining lessons of the Phase. Of particular note in Lesson 16 was that Ian was found explaining the game to a student who had been away from his group in the previous lesson.
The second variable of quality was who initiated the interactions and the existence of a response from Ian. The results relating to initiation of interaction are displayed in Figure 5.13.

<table>
<thead>
<tr>
<th>Initiation of Interactions</th>
<th>Mean</th>
<th>Median</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>PWOD</td>
<td>42</td>
<td>46</td>
<td>(28–53)</td>
</tr>
<tr>
<td>Ian (SMID)</td>
<td>51</td>
<td>46</td>
<td>(43–65)</td>
</tr>
<tr>
<td>Teacher</td>
<td>7</td>
<td>7</td>
<td>(2–11)</td>
</tr>
<tr>
<td>No response</td>
<td>0</td>
<td>5</td>
<td>(0–6)</td>
</tr>
</tbody>
</table>

*Figure 5.13 Percentage of who initiated the interactions by Ian, PWOD or teacher and mean, median and ranges in the Application Phase*

Over the course of the Application Phase Ian initiated more interactions than his PWOD, with a mean of 51%. Ian’s initiating of interactions was variable, at a moderate level reaching into the high level in the last lesson and an increasing trend. The PWOD’s was variable, at a moderate level reaching into the low-to-moderate level in the last lesson and a decreasing trend. The teacher was slightly variable, at a low level and a zero trend. Figure 5.13 illustrated the substantial increase in Ian initiating interactions in Lessons 15 and particularly in Lesson 18. Of note in relation to Lesson 18, is that the entire class, through their roles, were given responsibility for preparing for the game in every way. Ian took on
the role of group organiser and was responsible for ensuring his group knew the new rules to the game and organising them during the game.

The in-depth analysis when applied to who initiated interactions found that Ian initiated 46% of the interactions with the teacher, which mainly consisted of asking questions in regards to the tasks set for the lessons. When Ian’s responses to interactions were examined from both the teacher and his PWOD combined it was found that Ian responded to all interactions directed to him throughout the Application Phase. The same analysis revealed that Ian interacted with 13 people during this Phase, two of whom he had not interacted with before.

The final variable analysed relating to the quality of interactions was the type of interaction. Table 5.3 displays the mean, median and ranges for the Application lessons for each of the interaction types and combination of types used.

Table 5.3 Types of interactions by Ian in the Application Phase (percentage mean, median and ranges)

<table>
<thead>
<tr>
<th>Type of Interactions</th>
<th>Mean</th>
<th>Median</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech</td>
<td>40</td>
<td>34</td>
<td>(32–57)</td>
</tr>
<tr>
<td>Gesture</td>
<td>7</td>
<td>5</td>
<td>(0–14)</td>
</tr>
<tr>
<td>Facial Expression (FE)</td>
<td>3</td>
<td>3</td>
<td>(0–6)</td>
</tr>
<tr>
<td>Speech &amp; Gesture</td>
<td>25</td>
<td>26</td>
<td>(23–27)</td>
</tr>
<tr>
<td>Speech &amp; FE</td>
<td>12</td>
<td>14</td>
<td>(5–15)</td>
</tr>
<tr>
<td>FE &amp; Gesture</td>
<td>2</td>
<td>0</td>
<td>(0–6)</td>
</tr>
<tr>
<td>Speech, Gesture &amp; FE</td>
<td>11</td>
<td>11</td>
<td>(2–25)</td>
</tr>
</tbody>
</table>

When analysing the types of interactions used by Ian across the Application Phase, Table 5.3 demonstrated that in the main Ian used a higher percentage of speech only in his interactions and to a lesser degree speech and gesture together. Ian also started to use all three types of interactions together (speech, facial expressions and gesture). This was more notable in Lesson 15 when the group was playing a game of ‘Keeping Up’ together and trying to improve their score as a group.

5.6 Between Phase comparison for Ian

Whilst the results from the Within Phase analysis have been completed in isolation, results from within the Baseline, Preparation and Application Phases will now be compared
to determine what changes occurred between the Phases. The comparison will begin by examining changes in the components of the lessons followed by interaction frequency changes and then move to analyse the changes in the quality of interactions through length, initiation and type of interaction.

Figure 5.14 revisits the amount of time devoted to the various components of the lesson across the 18 lessons.
Figure 5.14 Percentage of class time devoted to class activities across the Phases
Figure 5.14 demonstrated that changes occurred in the use of a cooperative learning approach and time devoted to instruction, management and transition over the course of the 18 lessons. When the cooperative learning intervention was introduced in the Preparation Phase, its use in the lessons was variable, notably dropping off when the groups were formed for the first time in Lesson 10. A similar decline was found towards the end of the Preparation Phase and the beginning of the Application Phase; however, the last three lessons of the Application Phase found the use of cooperative learning in the lessons rebound to their highest of the 18 lessons (see Appendix N for a more detailed description of how cooperative learning was implemented). This increase was accompanied by a large decline in the amount of time devoted to instruction, management and transitions over Lessons 16 to 18, compared to the Preparation Phase and the final three lesson of the Baseline Phase.

**5.6.1 Frequency of Interactions.** The first variable to be compared across the Phases was the frequency of interaction. An analysis of the changes in mean interaction frequency over the course of the intervention demonstrated an increasing trend with a moderate level mean of 50% for the Baseline Phase, a moderate level of 59% for the Preparation Phase and a moderate to high level of 70% for the Application Phase. There was a substantial increase in the interactions of Ian with his PWOD and the teacher in the class with an overall mean increase of 20% from the Baseline Phase to the Application Phase. This increase was gradual with approximately 10% mean increases in each Phase. The increase in interactions was not always stable throughout the intervention. There were times when interaction frequency decreased as was reported in the Within Phase analysis earlier. Figure 5.15 supports this by combining the three Phases of Baseline, Preparation and Application to demonstrate the path of interaction frequency for Ian over the course of the lessons.
Similar to the mean increases in interaction frequency, when examining the best-fit straight line for Ian, the frequency of interactions demonstrated an increasing trend across the intervention phases compared to the decreasing trend in the Baseline Phase. Figure 5.15 demonstrated the overall increasing trend of interaction frequency for Ian over the course of the Preparation and Application Phases.

When a comparison was made from the last lesson in the Baseline Phase (Lesson 5) to the first lesson in the intervention phases (Lesson 6), Figure 15 illustrated that there was a small increase in interactions (8%). In contrast, when the students were applying what they had learnt more independently in the Application Phase, there was a decrease in interactions from the last lesson in the Preparation Phase (Lesson 13) to the first lesson in the Application Phase (Lesson 14), however, this recovered in the following lessons.

When analysing the strength of the above changes in interaction frequency, overlap of interaction frequency between the Phases was examined. Lane and Gast (2014) suggest that the less overlap between the Phases the stronger the relationship between the improvements in interaction being the result of the cooperative learning intervention. With this in mind, when comparing the overlap from the Application Phase to the Baseline Phase, there was only a one-lesson overlap (Lesson 14) strengthening the case for the cooperative
learning intervention as being responsible for the changes in interaction frequency. It is noted that there was overlap between adjacent Phases, however, the overall increasing trend might signal that introducing a cooperative learning intervention may result in a more gradual change in interactions over time rather than a quick significant change as students get used to the new way of learning.

When relating interaction frequency with the components of the lesson, Figure 5.16 demonstrates where interaction occurred across all Phases.
Figure 5.16 Interactions per the breakdown of class activities across the Phases
Figure 5.16 demonstrated that approximately 85% of interactions occurred either in the activity or the transition time of the lesson. During the cooperative learning activity time in the intervention phases, interactions were more frequent as compared to the non-cooperative learning activities of the Baseline Phase.

Although there was a larger amount of time dedicated to instruction and management and in some cases transition in the Preparation Phase compared to the Baseline condition, interaction frequency for Ian still continued to improve after a small decline from Lesson 6 to Lesson 7 (Figure 5.15). It is noted from Figure 5.15 that the highest frequency of interactions for Ian were found in lesson 11 of the Preparation Phase and the final four Application lessons. Figure 5.14 illustrates that these lessons also recorded the highest amount of time devoted to cooperative learning activities, apart from Lesson 15, where there were some non-cooperative learning activities present.

5.6.2 Quality of Interactions. The examination of the changes to the quality of interactions (length, initiation and type) between Phases also demonstrated an increasing trend. To begin with the analysis of quality, Figure 5.17 combines the length of interactions across the phases.
Overall the length of interactions improved with Ian utilising a greater percentage of medium to long interactions. Figure 5.17 illustrated that the introduction of the cooperative learning intervention in the Preparation Phase meant a substantial decrease in short interactions replaced by more medium and, of note, long interactions. This trend for a greater percentage of long interactions continued into the Application Phase where in Lesson 16 long interactions equalled the short interactions (Figure 5.17).

The analysis of changes in the length of interactions over the course of the intervention demonstrated a decreasing trend for short interactions with a high level mean of 72% for the Baseline Phase, a moderate level mean of 44% for the Preparation Phase and moderate level mean of 40% for the Application Phase. Correspondingly, while long interactions were in the low and low-to-moderate level there was an increasing trend for long interactions with a mean of 3% for the Baseline Phase, 19% for the Preparation Phase and 25% for the Application Phase. While medium-length interactions improved from the Baseline Phase into the intervention phases with an 11% mean increase they did show a slight decreasing trend over the course of the intervention with more in the moderate level as compared to the low-to-moderate level of the Baseline Phase.

Similar to the mean increases in interaction frequency, when examining the best-fit straight line for the length of interactions, changes in the direction of trend were observed across the short and long interactions. The short interactions demonstrated a decreasing trend across the intervention phases as compared to the increasing trend in the Baseline Phase. This change in trend was also observed for the long interactions; however, the direction was reversed with long interactions demonstrating an increasing trend across the intervention phases as compared to the decreasing trend in the Baseline Phase. While the direction of trend for the medium length interactions was decreasing in both the intervention and Baseline Phases the steepness of the trend was less in the intervention phases.

When a comparison was made from the last lesson in the Baseline Phase (Lesson 5) to the first lesson in the intervention phases (Lesson 6), Figure 17 illustrated that there was an immediate decrease in short interactions and an immediate increase in medium interactions with no change in the long interactions. There was also a decrease in long interactions (20%) and an increase in short interactions (18%) from the last lesson of the Preparation Phase (Lesson 13) to the first lesson of the Application Phase (Lesson 14). This occurred when the students in their groups were applying what they had learnt in the previous Phase, where they were working more independently. These long interactions, however, recovered in the following two lessons being at their highest of the intervention in Lesson 16.
When analysing the strength of the above changes in the length of interactions, overlap of the length of interactions between the Phases was examined. When comparing the overlap from the Application Phase to the Baseline Phase, there was no overlap for long interactions and only one lesson overlap for short interactions. This occurred in the first lesson in the Application Phase where groups were working more independently. It is noted that while there was some overlap between adjacent Phases, when the groups were formed in Lesson 10 there was no overlap for short and long interactions for the rest of the Preparation Phase. Compared to the Baseline Phase, this strengthens the case for the cooperative learning intervention as being responsible for the changes in the long and short interactions.

The changes in relation to Ian’s initiation of interactions were not as substantial as the length of interactions or frequency of interactions and were more variable. Figure 5.18 combines the initiation of interactions data across the Phases.

![Figure 5.18 Percentage of who initiated the interactions by Ian, PWOD and the teacher across the Phases (classroom-based health lessons were 6, 7, 10 and 12)](image)

Alongside the examination of the best-fit straight line, Figure 5.18 demonstrated that Ian’s overall initiation of interaction with his PWOD and the teacher, improved with an increasing trend over the course of the combined intervention phases as compared to the decreasing trend in the Baseline Phase. Whilst there was an increasing trend it was not always the case when the specific phase results were examined it is noted that there was a decreasing trend in the Preparation Phase with a mean drop (7%) in initiating interactions as compared to the Baseline Phase. This was influenced by a sharp decrease in Lesson 10 when
groups were formed for the first time. The more-substantial change for Ian occurred later in the Preparation Phase and more notably the Application Phase where his mean for initiating of interactions surpassed his PWOD (9%).

When a comparison was made from the last lesson in the Baseline Phase (Lesson 5) to the first lesson in the intervention phases (Lesson 6), Figure 5.18 illustrated that there was a sharp increase in Ian initiating interactions (17%). There was, however, a slight decrease in Ian initiating interactions (3%) from the last lesson in the Preparation Phase (Lesson 13) to the first lesson in the Application Phase (Lesson 14) with his initiation of interactions matching his PWOD.

When analysing the strength of the above changes in initiating interactions, overlap of Ian initiating interactions between the Phases was examined. The strength of the changes was not considered substantial as the large range of data within Phases meant that there was overlap between the Phases. Despite this, the later trend of improvement over the entire Application Phase was also reflected in Ian’s initiation of interactions with the teacher where there was an increase of 25% from the Baseline Phase and 10% from the Preparation Phase. Similarly, Ian responded to all interactions directed toward him in the Application Phase an improvement of 3% from the Preparation Phase and 9% from the Baseline Phase. Furthermore, Ian was interacting with a wider group of PWOD in the Preparation Phase compared to the Baseline and this increase continued into the Application Phase.

The final variable of quality, the type of interaction was combined across the Phases in Table 5.4.
Table 5.4 Percentage mean for types of interactions by Ian across the phases

<table>
<thead>
<tr>
<th>Type of Interactions</th>
<th>Mean - Baseline</th>
<th>Mean - Prep</th>
<th>Mean - App</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech</td>
<td>33</td>
<td>27</td>
<td>40</td>
</tr>
<tr>
<td>Gesture</td>
<td>11</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Facial Expression (FE)</td>
<td>12</td>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td>Speech &amp; Gesture</td>
<td>21</td>
<td>17</td>
<td>25</td>
</tr>
<tr>
<td>Speech &amp; FE</td>
<td>9</td>
<td>23</td>
<td>12</td>
</tr>
<tr>
<td>FE &amp; Gesture</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Speech, Gesture &amp; FE</td>
<td>2</td>
<td>7</td>
<td>11</td>
</tr>
</tbody>
</table>

Table 5.4 demonstrated that the changes in Ian’s use of the types of interactions were centred around a greater use of verbal and non-verbal types of communication together. Ian’s use of the three types of interactions (speech, gesture and facial expressions) together became more apparent over the course of the Phases with an increase of 9% from the Baseline Phase. During the Preparation Phase, Ian was more animated in his interactions with a substantial increase in facial expressions, predominantly smiling, when he was talking to others. Although Ian used a variety of interaction types, his use of speech alone and speech combined with facial expression and/or gestures during the Application Phase was greater than compared to the Baseline Phase. This meant that Ian was using talking more than other types of interaction when interacting with others in the Application Phase.

### 5.7 Conclusion

In summary, when Ian was participating in PDHPE lessons without the cooperative learning intervention his interactions with others were decreasing, were short in length and were with only a few PWOD. Additionally, Ian’s interactions with the teacher were limited and he was not always responsive when others initiated the interaction. When the cooperative learning intervention was introduced over the course of the 13 lessons, Ian’s interactions with others gradually increased, were longer in length, were with more PWOD and were almost always responsive to others. Additionally, Ian over time initiated more interactions with others, including the teacher and he used more types of interactions (speech, facial expressions and gestures) together. In relation to Research Question One and through the integration of multiple, rigorous and proven visual analysis strategies these changes mean that there was a functional relationship between the cooperative learning intervention and Ian’s increased and
improved interactions with PWOD and the teacher. More importantly, this functional relationship was considered substantial for frequency of interaction and length of interaction.
Chapter 6 Results – John

6.1 Introduction

This chapter will examine the results for the second student, John who was involved in the study that answers Research Question One: What is the impact of a cooperative learning intervention on the social interactions between SMID and their PWOD in inclusive secondary school physical education classes? The results reported in this chapter will be presented as per the framework from Chapter Five. To begin the analysis a brief description of John, his class, the teacher and the school will be revisited.

6.2 Target Student 2 (John)

John was a 14-year-old student diagnosed as functioning in the mild range of intellectual disability and an IQ score of 70 on the WISC IV. He was also diagnosed with Attention Deficit Hyperactivity Disorder and was identified by the school and teacher as having difficulties with social interaction within his Physical and Health education classes. The teacher provided some accommodation for his disability through the application of specific behaviour management strategies. He was included in a Year 8 mixed-gender physical and health education class with 17 other students of similar age. The class was graded as a lower ability class consisting mainly of students with behaviour difficulties. The study started with one teacher Mrs O who was the Head Teacher Physical and Health Education. After the first Preparation lesson Mrs F (a casual teacher with two years of experience) took over the classes as Mrs O took another position in the school.

Additional measures were put in place when developing the design and as the research was conducted to be responsive to the needs of the participants. This included modifying the program to better suit the dynamics of the class, changing the original group John was placed in and moving John into a focus group when he expressed discomfort with being interviewed individually. It is noted that due to delays, wet weather, teacher and student absence, the amount of lessons with which to collect data were restricted. This impacted every phase of the study and while collection of data beyond the 15 lessons would have been ideal, it was not possible.

6.3 Within Phase Analysis – Baseline Phase Results for John

As illustrated already in Figure 5.1, the first contextual factor to be described in the Within Phase analysis is the content and conduct of the Baseline Phase. This Phase included three physical education lessons focusing on the content of athletics and indigenous games...
from the NSW PDHPE syllabus Strand 2 and 4 (Movement Skill & Performance and Lifelong Physical Activity) (Board of Studies., 2003). The first two lessons involved learning and practicing how to throw the shot put and javelin. This concluded the short unit on athletics due to the constant weather interruptions and a lack of covered facilities. The third lesson introduced the unit on indigenous games and focused on students learning and playing two games: ‘Kai’ (similar to ‘Keeping Up’) and ‘Wana’ (similar to continuous cricket). Baseline lessons were conducted by the regular teacher using their traditional teaching style, which was in the main a direct teaching approach.

Data were collected on the components of the three lessons and Figure 6.1 provides the percentage of class time devoted to instructional, managerial cooperative learning activity, transitional and other type of activity (not classed as cooperative learning).

![Figure 6.1 Percentage of class time devoted to class activities in the Baseline Phase](image)

It is illustrated from Figure 6.1 that the cooperative learning approach was not used in these lessons. The time devoted to giving instruction increased over the course of the three lessons and combined with management and transition time, the last two lessons displayed a substantial drop in activity time compared to the first lesson.

6.3.1 Frequency of Interactions. The first variable to be examined was John’s Frequency of Interaction with his PWOD and the teacher in each lesson. To understand how John interacted with others within the Baseline lessons, data were collected on a 20-second
John’s percentage of interaction frequency for each of the three Baseline lessons was then recorded as three data points on a line graph (Figure 6.2).

Analysis of Figure 6.2 revealed that John’s scores for interaction frequency were stable with a moderate level mean of 50%, and a range of 46–53. The trend was slightly increasing, nearing a zero trend. It is noted from Figure 6.1 that in Lessons 2 and 3 there was an increase in instruction and transition time and although 48% of John’s interactions were found in the non-cooperative learning activity time, he continued to interact through other components of the lesson. For example, in Lesson Two, John interacted with others during instruction 23% of the time, 16% during management time and 26% during transition time.

6.3.2 Quality of Interactions. The Baseline lessons were also examined to gain an understanding of the quality of John’s interactions through the examination of the length, who initiated and the type of interaction. The first variable of quality is the length of interactions and Figure 6.3 displays the data on the percentage of John’s interactions devoted to short, medium and long interactions.
Figure 6.3 Percentage of John’s length of interactions and mean, median and ranges in the Baseline Phase

Figure 6.3 illustrates that John’s interactions were predominantly short in length with limited incidences of John participating in long interactions. John’s short interactions were variable, at a predominantly moderate-to-high level and an increasing trend. Medium interactions were also variable, at a predominantly low-to-moderate level and a decreasing trend. Long interactions were slightly variable, at a low level and a decreasing trend. John sat out the first lesson next to another student who had injured himself and they talked to each other at times about John’s phone, accounting for the higher medium and long interactions for the first lesson.

The second variable of quality was who initiated the interaction and the existence of a response. The results relating to initiation of interaction are displayed in Figure 6.4.
Examination of data from Figure 6.4 indicated that John initiated more interactions than his PWOD with a mean of 60% compared to 35% from his PWOD. John’s initiating of interactions was variable, at a moderate level reaching a moderate-to-high level in the last lesson and an increasing trend. The PWOD’s was also variable, at a predominantly low-to-moderate level and a decreasing trend. The teacher was slightly variable, at a low level and a slightly decreasing trend. The results from Figure 6.4 illustrated that John increased his initiation of interaction and his PWOD decreased their initiation of interaction with John over the course of the three lessons. An in-depth analysis of the above results was conducted and revealed that John initiated 58% of the interactions with the teacher with an average of three interactions per lesson. When John’s responses to interactions were examined for both the teacher and his PWOD combined, it was found that he did not respond to others initiating interactions with him 10% of the time. The same analysis indicated that John interacted with eight PWOD throughout the Baseline lessons, however, more importantly his PWOD did not respond to John 32% of the time.
The final variable examined related to the quality of interactions was the type of interaction. Table 6.1 displays the mean, median and ranges for the Baseline lessons for each of the interaction types and combination of types used.

Table 6.1 Types of interactions by John in the Baseline Phase (percentage mean, median and ranges)

<table>
<thead>
<tr>
<th>Type of Interactions</th>
<th>Mean</th>
<th>Median</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech</td>
<td>41</td>
<td>47</td>
<td>(19–57)</td>
</tr>
<tr>
<td>Gesture</td>
<td>12</td>
<td>14</td>
<td>(5–16)</td>
</tr>
<tr>
<td>Facial Expression (FE)</td>
<td>3</td>
<td>0</td>
<td>(0–10)</td>
</tr>
<tr>
<td>Speech &amp; Gesture</td>
<td>23</td>
<td>26</td>
<td>(11–32)</td>
</tr>
<tr>
<td>Speech &amp; FE</td>
<td>9</td>
<td>3</td>
<td>(3–21)</td>
</tr>
<tr>
<td>FE &amp; Gesture</td>
<td>6</td>
<td>9</td>
<td>(0–10)</td>
</tr>
<tr>
<td>Speech, Gesture &amp; FE</td>
<td>3</td>
<td>0</td>
<td>(0–10)</td>
</tr>
</tbody>
</table>

Across the Baseline lessons, Table 6.1 demonstrated that John did use all types of interaction and combinations of types but to a varying degree. Predominantly John used a higher percentage of speech alone when interacting with his PWOD and the teacher, followed by a combination of speech and gesture together. John only used three types of communications (speech, gesture and facial expressions) together on limited occasions.

6.4 Within Phase Analysis – Preparation Phase Results for John

The content and conduct for the Preparation Phase where the cooperative learning intervention was introduced included eight lessons with a mix of health education (classroom based) and physical education. The content of the health-based lessons focused on the NSW syllabus strand of Self and Relationships (Board of Studies., 2003). Students were given the opportunity to learn the social skills necessary to work together such as active listening, non-verbal communication, how to explain and give feedback, decision making, problem solving, learning group roles and group bonding activities.

In the physical education lessons, the students practised these skills while participating in indigenous games and dance through the NSW PDHPE syllabus Strand 2 and 4 (Movement Skill & Performance and Lifelong Physical Activity) (Board of Studies.,
The content of the first two physical education lessons continued and concluded the indigenous games unit with the students learning and playing ‘Gorri’ and ‘Kee’an’ (both target games). In ‘Kee’an’ pairs were involved in designing their own game for others to play. The first lesson on Australian Dance focused on students learning steps to a dance, teaching others in their group and performing. The planned unit was then modified due to the students’ dislike of traditional dance and subsequent behavioural issues. The final lesson then focused on developing dance concepts by groups creating combinations of movements based around an Australian theme, without calling it dance. The first four lessons were conducted where students worked with different pairs and the groups were formed in the fifth lesson and continued for the rest of the Preparation lessons. All learning opportunities utilised cooperative learning structures during the Preparation Phase which included round robin, Jigsaw, co-op play, learning teams, team windows and inside outside circle. It is important to note that John missed the first four and final lessons, attending only three lessons (8, 9, 10) of the Preparation lessons. John began the preparation lessons in the fifth lesson (8) when groups were formed for the first time. As described in the methodology (Chapter Four), the students in the class were unaware of who the researchers were watching so lessons had to continue regardless of whether the target student attended or not. This meant that John missed the lessons focusing on listening, non-verbal communication, explaining and giving feedback. When John did attend, he refused to participate in the group that was chosen for him and he joined a group with three other students, two of whom had very difficult behaviour problems.

Figure 6.5 provides the percentage of class time devoted to the components of these eight lessons across instructional, managerial, cooperative learning activity, transitional and other type of activity (not classed as cooperative learning).
Figure 6.5 illustrated that the cooperative learning approach was used in these lessons confirmed by the Cooperative Learning Verification Tool applied to each lesson (see Appendix O). Figure 6.5 illustrated that as the Preparation Phase continued the amount of time devoted to cooperative learning activities increased overall. It was also noted that the amount of time devoted to instruction decreased over the lessons and time devoted to management was minimal in Lesson 10.

**6.4.1 Frequency of Interactions.** The first variable to be analysed was John’s percentage of interaction frequency for the Preparation lessons. Each of the three Preparation lessons that John attended were recorded as three data points on a line graph (Figure 6.6).
Analysis of Figure 6.6 revealed that John’s scores for interaction frequency were variable with a predominantly moderate level mean of 62%, reaching moderate-to-high level with a range 51–75 and an increasing trend. It is important to note from Figure 6.5, the increased time devoted to the cooperative group activity and the decrease in instruction time in Lesson 10. Considering 64% of the interactions occurred during the cooperative learning activities of the Preparation lessons this increase in interactions for Lesson 10 could be expected.

**6.4.2 Quality of Interactions.** Further analysis of the above interactions revealed more information relating to the quality of John’s interactions within the Preparation lessons. The first variable of quality is the length of interactions and Figure 6.7 displays the data on the percentage of John’s interactions devoted to short, medium and long interactions.
When examining the length of John’s interactions, Figure 6.7 illustrates that there was a change over the course of the three recorded Preparation lessons. John’s short interactions were variable, at a moderate level and a decreasing trend. Medium interactions were slightly variable, at a moderate level and a very slightly increasing trend. Long interactions were variable, at a low level reaching in the last lesson to low-to-moderate level and an increasing trend. Of note is the increase in the amount of long interactions that John participated in from Lesson 10 when the groups were using consensus decision making to develop a group name.

The second variable related to the quality of interactions was who initiated the interaction and the existence of a response. The results relating to initiation of interaction are displayed in Figure 6.8.
Over the course of the Preparation Phase, John initiated more interactions than his PWOD with a mean of 43% compared to 28% from his PWOD. John’s initiating of interactions was variable, at a predominantly moderate level and an increasing trend. The PWOD’s was also variable, at a low-to-moderate level and a decreasing trend. The teacher was relatively stable, at a low-to-moderate level and an increasing trend. The results from Figure 6.8 illustrated that John increased his initiation of interaction with others and his PWOD decreased their initiation of interaction with John over the course of the three lessons. Lesson 8, where groups were formed for the first time, was the exception, with the PWOD initiating more interactions than John. Of note is the large amount of interactions initiated by the teacher over the course of the three lessons. When the in-depth analysis of the above results was conducted it found that John initiated 20% of the interactions with the teacher with an average of 17 interactions per lesson. When John’s responses to interactions were examined for both the teacher and his PWOD combined, it was found that he did not...
respond to others initiating interactions with him 5% of the time. The same analysis indicated that John interacted with nine PWOD throughout the Preparation lessons and his PWOD did not respond to John 8% of the time. Although some of these percentages are small their importance will become more evident in the comparison between Phases in Chapter Eight.

The final variable analysed relating to the quality of interactions was the type of interaction. Table 6.2 displays the mean, median and ranges for the Preparation lessons for each of the interaction types and combination of types used.

*Table 6.2 Types of interactions by John in the Preparation Phase (percentage mean, median and ranges)*

<table>
<thead>
<tr>
<th>Type of Interactions</th>
<th>Mean</th>
<th>Median</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech</td>
<td>23</td>
<td>23</td>
<td>(6–40)</td>
</tr>
<tr>
<td>Gesture</td>
<td>15</td>
<td>16.</td>
<td>(3–27)</td>
</tr>
<tr>
<td>Facial Expression (FE)</td>
<td>7</td>
<td>6</td>
<td>(2–13)</td>
</tr>
<tr>
<td>Speech &amp; Gesture</td>
<td>35</td>
<td>33</td>
<td>(31–41)</td>
</tr>
<tr>
<td>Speech &amp; FE</td>
<td>8</td>
<td>7</td>
<td>(4–14)</td>
</tr>
<tr>
<td>FE &amp; Gesture</td>
<td>5</td>
<td>3</td>
<td>(0–13)</td>
</tr>
<tr>
<td>Speech, Gesture &amp; FE</td>
<td>4</td>
<td>4</td>
<td>(0–9)</td>
</tr>
</tbody>
</table>

Table 6.2 demonstrates that John used all types of interactions and combinations of interactions. Of note is that he used speech and gesture together the most followed by speech alone then gesture alone when interacting with his PWOD and the teacher. He only used speech, gesture and facial expressions together 4% of the time over the Preparation lessons.

**6.5 Within Phase Analysis - Application Phase Results for John**

The content and conduct for the Application Phase of the intervention consisted of four physical education lessons focusing mainly on the content of dance and sport combinations. These lessons linked to the physical education lessons from the Preparation Phase by working on the elements of dance and the combinations of movement through the NSW PDHPE syllabus Strand 2 and 4 (Movement Skill & Performance and Lifelong Physical Activity) (Board of Studies., 2003). The first lesson (12) focused on groups developing combinations with equipment based on the elements of dance (speed, levels, directions and relationships). Lesson 13 added the concept of linking in combinations of
movement chosen out of a hat. Lesson 14 moved to the outdoor field and continued developing combinations in sport-based challenges with students being given a restriction (e.g., move to end of field as a team passing the ball in the air with no use of your hands). The final lesson concluded the unit and term with a game of Goal Ball where student groups had to combine to stop the other groups scoring over their line while blindfolded. During the Application Phase cooperative learning structures such as co-op play, learning teams and Jigsaw were used to deliver the above content. Students were asked to apply what they had learnt in the Preparation Phase during these lessons more independently than the Preparation Phase. Figure 6.9 provides the percentage of class time devoted to the components of these five lessons across instructional, managerial cooperative learning activity, transitional and non-cooperative learning activity.

![Figure 6.9 Percentage of class time devoted to class activities in the Application Phase](image)

Figure 6.9 illustrated that although the use of cooperative learning activities in the last three lessons was increasing it was low compared to Lesson 12 where there was no management time and minimal amount of time devoted to transition. The increase in the overall time devoted to instruction, transition and at times management over the last three lessons was higher than Lesson 12 limiting the amount of time devoted to cooperative learning. It is interesting to note that non-cooperative learning activities were part of Lesson 13 even though they were not planned for, also affecting the time devoted to cooperative learning. The majority of this non-cooperative learning time was spent with the students.
watching the other groups’ combinations, although related to the cooperative learning activity it was not directly conducted as cooperative learning. Other non-cooperative learning time was when the target student and his group members were not participating in the cooperative learning activity.

6.5.1 Frequency of Interactions. The first variable to be analysed was John’s percentage of interaction frequency for the Application lessons. Each of the four Application lessons was recorded as four data points on a line graph (Figure 6.10).

![Figure 6.10](image.png)

*Figure 6.10 Percentage of John’s frequency of interactions in the Application Phase*

Analysis of Figure 6.10 revealed that John’s scores for interaction frequency were variable with a moderate level mean of 63% with a moderate-to-high level range of 50–70 and an increasing trend. There was a small decrease in interactions in Lesson 13 followed by a 19% increase in the following lesson (Lesson 14) and a flattening of the trend toward the end of the Application Phase. When considering the components of the lessons, 55% of his interactions occurred during the cooperative learning activities and 23% occurred during transition time.

6.5.2 Quality of Interactions. Further analysis of the above interactions revealed more information relating to the quality of John’s interactions within the Application lessons. The first variable of quality is the length of interactions and Figure 6.11 displays the data on the percentage of John’s interactions devoted to short, medium and long interactions.
Examination of Figure 6.11 reveals that John’s short interactions were variable, at a predominantly moderate level and a zero trend. Medium interactions were also variable, at a predominantly moderate level and a decreasing trend. Long interactions were variable, at a low level and an increasing trend. Short interactions dominated the first lesson with very few long interactions recorded. It is important to note that John was participating in Lesson 12 with a pre-service teacher who was directing most of the interactions.

The second variable of quality was who initiated the interactions and existence of a response. The results relating to initiation of interaction are displayed in Figure 6.12.
Initiation of Interactions | Mean | Median | Ranges
---|---|---|---
PWOD | 19 | 21 | (2–33)
John (SMID) | 35 | 39 | (10–51)
Teacher | 46 | 41 | (16–88)
No response | 4 | 1 | (0–12)

*Figure 6.12 Percentage of who initiated the interactions by John, PWOD or teacher and mean, median and ranges in the Application Phase*

Over the course of the Application Phase John initiated more interactions than his PWOD with a mean of 35% compared to 19% of his PWOD. John’s initiating of interactions was variable, ranging from a low level to a moderate level and an increasing trend. The PWOD’s was also variable, ranging from a low to low-to-moderate level and an increasing trend. The teacher was extremely variable, ranging from a high to a low level and a decreasing trend. Although the mean initiation of interaction for the teacher was high over the course of the Application Phase, Figure 6.12 illustrated the distortion from Lesson 12 where John was participating in the lesson alongside a pre-service teacher. In comparison, when the teacher initiated fewer interactions in Lesson 14, John’s PWOD increased their initiation of interactions with John.

The in-depth analysis applied to who initiated interactions found that John initiated 21% of the interactions with the teacher, the majority found in the last two lessons. There was an average of 22 interactions per lesson but when Lesson 12 was deleted from these
calculations due to presence of a pre-service teacher there was an average of 17 interactions per lesson. When John’s responses to interactions were examined for both the teacher and his PWOD combined, it was found that he did not respond to others initiating interactions with him 4% of the time (although this percentage is small its importance will become more evident in the comparison between Phases on p. 177). The same analysis indicated that John interacted with 15 PWOD throughout the Application lessons and his PWOD did not respond to John 4% of the time.

The final variable analysed relating to the quality of interactions was the type of interaction. Table 6.3 displays the mean, median and ranges for the Application lessons for each of the interaction types and combination of types used.

*Table 6.3 Types of interactions by John in the Application Phase (percentage mean, median and ranges)*

<table>
<thead>
<tr>
<th>Type of Interactions</th>
<th>Mean</th>
<th>Median</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech</td>
<td>19</td>
<td>20</td>
<td>(10–25)</td>
</tr>
<tr>
<td>Gesture</td>
<td>33</td>
<td>34</td>
<td>(27–39)</td>
</tr>
<tr>
<td>Facial Expression (FE)</td>
<td>2</td>
<td>2</td>
<td>(0–3)</td>
</tr>
<tr>
<td>Speech &amp; Gesture</td>
<td>30</td>
<td>26</td>
<td>(17–50)</td>
</tr>
<tr>
<td>Speech &amp; FE</td>
<td>4</td>
<td>4</td>
<td>(0–10)</td>
</tr>
<tr>
<td>FE &amp; Gesture</td>
<td>3</td>
<td>3</td>
<td>(0–8)</td>
</tr>
<tr>
<td>Speech, Gesture &amp; FE</td>
<td>6</td>
<td>4</td>
<td>(0–16)</td>
</tr>
</tbody>
</table>

When analysing the types of interactions used by John across the Application Phase, Table 6.3 demonstrated that John used a higher percentage of speech and gesture together followed closely by gesture alone in his interactions and to a lesser degree speech alone. John used all three types of interactions together (speech, facial expressions and gesture) 6% of the time.

**6.6 Between Phase Comparison for John**

Whilst the results from the Within Phase analysis have been completed in isolation, results from within the Baseline, Preparation and Application Phases will now be compared to determine what changes occurred between the Phases. The comparison will begin by examining changes in the components of the lessons followed by interaction frequency.
changes and then move to analyse the changes in the quality of interactions through length, initiation and type of interaction.

Figure 6.13 revisits the amount of time devoted to the various components of the lesson across the 10 lessons.
Figure 6.13 Percentage of class time devoted to class activities across the Phases
Figure 6.13 demonstrated that there was no distinct pattern in relation to the components across the 10 lessons. There was, however, more time spent in cooperative learning activities in the Preparation Phase compared to the Baseline and Application Phase, however, the use of cooperative learning was starting to increase again in the Application Phase with an increasing trend in the last three lessons. Time devoted to instruction and transition remained relatively stable and high over the course of the 10 lessons and it is noted that when they were at their lowest in Lesson 1 and 10, the time available for activity increased. Time devoted to management did decrease in the Preparation Phase and with the exception of Lesson 13, remained low in the Application Phase as well.

6.6.1 Frequency of Interactions. The first variable to be compared across the Phases was frequency of interaction. Analysis of the changes in mean interaction frequency and best-fit straight line over the course of the intervention demonstrated an increasing trend with a mean of 50% for the Baseline Phase, 62% for the Preparation Phase and 63% for the Application Phase. There was a substantial increase in the interactions of John with his PWOD and the teacher in the class with an overall mean increase of 13% from the Baseline Phase to the Application Phase. This increase was larger from the Baseline to the Preparation Phase with only a small increase from the Preparation Phase to the Application Phase. The increase in interactions was not always stable throughout the intervention with times when interaction frequency decreased as was reported in the Within Phase analysis earlier. Figure 6.14 supports this by combining the three Phases of Baseline, Preparation and Application to demonstrate the path of interaction frequency for John over the course of the lessons.
When a comparison was made from the last lesson in the Baseline Phase (Lesson 3) to John’s first lesson in the intervention phases (Lesson 8) when the groups were first formed, Figure 6.14 illustrated that there was a small increase in interactions (9%). In comparison, when the students were applying what they had learnt more independently in the Application Phase, there was a 14% decrease in interactions from the last lesson in the Preparation Phase (Lesson 10) to the first lesson in the Application Phase (Lesson 12), however, this recovered in the final two lessons.

When analysing the strength of the above changes in interaction frequency, overlap of interaction frequency between the Phases was examined. When comparing the overlap from the intervention phases to the Baseline Phase there was only a two-lesson overlap (Lessons 9 and 13) strengthening the case for the cooperative learning intervention as being responsible for the changes in interaction frequency.

When relating interaction frequency with the components of the lesson, Figure 6.15 demonstrates where interaction occurred across all Phases.

![Figure 6.14 Percentage of John’s frequency of interactions across the Phases (classroom-based health lessons were 8 and 10)](image-url)
Figure 6.15 Interactions per the breakdown of class activities across the Phases
Figure 6.15 demonstrated that approximately 75% of interactions occurred either in the activity or transition time of the lesson. During the cooperative learning activity time in the Preparation and Application Phase, interactions were more frequent as compared to the non-cooperative learning activities of the last two lessons of the Baseline Phase (the first lesson, where John did not participate, was taken out of this calculation). It is also noted from Figure 6.14 that the highest frequency of interactions for John was found in Lesson 10 of the Preparation Phase. Figure 6.15 illustrated that this lesson also recorded the highest amount of time devoted to cooperative learning activities.

6.6.2 Quality of Interactions. The examination of the changes to the quality of interactions (length, initiation and type) between Phases demonstrated both an increasing and decreasing trend. To begin the analysis of quality, Figure 6.16 combines the length of interactions across the Phases.

Overall the length of interactions improved with John utilising a greater percentage of medium to long interactions. Figure 6.16 illustrated that the introduction of the cooperative learning intervention in the Preparation Phase meant a substantial decrease in short interactions replaced by more medium and, of note, long interactions. This trend for a greater percentage of longer interactions continued into the Application Phase, with the
exception of Lesson 12. Similar to the changes in interaction frequency, these changes in the length of interactions were greater from the Baseline Phase to the Preparation Phase.

Analysis of changes in the length of interactions over the course of the three Phases was variable. The most notable of the changes occurred from the Baseline Phase to the Preparation Phase with a substantial decrease in the mean short interactions from the Baseline Phase (a moderate-to-high level of 76%) to the Preparation Phase (a moderate level of 42%). Correspondingly there was a substantial increase in the medium interactions with a low level mean of 19% for the Baseline Phase and a moderate level mean of 41% for the Preparation Phase. This trend continued with long interactions increasing from a low level mean of 4% in the Baseline Phase to a higher low-level mean of 16% in the Preparation Phase.

When examining the best-fit straight line for the length of interactions the long interactions demonstrated a slightly increasing trend across the intervention phases as compared to the decreasing trend in the Baseline Phase. While the direction of trend for both the medium interactions (decreasing) and short interactions (increasing) remained the same in both the intervention and Baseline Phases, the steepness of the trend was substantially less in the intervention phases.

When a comparison was made from the last lesson in the Baseline Phase (Lesson 3) to John’s first lesson in the intervention phases (Lesson 8) the change for all interaction lengths were substantial. Figure 6.16 illustrated that there was a steep decrease in short interactions, a steep increase in medium interactions and a smaller but still important increase in long interactions in the first lesson for John in the Preparation Phase (Lesson 8). This change in short and long interactions was, however, reversed from the last lesson in the Preparation Phase (Lesson 10) to the first lesson in the Application Phase (Lesson 12) with an increase in short interactions and a decrease in long interactions. This decrease in long interactions coincided with John being paired with a pre-service teacher for the lesson and it is noted that the long interactions did recover for the rest of the Application Phase when he was in his group.

When analysing the strength of the changes in the length of interactions, overlap of the length of interactions between the Phases was examined. When comparing the overlap from the Preparation Phase to the Baseline Phase there was no overlap across the three lengths of interactions. Furthermore, there was no overlap in the short interactions and only one lesson overlap in the medium interactions from the Baseline Phase to the combined intervention phases, strengthening the case for the cooperative learning intervention as being responsible for the changes in the small, medium and long interactions. While there was a
two lesson overlap between the Application Phase and the Baseline Phase for long interactions it is noted that these occurred in Lesson 12, where John was paired with a pre-service teacher and Lesson 14 which matched the highest amount of long interactions in the Baseline Phase.

The changes in relation to John’s initiation of interaction were not as substantial as compared to changes in the length of interactions or frequency of interactions. Figure 6.17 combines the initiation of interactions data across the Phases.

Figure 6.17 Percentage of who initiated the interactions by John, PWOD and teacher across the Phases.
(Classroom based health lessons were 8 and 10)

Figure 6.17 demonstrated that John continued to initiate more of the interactions with his PWOD and to a lesser extent the teacher when the cooperative learning intervention was introduced. The exception to this was in Lesson 8 when the groups were formed for the first time and John returned to the lessons after a short break. It is noted that when the cooperative learning intervention was introduced, John and his PWOD initiated less interactions compared to the Baseline Phase and this decrease continued into the Application Phase. At the same time, the teacher was initiating more interactions with John and his group and John was initiating fewer interactions with the teacher over this time. This change was more notable from the Baseline Phase to the Preparation Phase where there was a drop of John initiating interactions with the teacher by 28%.
When examining the best-fit straight line for the initiation of interactions the direction of trend remained the same for John (increasing) and the PWOD (decreasing) across the intervention phases as compared to the Baseline Phase, however, the steepness of the trend was substantially less for both nearing a zero trend. The trend for the teacher initiating interactions changed from a decreasing trend in the Baseline Phase to a slightly increasing trend across the intervention.

When a comparison was made from the last lesson in the Baseline Phase (Lesson 3) to John’s first lesson in the intervention phases (Lesson 8), some substantial changes were noted. Figure 6.17 illustrated that there was a sharp decrease in John initiating interactions (41%) While this was a large decrease, it coincided with an increase in both the teacher and the PWOD initiating more of the interactions with John. This was a positive situation considering that in the Baseline Phase the PWOD were decreasing their initiation of interactions with John and interactions initiated by John were not always welcomed or responded to. While John’s initiation of interactions continued to decrease from the last lesson in the Preparation Phase (Lesson 10) to the first lesson in the Application Phase (Lesson 12), it is noted that this was when most of John’s group were not present and he was paired with a pre-service teacher, with his initiations returning to Preparation Phase levels in the next few lessons. John did, however, respond to more interactions directed toward him in the Application Phase, an improvement of 6% from the Baseline Phase. A more-substantial improvement of 28% was found in the PWOD responding to John’s interactions from the Baseline Phase to the Application Phase. Furthermore, John interacted with a wider group of PWOD in the Application Phase compared to the Baseline and Preparation Phases.

When analysing the strength of the above changes in initiating interactions, overlap of John initiating interactions between the Phases was examined. The strength of the changes was not considered strong as there was overlap between each of the Phases. There was, however, no overlap in the teacher-initiated interactions from the Baseline Phase to the intervention phases with the teacher more involved with John when he was in the cooperative learning group.

The final variable of quality, type of interaction was combined across the Phases in Table 6.4.

<table>
<thead>
<tr>
<th>Type of Interactions</th>
<th>Mean Baseline</th>
<th>Mean Prep</th>
<th>Mean App</th>
</tr>
</thead>
</table>

*Table 6.4 Percentage mean for types of interactions by John across the phases*
<table>
<thead>
<tr>
<th></th>
<th>Baseline Phase</th>
<th>Application Phase</th>
<th>Overall Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech</td>
<td>41</td>
<td>23</td>
<td>19</td>
</tr>
<tr>
<td>Gesture</td>
<td>12</td>
<td>15</td>
<td>33</td>
</tr>
<tr>
<td>Facial Expression (FE)</td>
<td>3</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Speech &amp; Gesture</td>
<td>23</td>
<td>35</td>
<td>30</td>
</tr>
<tr>
<td>Speech &amp; FE</td>
<td>9</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>FE &amp; Gesture</td>
<td>6</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Speech, Gesture &amp; FE</td>
<td>3</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 6.4 demonstrated that the changes in John’s use of the types of interactions were centred on a greater use of non-verbal types of communication. As John decreased his use of speech alone he increased his use of gestures alone. The use of both speech and gesture together also increased and this was more noticeable in the Preparation Phase compared to the Baseline Phase. John’s use of the three types of interactions (speech, gesture and facial expressions) together also increased over the course of the Phases with an increase of 3% from the Baseline Phase to the Application Phase.

**6.7 Conclusion**

In summary, when John was participating in Physical and Health Education lessons without the cooperative learning intervention his interactions with others were decreasing overtime, were short in length and were limited with the teacher. Additionally John was not always responded to by others when he initiated the interactions and he was not always responsive when others initiated interactions with him. When the cooperative learning intervention was introduced over the course of the seven lessons, John’s interactions with others increased immediately and then remained stable, were longer in length, were with more PWOD and there were more interactions with the teacher. Additionally, others responded to John substantially more and John was almost always responsive to others, where he used more gestures when communicating. In relation to Research Question One and through the integration of multiple, rigorous and proven visual analysis strategies the combination of these changes meant that there was a functional relationship between the cooperative learning intervention and John’s increased and improved interactions.
Chapter 7 Results – Peter

7.1 Introduction

This chapter will examine the results for the third target student, Peter who was involved in the study that address/answer Research Question One: What is the impact of a cooperative learning intervention on the social interactions between SMID and their PWOD in inclusive secondary school physical education classes? The results reported in this chapter will be presented as per the framework from Chapter Five. To begin the analysis is a brief description of Peter, his class, the teacher and the school will be revisited.

7.2 Target Student 3 (Peter)

Peter was a 14-year-old student with Aspergers who received academic support from a support teacher in some of his classes (not health or physical education) and he was identified by the school and teacher as having limited social interaction within his physical and health education classes. He was included in a Year 8 mixed-gender physical and health education class with 23 other students of the same or similar age and the class was graded as a mixed-ability class. The teaching of the class was shared at the start of the study with Mr M, who was a part time teacher starting the study and after the third Baseline Lesson Mr B took over the classes. Mr B was the Acting Head Teacher Physical & Health Education with five years of experience.

7.3 Within Phase Analysis – Baseline Phase results for Peter

As described already in Figure 5.1 (Chapter Five), the first contextual factor to be described in the Within Phase analysis is the content and conduct of the Baseline Phase. This Phase included four physical education lessons focusing on the content of striking and fielding (softball) and the beginning of a unit on invasion games (touch football) through the NSW PDHPE syllabus Strand 2 and 4 (Movement Skill & Performance and Lifelong Physical Activity) (Board of Studies., 2003). The first lesson concluded a unit on striking & fielding and involved playing tag as a warm-up, ten passes (throwing) and a game of softball. The final three lessons introduced the unit on invasion games and focused on students learning skills and playing touch football culminating in an assessment in the final lesson during a game. Baseline lessons were conducted by the regular teacher using their traditional teaching style, which was in the direct teaching approach.
Data were collected on the components of the four lessons and Figure 7.1 provides the percentage of class time devoted to instructional, managerial cooperative learning activity, transitional and other type of activity (not classed as cooperative learning).

![Figure 7.1 Percentage of class time devoted to class activities in the Baseline Phase](image)

Figure 7.1 illustrates that the cooperative learning approach was not used in these lessons. The time devoted to giving instruction, transition, management and activity time remained relatively stable over the course of the four lessons with a small drop in activity time and an increase in transition time in Lesson 2 when the new unit was introduced. Figure 7.1 also illustrates that the final three lessons had small increases in time devoted to instruction and activity time alongside small declines in time devoted to transition and management.

**7.3.1 Frequency of Interactions.** The first variable to be examined was Peter’s Frequency of Interaction with his PWOD and the teacher in each lesson. To understand how Peter interacted with others within the Baseline lessons data were collected on a 20-second observe/20-second record cycle and represented as a percentage. Peter’s percentage of interaction frequency for each of the four Baseline lessons was then recorded as four data points on a line graph (Figure 7.2).
Analysis of Figure 7.2 revealed that Peter’s scores for interaction frequency were variable with a low-to-moderate level mean of 28%, a range of 19–41 and a decreasing trend. It is noted from Figure 7.1 that although there was an increase in activity time in the final three lessons, Peter’s frequency of interactions still declined. The majority (64%) of Peter’s interactions were found in the non-cooperative learning activity followed by 25% during transition time. The small decline in transition time over the last three lessons and the increase in instruction time may account for some of the decline in interaction frequency.

7.3.2 Quality of Interactions. The Baseline lessons were also examined to gain an understanding of the quality of Peter’s interactions through the examination of the length, who initiated and the type of interaction. Figure 7.3 displays the data on the percentage of Peter’s interactions devoted to short, medium and long interactions.
Figure 7.3 illustrates that Peter’s interactions were predominantly short in length with limited incidences of Peter participating in long interactions. Peter’s short interactions were variable, at a moderate-to-high level and an increasing trend. Medium interactions were slightly variable, at a predominantly low-to-moderate level and a slightly decreasing trend. Long interactions were variable, at a low level and a decreasing trend with no long interactions recorded in the final two lessons of the Phase.

The second variable of quality was who initiated the interaction and the existence of a response. The results relating to initiation of interaction are displayed in Figure 7.4.
Examination of data from Figure 7.4 indicated that Peter initiated fewer interactions than his PWOD with a mean of only 25% compared to 67% from his PWOD. Peter’s initiating of interactions was variable, at a low-to-moderate level and a slightly decreasing trend. The PWOD’s was variable, ranging from a moderate level to a moderate-to-high level and a decreasing trend. The teacher was variable, at a low level and an increasing trend. The results from Figure 7.4 illustrated that Peter decreased his initiation of interaction over the first three lessons with a slight increase in the final lesson. Of note, is the increase in the teachers’ initiation of interactions in the last lesson, which also corresponded with a decrease in the PWOD initiating interactions with Peter. As discussed before this lesson was an assessment lesson that was conducted by the new teacher.

An in-depth analysis of the above results was conducted and revealed that Peter initiated 22% of the interactions with the teacher with an average of two interactions per lesson. When Peter’s responses to interactions were examined for both the teacher and his
PWOD combined, it was found that he did not respond to others initiating interactions with him 7% of the time with the majority of these occurring in the final two Baseline lessons. The same analysis indicated that Peter interacted with 11 PWOD throughout the Baseline lessons with the majority of these interactions limited to three people.

The final variable examined related to the quality of interactions was the type of interaction. Table 7.1 displays the mean, median and ranges for the Baseline lessons for each of the interaction types and combination of types used.

<table>
<thead>
<tr>
<th>Type of Interactions</th>
<th>Mean</th>
<th>Median</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech</td>
<td>11</td>
<td>9</td>
<td>(6–19)</td>
</tr>
<tr>
<td>Gesture</td>
<td>30</td>
<td>26</td>
<td>(14–56)</td>
</tr>
<tr>
<td>Facial Expression (FE)</td>
<td>12</td>
<td>9</td>
<td>(0–29)</td>
</tr>
<tr>
<td>Speech &amp; Gesture</td>
<td>16</td>
<td>14</td>
<td>(6–28)</td>
</tr>
<tr>
<td>Speech &amp; FE</td>
<td>6</td>
<td>4</td>
<td>(0–17)</td>
</tr>
<tr>
<td>FE &amp; Gesture</td>
<td>11</td>
<td>11</td>
<td>(6–16)</td>
</tr>
<tr>
<td>Speech, Gesture &amp; FE</td>
<td>8</td>
<td>10</td>
<td>(0–13)</td>
</tr>
</tbody>
</table>

Across the Baseline lessons, Table 7.1 demonstrated that Peter did use all types of interactions and combinations of types but to a varying degree. Predominantly Peter used a higher percentage of gestures alone when interacting with his PWOD and the teacher, followed by a combination of speech and gesture together. Table 7.1 also illustrated that Peter used more non-verbal means of communications than verbal means with 53% of communication found across gestures and facial expressions only and gestures and facial expressions combined.
7.4 Within Phase Analysis – Preparation Phase Results for Peter

The content and conduct for the Preparation Phase where the cooperative learning intervention was introduced included eight lessons with a mix of health education (classroom based) and physical education. The content of the health-based lessons focused on the NSW Syllabus strand of Self and Relationships (Board of Studies., 2003). Students were given the opportunity to learn the social skills necessary to work together such as active listening, non-verbal communication, how to explain and give feedback, decision making, problem solving, learning group roles and group bonding activities.

In the physical education lessons the students practised these skills while participating in the invasion games of hockey and soccer through the NSW PDHPE syllabus Strand 2 and 4 (Movement Skill & Performance and Lifelong Physical Activity) (Board of Studies., 2003). The content of the first three physical education lessons was based around a unit on hockey. The first physical education lesson introduced the skills of passing and trapping through skill challenges and a game of two on two was played. The second lesson where students were in their groups continued with passing and trapping in a group challenge and groups then played a game of four on four. The third physical education lesson concluded the unit on hockey by introducing the skills of dribbling and tackling, and a larger game of zone hockey was played. The fourth and final physical education lesson in the Preparation Phase, begun the unit of soccer with a group-based warm-up followed by a full-sized game of soccer where students had to choose a skill to focus on in the game as a group. The first three lessons were conducted where students worked with different pairs and the groups were formed in the fourth lesson and continued for the rest of the Preparation lessons.

All learning opportunities utilised cooperative learning structures during the Preparation Phase which included round robin, Jigsaw, co-op play, learning teams, team windows and inside outside circle. It is important to note that Lesson 13 did not fully use a cooperative learning structure for the game. Peter attended all of the lessons except Lesson 10 where groups were together for the first time in the physical education context.

Figure 7.5 provides the percentage of class time devoted to the components of these eight lessons across instructional, managerial, cooperative learning activity, transitional and other type of activity (not classed as cooperative learning).
Figure 7.5 illustrates that the cooperative learning approach was used in the majority of the lessons confirmed by the Cooperative Learning Verification Tool applied to each lesson (see Appendix P). There were some exceptions with some non-cooperative learning activities used in parts of Lesson 11 and Lesson 13 with a small amount used in Lesson 9. Figure 7.5 illustrated that the amount of time devoted to cooperative learning increased over the first four lessons, decreased in Lesson 9 and then rebounded to reach its highest in Lesson 12. Although the amount of time devoted to activity in Lesson 13 was at its highest in the Preparation Phase, 49% of the lesson was not classed as cooperative learning. Over the course of the preparation lessons the amount of time devoted to instruction decreased, more notable after the first two lessons to reach its lowest in Lesson 13. It was also noted that although time devoted to management increased in Lessons 8 and 9, this dropped substantially in the final three lessons.

7.4.1 Frequency of Interactions. The first variable to be analysed was Peter’s percentage of interaction frequency for the Preparation lessons. Each of the eight Preparation lessons that Peter attended were recorded as eight data points on a line graph (Figure 7.6).
Analysis of Figure 7.6 revealed that Peter’s scores for interaction frequency was variable with a low-to-moderate level mean of 38%, ranging from a low-to-moderate level to a moderate level of 28–61 with a decreasing trend. It is important to note from Figure 7.6, that although there was a decreasing trend, Peter’s interactions were overall higher when he was working in pairs in the first three lessons and increased slightly when working in the group for the first time in Lesson 8. The time devoted to cooperative learning was at its highest in Lessons 11 and 12 (Figure 7.5) and Peter’s frequency of interaction remained relatively stable.

### 7.4.2 Quality of Interactions

Further analysis of the above interactions revealed more information relating to the quality of Peter’s interactions within the Preparation lessons. The first variable of quality is the length of interactions and Figure 7.7 displays the data on the percentage of Peter’s interactions devoted to short, medium and long interactions.
When examining the length of Peter’s interactions, Figure 7.7 illustrates that there was no clear trend over the course of the Preparation lessons. Peter’s short interactions were extremely variable, ranging from a low-to-moderate level to a moderate to high level with an increasing trend. Medium interactions were also variable, ranging from a low-to-moderate level to a moderate level and a decreasing trend. Long interactions were extremely variable, ranging from a low level to a moderate level and a decreasing trend.

The extremes of the Preparation Phase for length of interactions coincided with a number of contextual factors. Medium and long interactions dominated Lessons 5 and 6 which were the first two health education lessons where students were in pairs. This was followed by a large increase in short interactions and a similar decrease in long interactions in Lesson 7, which was the first physical education lesson conducted in pairs. Medium interactions reached their peak when the groups were formed for the first time in Lesson 8, with long interactions also rebounding from the lows of Lesson 7. These long interactions remained relatively stable for Lessons 8, 9, 11 and 12 with the percentage of short, medium
and long interactions displaying a distinct change in Lesson 12 when time devoted to cooperative learning was at its highest. Medium and long interactions, however, decreased again in Lesson 13 when time devoted to cooperative learning was at its lowest for the Preparation Phase.

The second variable of quality of interactions was who initiated the interaction and the existence of a response. The results relating to initiation of interaction are displayed in Figure 7.8.

![Graph showing the percentage of interactions initiated by Peter, PWOD, teacher, and no response over lessons 5 to 13.](image)

<table>
<thead>
<tr>
<th>Initiation of Interactions</th>
<th>Mean</th>
<th>Median</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>PWOD</td>
<td>58</td>
<td>60</td>
<td>(36–65)</td>
</tr>
<tr>
<td>Peter</td>
<td>26</td>
<td>25</td>
<td>(13–37)</td>
</tr>
<tr>
<td>Teacher</td>
<td>17</td>
<td>11</td>
<td>(0–46)</td>
</tr>
<tr>
<td>No response</td>
<td>2</td>
<td>0</td>
<td>(0–11)</td>
</tr>
</tbody>
</table>

*Figure 7.8 Percentage of who initiated the interactions by Peter, PWOD or teacher and mean, median and ranges in the Preparation Phase (classroom-based health lessons 5, 7, 8 and 9)*

Over the course of the Preparation Phase Peter initiated fewer interactions than his PWOD with a mean of 26% compared to 58% from his PWOD. Peter’s initiating of interactions was variable, ranging from a low level to a low-to-moderate level and a slightly decreasing trend. The PWOD’s was extremely variable, ranging from a low-to-moderate level to a high level and a slightly decreasing trend. The teacher was also extremely variable,
ranging from a low level to a moderate level and an increasing trend. The results from the
Figure 7.8 illustrated that Peter increased his initiation of interaction with others during the
first three lessons when the students were in pairs with a substantial decrease in initiating
interactions with others in Lesson 8 when groups were formed for the first time. Over the
next three lessons (Lessons 9, 11 and 12) Peter again increased his initiation of interactions
with others to reach the second highest of the Preparation Phase in Lesson 12. When the use
of cooperative learning was at its lowest in Lesson 13, Peter again decreased his initiation of
interactions with others. Although the teachers’ initiation of interaction was relatively low
for the majority of the Phase, the exceptions were Lessons 9 and 11 where they were at their
highest with a subsequent drop in PWOD initiating interactions.

When the in-depth analysis of the above results was conducted, it found that Peter
initiated 18% of the interactions with the teacher with an average of six interactions per
lesson. When Peter’s responses to interactions were examined for both the teacher and his
PWOD combined, it was found that he did not respond to others initiating interactions with
him 2% of the time. Although this percentage is small, its importance will become more
evident in the comparison between Phases on page 177. The same analysis indicated that
Peter interacted with 14 PWOD throughout the Preparation Phase.

The final variable analysed relating to the quality of interactions was the type of
interaction. Table 7.2 displays the mean, median and ranges for the Preparation lessons for
each of the interaction types and combination of types used.
Table 7.2 Types of interactions by Peter in the Preparation Phase (percentage, mean, median and ranges)

<table>
<thead>
<tr>
<th>Type of Interactions</th>
<th>Mean</th>
<th>Median</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech</td>
<td>23</td>
<td>22</td>
<td>(5–48)</td>
</tr>
<tr>
<td>Gesture</td>
<td>21</td>
<td>20</td>
<td>(6–37)</td>
</tr>
<tr>
<td>Facial Expression (FE)</td>
<td>8</td>
<td>7</td>
<td>(3–18)</td>
</tr>
<tr>
<td>Speech &amp; Gesture</td>
<td>10</td>
<td>12</td>
<td>(3–18)</td>
</tr>
<tr>
<td>Speech &amp; FE</td>
<td>16</td>
<td>16</td>
<td>(3–36)</td>
</tr>
<tr>
<td>FE &amp; Gesture</td>
<td>6</td>
<td>4</td>
<td>(0–19)</td>
</tr>
<tr>
<td>Speech, Gesture &amp; FE</td>
<td>13</td>
<td>13</td>
<td>(0–30)</td>
</tr>
</tbody>
</table>

Table 7.2 demonstrates that Peter used all types of interactions and combinations of interactions. Peter used speech alone and gesture alone the most when interacting with his PWOD and the teacher, followed by speech and facial expressions together. To a lesser extent but still of note, Peter used speech, gesture and facial expressions together 13% of the time, reaching its highest in Lesson 7 where it was used 30% of the lesson. In Lesson 7 students were in pairs in the classroom and were practicing giving explanations and providing feedback to each other. When time devoted to cooperative learning was at its highest in the physical education Lesson 12, Peter also used speech, gesture and facial expressions together 26% of the time.

7.5 Within Phase Analysis - Application Phase results for Peter

The content and conduct for the Application Phase of the intervention consisted of three physical education lessons focusing on the content of invasion games through the NSW PDHPE syllabus Strand 2 and 4 (Movement Skill & Performance and Lifelong Physical Activity) (Board of Studies., 2003). These lessons linked to the physical education lessons from the Preparation Phase by adding a round robin soccer competition with teams of eight (two groups joined together) and group-based warm-ups. In the first lesson (Lesson 14) groups were asked to choose a different skill to concentrate on in the game. Lesson 15 continued the round robin competition with the teacher awarding bonus points to groups for teamwork and specific skills performed in the game. The final lesson in the Application Phase was conducted indoors in a hall due to inclement weather where the round robin soccer competition was completed. The lesson concluded with a continuous game of numbered soccer and the teacher continued to award bonus points for good teamwork.
throughout this lesson. During the Application Phase cooperative learning structures such as co-op play, learning teams and Jigsaw were used to deliver the above content. Students were asked to apply what they had learnt in the Preparation Phase during these lessons more independently than the Preparation Phase. Figure 7.9 provides the percentage of class time devoted to the components of these three lessons across instructional, managerial cooperative learning activity, transitional and non-cooperative learning activity.

![Figure 7.9 Percentage of class time devoted to class activities in the Application Phase](image)

Figure 7.9 illustrated that the amount of time devoted to cooperative learning increased after the first lesson to reach the highest level of the intervention in Lessons 15 and 16. Lesson 15 also had the lowest amount of time devoted to instruction and transition compared to the other two lessons. It is important to note that the time devoted to management was minimal across the Phase with no time recorded for management in the final two lessons.

7.5.1 Frequency of Interactions. The first variable to be analysed was Peter’s percentage of interaction frequency for the Application lessons. Each of the three Application lessons was recorded as three data points on a line graph (Figure 7.10). Due to only having three lessons, all variable interaction results must be treated with caution, as it is difficult to fully ascertain trends on a small set of data.
Analysis of Figure 7.10 revealed that Peter’s scores for interaction frequency were variable with a moderate level mean of 48%, a range of 41–56 and a decreasing trend. Although time devoted to cooperative learning was at its highest in Lessons 15 and 16, Peter’s interaction frequency continued to decrease slightly. When considering the components of the lessons, 79% of his interactions occurred during the cooperative learning activities and 19% occurred during transition time with only 2% found during instruction time.

7.5.2 Quality of Interactions. Further analysis of the above interactions revealed more information relating to the quality of Peter’s interactions within the Application lessons. The first variable of quality is the length of interactions and Figure 7.11 displays the data on the percentage of Peter’s interactions devoted to short, medium and long interactions.

Figure 7.10 Percentage of Peter’s frequency of interactions in the Application Phase
<table>
<thead>
<tr>
<th>Length of Interactions</th>
<th>Mean</th>
<th>Median</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short</td>
<td>51</td>
<td>50</td>
<td>(35–68)</td>
</tr>
<tr>
<td>Medium</td>
<td>40</td>
<td>43</td>
<td>(29–47)</td>
</tr>
<tr>
<td>Long</td>
<td>9</td>
<td>7</td>
<td>(3–18)</td>
</tr>
</tbody>
</table>

Figure 7.11 Percentage of Peter’s length of interactions and mean, median and ranges in the Application Phase

Examination of Figure 7.11 reveals that all lengths of interactions were variable over the course of the Application Phase. Peter’s short interactions were variable, ranging from a low-to-moderate level to a moderate-to-high level and a decreasing trend. Medium interactions were also variable, predominantly at the moderate level and a slightly increasing trend overtaking short interactions in the final lesson. Long interactions were variable, at a low level and an increasing trend.

The second variable of quality was who initiated the interactions and existence of a response. The results relating to initiation of interaction are displayed in Figure 7.12.
Initiation of Interactions

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>PWOD</td>
<td>60</td>
<td>65</td>
<td>(48–66)</td>
</tr>
<tr>
<td>Peter</td>
<td>23</td>
<td>24</td>
<td>(17–29)</td>
</tr>
<tr>
<td>Teacher</td>
<td>17</td>
<td>17</td>
<td>(14–16)</td>
</tr>
<tr>
<td>No response</td>
<td>1</td>
<td>0</td>
<td>(0–3)</td>
</tr>
</tbody>
</table>

Figure 7.12 Percentage of who initiated the interactions by Peter, PWOD or teacher and mean, median and ranges in the Application Phase

Over the course of the Application Phase Peter initiated less than half of the interactions than his PWOD with a mean of 23% compared to 60% of his PWOD. Peter’s initiating of interactions was variable, ranging from a low level to a low-to-moderate level and an increasing trend. The PWOD’s was also variable, ranging from a moderate level to a moderate-to-high level and nearing a zero trend. The teacher was variable, ranging from a low level to a low-to-moderate level and a slightly decreasing trend. Of note is the increase in Peter initiating interactions in Lesson 15 where time devoted to cooperative learning was at its’ highest. Figure 7.12 illustrated that the teacher also initiated more interactions in Lesson 15 with a subsequent drop in PWOD initiating interactions.

The in-depth analysis applied to who initiated interactions found that Peter initiated 0% of the interactions with the teacher with an average of six interactions per lesson. When Peter’s responses to interactions were examined for both the teacher and his PWOD combined, it was found that he did not respond to others initiating interactions with him 1%
of the time (although this percentage is small its importance will become more evident in the comparison between Phases on Page 177). The same analysis indicated that Peter interacted with 11 PWOD throughout the Application lessons, with two of these PWOD being students he had not interacted with in prior lessons.

The final variable analysed relating to the quality of interactions was the type of interaction. Table 7.3 displays the mean, median and ranges for the Application lessons for each of the interaction types and combination of types used.

<table>
<thead>
<tr>
<th>Type of Interactions</th>
<th>Mean</th>
<th>Median</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech</td>
<td>11</td>
<td>13</td>
<td>(0–20)</td>
</tr>
<tr>
<td>Gesture</td>
<td>39</td>
<td>36</td>
<td>(17–65)</td>
</tr>
<tr>
<td>Facial Expression (FE)</td>
<td>4</td>
<td>6</td>
<td>(0–7)</td>
</tr>
<tr>
<td>Speech &amp; Gesture</td>
<td>19</td>
<td>17</td>
<td>(16–23)</td>
</tr>
<tr>
<td>Speech &amp; FE</td>
<td>13</td>
<td>16</td>
<td>(0–24)</td>
</tr>
<tr>
<td>FE &amp; Gesture</td>
<td>9</td>
<td>10</td>
<td>(6–12)</td>
</tr>
<tr>
<td>Speech, Gesture &amp; FE</td>
<td>3</td>
<td>3</td>
<td>(0–7)</td>
</tr>
</tbody>
</table>

When analysing the types of interactions used by Peter across the Application Phase, Table 7.3 demonstrated that Peter used a higher percentage of gestures alone and to a lesser degree speech and gesture together. Peter used all three types of interactions together (speech, facial expressions and gesture) 3% of the time.

7.6 Between Phase Comparison for Peter.

Whilst the results from the Within Phase analysis have been completed in isolation, results from within the Baseline, Preparation and Application Phases will now be compared to determine what changes occurred between the Phases. The comparison will begin by examining changes in the components of the lessons followed by interaction frequency changes and then move to analyse the changes in the quality of interactions through length, initiation and type of interaction.
Figure 7.13 revisits the amount of time devoted to the various components of the lesson across the 15 lessons.
Figure 7.13 Percentage of class time devoted to class activities across the Phases
Figure 7.13 demonstrated that although there was no distinct pattern in relation to the components across the 15 lessons the first half of the Preparation Phase did display some important changes compared to the other Phases. Time spent in activity (both cooperative learning and non-cooperative learning) overall declined in the first half of the Preparation Phase compared to the Baseline Phase but this rebounded at the end of the Preparation Phase and continued at this rate into the Application Phase. Specifically, time devoted to cooperative learning was lower in the Preparation Phase compared to time devoted to non-cooperative learning in the Baseline Phase; however, this rebounded in the Application Phase to reach its highest for the intervention in Lesson 15. Time devoted to instruction increased in the first half of the Preparation Phase compared to the Baseline Phase and decreased at the end of the Preparation Phase continuing at the same rate into the Application Phase to reach its lowest level in Lesson 15. The amount of time devoted to management, although present in the Baseline Phase, increased substantially when groups were formed for the first time in Lessons 8 and 9 of the Preparation Phase with a subsequent decrease to reach no recorded incidences in the last two lesson of the Application Phase.

7.6.1 Frequency of Interactions. The first variable to be compared across the Phases was frequency of interaction. Analysis of the changes in mean interaction frequency over the course of the intervention demonstrated an increasing trend with a low-to-moderate level mean of 28% for the Baseline Phase, a low-to-moderate level mean of 38% for the Preparation Phase and a moderate level mean of 48% for the Application Phase. There was a substantial increase in the interactions of Peter with his PWOD and the teacher in the class with an overall mean increase of 20% from the Baseline Phase to the Application Phase. This increase was gradual with approximately 10% mean increases in each Phase. This increase in interactions was not always stable throughout the intervention with times when interaction frequency decreased as was reported in the Within Phase analysis earlier. Figure 7.14 supports this by combining the three Phases of Baseline, Preparation and Application to demonstrate the path of interaction frequency for Peter over the course of the lessons.
In contrast to the mean increases in interaction frequency, when examining the best-fit straight line for Peter, the frequency of interactions demonstrated a decreasing trend across the intervention phases. While this was similar to the decreasing trend in the Baseline Phase, the steepness of the trend was substantially less in the intervention phases nearing a zero trend. Figure 7.14 demonstrated that the variability of the data paths in the intervention phases influenced the overall trend.

When a comparison was made from the last lesson in the Baseline Phase (Lesson 4) to the first lesson in the intervention phases (Lesson 5), Figure 7.14 illustrated that there was a substantial increase in interactions (42%). A smaller but still substantial increase of 26% was found from the last lesson of the Preparation Phase (Lesson 13) to the first lesson of the Application Phase (Lesson 14).

When analysing the strength of the above changes in interaction frequency, overlap of interaction frequency between the Phases was examined. When comparing the overlap from the Application Phase to the Baseline Phase, there was only a one lesson overlap (Lesson 16) strengthening the case for the cooperative learning intervention as being responsible for the changes in interaction frequency. It is noted that there was overlap between adjacent Phases, however, the overall increasing mean trend might signal that introducing a cooperative learning intervention may result in a more-gradual change in

\[ \text{Figure 7.14 Percentage of Peter's frequency of interactions across the Phases (classroom-based health lessons 5,7,8 and 9)} \]

![Graph showing percentage of interactions across phases](image-url)
interactions overtime rather than a quick significant change as students get used to the new way of learning.

When relating interaction frequency with the components of the lesson, Figure 7.15 demonstrates where interaction occurred across all Phases.
Figure 7.15 Interactions per the breakdown of class activities across the Phases
Figure 7.15 demonstrates that approximately 90% of interactions occurred either in the activity or transition time of the lesson. During the cooperative learning activity time in the Preparation and Application Phases, interactions were more frequent overall as compared to the non-cooperative learning activities of the Baseline Phase.

7.6.2 Quality of Interactions. The examination of the changes to the quality of interactions (length, initiation and type) between Phases demonstrated both an increasing and decreasing trend. To begin with, the analysis of quality, Figure 7.16 combines the length of interactions across the Phases.

![Figure 7.16 Percentage of Peter’s length of interactions across the Phases](image)

*Figure 7.16 Percentage of Peter’s length of interactions across the Phases (classroom-based health lessons were 5, 7, 8 and 9)*

Overall, the length of interactions improved with Peter utilising a greater percentage of medium interactions across the Phases with a 20% increase from the Baseline Phase to the Application Phase. Figure 7.16 illustrated that the introduction of the cooperative learning intervention in the Preparation Phase meant a substantial decrease in short interactions replaced by more medium and, of note, long interactions, with the exception of Lessons 7 and 13. Although short interactions were more than medium and long interactions in the beginning of the Application Phase they did not reach the highs of the Baseline Phase. Long interactions were overall higher in the Preparation Phase than the Baseline and Application Phase, with long interactions 4% higher in the Application Phase compared to the Baseline Phase.
Analysis of changes in the mean length of interactions over the course of the intervention demonstrated an increasing trend for medium interactions starting with a very low-to-moderate level mean of 21% for the Baseline Phase, increasing to a low-to-moderate level mean of 31% for the Preparation Phase and a further increase to a borderline moderate level mean of 40% in the Application Phase. Correspondingly, there was changing trend for the short and long interactions. Short interactions started with a high level mean of 74% for the Baseline Phase, down to a moderate level mean of 47% for the Preparation Phase and a slightly increased moderate level mean of 51% for the Application Phase. Similarly, long interactions started with a low level mean of 5% for the Baseline Phase, up to a low-to-moderate level mean of 22% for the Preparation Phase, back to a low level mean of 9% for the Application Phase.

When examining the best-fit straight line for the length of interactions, the direction of trend for the short and long interactions remained the same for Peter across the intervention phases as compared to the Baseline Phase, with a change in the trend for the medium length interactions. While the short interactions continued to have an increasing trend and the long interactions continued to have a decreasing trend, the medium interactions changed from a decreasing trend to a zero trend. It is noted that the trend in the Application Phase for long interactions was increasing as compared to the combined Phases of the intervention.

While there were minimal changes in the trend between Phases there were more-substantial changes when the intervention was first introduced. When a comparison was made from the last lesson in the Baseline Phase (Lesson 4) to the first lesson in the intervention Phase (Lesson 5), the changes were substantial for all lengths of interactions. Figure 7.16 illustrated that there was a steep decrease in short interactions, a steep increase in medium interactions and an even steeper increase in long interactions in the first lesson of the Preparation Phase (Lesson 5). There was a similar decrease in short interactions and increase in medium interactions from the last lesson in the Preparation Phase (Lesson 13) to the first lesson in the Application Phase (Lesson 14) with no change in long interactions at this time.

When analysing the strength of the above changes in the length of interactions, overlap of the length of interactions between the Phases was examined. When comparing the overlap of medium interactions from the Application Phase to the Baseline Phase there was no overlap strengthening the case for the cooperative learning intervention as being responsible for the changes in the medium interactions. It is noted that there was some overlap between the Preparation Phase and the Baseline Phase and this occurred when and after the groups of four were formed with Peter talking longer in the cooperative learning pairs with the exception of Lesson 7. While there was a four-lesson overlap for the long interactions between the Baseline
Phase and the intervention phases there were still seven out of the 11 intervention lessons where Peter had long interactions.

There were three lessons (Lesson 7, 13 and 15) in the intervention where decreases in both long and medium interactions were noted in the one lesson and they were not typical of what was happening in other lessons. Lesson 7 was the first physical education lesson for the intervention with Peter paired with a student he had not been observed working with before and the teacher distracted by events occurring outside the lesson. Lesson 13 was not considered a complete cooperative learning lesson according to the cooperative learning Verification Instrument, with a full-sided game being played for most of the lesson. Lesson 15 involved the students playing in a series of round robin games after a team-based warm-up. While students were interacting, the nature of being on the field and playing reduced the length of the interactions. It was noted that a group processing session was not conducted in this lesson.

The changes in relation to Peter’s initiation of interaction were not as substantial as compared to changes in the length of interactions or frequency of interactions. Figure 7.17 combines the initiation of interactions data across the Phases.
Figure 7.17 demonstrated that Peter initiated fewer of the interactions compared to his PWOD over the Baseline and intervention phases. It is noted that when the cooperative learning intervention was introduced and Peter was working in pairs, his initiation of interactions began to increase; however, they declined after this into the Application Phase to similar levels as the Baseline Phase. At the same time the teacher was initiating more interactions with Peter and his group in the intervention phases with the greater increase in the Preparation Phase. Despite more interactions with the teacher, there was an obvious decrease in Peter initiating these interactions in the Application Phase. Peter, however, responded to more interactions directed toward him in the Application Phase an improvement of 6% from the Baseline Phase. Furthermore, Peter interacted with a wider group of PWOD in the Preparation and Application Phase compared to the Baseline Phase.

Analysis of changes in the mean initiation of interactions over the course of the intervention demonstrated a relatively stable trend for Peter, a changing trend for the PWOD and an increasing trend for the teacher. Peter’s initiations of interactions all fell within the low-to-moderate range with means of 25% for the Baseline Phase, 26% for the Preparation Phase and 23% for the Application Phase. The PWOD started with a moderate-to-high mean of 67% for the Baseline Phase down to a moderate mean of 58% for the Preparation Phase and back to a moderate-to-high mean of 60% for the Application Phase. The teacher’s all fell within the low-
range but increased from 8% in the Baseline Phase to 17% in both the Preparation and Application Phases.

When examining the best-fit straight line for the initiation of interactions across the intervention, the direction of trend for all three remained the same as the Baseline Phase with Peter’s decreasing, the PWOD’s decreasing and the teacher’s increasing. The steepness of the trend changed only for the PWOD nearing a zero trend in the intervention phases. It is noted that the trend in the Application Phase for Peter initiating interactions was increasing as compared to the decreasing trend of the intervention as a whole.

When a comparison was made from the last lesson in the Baseline Phase (Lesson 4) to the first lesson in the intervention Phase (Lesson 5) there was no change for Peter, and changes for the PWOD and the teacher. Figure 7.17 illustrated that there was a 9% increase for the PWOD and a 10% decrease for the teacher initiating interactions with Peter. It is noted that in Lesson 9 (the second lesson with the group) and Lesson 11 the teacher substantially increased his initiation of interactions with Peter as he was supporting the groups more. When the intervention entered the Application Phase in Lesson 14 there was a decreasing change for Peter (6%) in initiating interactions, no change for the PWOD and an increasing change for the teacher.

When analysing the strength of the changes in initiating interactions, overlap of Peter initiating interactions between the Phases was examined. The strength of the changes was not considered strong, as there was overlap between each of the Phases. This occurred for the PWOD and the teacher as well.

The final variable of quality, type of interaction was combined across the Phases in Table 7.4.
Table 7.4 Percentage mean for types of interactions for Peter across the Phases

<table>
<thead>
<tr>
<th>Type of Interactions</th>
<th>Mean - Baseline</th>
<th>Mean Prep</th>
<th>Mean App</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech</td>
<td>11</td>
<td>23</td>
<td>11</td>
</tr>
<tr>
<td>Gesture</td>
<td>30</td>
<td>21</td>
<td>40</td>
</tr>
<tr>
<td>Facial Expression (FE)</td>
<td>12</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Speech &amp; Gesture</td>
<td>16</td>
<td>10</td>
<td>19</td>
</tr>
<tr>
<td>Speech &amp; FE</td>
<td>6</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td>FE &amp; Gesture</td>
<td>11</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Speech, Gesture &amp; FE</td>
<td>8</td>
<td>13</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 7.4 demonstrated that the changes in Peter’s use of the types of interactions were centred on a greater use of non-verbal types of communication. Specifically, the use of gestures alone, which although they declined in the Preparation Phase, rebounded to their highest use in the Application Phase compared to other types of interactions. Similar to the other variables for Peter, the changes in the types of interactions used showed more changes in the Preparation Phase returning to Baseline levels in the Application Phase and in some cases lower. This is most notable in speech alone, gesture alone, speech and gesture together, gestures and facial expressions together and speech, gesture and facial expressions together.

7.7 Conclusion

In summary, when Peter was participating in physical and health education lessons without the cooperative learning intervention his interactions with others were decreasing, were short in length and were limited with the teacher. Additionally Peter was not always responsive when others initiated interactions. When the cooperative learning intervention was introduced over the course of the 11 lessons, Peter’s interactions with others increased gradually, were longer in length, were with more PWOD and there were more interactions with the teacher. Additionally, Peter was almost always responsive to others and he used more gestures when communicating with others. It is also noted that the more-substantial changes occurred when Peter was participating in cooperative learning pairs as compared to participating in cooperative learning groups of four. In relation to Research Question One and through the integration of multiple, rigorous and proven visual analysis strategies these changes mean that there was a functional relationship between the cooperative learning intervention and Peter’s improved interactions.
Chapter 8 Results – Multiple-Baseline Comparison

8.1 Comparison Across the Three Target Students

The previous examination of results has been devoted to an examination of the results for the individual students in each school. The following analysis will compare the three target students utilising a multiple-baseline design and will highlight the similarities and differences between the students on each of the interaction variables, that is, the frequency of interaction and the quality of interactions (length, initiation and type of interaction). For each variable, there is a comparison across the three students in the Baseline Phase continuing into a comparison when the cooperative learning intervention was introduced across the Preparation and Application Phases combined. This comparison will highlight the similarities and differences on either the level, trend, variability, magnitude of effect, immediacy of effect, strength of the changes and consistencies in patterns across the three presentations of the intervention (Horner et al., 2005).

To answer Research Question One: What is the impact of a cooperative learning intervention on the social interactions between SMID and their PWOD in inclusive secondary school physical education classes? a summary is provided that draws attention to the consistency with which the changes in interaction co-occurred with the changes of the intervention across the three students. Combined with individual student changes a conclusion of whether a functional relationship exists between the cooperative learning intervention and the interaction behaviours of SMID will be made.

8.1.2 Frequency of Interaction. To examine the frequency of interaction across the three students, a multiple-baseline graph was utilised. Figure 8.1 displays the frequency of interaction data for John, Peter and Ian.
Figure 8.1 Percentage of John’s, Peter’s and Ian’s frequency of interaction across the Baseline and intervention phases
The analysis of Figure 8.1 revealed that although there was some variability in the frequency of interactions during the Baseline Phase for the three students there was a consistent decreasing trend for Ian and Peter and a near zero trend for John. John and Ian had a similar moderate mean interaction frequency of 50% with Peter substantially lower with a low-to-moderate mean of 28%. For all three students the majority of these interactions were found in the non-cooperative learning activity time and to a lesser degree the transition time of the lessons.

When the cooperative learning intervention was implemented Figure 8.1 illustrates that all three students substantially increased their frequency of interaction with similar mean increases of 12% for John and Peter and 13% for Ian over the course of the intervention. Greater increases were found when comparing the means from the Baseline Phase to the Application Phase with Peter and Ian increasing their mean frequency by 20% and John by 13%. Both Peter and Ian had gradual increases with a 10% increase per Phase, whereas most of John’s increase was found in the Preparation Phase with only a small increase into the Application Phase of the intervention. When examining the best-fit straight line both Ian and John displayed an increasing trend reversing the decreasing trend from the Baseline Phase. It is noted that Peter displayed a very slight decreasing trend nearing a zero trend across the intervention phases and while this did not reverse the decreasing trend found in the Baseline Phase, the steepness of the trend was substantially less.

Consistent and immediate increases in frequency of interaction were also found when comparing the change from the last lesson of the Baseline Phase to the first lesson of the intervention across all the students with John showing a 9% increase in interaction frequency, Peter a 42% increase and Ian an 8% increase. Peter also showed an immediate increase of 26% into the first lesson of the Application Phase from the last lesson of the Preparation Phase of the intervention. Although John and Ian had decreasing frequencies at the same stage they both recovered their frequency of interaction in the following lessons.

The strength of the changes in interaction frequency across the three students can be demonstrated by the amount of overlap between Phases (Horner et al., 2005) In relation to the overlap, for all three students there was only a one lesson overlap from the Baseline Phase to the Application Phase of the intervention displaying strength in the cooperative learning intervention being responsible for the changes. It is noted that while there was overlap between adjacent Phases for all three students the overall increasing mean trend may signal that introducing a cooperative learning intervention may result in gradual changes in interactions frequency as students get used to the new way of learning.
8.1.3 The Quality of Interactions.

8.1.3.1 Length of interaction. The quality of interaction variables (the length, who initiated and the type) were also compared across the three SMID in the Baseline Phase. The first variable to be examined is the length of interactions across the three students. Figure 8.2 displays the mean scores across the three students, John, Peter and Ian for length of interaction.
Figure 8.2 Percentage of John’s, Peter’s and Ian’s length of interactions across the Baseline and intervention phases
Table 8.1 Percentage means of John’s, Peter’s and Ian’s length of interactions across the Baseline and intervention phases

<table>
<thead>
<tr>
<th>Length of Interaction</th>
<th>Baseline</th>
<th>Preparation</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>John</td>
<td>Peter</td>
<td>Ian</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short</td>
<td>77</td>
<td>74</td>
<td>73</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>47</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>49</td>
<td>51</td>
<td>41</td>
</tr>
<tr>
<td>Medium</td>
<td>19</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>36</td>
<td>31</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>39</td>
<td>40</td>
<td>34</td>
</tr>
<tr>
<td>Long</td>
<td>4</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>22</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>9</td>
<td>25</td>
</tr>
<tr>
<td>Totals %</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

The analysis of Figure 8.2 and Table 8.1 revealed that although there was some variability in the different lengths of interaction during the Baseline Phase for the three students there were several consistencies. There was an increasing trend for short interactions with all students displaying similar moderate-to-high level mean scores. Further, there was a decreasing trend for medium interactions with all students displaying similar low-to-moderate level mean scores. Finally, while long interactions displayed low-level mean scores for all three students there was a decreasing trend for long interactions for John and Peter with Ian displaying a zero trend.

When the cooperative learning intervention was implemented Figure 8.2 illustrates that all three students consistently utilised a greater percentage of medium and long interactions and a substantial immediate reduction in short interactions when compared to the Baseline Phase. John increased his medium and long interactions by 20% and 8% respectively, Peter by 19% and 4% and Ian by 15% and 20%. Although these improvements were from the Baseline Phase to the Application Phase of the intervention, there were greater increases in the Preparation Phase of the intervention for John in both medium and long interactions (22% and 13% respectively) and for Peter in long interactions (17%) displaying a more-immediate effect of the intervention on length of interactions. When comparing the Baseline Phase to the combined intervention phases John increased his medium and long interactions by 20% and 10% respectively, Peter by 12% and 13% and Ian by 7% and 13%.

When examining the best-fit straight line across the combined intervention phases all three students demonstrated a reversal or change in trend for one or two of the lengths of interactions. John and Ian both displayed an increasing trend line for long interactions compared to the decreasing trend from the Baseline Phase with Ian also displaying a decreasing trend line.
for short interactions compared to the increasing trend of the Baseline Phase. In contrast Peter displayed a change in trend for the medium interactions across the combined intervention phases with a zero trend compared to the decreasing trend of the Baseline Phase. It is noted that Peter displayed a reversal in trend for long interactions in the Application Phase compared to the Baseline Phase (i.e., increasing as opposed to decreasing).

Consistent and immediate changes in the length of interactions were also found when comparing the change from the last lesson of the Baseline Phase to the first lesson of the intervention across all three students. Figure 8.2 demonstrated that across all three students there was an immediate decrease in short interactions with John and Peter displaying substantial decreases. Additionally, there was an immediate increase in medium interactions with John again displaying larger increases. While John and Peter also displayed immediate increases in long interactions at this time it took Ian until the second lesson in the intervention to increase his long interactions. John’s substantial changes may have been due to him joining the intervention at a later lesson than Peter and Ian, as discussed previously.

While there were also changes when the students entered the first lesson of the Application Phase of the intervention compared to the last lesson of the Preparation Phase, the only consistent change across all three students at this time was a decrease in long interactions. It is noted that all three recovered this decrease in the following one or two lessons. Figure 8.2 demonstrated that all three students returned to a similar pattern as was displayed in the Baseline Phase at this time when they working more independently, however, separation between the lengths was not as substantial.

The strength of the changes in interaction frequency across the three students can be demonstrated by the amount of overlap between the Phases. All three students displayed no overlap with one or more of the three lengths of interactions for different Phases; however, there was no consistent pattern between them. John displayed the strongest change with no overlap across all three lengths from the Preparation Phase to the Baseline Phase. When comparing the combined intervention with the Baseline Phase John also had no overlap with short interactions and only one lesson overlap with medium interactions. No overlap was recorded for Peter and Ian when comparing the Application Phase to the Baseline Phase for medium interactions (Peter) and long interactions (Ian) with Ian also displaying only one lesson overlap for short interactions.

8.1.3.2 Initiation of interaction. The second variable of quality to be examined and compared across the three SMID was who initiated the interaction and the existence of a response. Figure 8.3 displays the graphs across the three students, John, Peter and Ian for initiation of interaction.
Figure 8.3 Percentage of who initiated the interactions by John, Peter, Ian, PWOD or teacher across the Baseline and intervention phases.
The analysis of Figure 8.3 and Table 8.2 revealed that although there were differences in the mean scores of John, Peter, and Ian’s initiation of interactions in the Baseline Phase (60%, 25%, and 44% respectively) some consistencies in the data did emerge after some explanation of the reasons was explored. Ian and Peter had a decreasing trend in initiating interactions across the Phase and apart from the first two lessons, where Ian was participating alongside his best friend, both Ian and Peter were initiating less interactions than the PWOD. John, although showing an increasing trend in initiating interactions, was not receiving responses to these interaction attempts 32% of the time.

The in-depth analysis conducted on who initiated the interaction revealed further consistencies across the three students in regards to the: existence of a response; the interactions with the teacher; and the number of students they interacted with overall. Firstly, when either the teacher or the PWOD initiated the interactions John, Peter, and Ian did not respond 10%, 5%, and 10% of the time respectively. Secondly, all three students had limited incidences of interactions with the teacher across the Baseline Phase with an average of between two and three interactions per lesson. Thirdly, although the number of PWOD that the students interacted with seemed relatively high, both Ian and Peter predominantly interacted with only a few of these PWOD regularly over the Phase and John experienced a similar situation. This was brought about by the fact that a high proportion of his interaction attempts were ignored by his PWOD, as discussed previously.

When the cooperative learning intervention was implemented, the main consistency that emerged in the data across the three students was a decrease in initiating interactions when the groups of four were formed for the first time followed by an increasing trend for the rest of the
Preparation Phase. For example, Ian’s initiation of conversations declined by 22% in Lesson 10, John declined by 41% in Lesson 8 and Peter declined by 24% in Lesson 8.

The in-depth analysis conducted on who initiated interactions across the intervention revealed other changes across the three students compared to the Baseline Phase. Firstly, all three students responded more to others interactions with them with a decreasing change in the percentage of times the students did not respond (6% for John; 3% for Peter; 10% for Ian). Secondly, all three students increased their interactions with the teacher during the intervention with an extra on average, 14 interactions per lesson for John, four for Peter and three for Ian. Thirdly, all three students were interacting more regularly with a wider group of PWOD.

When examining the best-fit straight line for initiation of interactions across the three students for the combined intervention phases there was no consistent pattern emerging with only Ian displaying an increasing trend across the intervention, a reversal of the trend in the Baseline Phase. Ian continued to have strong results with his initiation of interactions surpassing his PWOD late in the Preparation Phase and into the Application Phase. While Peter’s decreasing trend of initiating interactions continued across the combined intervention phases, he did display an increasing trend in the Application Phase.

Similar to the best-fit straight line there were no consistencies across the three students when comparing the change from the last lesson of the Baseline Phase to the first lesson of the intervention. Ian was the only student who increased his initiation of interactions at this time with John displaying a substantial decrease and Peter remaining the same. Furthermore, there were no consistencies when comparing the change from the end of the Preparation Phase to the beginning of the Application Phase.

The strength of the changes in interaction frequency across the three students in relation to initiation of interactions was not considered strong. The variability of the data across the intervention phases meant that there was overlap between each of the Phases for all three students.

8.1.3.3 Type of Interaction. To examine the final variable of quality, the type of interaction, the mean scores for each type and combination of types was compared. Table 8.3 displays the data across the three students, John, Peter and Ian for type of interaction.

Table 8.3 Percentage mean types of interactions for John, Peter and Ian across the Baseline and intervention phases
The analysis of Table 8.3 revealed that although the students used different types of interactions when compared to each other across the Baseline Phase they all had a tendency to use one dominant type followed by another to a lesser degree. In the main Ian and John used speech alone followed by a combination of speech and gesture, whereas Peter used gestures alone followed by a combination of speech and gesture. John and Ian had similar low rates of using speech, gesture and facial expressions together over the course of the Baseline Phase.

When the cooperative learning intervention was implemented Table 8.3 illustrates that there were limited consistent changes across the three students in the types of interactions utilised. All three students did increase their use of speech, facial expressions and gestures together in the Preparation Phase of the intervention compared to the Baseline Phase. Although this use then declined for Peter, the increase continued for Ian and John into the Application Phase of the intervention. In the Application Phase of the intervention, Ian and Peter did increase their use of the dominant variable found in the Baseline Phase (speech alone and gesture alone respectively) despite decreasing in the Preparation Phase of the intervention.

In summary, when the cooperative learning intervention was implemented the main changes that were consistent for all three students were:

1. an increase in their interaction frequency with others overall
2. an immediate increase in their interaction frequency when the intervention was first introduced
3. minimal overlap of frequency of interaction between the Baseline Phase as compared to the Application Phase of the intervention due to the increases in interaction frequency
4. an increase in interaction frequency in the cooperative learning activities of the intervention compared to the non-cooperative learning activities in the Baseline Phase

5. an increase in their use of medium and long interactions

6. interactions with a wider group of PWOD

7. responding more to others initiating interactions with them.

Although the above points were the consistent themes to emerge in the quantitative analysis across the three students, there were other changes for each student discussed in the individual analysis that can also add strength to the cooperative learning intervention having an impact on interaction behaviours. These include:

1. greater use of all three types of communication together (speech, facial expressions and gestures) for Ian and John (Peter displayed this trend more in the Preparation Phase)

2. substantial reduction in PWOD ignoring John when he initiated interactions

3. Ian initiating more interactions with a wider group of PWOD and the teacher

4. Peter initiating more interactions when working in cooperative learning pairs.

The results for the three students individually and across the three students were dependent on the data that was gathered in the authentic environment. It is acknowledged that the size of the Application Phases of each student was impacted by the complex nature of each school. While for some interaction behaviours it would have been ideal to continue the intervention to determine a stronger trend in the data, this was not possible. Caution should then be exercised when generalising these results to other contexts.

8.2 Social validity

To determine the social validity of the cooperative learning intervention and the findings in relation to: the importance of any changes in interaction; the acceptability, feasibility and effectiveness of the intervention; and the choice to use cooperative learning in the future, an analysis of the three teacher interviews, eight individual interviews and 18 students in the final focus groups and after lesson interviews was conducted.
When the teachers were asked if they saw a difference in interaction between the SMID and their PWOD over the course of the intervention, two teachers indicated that more interaction was happening, with Ian’s teacher commenting that “he completely changed his interaction … he has come out of his shell” and “all of sudden he got this self-worth”. The same teacher also reported that other teachers had noticed a change in Ian’s interactions in other KLA classes. Peter’s teacher’s first reaction was that Peter “took his hood off” and “he definitely interacted more than he normally would”. He also stated that “it gave other students the chance to work with him when they normally wouldn’t and vice versa with him [Peter]”. John’s teacher noted that interaction was not much different but he was smiling more, and giving activities a go more than before. This same teacher did comment, however, if the others:

allowed him a chance to speak … he would have input, good or not good, he at least said something. He recognised ‘ok this is my time to speak’, so he would give it a go.

(John’s teacher)

When the teachers were asked about the most significant things found about interaction in the class for the other groups of students all three teachers gave a range of responses. One teacher commented about the impact of the cooperative learning intervention on the whole class “I did not realise how good a class they were”. Another teacher felt that there was “more constructive interaction happening” for the class in the physical education lessons with the other teacher commenting that the intervention “gave the people that would not speak to each other more opportunity”.

Two teachers commented on how the approach was positive for the other quieter students as well. One teacher talked about how a student who tried to isolate himself in his group early on, later stepped up and “took on a dominant role in the group”. He further commented:

I know that in his circumstance I have had a lot of trouble engaging him since the start of the year, trying to do things with him, trying to put supportive people around him but he has been really difficult to engage that sought of a kid. All of a sudden he had a light turn on. That is what I see with cooperative learning, giving kids power over what they do. (Ian’s teacher)

This same teacher also commented that “it was good to see some of the kids within those groups really help other kids that were struggling” and “I think that some of the relationships have improved in the class too … their support of people outside their friendship group has really improved too”. Similarly, another teacher commented that “we saw them eventually trust each other more and we were getting more-productive learning out of them and recognition of each other”.
In determining the acceptability and feasibility of the intervention the teachers were asked about how they felt using the intervention in the lessons. All of the teachers reflected that it got easier over time, with all reporting that the initial implementation in the first four to five lessons in the Preparation Phase was difficult using words like “challenging” “a struggle” and “a battle”. Ian’s teacher commented:

if it was just me trying this new teaching style, I probably would have lasted two or three lessons. I would have been going this is not working with the kids because they were not doing it as I had seen it. At the end of 13 lessons you sit back and evaluate it, they did pretty good. Part of it is through perseverance and patience, that’s just the key to it. It is not a learning style that you are going to get instant results with, particularly when they go from being very teacher-centred. (Ian’s teacher)

The same teacher also reflected “I think sometimes we are too quick to throw things out because it is not working straight away”. Ian and Peter’s teacher commented that the difficulties experienced in the early stages made them feel that they “did not know how to teach” and Ian’s teacher stated that by “handing over the reins” to the students, “you feel that you are just putting out spot fires for a lot of the time”.

When referring to the students all teachers reported that the students coped better with the approach over time, although some students continued to struggle at different times. Furthermore, two of the teachers commented that the students took on their roles better over time.

When asked about the choice to use cooperative learning in the future, all teachers indicated that they would use cooperative learning moving forward with each teacher considering a different use for it. All reported that they would incorporate components of it into their lessons and felt that preparing students socially was important talking about the importance of developing student’s relationships and trust at the beginning and giving students time to get to know each other in the early stages. All teachers had thought about its use going forward offering different suggestions of how they might use it. Suggestions included: starting the use of cooperative learning at the beginning of the term; conducting the approach at different times, throughout the year, rather than every lesson and even throughout their school life; that it should be a whole school approach; and in lessons there should be more of a focus on the process not just the content of lessons.

Further suggestions were provided about using the intervention or cooperative learning approach. Two of the teachers talked about being explicit with students on how to be part of cooperative learning lessons in the first few lessons of implementing it with a suggestion that more video footage of other students participating in a cooperative learning activity be
developed so they can see how it works. The same teacher suggested similar video footage for the teachers so they could “see it (cooperative learning) taught first” before using it. Two of the teachers commented on the need for help with writing programs or units of work, specifically suggesting that adapting current units of work to be more cooperative would be beneficial. Both of these teachers were keen to have options available that they could choose between for different activities or game categories.

When ascertaining the acceptability of working in cooperative learning groups, students in the final focus groups and individual interviews were asked about their preference for learning. Of the 26 students, 24 indicated that they preferred to work in groups than individually as they did in the Baseline Phase, including Ian and John. Of these 24, five students stated that it depended on the group members. While the majority of the students preferred to work in groups, nine of them also commented that they think a combination of working in a group and individually would be better. While Peter said he liked the group he and one other student preferred not to work in groups. Some students who were strong resisters to change, determined via the after lesson focus groups and observations in the early stages of the intervention, changed their minds over the course of the intervention with one of these students commenting “it wasn’t that bad in the end”.

8.3 Conclusion

In conclusion, when considering the changes across the three students and the individual changes in students it can be determined that the cooperative learning intervention did have a substantial impact on some of the interaction behaviours of the students in their inclusive secondary school physical education classes. More specifically the impact was more favourable in relation to frequency and length of interactions. In addition, replication of the study across the three students revealed consistencies that strongly support that a functional relationship does exist between cooperative learning and these increased and improved interaction behaviours for SMID in inclusive secondary school physical education classes.

Furthermore, these changes in interaction were observed by two of the three teachers, with all three teachers highlighting the varied benefits of the intervention for the three SMID and the PWOD. While implementation of the intervention was challenging in the early stages the teachers and students believed that it got better as the intervention progressed and they got used to the new way of learning. The teachers indicated a willingness to use the cooperative learning approach in the future with the majority of students interviewed preferring to work in a group than individually. It is noted that this willingness and preference was dependent on a number of factors related to the members of the group and its dynamic.
Chapter 9 Qualitative Results for Research Question Two, Three and Four

9.1 Introduction

The examination of the data from Research Question One for all three SMID strongly indicated that a functional relationship existed between the cooperative learning intervention and the increasing and improving interaction behaviours between the SMID and PWOD in inclusive secondary school physical education classes.

Indeed the results from Research Question One indicated that interactions in the Baseline Phase where a Direct Teaching approach was predominantly used were infrequent, short, initiated by others and were with only a few people. It was generally observed that although the SMID may be standing next to their peers and friends who were interacting, they would generally just observe the interaction happening and not participate in these verbal interactions with others. In most cases they seemed interested in the interactions happening around them as they smiled and laughed at what others were saying and the opportunity to verbally interact was in some cases possible, however, the SMID were reluctant to participate (Field Notes). In other words they were passive observers to the interactions that were occurring.

Conversely during the intervention phases when the cooperative learning intervention was used the students were more active participants in the interaction process, with the SMID being involved in more frequent and longer face-to-face verbal and non-verbal interactions with other students in the immediate vicinity. These interactions were predominantly observed with members of their cooperative learning group, where they contributed to the three or four way conversations of the group and to a lesser extent with the other group’s members. Students were observed initiating and responding to interactions from others as the group attempted to achieve the goals of the lessons with the majority of these interactions being positive in nature. Their interactions were animated as they relied on more types of interactions, incorporating a mixture of speech, gestures and facial expressions. It is noted that although interactions predominantly increased and improved under the cooperative learning intervention there were still some circumstances where interactions were restricted, shorter and at times aggressive with little eye contact observed, similar to interactions observed in the Baseline Phase.

To further understand this relationship between the use of the cooperative learning intervention and the enhanced interactions, data from the classroom observations, teacher and student interviews and focus groups were analysed. The data were then used to provide...
descriptions and explanations of the predominantly positive and at times negative impacts on the interaction behaviours between the SMID and their PWOD. This analysis was framed by the following key areas from the theoretical framework: the existence of role, social or person factors (Research Question Two); the provision of feedback (Research Question Three; and the flow of resources (Research Question Four).

For each of the Research Questions the results will be reported based on the major findings and themes to emerge from the data on each of the key areas with comparisons made between the Baseline Phase and the intervention phases (Preparation & Application). Inherent in this discussion of the findings and themes within each Research Question will be a focus on the impact of the cooperative learning intervention as compared to the Direct Teaching approach in relation to how it increased and improved or limited and restricted the interaction behaviours between the SMID and the PWOD.

Specifically, the Research Questions were:

**Research Question 2**

*How does the presence of role, social or person factors impact the social interaction behaviours between SMID and PWOD when using a cooperative learning intervention?*

**Research Question 3**

*How does the provision of feedback in inclusive secondary school physical education classes impact the social interaction behaviours between SMID and PWOD when using a cooperative learning intervention?*

**Research Question 4**

*How does the flow of resources in inclusive secondary school physical education classes impact on the social interaction behaviours between SMID and PWOD when using a cooperative learning intervention?*

When the data in relation to Research Question Two was analysed it was by far the question that promoted the most discussion in the interviews and focus groups. The main findings and themes from Research Question Two will be presented and will focus on the analysis of the qualitative data in relation to the impact of role, social or person factors on the interaction behaviours between SMID and PWOD when using a cooperative learning intervention.
9.2 Results for Research Question Two

The most important finding to emerge from Research Question Two was that the presence of role, social and person factors, individually and in conjunction with each other contributed to the increase in the frequency of interactions and the improvement in the quality of interactions between the SMID and PWOD over the course of the cooperative learning intervention. While the impact on interactions was predominantly positive over the course of the intervention, there were limited situations where interactions were restricted. These positive and restrictive impacts will be presented through the individual findings and themes from each of the above factors in turn followed by the main result to emerge from the combination of the factors. The description will begin with the role factors.

9.2.1 The Impact of role factors on interactions. The roles the SMID adopted or identified within the Baseline Phase, where a more direct teaching approach was used, were limited as were the interactions between the of the SMID and the PWOD. In reference to the theoretical framework discussed in Chapter Three, these roles consisted of gender-based, school-based and socially based roles that included male, student and friend respectively with the student role restricted to following the teacher’s instruction or answering specific questions (Burke & Stets, 2009). In contrast, the nature of the cooperative learning intervention meant that students were required to adopt additional roles during the intervention phases and this promoted interactions between the SMID and the PWOD. These additional roles consisted of the role of group member and the specific cooperative learning group roles, for example, group organiser. To explain how this change in interactions occurred as a result of the roles students adopted and identified with, the main themes emerging from the analysis of the data that was common across the three SMID was twofold. These included the impact of the negotiation and the undertaking and rotation of the specific cooperative learning group roles on the interactions between the SMID and the PWOD.

To provide a context, in the cooperative learning intervention students were generally asked to choose between four roles each lesson and to rotate them among the group evenly over the intervention i.e. take on a different role each lesson. The choice of roles was conducted at the beginning of the lessons and students were asked to form a huddle facing each other and record their choice. The roles included group organiser, scribe/recorder, motivator and checker. Other roles such as performer, coach, catcher, caller and trainer were added later depending on the needs of the cooperative learning structure or the activity being conducted. Some lessons did not require students assuming any of the specific roles but in these lessons each student was required to utilise the role of group member by contributing ideas or performing to complete the group task.
9.2.1.1 Negotiation of roles. When the students in the group negotiated what cooperative learning roles they would play, interactions between the SMID and the PWOD were more frequent, longer and animated with the SMID observed at times initiating more of the interactions. While the increase and improvement in interactions occurred across the three SMID, the intensity of this impact was different for each SMID depending on how active they were in the negotiation process. For Ian’s group the choice of roles and the positioning of being in a huddle usually created longer discussions as students negotiated face-to-face what role they would play. This is illustrated from analysis of a segment from the field notes where Ian verbally interacted with all three students in his group in a four way face-to-face conversation when the teacher asked the groups to choose their roles (Field Notes).

The requirement to face each other in a huddle when choosing a role, whilst seeming dictatorial, did force Peter and John to be more attentive to the interactions within the group. Peter’s non-verbal interactions improved, rarely having his hood over his head, a situation observed regularly during the Baseline Phase. Although he would at times still be sitting with his knees up, he would be looking at the other members of the group and contributing to the conversation on the allocation of roles for the lesson. Similarly, even though John still got distracted at times, the huddle used when choosing roles gave him a focal point to direct his interactions more than in the Baseline Phase. This is supported by a comment from the teacher at Peter’s school when talking about choosing roles:

It made them sit down as a group and allocate roles or one person going I am going to do this or that. (Peter’s teacher)

It is noted that in Peter and John’s groups some group members took control of the allocation of roles in some lessons, limiting the amount of interaction with these SMID. At these times, Peter although present and listening to the group when the decision was made usually agreed with the selection from others (Field Notes). At times John was not present and the high ability student allocated roles and told him what role he was doing when he arrived late to class (Field Notes). In both cases the person who controlled the allocation of roles would rarely give group organiser to Peter and John.

The choosing of a role usually meant stating their preference for a role, leading to more-animated negotiations between the members of the group, especially when two members wanted to play the same role or when a student did not want to play a role. This is reflected in a comment by John’s teacher, who felt that there was a “status” attached to the roles, creating a “hierarchy” for each student when choosing (John’s teacher). This preference influenced the intensity of the interactions with John’s and Ian’s negotiations and interactions quickly focused on avoiding the scribe role, at times initiating the interactions toward this goal using facial
expressions and hand gestures more to display preference (Field Notes). It was in the Application Phase of the intervention, where the frequency of interaction and quality of interaction was the highest, that preference for a role was more obvious as they could choose more freely which role to play. This preference was illustrated from the higher ability student in Ian’s group when asked what roles he played:

Researcher: Your group sought of shared the roles around?

Student: Yeh, just pass them around, whoever was good at one role, they stuck to it. I most of the time stuck to motivator because I am a happy person. (High ability student, Ian’s group)

Further important insights about preference were provided from the comments from the final focus groups and one-on-one interviews. When 27 of the other students, including the SMID were asked which role they liked the most, 18% preferred the group organiser, 44% preferred the motivator, 18% preferred the checker, 11% preferred the scribe, 11% preferred other roles such as trainer and coach and 3% did not like any (some students preferred two roles so percentages do not add up to 100%). Although the students at John’s school did not specifically say which role they did not like the most, 15 out of the other 21 students in the interviews and focus groups at other schools did not like the role of scribe because they “do not like writing” or found it “boring” (Final focus groups and one-on-one interviews). At John’s school, students did comment that working in a group did mean they did not have to write as much, which they considered was a positive thing (Final focus group, John’s school).

9.2.1.2 Undertaking a role. When the three SMID undertook either the different cooperative learning roles or the role of group member, the frequency and quality of interactions between the SMID and the PWOD were, in the main, increased and improved. This was even more so when the SMID played the role they preferred. Ian commented in the interview that he preferred the group organiser role “because it was easy” (Ian’s interview). Taking on this role usually meant that he interacted more as he guided the group through a task or took control of the task. This was supported by the teacher who was surprised by Ian’s preference and commented:

It was not until he [the higher ability student] was away that Ian stepped up and took on the group organiser’s role and just took over the group. From that lesson onwards he had more of a presence in the group. He started taking on a bit more of a dominant role, having his say in the group. It was good to see. To me that was the turning point when [the higher ability student] was away. Ian stepped into the role. I thought that [one of the middle ability students] would have stepped into that role. (Ian’s teacher)
Similarly, when Peter was the group organiser his interactions with the group were increased. This is supported by the teacher who commented on his performance as group organiser. “He took his role so literally. The time where he was the organiser and he had to read the instructions. He would never normally do that so that was a significant thing for him to do” (Peter’s teacher). Peter, however, did not take on the role as group organiser as much, preferring the scribe or recorder role and as mentioned earlier did not always get an equal say in the choice. When asked why he liked this role, Peter commented “Um, gives me something to do, actually feel like I am doing something” (Peter’s Interview). This preference, however, limited his interactions at times as he was writing or recording.

Similarly, John rarely played the group organiser role as he preferred the checker role and similar to Peter did not always get an equal say in the choice. When asked why he liked the checker role in the focus group, John commented “Because you check stuff of what other people done and didn’t do” (John, Final Focus Group). John, however, did not perform his roles at times to their capacity due to other distractions such as his phone and misbehaving students in his group limiting his interactions at this time (Field Notes).

Despite having less interaction overall than Ian, both John and Peter by assuming any role, did at times have to interact more than they did in the Baseline Phase. This is supported by a comment from the teacher at Peter’s school when talking about roles:

I think it put him (Peter) in the situation where he had to not be withdrawn, he had to be there. Whatever his role was he had to take it on and may have to talk more or cool I don’t have to do much. It gave him a little bit more ownership and gave the group ownership of what they need to do. (Peter’s teacher interview)

Similarly, for John, he was observed increasing his interactions when he was relied on by his group to develop an idea as the role of caller in the goal ball game and when prompted by a teacher to inform the group of his idea (Field Notes). This contribution to his group is supported by John’s teacher who commented that the roles “gave every kid a belonging” (John’s teacher interview). However, it took time for John to feel this sense of belonging and early on in the Preparation Phase John showed little interest or confidence in doing his role. For example, when practicing how to do roles John shook his head when it was his turn to be the organiser and another student was going to step in until the teacher encouraged John to take on the role (Field Notes).

**9.2.1.3 Rotation of roles.** When the data were examined for evidence of increased and improved interactions it appeared that when there was sharing in the form of rotation of the roles across the lessons or within a lesson, students interactions increased and improved. The best example of this was found at Ian’s school where his teacher encouraged the rotation of the
roles each lesson and this meant that students had to take an active role in the interaction process and activities as they were being relied upon to perform their role for the group to complete the task. This within-lesson rotation is illustrated in the cooperative learning structure of Performer Coach in Lesson 17 where students were asked to help each other in their group to perform and improve the skills of bowling and pitching in preparation for the main game. Over the lesson, students rotated around the roles of coach, checker, performer and equipment manager resulting in the second highest frequency of interactions for Ian over the course of the intervention. The SMID was also observed using more facial expressions and gestures as he gave coaching tips and responded to tips given to him as a performer. This is in contrast to the Baseline Phase where Ian was not required to take on a role and could remain a passive observer to the activity and interactions.

The rotation of roles across the lessons was also illustrated by the higher ability student in Ian’s group when asked about what roles he played.

Student: I played scribe, I done checker, motivator and organiser.

Researcher: So you did all of them?

Student: I did about half of scribe. It is hard.

Researcher: Your group sort of shared the roles around?

Student: Yeh, just pass them around, whoever was good at one role, they stuck to it. I most of the time stuck to motivator because I am a happy person. (high ability student, Ian’s Group)

While this excerpt demonstrates rotating of roles it also highlights that rotation did not always occur as students “stuck” to a role they preferred. As reported earlier students did have more freedom to choose roles in the Application Phase, which, in some cases, reduced the chances of role rotation across lessons. Nevertheless, interactions between the SMID and PWOD were not affected and continued to increase and improve in this Phase, maybe due to the teachers continuing to prompt and monitor the rotation of roles across the lessons.

The above presentation of results and evidence highlights that when the cooperative learning intervention was implemented the additional roles of being a group member and the specific cooperative learning roles contributed to the increase and improvement in interactions between the SMID and the PWOD as compared to the Baseline Phase. More specifically, the evidence demonstrated that being required to choose and negotiate what role they were playing, undertaking that role and rotating roles across and within lessons, interactions between the SMID and the PWOD were more frequent, longer with more two, three and four way

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conversations. Additionally, the SMID initiated more of the interactions and used more gestures and facial expressions. This impact on interactions was even more noticeable when the SMID preferred or took on the role of group organiser. It is noted that interactions were at times restricted, shorter and the SMID initiated fewer interactions if a PWOD in the group controlled the choice of roles or undertaking of key roles such as the group organiser.

While the specific cooperative learning roles impacted the interactions of the three SMID, it was observed that the additional role of being a group member where social factors emerged also contributed to the increase and improvement in the interactions between the SMID and the PWOD.

9.2.2 The impact of social factors on interactions. In the Baseline Phase when the direct teaching approach was used the SMID were repeatedly observed being on their own in the lessons and rarely interacting with others as they participated as an individual. When they did interact, it was mainly with a best friend and the interactions were short. In contrast, when the cooperative learning intervention was implemented, it was their social membership in the pairs and the group of four students, that increases and improvements in interactions were noted. To understand how this change in interactions occurred as a result of the SMID membership of the pairs and the group, two main themes emerged from the analysis of the data that was common across the three SMID. These themes were the impact of: the formal and informal group bonding processes and the combination of the level of on-task behaviour and the level of interest among group members on the interactions between the SMID and the PWOD.

9.2.2.1 Formal and informal group bonding processes. As discussed in Chapter Five the cooperative learning intervention allowed time for the students in the group of four to get to know each other when they were first placed in groups and this provided the impetus for group bonding. All three students with a disability were observed participating in the cooperative learning activities and interacting with all members of the group, however, there were some differences between the students and their groups.

For Ian, although the process of group bonding was not always immediate it did happen earlier in his group as opposed to the other SMID groups. This group bonding process began for Ian in the lesson before they were placed in groups, where he was working in pairs with one of his eventual group members, the higher ability student. This connection with one of his eventual group members meant that interactions in the lesson when they were first placed in groups was easier. Although Ian interacted with all his group members in this lesson he was observed interacting with the higher ability student more than the others (Field Notes).
During this first group lesson in the Preparation Phase, the cooperative learning activities that were used to get to know each other promoted interactions as each student had to contribute to the task. It was observed, however, that Ian and his group were interacting socially in their own way when they waited for a group member to finish their role or other groups to finish. The group were observed designing their own cricket type game with money and a paintbrush and roller found behind the table. The higher ability student and one of the middle ability students interacted in a three-way conversation as they played the game (Field Notes). This socially based interaction was usually observed during transition time, when the teacher was getting organised, when the group finished a task early and even during a task. This interaction continued for Ian and his group throughout the intervention with the group observed participating in this informal group bonding every lesson. In contrast to the Baseline Phase where Ian predominantly interacted in short one-word interactions he and his group members were observed during the intervention phases having two, three and four way conversations, laughing with each other and participating in pretend play (Field Notes). The teacher commented about what he felt was a “different way for them” to get to know each other:

Sometimes they just wanted to go with their own little conversations and find out things about each other … Trying to find out something that is going to help them as a group.
(Ian’s Teacher Interview)

The students in the group commented about how and why the group interacted more and worked well together. The middle ability student in the group felt that they “turned into friends and talked more” (Middle ability student, Ian’s Group). When Ian was asked why he thought his group worked well together he commented “because we know each other” (Ian’s Interview). The higher ability student added to these thoughts by commenting on the group’s progression over time:

because at first we were all a bit nervous, didn’t really talk to each other, found it a bit hard to know what we had to do but in the end we all worked it out, we all worked together, we made friends and it was a lot more easier than when we first started.
(Higher ability student’s Interview, Ian’s Group)

Similarly, for John, the formal and informal group bonding process did occur with the two middle ability students and his interactions with these two students did increase, compared to the Baseline Phase. However, in contrast to Ian, the group bonding did not occur with all group members, specifically the higher ability student, with this limiting their interactions. One possible reason for this was John’s absence from class during the first four Preparation Lessons where students worked on the social skills necessary to work together in a group. John and his group did, however, try and connect in the formal group bonding activities in the first group
lesson where they were getting to know each other. There was interaction between each other as they worked through the tasks, with John interacting with each group member with his own ideas (Field Notes). The teacher observed that when John was accepted by the group and they “allowed him a chance to speak … he would have input, good or not good, he at least said something. He recognised ‘OK this is my time to speak’, so he would give it a go. When no one else is into it, ‘no one else is doing it’ he wouldn’t either” (John’s teacher Interview).

Unfortunately, John at times clashed with the high ability student, which meant that the informal group bonding process was limited at certain times. As discussed on page 193, the low point for John in the group bonding process was in Lesson 12 (Field Notes). After this lesson, John did start to work better in his group, however, “groups changed day to day, because so many kids were away” (John’s teacher). It was noted that for three out of four of the Application Lessons, John’s group was not complete or he was in another group due to absences (Field Notes). On the other hand, the high point for John’s interaction was in the final two lessons when he participated well in the tasks, interacted with his group members to achieve a task and in the last lesson connected with the higher ability student as they shared responsibility during a game (Field Notes). While John’s group did start to bond with each other toward the end of the intervention, it did take time. John’s teacher provided an explanation for this suggesting that the students needed to develop “trust” between themselves and commented on the “need to give them the onus and the power to develop between them before we can progress” (John’s teacher Interview).

When John was asked what he learnt about being in a group, during the focus group interview he commented “Know them all, know about them”. Later John commented that he felt that he talked to everyone in his group “equally” and that they made him feel part of the group when they made him laugh. He did comment, however, that “sometimes” he did not feel part of his group but could not provide a reason for this (John – Final Focus Group). John did not always join his group and he commented “sometimes it was annoying”. When asked why he was annoyed he could not provide a reason. However, later when asked to give advice to other students who might be going to do cooperative learning he commented “it might be bad at the start”. Unfortunately, the students in John’s group declined to be interviewed so it is difficult to get their opinion of working in groups and cooperative learning.

For Peter, there was at times a lack of commitment by the group members including Peter to participate fully in the formal and informal group bonding process. Although the group were observed participating and interacting in the formal group bonding activities in the first lesson as a group, in contrast to Ian’s group they were reluctant to continue informal conversations outside the tasks. This continued for most of the intervention and although Peter
interacted more than he did during the Baseline Phase, the interaction was mainly task based with limited socially based interaction occurring. Peter’s teacher commented that “they needed to learn how to be accepting of each other” (Peter’s teacher Interview).

The students in Peter’s group also commented about interaction in their group. Peter thought that “we all talked pretty equally” and that he liked working in a group “cause most of my group I don’t know much about but the more we were together the more I learnt about them”. Peter also commented that he felt part of his group “when they acknowledged me, I guess, asked me if I had any ideas” (Peter’s Interview). The middle ability male student and the higher ability student felt that the group talked equally to each other and that the group improved over the course of the lessons. The male middle ability student commented “we started working more as a group as we got into it because we had already been working at it and we were used to it … it was getting easier so it just came naturally” (Male middle ability student Interview, Peter’s Group). The other middle ability female student, however, felt that she talked more to the female student in the group because she knew her but did talk to the other two males more than before the intervention and commented:

S: Yeh, I would not normally talk to them. Yeh I would but not as much as I did.

R: How was that?

S: It was weird talking to them because I never used to talk to them that much.

R: Ok and did you find it got easier?

S: Yeh it did.

(Female middle ability student Interview, Peter’s Group)

When this student was asked about whether she felt that everyone in the group was included equally she commented specifically about Peter, “Yeh I think so, most of them, one student was quiet but I think he got the hang of it” (Female middle ability student Interview, Peter’s Group).

The above evidence demonstrates that the formal group bonding process utilised early in the cooperative learning intervention was vital in influencing the change in interactions between the SMID and the PWOD All three SMID were observed participating in this process, immediately increasing their interaction with a wider group of peers. Further analysis of the data revealed that informal group bonding experiences were important in sustaining these interactions over the course of the intervention. It is noted that other factors also played a role in whether or not this quick transition and improvement in interaction was sustained over the course of the intervention.
9.2.2.2 Combination of task behaviour and level of interest. The first of these other sustaining factors was the impact of the individual task behaviour of group members. For Ian and Peter’s group all group members were well behaved in class and this led to more-positive and sustained on-task interactions than was observed in the Baseline Phase. In contrast, most of John’s group was poorly behaved and the interactions that were promoted were more socially based, disruptive and off task not appropriate within the class context. The two middle ability students were off task regularly, as was John who joined them impacting his interactions in different ways. On a positive note he interacted more with these students socially than he did in the Baseline Phase, however, similar to the Baseline Phase most of the interaction was not task focused early on in the intervention (Field Notes). An example was in the first lesson together as a group, where John and the two middle ability students where observed being easily distracted from the tasks, leaving the group, playing with phones and other objects together (Field Notes).

The higher ability student had less behavioural issues but was adversely affected by the behaviour of John and the others. An example was observed in the third lesson together as a group where John tried to jokingly punch the higher ability student. The higher ability student snapped at John aggressively and the teacher sent the higher ability student out of class. When this student returned, he had limited interaction with the group until the teacher stepped in and guided the group through the task (Field Notes).

Over the course of the intervention the two middle ability group members and John, as with the rest of the class, did improve their behaviour, which enhanced the on task interactions within John’s group as was mentioned earlier. This change in behaviour led to John and his group eventually being more engaged in the lesson activities. Further investigation of the data revealed that this engagement was also important for the sustained interactions between the SMID and all the PWOD in the group.

The second of these other sustaining factors was the impact of the group member’s level of interest in the cooperative learning activities. This interest was mixed for all three groups and impacted interactions both positively and negatively. Ian’s group were all observed being interested in the activities and this impacted interactions in a positive way, with the target group participating in two, three and four-way conversations to achieve a task. This interest was observed in all lessons after they were put into groups and by the Application Phase of the intervention no instances of disinterest were observed (Field Notes). For Ian this was in contrast to the Baseline Phase and the first four lessons of the Preparation Phase where he was observed showing little interest in activities (Field Notes).

In contrast, John and the two middle ability students were generally not interested in the tasks, especially the classroom-based lessons. The teacher felt that “with health no one really
stuck their necks out to contribute because of their fear, intelligence or lack of, being right” (John’s teacher Interview). The teacher felt that “more constructive interaction [was] happening” in the physical education lessons (John’s teacher Interview). This improved interaction was observed coinciding with the change in the lesson focus from dance-based lessons, which were not well received, to a focus on the different combinations achieved in a physical setting while still meeting the curriculum requirements of elements of composition (dynamics, relationships, space, rhythm/timing). This change contributed to the increase and improvement in interactions between John and his group.

Of note, the higher ability student in John’s group, who was generally always interested in completing a task, tended to take over the task not giving the others a chance to be part of it. This usually limited interactions with John and the group. The teacher refers to a conversation she had with the higher ability student about not asking his group members their ideas and he responded “Oh it is alright, they are not going to say anything anyway” (John’s teacher Interview).

In contrast to Ian’s group, and to some extent similar to John’s group, Peter’s group were not overtly interested in some of the tasks, but they did participate in them. They were keen to finish each task quickly, which meant that the group’s interactions were limited to during the task. Outside the task they all, including Peter, tended to talk to other people in other groups, especially early on in the intervention or were observed not interacting with each other even if the opportunity to interact was available (Field Notes). Peter himself was observed displaying a keener interest in tasks and interacting more when working with different pairs at the beginning of the Preparation Phase of the intervention as compared to when he was working with his group (Field Notes). Of note was that Peter was always keen to be involved in the physical education lessons as he was in the Baseline Phase.

When considering the combination of on task behaviour and level of interest within the three groups difference emerged. While Ian’s group displayed on-task behaviour and a high level of interest, the majority of John’s group was the opposite with off-task behaviour and low level of interest. Peter’s group displayed on-task behaviour but a low level of interest. Despite these difference interactions still continued to improve and increase especially between the groups members who displayed the same combination.

The above evidence illustrates that the formal and informal group bonding processes and the similarity of the combination of level of on-task behaviour and the level of interest in the cooperative learning activities within the group can impact the interactions between the SMID and the PWOD. Considering there are four people in a group further observations and
analysis of the data revealed that each group member also had a role to play in impacting the interactions between the SMID and the PWOD.

**9.2.3 The impact of person factors on interactions.** During the Baseline Phase when the direct teaching approach was used, the SMID were observed generally displaying isolating personal attributes which limited their interactions with other PWOD. Additionally, many of the PWOD were not making an effort to interact with the SMID displaying non-verbal behaviours that restricted interactions. In contrast, when the cooperative learning intervention was implemented, it was the presence of a wider range of more-sociable personal attributes of the SMID and the PWOD in their group that positive increases and improvements in interactions were noted. To understand how this change in interactions occurred as a result of the personal attributes of the group members, the main theme emerging from the analysis of the data that was common across the three SMID was the impact of the changing, adapting and compatibility of the person attributes of the SMID and the PWOD.

**9.2.3.1 Changing person attributes.** Over the course of the cooperative learning intervention the person attributes of all three SMID changed. While they were still observed at times displaying some Baseline attributes, in the main they were different to that of the Baseline Phase. The most substantial of these changes was observed with Ian who became far more animated and interactive in the group context. This is in contrast to the individual nature of the Baseline Phase where Ian displayed apathy and a difficulty in contributing in long conversations (Field Notes). This behaviour from the Baseline Phase, although less intense, continued for the first three lessons of the intervention, when they were working with a different partner each week (Field Notes). The teacher commented on a reason for this change in behaviour when they formed groups as “all of sudden he got this self-worth” (Ian’s teacher Interview).

Even though it took longer, John in the Application Phase concentrated more and moderated his behaviour within the group to achieve tasks. He was observed in the final three Application lessons conversing in discussions with group members (Field Notes). This is in contrast to the Baseline Phase and when groups were first formed in the Preparation Phase where John displayed a short and shifting attention span and what the teacher considered was annoying behaviour to his PWOD (John’s Teacher Interview). In the Baseline Phase when this perceived annoying behaviour was displayed, the PWOD were observed ignoring John when he initiated interactions.

Peter who was a very quiet student and withdrawn in the Baseline Phase generally remained quiet when in the four member group but was observed contributing to the group tasks with ideas every lesson (Field Notes). Peter commented in his interview that he “is not the conversational type … but in the groups, I talked more” (Peter Interview). The teacher also
noted that Peter “took his hood off” (Peter’s teacher Interview), which was a substantial barrier
to interaction in the Baseline Phase (Field Notes). Of note and in contrast to Ian, Peter was
observed interacting more and being animated in his interactions when working in pairs early on
in the intervention (Field Notes).

9.2.3.2 Compatibility of person attributes. With the presence of three other group
members, the SMID had to work with a variety of different person attributes from the PWOD
every lesson that was not available during the Baseline Phase when cooperative learning groups
were not used. With the exception of one student in John and Peter’s group, the majority of the
person attributes of the PWOD in the three groups were compatible with the person attributes of
the SMID and this generally led to an increase in and more-positive interactions between them.
This impact was even greater when the PWOD were supportive and accepting of the SMID. The
best illustration of this compatibility was in Ian’s group where all four students person
attributes, while different, suited each other and they combined well to achieve the class tasks.
All three PWOD responded to Ian differently with Ian observed interacting in joking play with
the quieter middle ability student 15 times over four of the five Application lessons (Field
Notes). The other middle ability student was generally keen to talk to each member of the
group, which gave Ian another outlet for interaction in his group. Over the five Application
lessons Ian and this student interacted 51 times (Field Notes).

   The higher ability student, who was very talkative, had the greatest impact on Ian’s
interactions. His talkative nature seemed to suit Ian early on, being less talkative, which gave
Ian time to develop confidence in the group. At times his talkative nature allowed Ian and the
others in the group to sit back and not be as active in the interactions, observed in Lesson 12
when they were choosing a name for the group (Field Notes). The teacher backed this up by
commenting that “one of the things not so good was that he [the higher ability student]
dominated a fair bit of that group which sometimes did not allow, particularly [one of the
middle ability students with the opportunity of] interacting with that group” (Ian’s Teacher
Interview). At the same time, the supportive and accepting nature of this student and the others
in the group led to Ian interacting freely within the group with more two, three and four-way
conversations observed between them (Field Notes).

   Similar to Ian’s group, each of John’s group members had different personalities and
while they did not combine well to achieve class tasks, two of the three PWOD person attributes
were compatible with Ian’s attributes leading to increased interactions. One of the middle ability
students in John’s group was unmotivated and easily distracted. The other middle ability
student, although more active in class, was also easily distracted and tended to be absent from
class a lot. This suited John’s own short and shifting attention span and he was observed
interacting with the two middle ability students 55 times over the seven lessons of the intervention (Field Notes). On a positive note, this is in contrast to the Baseline Phase where John was rarely or not observed interacting with either of these students. Both these students, while not overtly supportive of John were accepting of his behaviour. The interaction with both these students during the intervention, however, was not always task oriented, characterised by being spoken to by the teacher for leaving the group to play on unauthorised equipment, talking when the teacher was talking and disrupting other groups.

Although the increase in interaction with the above two students was substantial, the greater impact of a student’s personality on John’s interactions was with the higher ability student. This student tended to dominate the group tasks, especially in the classroom-based setting and was observed interacting with John 19 times over the seven lessons of the intervention (Field Notes). While this is in contrast to the Baseline Phase where John did not interact with this student at all, the nature of the interactions were not always positive as outlined previously on p.

The personalities of Peter’s group members had a substantial impact on his interactions. Although the teacher felt that there “was not one overpowering person in [the] group” (Peter’s teacher Interview), the compatibility of the individual personalities did influence interactions with Peter and the group as a whole. The middle ability male student at times showed a sense of apathy toward the group, which was reinforced by the teacher who commented that he “did not do as well as he could” (Peter’s teacher Interview). This student did, however, take control of the activities most of the time and this meant that he interacted with all group members including Peter about the task and getting their input. He was also supportive and accepting of Peter as was the other middle ability female student in the group and as a result Peter was more likely to talk to both these PWOD about the task (Field Notes). This was in contrast to the Baseline Phase where Peter was rarely observed talking about the task and was only observed interacting with the female middle ability student once over the four Baseline lessons (Field Notes).

At times, the middle ability female student’s attention was diverted from the group by the other female student as they interacted with each other, leaving Peter and the other male student out of the conversation. This student did comment in the interviews that she felt that she was “not that nice” to her group members (Middle ability female student Interview, Peter’s Group). The teacher was surprised by this comment and it was observed that her connection with Peter was far friendlier than the higher ability female student (Field Notes). When questioned further on this comment the student felt that she was not nasty to them but “just wasn’t giving it her best” (Middle ability female student Interview, Peter’s Group).
The higher ability female student displayed an unmotivated attitude in classroom-based lessons, observed with her head on the desk four times during one lesson (Field Notes). This impacted interactions with the group and Peter as her non-verbal behaviour prohibited interaction. In physical education lessons this student was more active in her participation, improving interaction somewhat with the group but as mentioned previously she rarely talked to Peter in both the classroom-based Health lessons and the physical education lessons. Similar to John, it is noted that although the higher ability student’s interactions were limited during the intervention it was an increase from the Baseline Phase where they did not interact at all. The evidence demonstrates that the presence of the cooperative learning group enabled the three SMID more opportunities to develop and experience compatibility with a wider variety of PWOD, leading to increased interactions that were longer in length, at times more animated and in the main positive in nature. While the compatibility of person attributes was important other person attribute factors also impacted the interactions between the SMID and the PWOD.

9.2.3.3 Adaptability of person attributes. When either or both the SMID and the PWOD were able to or willing to adapt their person attributes to the situation, interactions were increased and were longer in length. In some cases this adaptability led to the SMID initiating more of the interactions with the PWOD as compared to the Baseline Phase. An example was observed in the Ian’s group later in the intervention. In a surprising action by Ian in Lessons 13 and 14 when the higher ability student was absent from class, he stepped up and took on the leadership role in the group. The teacher commented that he was shocked by this change in Ian (Ian’s teacher Interview). When the high ability student returned to class Ian took on the role of explaining what he had missed in the previous lessons (Field Notes). The teacher felt that this change was positive for Ian’s interaction and commented that:
from that lesson onwards he had more of a presence in the group he started taking on a bit more of a dominant role, having his say in the group. It was good to see. To me that was the turning point when [the higher ability student] was away. Ian stepped into the role. I thought that [the other middle ability student] would have stepped into that role. (Ian’s teacher Interview)

This ability of the SMID to adapt to the situation and take on more of a leadership role was positive for interactions with the group. It is noted that this did occur later in the intervention with a similar example of adaptability also occurring in John’s group later in the intervention. While John and the higher ability student did clash earlier on in the Preparation Phase, fortunately later in the Application Phase this student and John were able to converse in a productive and long conversation during a cooperative Goal Ball lesson where the students had to work together as a group to achieve the common goal of stopping the ball from going over the line while blindfolded (Field Notes). Even though it took longer, the cooperative learning task encouraged both John and the higher ability student to adapt their person attributes to the situation so the goal could be achieved and in turn increase and improve their interactions.

9.2.4 The impact of group dynamics on interactions. While role, social and person factors all contributed to the increase in the frequency of interactions and improvement in the quality of interactions, the distinguishing theme of this study was the combination and interplay of the role, social and person factors that produced a unique group dynamic which contributed substantially to the increase in the frequency of interactions and the identified improvements in the quality of interactions between the SMID and PWOD. While the overall impact on interactions was similar for each SMID as described in each of the role, social and person sections individually, the combinations of the factors were unique to the three different groups and some factors were more important than others for each group and each person.

For Ian’s group, the social factors were more prominent in their interactions with each other with role and person factors being similar in influence. For John’s group, the person factors were more prominent in their interactions, followed by the social factors with less emphasis on the role factors overall. It is noted that the role factors for one student in John’s group was more important than the others. For Peter’s group, the role and person factors were equally important in their interactions with the social factors less so. Similar to John’s group, there was one student in Peter’s group where person and social factors dominated. In the main, the majority of the group were all together on the relative importance of role, social and person factors and interactions increased and improved. It was when the importance was different as with the two students in John and Peter’s group that the group dynamic became more of an issue
and interactions were more restricted within the group, including the SMID. This is reflected by the teachers at Ian’s and Peter’s school who felt that group dynamics was the “hardest” or most “difficult thing” when referring to all the groups in the class (Ian and Peter’s teacher Interviews).

These unique group dynamics that emerged over the course of the cooperative learning intervention were also influenced by the original selection criteria of mixed-ability grouping and choosing supportive students.

**9.2.4.1 The impact of original selection criteria on interactions.** To provide context, the members of each cooperative learning group in the class were selected by the teacher. Based on the recommendations from previous research (Dyson, 2002; Dyson & Rubin, 2003) the teacher was asked to form mixed-ability groups of four with one higher ability student, one lower ability student and two middle ability students based on intellectual ability. The SMID were classed as the lower ability students. Sport-related ability was also considered with a mixture of abilities placed into each group to ensure evenness across the groups in the class. To avoid the situation that occurred in the Baseline Phase where the SMID interacted mainly with their best friends (Field Notes), it was decided not to place the SMID in a group with their best friend. Alternatively, to assist the transition to being in a group, at least one and sometimes more students considered supportive were placed in their groups.

The impact that the above selection criteria of mixed-ability grouping and supportive students had on the SMID’s interactions was positive for Ian and mixed for John and Peter. Overall, all three students interacted with the middle ability students in their groups. The difference between the three students was the interaction with higher ability student in their group. It is noted that these are the two students identified earlier who placed different importance compared to their group members on the role, social and person factors.

All the students in Ian’s group were supportive and inclusive of each other and he participated in longer conversations and even initiated interactions with them. This was particularly so with Ian interacting evenly with the higher ability male student and the middle ability students in his group. The teacher commented about the change in Ian’s interaction from the Baseline Phase where the Direct Teaching approach was used and the first four lessons of the intervention in comparison to when he was put in his group and suggested a possible reason for this:

Basically, his interaction was with one or two kids before we did this. I think he struggled a little before we put him in his group. I think the first lesson he was in his group he struggled and then all of a sudden something clicked for him. I do not know what it is, whether he is comfortable with the people that were in his group. I think
having [the middle ability student] there, he was not necessarily one of his closest friends but he was on the periphery of his friendship group – that really helped him. It gave him someone who he thought, ‘I am OK with these people because I have someone here’. (Ian’s Teacher Interview)

Although John interacted with more students during the intervention than the Baseline Phase, his interaction with the higher ability male student during the intervention phases was of particular note. John interacted with this student in some of the earlier lessons, however, this student clashed with John on a number of occasions throughout the intervention. This meant that although the middle ability students were generally supportive of John, the lack of attendance by the two middle ability students over the course of the intervention meant that at times John did not have a group, as the higher ability student was not interested in working with John on his own. An example of this occurred in Lesson 12 when the higher ability student and John clashed at the beginning of the class (unable to hear reason on video) causing John to throw the folder and walk away. The higher ability student refused to work with John and he was not happy about being left out (Field Notes). In the final few lessons of the intervention John and the higher ability students’ interactions improved and they did reconnect.

During the intervention phases, Peter interacted with students that he had not interacted with during the Baseline Phase. Despite this improvement, the members in Peter’s group were mixed in their support and subsequent interactions with Peter. The higher ability female student rarely supported or talked to Peter and her attention was more focused on other students outside the group. This student was observed talking to Peter nine times over the eight lessons of the intervention. This is compared to the middle ability male student who, although not overtly supportive did talk to and include Peter 42 times over the eight lessons of the intervention (Field Notes). The teacher also felt that they talked to each other and commented on the middle ability male students inclusion in the group, “I think that was important to have someone close to him because that gives him that little bit of comfort to start off with. So that was good” (Peter’s teacher Interview). The other female middle ability student was mixed in her support and interaction, talking to Peter 36 times over the eight lessons of the intervention. While she did at times show support for and talk to Peter, there were times where she isolated herself from the two males, especially when conversing with the other female in the group (Field Notes). The teacher, however, reflected on Peter’s inclusion in the group:

I think it gave other students the chance to work with him when they normally wouldn’t and vice versa with him. I still think that he was reluctant with some but did come out a little bit better. With the girls, he had the [middle ability and higher ability student] in his group and he would normally not have anything to do with them so I think that was
good for him, especially with social interaction because he hangs with just the boys, that are his mates and he does not care about anyone else. That was good for him. (Peter’s teacher Interview)

In summary, the above evidence for Research Question Two provides new and valuable insight on the positive impact of the role, social and person factors present in the cooperative learning intervention on the identified increased and improved interaction behaviours between students with a disability and their PWOD. This is through the existence of: the additional roles that students took on; their membership of the group; the range of personal attributes they displayed; and the combination of these role, social and person factors during the cooperative learning intervention meant that other factors were present, that were not available when utilising the direct teaching approach. All this influenced the transition of the three SMID from being passive observers to interactions to active participants in the interaction process with the PWOD.

In particular, when the students were equally involved in the negotiations of which cooperative learning role they would play in the lesson and they played a role they preferred, interactions between the SMID and the PWOD in their group were promoted, were longer and involved four-way conversations. The additional role of being a group member, the associated group bonding activities and experiences and the similarity between student’s on-task behaviour and interest level in a group led to immediate and sustained increases and improvements in interactions between the SMID and the PWOD. When the SMID changed their person attributes to be friendlier, more sociable, happier and hardworking, their interactions were more animated as they used a variety of types of interactions such as speech, gestures, facial expressions and combinations of these as the Baseline Phase where one type of interaction (speech or gesture) generally dominated. With respect to compatibility, if the SMID was grouped with PWOD who displayed accepting and supportive person attributes, interactions between the two were more frequent, longer and initiated more equally between them. Additionally, when either or both the SMID and the PWOD displayed a wider range of personal attributes and adapted these to the other’s personal attributes they had more positive interactions. They responded to each other’s interactions more, looked at each other and smiled more as they interacted.

The findings outlined in the previous sections (Research Questions One and Two) indicated that the cooperative learning intervention, with the additional roles that students took on, their membership of the group, the range of personal attributes they displayed and the group dynamic had a substantial impact on the interactions between the SMID and the PWOD. Research Question Three is concerned with how the provision of feedback in inclusive secondary school physical education classes impacted the social interactions behaviours
between SMID and PWOD when using a cooperative learning intervention. The main finding and themes from Research Question Three will be presented and will focus on the analysis of the qualitative data.

9.3 Results for Research Question Three

The most important finding to emerge from Research Question Three was that the provision of feedback on a group and individual level contributed to the increase in the frequency of interactions and the improvement in the quality of interactions between the SMID and PWOD over the course of the cooperative learning intervention. This increase and improvement in interactions is in comparison to the Baseline Phase when feedback was generally provided on a class and an individual level and interactions were limited and of a poorer quality. Whilst in the main, the feedback was more positive and influenced the willingness of the SMID to continue to interact with their PWOD, there were instances where the feedback was negative and this diminished the willingness of the SMID and the PWOD to interact with each other.

To understand how this change in interactions occurred as a result of the way the feedback was provided in the cooperative learning intervention, two main themes emerged from the analysis of the data that were common across the three SMID: more-frequent verbal and non-verbal feedback; and more-focused verbal and non-verbal feedback from the PWOD, the SMID and the teacher when the cooperative learning intervention was used. In the main, the provision of feedback by both the teachers and peers on a group level enhanced interactions, as it was provided firstly more frequently and secondly was more focused on the students and the group. For example, feedback was given to the group about the SMID contribution to the group in a task. In comparison, the provision of feedback on an individual and class level during the Baseline restricted interactions, as it was less frequent and less focused on the students. When reporting the evidence on how these two themes impacted interactions reference will also be made to how the inherent elements and structures of the cooperative learning approach enabled more-frequent and focused feedback to be provided.

9.3.1 More-frequent positive feedback. Over the course of the cooperative learning intervention the PWOD and the teacher gave more-frequent verbal and non-verbal feedback to the SMID through the group format. In turn the SMID was also observed providing more-frequent verbal and non-verbal feedback to their PWOD compared to the Baseline Phase. The opportunity to provide more-frequent feedback was also influenced by the elements and structures of the cooperative learning approach. This giving and receiving of more feedback contributed to the increase and improvement in the interactions between the SMID and the PWOD, especially when it was more positive in nature. It is noted that the frequency of
negative and isolating non-verbal feedback to and from the SMID was a distinguishing feature of the Baseline Phase and this was almost reversed, with the exception of a few instances during the cooperative learning intervention.

When the cooperative learning intervention was implemented the verbal and non-verbal feedback the SMID received was continually being provided by the members of the group as they interacted in a huddle. Driven by the cooperative learning element of face-to-face interactions, this close proximity to each other gave the SMID the opportunity to receive more-frequent feedback from their PWOD. When this feedback was positive the SMID were more willing to interact with their group leading to more-frequent and longer interactions between them. A good example of this willingness to interact was observed at Peter’s school in the last physical education lesson in the Preparation Phase where the group were asked to come up with a movement for a warm-up that would be shared by the class. The group formed a huddle to discuss their ideas resulting in a four-way conversation between all members who were observed enjoying the process smiling at each other. Peter was willing to offer a suggestion with a demonstration to the group and he received positive feedback on his idea from the middle ability male student who copied his action (Field Notes). This is in contrast to the Baseline Phase where Peter was normally reluctant to offer ideas and later Peter himself commented that although he usually prefers to listen to others he did talk more in the group (Peter’s Interview).

The verbal feedback to and from the SMID and their peers was also more frequent when both the SMID and the PWOD were prompted through the elements and structures of the cooperative learning approach, to explain and give feedback to each other on a task or skill. During these activities interactions between the SMID and the PWOD increased and improved. An example was in the early stages of the intervention when the pairs and groups participated in the cooperative learning element of interpersonal and small group social skill development activities. In the third lesson of the Preparation Phase all students were responsible for relaying information about an image to another student to draw, without this student viewing the image. When Ian and Peter were responsible for giving this information and responding with feedback to the questions of the other student, interactions were more frequent and longer as two-way conversation were being promoted. By being in control of the information, the SMID were initiating more of the interactions and they were also using more facial expressions as they laughed with each other about the task and the final drawn product. In Ian’s case this interaction was later extended to include another pair directly behind them (Field Notes).

Similar situations were observed for Ian on 24 occasions during the Preparation Phase of the intervention where he was observed receiving and giving advice to others on how to do a task or perform a skill. This mutual offering of feedback was more evident in the fourth
Application lesson where the cooperative learning structure of Performer/Coach, with the inbuilt elements of individual accountability and positive interdependence, was used. Ian and his group were equally and willingly providing feedback to each other on their individual attempts at the skill. The group were observed having fun, promoting interaction among the group with the frequency of interaction for this lesson, the second highest for the intervention (Field Notes). This is in contrast to the Baseline Phase where the Ian, the other two SMID and the PWOD participated in the class on an individual basis and were not required to offer feedback on a task or skill to each other, limiting their options for interactions.

Another avenue for additional feedback that was not present in the Baseline Phase but was observed during the intervention was the group processing sessions, an element of the cooperative learning approach, where the progress of the group was discussed. Scheduled for the end of the lessons, these sessions provided the opportunity for the SMID and the PWOD in their group to interact. An example was observed in Ian’s group in the physical education Lesson (13), where Ian chose to be group organizer and the group was given a checklist to talk about how they went as a group in the lesson. All group members were observed smiling, laughing and interacting for the entire time allocated for the task in a three way conversation (one group member away) about their group. Ian was observed initiating the interactions nine times with his group members and once with the teacher as they completed the checklist. They were also observed talking about the game strategy they developed with one group member demonstrating the strategy and Ian and the others responding to this.

As highlighted in the fidelity checks on the implementation of the intervention these sessions were not always conducted evenly across the schools with Ian’s school observed conducting these sessions the most. Although the sessions were conducted at Peter’s school at different times, the females in the group did not always participate in these sessions limiting his opportunity for interactions with all students in the group. Observations reveal that Peter did interact more with the male PWOD overall than the females. For John, the sessions were either not conducted or his group members were absent or John and his group members were reluctant to participate. John was observed only participating in these sessions with a pre-service teacher from the university during the physical education lessons (Field Notes). Although interactions for John and Peter still increased compared to the Baseline Phase, they were not as animated as Ian and his group.

Alongside the increase in feedback between the SMID and the PWOD, the teacher was also observed providing more group-based feedback during the intervention phases when the cooperative learning intervention was implemented, promoting interactions. For example, on five occasions in the health lessons when students were working in pairs, Ian and his partner
were observed interacting in a two-way conversation when the teacher gave feedback to them on the task (Field Notes). Similar situations were also observed for Peter and John in their health lessons. During the physical education lessons, all three teachers were observed walking around the class checking on the progress of the groups and offering assistance where necessary to the group. On many of these occasions, interactions between the SMID and the PWOD in the group were increased and longer as they interacted about the teachers’ feedback in two, three or four-way conversations. This is in contrast to the Baseline Phase where the teacher had less time to provide individual feedback to all students so they tended to provide feedback to the class as a whole, which generally was limited, as were the interactions between the SMID and the PWOD.

While the majority of this additional feedback that the SMID was receiving and giving in the intervention phases was positive, there were limited instances where the additional feedback was more negative and this adversely impacted the interactions of John and Peter with their PWOD at this time. For example, the higher ability female student at Peter’s school demonstrated negative non-verbal body language (slumped over, head down, back to the group) on several occasions over the course of the intervention. The teacher felt this “hindered the group” (Peter’s Teacher Interview) and Peter and this student were observed interacting the least over the course of the intervention with any interaction between them observed to be of a short nature.

Similar situations were observed with the higher ability student in John’s group who displayed both negative verbal and non-verbal feedback toward John at different times during the Preparation Phase of the intervention. The student was observed with his head down doing a task, ignoring John and the other group members, arguing with John for not doing his role and leaving the group to be in another group. Interactions between John and this student were also less than the other students in the group.

It is noted that this negative non-verbal feedback that Peter and John experienced during the intervention was a distinguishing theme that was regularly observed in the Baseline Phase for all of the SMID. For example, this type of negative non-verbal feedback was illustrated for Ian seven times over the Baseline Phase, where there was an opportunity for Ian to be part of the interaction but no interaction was recorded because other students had their backs to him (Field Notes). As discussed page 197 John perceived that he was considered annoying by others in the class (John – Final Focus Group). This was demonstrated during the Baseline Phase where John was observed not being responded to 10 times when he tried to make contact with others (Field Notes).
Additionally, the SMID themselves also contributed to this situation by providing more-negative non-verbal feedback to their peers in the Baseline Phase. The most obvious examples were at Peter’s school where he was observed with his hood on and his knees up in a crouched position on many occasions, restricting his interactions with others (Field Notes). Furthermore, Peter was observed not responding to others attempts to interact with him on 24 occasions in the Baseline Phase. Similar observations were made for Ian and John who both predominantly had their heads down and made no eye contact with others, restricting their interactions with others (Field Notes). These non-verbal cues from the SMID demonstrated to their peers their unwillingness to be involved in interactions. It is noted that these negative and isolating non-verbal cues were less prevalent during the intervention for all of the SMID. Peter was observed removing his hood during lessons with Ian and John making eye contact with their PWOD more regularly.

The evidence demonstrates that over the course of the intervention the negative non-verbal feedback was diminished and the SMID were receiving and giving more-positive feedback with the PWOD and the teacher. While the opportunity for more-positive feedback contributed to the increase and improvement in interactions over the course of the intervention the content of the feedback given was also important to changing the interactions.

9.3.2 More-focused feedback. Over the course of the cooperative learning intervention as the students worked together in a group, the PWOD and the teacher gave more-focused verbal and non-verbal feedback to the SMID about their performance, their contribution or fit within the group. In turn, the SMID was also observed providing more focused verbal and non-verbal feedback to the PWOD compared to the Baseline Phase. The opportunity to provide more focused feedback was also influenced by the elements and structures of the cooperative learning approach. This giving and receiving of more focused feedback contributed to the increase and improvement in the interactions between the SMID and the PWOD, especially when it was positive in nature.

9.3.2.1 Feedback about performance. Over the course of the cooperative learning intervention the opportunity for the teacher, the PWOD and the SMID to receive and give more-focused feedback about performance was increased as the students participated as a group to achieve the tasks. The nature of this feedback, in the main, was positive as through the group, the SMID and the PWOD achieved more success in the tasks, which on its own was a form of feedback on performance. Combined with the verbal and non-verbal form of focused feedback from the teacher and each other, interactions between the SMID and PWOD were more frequent and longer. This impact on interactions was sustained further as the different forms of feedback led to an increase in participation in tasks for the SMID. In contrast, when the direct teaching
approach was used and the students worked on an individual basis the cycle of feedback, success and participation was reversed with the SMID achieving less success in a task and finding ways to remove themselves from participation. Interactions between the SMID and the PWOD were limited, at times non-existent and shorter in length.

This change to more-focused feedback to the group and the student on performance during the intervention was more evident from the teachers across the three schools as compared to the Baseline Phase. An example was observed for Ian’s group in the last lesson of the Preparation Phase where they were asked as a group to develop a strategy to pass the ball to each other across four zones and into a bucket as fast as they could. Ian’s group interacted in a three-way conversation to develop the strategy and recorded the fastest time. The teacher then asked the group to relay their strategy to the class and Ian responded to the class. Ian and his group were observed smiling and acknowledging each other when the teacher commented on how good the strategy was and why (Field Notes). Ian also commented in the interviews on how other groups copied them in this lesson (Ian’s Interview). The positive and focused nature of this feedback from the teacher about the group’s successful performance led to positive verbal and non-verbal interactions between the group members.

Although the teacher at Ian’s school did attempt to offer him feedback during the Baseline Phase it was less specific than during the intervention phases. During the athletics unit in the Baseline Phase Ian received feedback from the teacher on his performance from a distance as the teacher placed himself on the side of the class. This feedback was general in nature such as “good throw” and Ian did not respond verbally or non-verbally to it (Field Notes). It was unclear at times if Ian actually heard the feedback or knew it was directed at him.

When looking at the feedback provided to John by his teacher, his absence from the first four lessons of the intervention meant that John’s teacher on many occasions had to assist his group when they formed with her feedback more focused to the needs of his group. Initially during the Preparation Phase it was directed at how to participate in the group without arguments (Field Notes). Later in the Application Phase the teacher’s feedback was more focused to the individual and group on how to do the task (Field Notes). By focusing on the needs of the group and its members John was able to participate more easily in his group, resulting in some success in tasks thus increasing his frequency of interactions with the PWOD in his group. More importantly, the interactions were more positive with fewer arguments between John and the higher ability student. This is in comparison to the Baseline Phase where the majority of the teacher’s attention was on dealing with specific students behavioural difficulties, including the SMID, restricting feedback on performance. Even when John was observed performing a skill well, the teacher’s attention was elsewhere and success was not
always acknowledged. Likewise, the interactions between the SMID and the PWOD were restricted, shorter with obvious non-verbal displays of annoyance toward John (Field Notes).

The teacher at Peter’s school referred to the value of a focused form of feedback on performance offered when the groups were playing invasion games (e.g., soccer). Groups were offered bonus points on an individual and group basis. The teacher commented that it took him a bit longer to have a presence (as the teacher) in the lessons but when he started to give feedback in the form of bonus points he played a more pivotal role (Field Notes). These bonus points could be related to improvement in skill level and the group’s ability to work together to achieve a task. Peter successfully stopped a try being scored against his team and when the teacher gave his team bonus points he also highlighted the fact that Peter never gives up. Students were observed giving Peter high fives and patting him on the back with Peter smiling (Field Notes). This success is in contrast to the Baseline Phase where Peter was observed being overlooked in receiving the ball 15 times during the Baseline Phase regardless of his attempts to be in the best position to get the ball (Field Notes). Peter also commented that other students did not think he was very good at ball sports (Peter’s Interview).

When the feedback about performance came from the PWOD and the success in a task, the SMID interactions with group members increased, was longer and more gestures and facial expressions were used as they discussed or celebrated their success. An example was observed at Peter’s school in a physical education class in the Preparation Phase when he was playing soccer. Peter successfully got the ball off another person on the opposing team and he was praised by some of the PWOD in his group and outside his group. Peter openly commented on this effort and acknowledged the praise from other students by raising his hand (Field Notes). This is in contrast to the Baseline Phase where although Peter was sometimes praised for his efforts he rarely acknowledged it openly to the class (Field Notes).

For Ian, the chance to succeed in a task acted as a form of feedback and he was more likely to participate in the task. When the cooperative learning intervention was implemented Ian was observed participating in all activities, which led to more frequent and longer interactions with group members with Ian initiating more of the interactions than in the Baseline Phase. This continual participation gave him more opportunities to succeed and although at times Ian and his group did not succeed, as it was intended it did not hinder his future attempts and interaction (Field Notes). The higher ability student in Ian’s group commented that it was a “good feeling to know that we can do something right” (Higher Ability Student Interview, Ian’s Group). In comparison, when the direct teaching approach was used, Ian found ways to remove himself from participating and interacting. Ian was observed standing at the side of the field and stopping his participation after a short time while others continued to participate limiting his
chances to receive feedback on performance, achieve success and to interact about the task (Field Notes).

9.3.2.2 Feedback about contribution to the group. For all SMID another avenue to receive feedback and determine success in the task was achieved somewhat in the group processing sessions. These sessions included providing positive feedback to group members on their contribution to the group, discussing the progress of the group against a checklist of group work criteria and discussing the task related success of the group. For Ian, the group were observed providing positive and constructive feedback to each other on their contributions to the group in lessons 12 and 13 of the Preparation Phase of the intervention. The group members also suggested to each other ways to improve their contribution to the group (Field Notes). Later in the Application Phase of the intervention the group were observed discussing task strategy and celebrating task success (Field Notes). As a result, interactions in the group involved lengthy conversations, positive non-verbal feedback, laughing and smiling.

As indicated on the cooperative learning Verification Tool (see Appendices N, O and P) the group processing sessions were not always fully conducted in every lesson for each of the SMID. Combined with the inexperience of the teachers in conducting these sessions and the student’s inability to fully and openly discuss progress, relevant and focused feedback was not always provided. For John, his group members were absent when discussing their contribution against the checklist and John only discussed this with a pre-service teacher from the university (Field Notes). The group were also reluctant to give each other constructive feedback on their contribution to the group and discussing their success in a task until the final two lessons. For Peter, the females in the group did not participate in the checklist discussion and similar to John’s group were reluctant to provide feedback to each other on their contribution to the group or their success in a task (Field Notes). Although interactions for John and Peter were improved from the Baseline Phase they were not as animated as Ian and his group.

9.3.2.3 Feedback about fit within the group. Over the course of the cooperative learning intervention the SMID and the PWOD received feedback that was focused toward how to behave in the cooperative learning group. This feedback came from a number of sources and it impacted the interactions of each of the groups differently. These sources began with the formal social skill development activities, an element of the cooperative learning approach that was conducted in the first four lessons of the Preparation Phase where students were asked to develop a list of what a group would look like, that worked well together. Alongside this, the students were also provided with information on what is the appropriate social behaviour in a group and these behaviours were later reinforced by the teacher and the group processing sessions, when conducted. For Ian, this information was vital in changing his behaviour in the
group and his participation in activities, which was reflected in more frequent and longer interactions with less isolating non-verbal behaviour than in the Baseline Phase. He initiated more interactions and used more-animated types of interaction such as gestures, smiling and laughing. Interestingly, Peter was also observed displaying less isolating non-verbal behaviours during the social skill development time and his frequency and length of interactions also increased.

In addition to the formal social skill development activities, each group developed their own notions about how to behave as they worked together in tasks and their actions toward these notions provided feedback to each other about how to behave. As reported in the group dynamics result on page 201-202 each group developed their own unique way of operating and most of the group members conformed to this. It is noted from the after lesson interviews, the individual interviews and the focus groups that the dominant behaviour that was important to most students was centred on the individual behaviour of students in a group. The majority of students were unhappy about students who misbehaved in their group as they perceived this impacted the success and harmony of the group (All Interviews and Focus Groups). The teachers supported this in their comments with all three referring to the distracting impact of the behaviour issues of a few students in the class on their group and the class as a whole.

John’s group was impacted the most by these behavioural difficulties with John receiving feedback from the higher ability student and the teacher on the inappropriateness of his behaviour in many situations, particularly in the early stages of the Preparation Phase of the intervention (Field Notes). It is noted that John was absent during most of the formal social skill development sessions meaning that he missed a large amount of information on how to behave in a group. As a result, the teacher was required to provide John and his group with feedback about the appropriate behaviour required for the group to be successful together on many occasions (Field Notes). Combined with some group processing sessions John did start to modify his behaviour towards the end of the intervention.

In summary, the above evidence for Research Question Three provides new and valuable insight on the positive impact of the provision of feedback in the cooperative learning intervention on the increased and improved interaction behaviours between SMID and their PWOD. The more frequent, focused and positive the feedback was to the cooperative learning group the more willing the SMID and the PWOD were to interact with each other. This is in contrast to the more-negative, less-focused and less-frequent feedback provided in the Baseline Phase when the direct teaching approach was utilised.

In particular, the evidence demonstrated that by being in a group of four and by being in close proximity to each other, the opportunity to receive more-frequent and focused feedback
was possible. When this was combined with the elements and structures of the cooperative learning approach that encouraged students to explain and give and receive feedback to each other, the interactions of the target students were more frequent and longer. This impact on interactions was further sustained when the group processing sessions, set aside to talk about and celebrate the group’s success in a task and overall progress, was conducted. Furthermore, the teacher, the PWOD and the SMID played an important role by providing more and focused positive feedback about the performance, contribution and fit of the SMID in the group. Alongside a substantial decrease in the negative non-verbal behaviour from the PWOD and the SMID, the interactions between the SMID and the PWOD were more frequent, longer, initiated more by the SMID and more animated with a variety of facial expressions and gestures observed.

The findings outlined in the previous sections (Research Questions One, Two and Three) indicated that the cooperative learning intervention with: the additional roles that students took on, their membership of the group and the range of personal attributes they displayed; and the more frequent and focused positive verbal and non-verbal feedback, had a substantial impact on the interactions between the SMID and PWOD. Research Question Four is concerned with the flow of resources and whether it was also important in increasing and improving interactions. The main themes from Research Question Four will be presented and will focus on the analysis of the qualitative data in relation to the impact of the flow of resources utilised in the cooperative learning intervention on the interaction behaviours between the SMID and PWOD.

9.4 Results for Research Question Four

The most important finding to emerge from Research Question Four was that the availability of more resources with improved access to and control of the social, knowledge and physical resources by the SMID and the PWOD when the cooperative learning intervention was used had a substantial impact on the interaction behaviours between the SMID and the PWOD.

In reference to the theoretical framework discussed in Chapter Three resources are “anything that supports individuals and the interaction of individuals” (Burke & Stets, 2009, p. 99). From the evidence already discussed in Research Questions Two and Three, the additional roles, the membership of the group, the range of person attributes and the feedback that is available when the cooperative learning intervention was utilised could be considered a powerful resource themselves in supporting the interactions of individuals. It was taken in this research project that these factors be considered separately and that the impact of resources would focus on the other valuable resources that supported the interactions between the SMID and PWOD in the physical education environment.
The theoretical framework suggests that there are many layers of resources in a social situation that are associated with and influence each other. For the purposes of this study the resources potentially available in the physical education environment were grouped into social, knowledge and physical resources. These layers of resources are also present in the classroom or physical education environment. This multi-layered view of resources is similar to the ecological approach to teaching and learning where it considered that there are many factors that exist and interact with each other in the classroom that Siedentop and Tannehill (2000) suggest provides a framework for teaching and learning. In line with this framework and for the purposes of this study the resources that were identified as being potentially available in the physical education environment can be grouped into social, knowledge and physical resources. Social resources can be found in: the social arrangement of the class; the connection with the other students in the class; and the social skill level of the students. Knowledge resources can be found in how knowledge is transferred within the class and the cognitive and physical skill level of the students. Physical resources can be found in the surrounding environment such as the field or the court and the equipment to perform the skill or play the game. How these resources were managed in the direct teaching approach as compared to the cooperative learning intervention influenced the number of, access to and the control of the resources available to support the interactions between the SMID and PWOD.

In the Baseline Phase, where a direct teaching approach was predominantly used, the number of, access to and control of the social, knowledge and physical resources were limited, as were the interactions between the SMID and PWOD. By utilising a cooperative learning intervention in the intervention phases, the number of, access to and control of the above resources were increased and improved, as was the interactions between the SMID and PWOD. Interactions were further increased and improved through the extra resources that also became available to the SMID through the elements and structures of the cooperative learning approach. They influenced the flow of the social, knowledge and physical resources available in the physical education environment and assisted with the target student’s transition to active participants in the interaction process.

To understand how this transition occurred as a result of the teaching approach, the framework for the description of results will be based on the impact that the management of the social, knowledge and physical resources had on the interactions between the SMID and PWOD. The main themes emerging from the analysis of the data that were common across the three SMID will be presented. These themes were: the additional and improved access to the social resources; the expansion, sharing and control of the knowledge resources; and the sharing and control of the physical resources. The description of the results will focus on how these themes impacted the target students’ transition to being more-active participants in the
interaction process by comparing interactions in the intervention phases where a cooperative learning intervention was applied to the Baseline Phase where a more direct teaching approach was utilised.

9.4.1 The additional and improved access to the social resources. The two main factors to emerge when accessing the social resources over the course of the cooperative learning intervention were the impacts that the physical positioning and the social development of students had on the interactions between the SMID and PWOD. The social arrangement of the students was influenced by their physical positioning, which promoted the interactions between the SMID and PWOD. The social connection between students and the social skill level of students was influenced by the planning for the development of social skills also promoting the interactions between the SMID and PWOD.

During the intervention phases when the cooperative learning intervention was applied the social arrangement resource of the class was changed physically so students were facing each other more than in the Baseline Phase where under a direct teaching approach they were generally observed in lines with their backs to each other. This difference in the social arrangement of students was influenced by the cooperative learning element of promotive (face-to-face) interaction. To meet this requirement in the classroom, desks were positioned so students were facing each member of the group and in the physical education environment students were encouraged to form huddles where they were facing each other. (The term ‘huddle’ was utilised to appeal to the student’s age group.) The formation of huddles enhanced the SMID’s ability to participate in face-to-face discussions within the group as they were physically in a better position to interact. This requirement under cooperative learning to employ the element of promotive (face-to-face) interaction supported interactions and could, therefore, be considered an extra resource that became available to the SMID (Johnson & Johnson, 2009). To provide an illustration of how successful this strategy was, two examples will be highlighted.

Apart from the Health lessons where the desks were arranged to face each other, Ian and Peter’s groups were observed regularly interacting in the huddle in the physical education lessons during the intervention. For Ian’s group the huddle promoted longer conversations, with each group member in the main, contributing equally. This was supported by the teacher at Ian’s school who commented that “in the huddle [Ian] was able to bounce ideas between the others and that was where the focus has to be, because sometimes he is easy to lose focus. I feel that was good for him” (Ian’s Teacher Interview). For Peter the huddle gave him the opportunity to interact and it encouraged him to improve his body language with others. In contrast to the Baseline Phase where Peter was observed with his knees up, head down and his hood on

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restricting interaction, Peter in the intervention Phase was observed taking off his hood and looking at others in the group promoting more interaction (Field Notes).

During the intervention phases when the cooperative learning intervention was implemented the resources found in the connection with the other students in the class and the social skill level of the students were improved. This improvement was the result of students learning the social skills necessary to work in groups as was identified in Chapter Five and the reflection (through group processing) on their performance as a group. This is in contrast to the Baseline Phase where under the direct teaching approach there was no deliberate planning for social skill development or reflection. This difference in the social connection between students and the social skill level of students was influenced by the cooperative learning elements of the development of interpersonal and small-group skills and group processing (reflection). The development of social skills meant that the SMID and the PWOD were better prepared to socially connect in “free and easy communication (Dyson & Casey, 2012, pp. 3-4) This requirement under cooperative learning to employ the elements of the development of interpersonal and small-group skills and group processing supported interactions and could therefore be considered an extra social resource that became available to the SMID. To provide an illustration of how successful these strategies were, examples across the three SMID will be provided.

This improved ability to socially interact was more evident with Ian who was observed frequently participating in two, three and four-way conversations with his group members, listening, responding, laughing, smiling, looking at group members, helping others, contributing to decisions and leading problem solving on 84 occasions over the intervention (Field Notes). Although Peter did display most of the above social skills apart from leading problem solving, he did this to a lesser degree than Ian whilst in the four-member group. For both Ian and Peter this was in contrast to the Baseline Phase where their interactions were short, lacked eye contact and were generally with one person (Field Notes).

This positive change in interactions for Ian and Peter from the Baseline Phase to the intervention phases is further highlighted at John’s school. John unfortunately missed the interpersonal and small-group skills lessons due to injury and it was clear that he took longer to adapt socially than Ian and Peter, only responding more appropriately when given social guidance by a teacher. The success of providing this guidance was initially observed in the first Application lesson where John worked with a pre-service teacher and it was after this lesson that John’s social skills in his group improved, displaying better social connections with other students in his group (Field Notes). This eventual improvement was in contrast to the Baseline Phase where John’s ability to interact socially with others appropriately was limited, leading to
him being considered “annoying” by others (John’s Teacher Interview). As a result John was observed being a passive observer to other friendship groups’ interactions 17 times over the three Baseline lessons (Field Notes). The provision of guidance supported the improvement in John’s interactions and it could, therefore, be considered a social resource that became available to John. Although this guidance was less than the social support that Ian and Peter received, it was a reasonable substitute considering the absentee circumstances at John’s school.

Although the cooperative learning element of group processing was implemented irregularly it did play a role in influencing interactions. This irregularity was mainly due to the element not being implemented every lesson due to time factors and the teacher’s lack of experience of using it in the lessons (see the CLVT Summary, Appendices N, O and P). When groups, however, were asked to reflect and discuss how they worked together as a group and on the lesson content during the intervention phases, interactions were promoted at that time. It is noted, however, that this element was not observed during the Baseline Phase where no reflection on the lesson was conducted with the class.

To provide an illustration of how successful the group processing strategy was, an example from Ian’s school will be discussed. One of the group processing sessions involved the group discussing and completing a checklist on how they felt their group were performing on a list of group work skills that included: listening, helping and encouraging each other, positive non-verbal communication, carrying out their role and contributing ideas. Ian was the group organiser during the group processing activity and he was observed interacting with his group by reading out the list and then participating in a three-way conversation with the group on their progress (Field Notes). This is an important observation considering that Ian only participated in short interactions with one student in the Baseline Phase.

The above evidence illustrates that through the cooperative learning intervention the SMID improved their access to the social resources in the lessons supporting their interactions. This improvement in access meant that the SMID were able to access more of the social resources and extra resources were also made available through the elements and structures of the cooperative learning approach. The physical positioning of students through promotive (face-to-face) interactions required under the cooperative learning approach allowed students to be in a better position to interact. Furthermore, the development of the social skills of students and their connections with other students through the development of interpersonal and small group skills and group processing allowed increased ability to participate in “free and easy” (Dyson & Casey, 2012, pp. 3-4) communication with their peers. Apart from the above social resources, other resources found in the physical education environment also played a role in supporting the interactions between the SMID and PWOD.
9.4.2 The Expansion, sharing and control of the knowledge resources. The major theme to emerge when accessing the knowledge resources in the physical education environment was the impact that the expanded sources of knowledge had on the interactions between the SMID and PWOD. The transfer of knowledge in the class was influenced by the increased number of people providing knowledge in and for the group as well as the requirement to share and at times control this knowledge promoting the SMID interactions with the PWOD and the teacher. Even though the cognitive and physical ability of the SMID and the PWOD was different, the sharing of their abilities within the group promoted the interactions between the SMID and PWOD.

When utilising the direct teaching approach the sources for the transfer of knowledge was limited to teacher and student exchanges. During the intervention phases when the cooperative learning intervention was used the sources for the transfer of knowledge was expanded to include the group members as well as the teacher. This difference in the transfer of knowledge was influenced by the cooperative learning elements of positive interdependence and individual accountability.

To meet the requirement of positive interdependence, students in the group were responsible for the transfer of knowledge, as they perceived that they had to rely on each other to do their role or contribute to the task to succeed in a group goal (Johnson & Johnson, 2009). This was more evident when students were required to utilise each other’s knowledge to solve a problem, make a decision or explain a skill or game. This requirement during cooperative learning to employ the element of positive interdependence supported interactions and could therefore be considered an extra resource that became available to the SMID. To provide an illustration of how successful this strategy was two examples will be highlighted.

Firstly, Ian responded well to the element of positive interdependence and was observed on many occasions contributing ideas to his group on strategy and explaining how to do a skill or play a game to other members of the group. One example was in the final lesson of the Preparation Phase where Ian was observed participating in a three-way conversation with his group members as they decided on a strategy as a group to play the game and what each of their roles were in the game. They were observed carrying out this plan, interacting with each other after each attempt and succeeding to the point where other groups followed their lead on later attempts (Field Notes).

The students recognised the benefit of this extra source of knowledge provided under the cooperative learning intervention. One of the middle ability students in Ian’s group commented “they probably know something I wouldn’t know and we probably know something that they wouldn’t have” (Middle ability student Interview, Ian’s Group). Ian supported this
comparing being in a group to being on your own, “if you’re on your own, you don’t really know, like if you do not know what to do you ask one of the others. It is better like in a group” (Ian’s Interview).

This is in contrast to the direct teaching approach utilised in the Baseline Phase where there was a lot of standing in lines while waiting to perform a skill, limiting the access to the resource of knowledge from others. Although the opportunity to discuss how to do the skill may have been available due to the time waiting in lines for their turn, Ian was rarely observed interacting with others in his line about the skill with only four short instances recorded over the last three Baseline Phase lessons when the athletics unit was started. The majority of the interaction directed at Ian was met with little or no response from him. Ian seemed more interested in keeping his spot in the line so he did not miss his turn and standing behind the others in the line when waiting (Field Notes).

The second example was Peter, who was not as successful as Ian in carrying out his role to create positive interdependence in the group during the intervention phases, did do this more than in the Baseline Phase, however. During the intervention Phase, Peter was observed playing his role in the group, contributing when asked and offering ideas. This transfer of knowledge between the group members was predominantly observed during the warm-up activities when students were asked to make up movements for the group and class to follow and discuss strategy and progress in a Jigsaw activity. In the Jigsaw activity each group member had to collect letters out in the field while practicing the skill of dribbling and return with these one at a time to unscramble and form a word. Peter and the others in the group offered suggestions to each other about which marker to go to in order to get a letter so the group could achieve the goal, promoting interactions (Field Notes). When utilising the direct teaching approach in the Baseline Phase, the transfer of knowledge was limited to the teacher giving instructions on how to play the game and Peter was rarely given the opportunity to contribute his ideas.

The transfer of knowledge was also influenced by the cooperative learning element of individual accountability. To meet this requirement each member of the group was responsible for completing their part in the task (Johnson & Johnson, 2009). Having this individual responsibility combined with the teacher reinforcing this responsibility meant that more knowledge was being transferred between group members. It is noted through the cooperative learning Verification Tool summaries (see Appendix N, O and P) that although individual accountability was not fully utilised by the teachers due to time factors and inexperience in implementing the element, when group members were encouraged to complete their part in the task, positive interactions were evident. To provide an illustration of how successful this strategy was when implemented, two examples will be provided.
Firstly, for Ian, the increased transfer of knowledge was observed predominantly during Jigsaw activities where individual group members were responsible for learning and then teaching other members in the group about a skill or component of a game. One example was observed in the final Application Phase lesson where Ian took on the role of group organiser and he was responsible for learning alongside other group organisers the rules of the game and then returning to his group to explain the rules. This resulted in Ian’s frequency of interaction being 72% for this lesson. The whole class were encouraged by the teacher to be responsible for setting up the game, completing their individual part of the task and learning what was required for the game of other group members in order to start the game quickly and to be successful (Field Notes). In contrast during the Baseline Phase Ian was not given a role to play and he was only responsible for his own performance in a game. On one occasion he was observed avoiding participation in the warm-up game by standing to the side of the field, limiting his interaction (Field Notes).

The second example was observed with Peter who was always keen to complete his part of the task, however, he needed the encouragement of the teacher and a specific role that would be followed up later to promote interaction. In one lesson the teacher asked the recorder in each group, which was Peter, to keep a running total of how many times his whole group achieved a specific skill in a game. Although he had some difficulty with the role, Peter was observed interacting with the group and the teacher to help him do this role before, during and after the game (Field Notes). In contrast, during the Baseline Phase although Peter was still keen to be involved in games, he was rarely given the opportunity to contribute which limited his interactions with others.

The knowledge resource found in the cognitive and physical ability of the students, including the students with a disability was also influenced by the cooperative learning element of positive interdependence. As outlined in the cooperative learning intervention framework (see Appendix J), during the intervention phases students were chosen for groups based on their cognitive and physical ability with a mix of abilities chosen for each group. This meant that students entered the groups with different cognitive and physical knowledge and having to share this knowledge through the element of positive interdependence promoted interactions between the SMID and PWOD. In contrast when the direct teaching approach was utilised in the Baseline Phase, students tended to be part of the class as an individual using their cognitive and physical abilities to vie or compete for their chance or their turn to either perform a skill or get the ball or equipment during a game, restricting interactions between the SMID and PWOD. To provide an illustration of how successful positive interdependence was in relation to the cognitive and physical abilities of the students, two examples will be highlighted.
When the direct teaching approach was utilised in the Baseline Phase, Peter’s opportunity to participate in the games being played was limited, as was his interaction. This lack of opportunity was exacerbated by Peter’s perceived lack of physical skill by others, the individual competitive nature of a number of students in his class and the size of the game. This was illustrated in the first Baseline Phase lesson when a game of Ten Passes was being played with the entire class on the one court. Peter was observed being in a good position to receive the ball 11 times but the ball was not passed to him and Peter did not call for it, even though he was observed wanting to be involved (Field Notes). Peter recognised this exclusion, commenting “when we are playing games and everyone ignores me because I am not that good” (Peter’s Interview). Positive interdependence in the soccer games played early on in the Preparation Phase of the intervention was not always strong and Peter further commented “there were some times where they got all the better players at the half way and those ones that are not good back at the goals. They did that a lot actually. It is a little annoying” (Peter’s Interview). To correct this, some deliberate actions were taken under the cooperative learning intervention during the Application Phase to strengthen positive interdependence. These actions included reducing the number of people playing the game, rotating the players in different positions on the field and the focus on the group improving a skill in a game. Peter received the ball more than in the Baseline Phase promoting interactions with other students as they discussed strategy and assisted with improvement of skill level and ball placement (Field Notes).

For John, his reduced cognitive abilities due to his intellectual disability meant that he was unsure of what to do in some games being played or in health lessons. As a result, John would cease his involvement in the activity, limiting his interactions with others. During the latter stages of the intervention, when positive interdependence was employed more easily by the teacher, John was observed contributing to a Jigsaw activity where he had to take it in turns to move out onto the field, find a letter and return with and interact with the group to unscramble the letters to form a word. John wanted to be part of this game and asked for help from the teacher to assist him in his group (Field Notes). He was able and willing to utilise the knowledge resource of the teacher and the group, which he had avoided in the past and displayed pleasure in his success. The teacher commented that John had smiled when he felt success, which she “had never really seen him do before” (John’s teacher Interview). This is contrast to the Baseline Phase where under the direct teaching approach utilised by the teacher, the transfer of knowledge came directly from the teacher on how to do a skill or play a game and John did not ask questions of clarification from the teacher or the other students.

The above evidence illustrates that through the cooperative learning intervention the SMID improved their access to more knowledge resources in the lessons to support their interactions. The expanded sources for the transfer of knowledge through positive
interdependence and individual accountability required under the cooperative learning approach meant that students were interacting with more people to gather the knowledge necessary to complete the task. Furthermore, the different levels of knowledge were influenced by the different cognitive and physical skill abilities of the students in the group. Combined with the cooperative learning element of positive interdependence the target student’s interactions were promoted as they were given the opportunity to be more engaged in the lesson activities through the exposure to different knowledge that offset their own physical or cognitive limitations. Apart from the above knowledge resources, other resources found in the physical education environment also played a role in supporting the interactions between the SMID and PWOD.

9.4.3 The Sharing and control of physical resources. The major theme to emerge when accessing the physical resources in the physical education environment was the impact that the sharing and/or control of the physical resources available in the lesson had on the interactions between the SMID and PWOD. The main resource that impacted interactions was found in the equipment used to perform the skill or play the game and consisted of group folders, task sheets, worksheets and sporting equipment. These resources were designed to complement the elements and structures of the cooperative learning approach. In the main how these physical resources were shared or controlled by the students during the intervention phases positively impacted the interactions between the SMID and PWOD.

The main resource utilised in most lessons was a group folder and included the group’s name, group’s colour and task sheets for the various cooperative learning structures. These folders were accessed more in health lessons when the groups were formed half-way through the Preparation Phase and tended to be used at the beginning and/or end of the physical education lessons in the Application Phase with some exceptions. The task sheets were utilised to explain a task, record during a task, choose a role and conduct group processing. This is in contrast to the Baseline Phase where the folder and task sheets were not present and sharing of resources was not available to the students. When the folders were used, students huddled around to look at the task sheets and/or to complete the task set and it created a focus and structure for the group to follow. This close proximity of group members and sharing of the folder and task sheets generally promoted face-to-face interactions and discussions.

For Ian, the sharing of the group folder, worksheets and task sheets among the group over the course of the lessons promoted interactions and they were a key resource in enabling his transition to an active participant in the interaction process as the following observation describes: ‘Ian’s group are huddled around the folder and are using a checklist in the folder for group processing and after some guidance from the teacher Ian interacts eight times and laughs as he participates in a four-way conversation with his group’ (Field Notes). Further observations
revealed that this type of interaction scenario for Ian and his group was observed 16 times during the intervention. The benefit of the folder, worksheets and tasks sheets for promoting interaction for Ian is further supported by a comment from the teacher at Ian’s school who commented on the “power and confidence” (Ian’s Teacher Interview) these resources provided Ian:

I think the task cards and the worksheets allowed him to have something concrete in front of him and it didn’t force him to generate his own discussion to start with. Having concrete ideas, this is what we have to do and he only had to tell the other people what they had to do was far easier for him to be able to do something like that then for me to say give instructions and ok you need to go back and tell your group members what they have to do. Having something concrete in front of him allowed him to step into that group organiser’s role. I think if it was a case of me just giving him verbal instructions and him having to relay it to his group and interpret, I think he would have really struggled with it, he would have gone back into his shell. (Ian’s Teacher Interview)

This support for the folder, worksheets and task sheets was backed up by the other two teachers who reflected on the folder and task sheets as “creating equality among the group … a place to belong … a way to get the students on task quicker … a responsibility for the group” (John’s Teacher Interview). Peter’s teacher also felt that the folders, worksheets and task sheets “created a structure … good for organisation at the beginning of the lesson … a novelty for the students … ownership” (Peter’s Teacher Interview). Although John and Peter’s group did not share these resources as much as Ian’s group did, when they did use them and share them interactions were promoted.

For John and Peter’s class the folders were generally accessed at the beginning of lessons to allocate roles and to conduct group processing. The teacher at John’s school commented that it “helped [her] to get them on task much quicker” and “they were at least still together” (John’s Teacher Interview). John was able to focus more when the folders were used as it was a focal point for his attention and he was observed on one occasion contributing to a four-way discussion on role allocation when they were used (Field Notes). Peter was observed looking at the folder and the person writing in it when it was used. Although he did not always interact every time they were used, he was observed interacting 10 times over the course of the intervention when the folders were the focal point for the group and task (Field Notes).

Further support for the folder and task sheets was provided by students in the focus groups and individual interviews. Consistent ideas and comments discussed by students across
the three schools were how they: provided organisation for the group; brought students together; allowed everyone to gather around and work together: and could be used to look back on work.

Occasionally, some students in the group tended to control the folder, which impacted the interactions between the SMID and PWOD both positively and negatively. On a positive note, in Ian’s case the teacher surprisingly observed that when the higher ability student was away and Ian was the group organiser he tended to pick up the folder and use it in a way to organise the group, increasing his interactions (Ian’s Teacher Interview).

In John’s case the higher ability student in the group tended to control the folder, worksheets and task sheets and tried to get the group involved in tasks which at times did require John to interact with him and others in the group. On one occasion, John was observed interacting three times in four-way conversation with his group and also using gestures to describe something to the group (Field Notes). However, at times the higher ability student got frustrated with the group for not always being involved and took over the folder limiting chances for John and others in the group to be part of the task and interact (Field Notes). It is noted that sometimes John did try and control the folder, worksheets and task sheets but the higher ability student usually stepped in and took over grabbing them from John (Field Notes).

In Peter’s case the male middle ability student tended to control the folder but this did not always limit interaction for Peter. Peter would look at what was being written in the folder or on the worksheet, smile and respond to interaction initiated by the male middle ability student (Field Notes). Similar scenarios for Peter where the male middle ability student controlled the folder and Peter still interacted were observed 11 times during the intervention (Field Notes).

Additionally, when the resource of equipment was combined with the elements of the cooperative learning approach interactions were also promoted. An example was at Ian’s school when the students were working in pairs in a Jigsaw activity where each person in the pair had part knowledge of how to throw the discus. The teacher enforced individual accountability, positive interdependence and promotive (face-to-face) interactions by refusing access to equipment until the pairs could demonstrate they knew how to do the skill without the equipment. The students in the class, including Ian and his partner very quickly started describing and demonstrating to their partner their section of the throw and combining them together, subsequently increasing their interaction (Field Notes).

The above evidence illustrates that through the cooperative learning intervention the sharing and/or control of the physical resources in the lessons in the main supported the target students’ interactions. The need to share the group folder, worksheets, task sheets and equipment under the cooperative learning intervention meant that the SMID was in a better
position to interact. It is noted that when these physical resources were not shared and were controlled by one other person in the group the target student continued to interact. Although interactions may have been less than when the physical resources were shared they were still evident as they were being encouraged to interact by others. This encouragement to interact was also evident when the teacher utilised the physical resources in conjunction with the elements and structures of the cooperative learning approach.

The description of results for the impact of access to resources has so far been isolated to each of the individual resource components: social, knowledge and physical. When these resources were combined into a cooperative learning structure the benefits were compounded. The best example of how interactions were promoted through the combination of resources was through the Performer Coach structure used at Ian’s school in the fourth Application lesson. Students were required to rotate around the roles of performer, coach, checker and catcher to teach each other the skills of bowling and pitching. The students were informed that these skills would be added to the game they had been building up over the last four lessons, in the next lesson.

Access to the social resources was evident when the coach, checker and performer were arranged and encouraged to face each other when providing feedback and asking questions on each skill attempt. Ian was observed participating in two, three and four-way conversations with his group members and utilising the social skills resources of listening, responding, laughing, smiling, looking at group members, helping others, asking questions, providing guidance and explaining skill components. Ian was provided greater access to the knowledge resources in the lesson as the coach and checker were required to share their knowledge of the skill by providing feedback to Ian when performing in order to achieve a better skill level in bowling and pitching. Ian was provided further access to knowledge when the teacher conducted a reflection (group processing) session at the end of the lesson where students shared their understanding of how to improve their skills. Ian was also supported in his interactions with others by the provision and sharing of the physical resources. Pictures and checklists were provided in the folder for the coach and checker to carry out their role providing Ian with a concrete resource from which to generate interaction with the performer. The result of this successful combination of resources was the recording of: the highest interaction; the second highest for long interactions and; the almost matching the POWD for initiation of interactions, for Ian with his group members for the entire intervention lessons (Field Notes). Interactions were longer reaching the second highest.

In summary, the above evidence for Research Question Four provides new and valuable insight on the positive impact that the availability of more, improved access to and the control of resources in a cooperative learning intervention has on the increased and improved
interaction behaviours between SMID and their PWOD. Access to, more control of and more social, knowledge and physical resources became available for the SMID to support their interactions with PWOD when the elements and structures of the cooperative learning approach were applied as compared to the direct teaching approach. This improvement in access to, control of and increased social, knowledge and physical resources influenced the SMID becoming more active participants in the interaction process.

In particular, how the social resources are managed through arranging students so they are facing each other and planning for the development of their social connections with others and their social skills led to “free and easy” communication with their PWOD (Dyson & Casey, 2012, pp. 3-4). Furthermore, through establishing cooperative learning groups more opportunities for interaction were available as the knowledge resources were managed, there were more sources for the transfer of knowledge and a variety of cognitive and physical ability levels were accessible to group members. Additionally, the physical resources used to complement the cooperative learning intervention were shared by the students in the group and led to more-focused and equal participation in the interaction process. Moreover, the requirements and elements of the cooperative learning intervention managed the above resources ensuring that extra resources become available to further support the interactions of the students with a disability.
Chapter 10 Discussion, Conclusions and Implications

10.1 Introduction

The purpose of this study was to investigate the impact of a cooperative learning intervention on the social interaction behaviours between SMID and their PWOD in inclusive secondary school physical education classes. This chapter will discuss and interpret the meanings of the findings of each of the Research Questions for this study with reference to the latest literature and the theoretical framework. This will be followed by a discussion of the quantitative and qualitative results and identifying the similarities and differences with other literature and their implications for future practice. The limitations of the research will be identified before making suggestions for future research in this field. Before embarking on the discussion of each method a summary of the major findings from both methods will be presented together to understand their relationship in the mixed method design.

10.2 Research Question One

*What is the impact of a cooperative learning intervention on the social interactions between SMID and their PWOD in inclusive secondary school physical education classes?*

This study was designed to address the previously identified problem of limited and unfavourable interactions between SMID and their PWOD in the inclusive physical education setting by implementing a cooperative learning intervention. In answering Research Question One a Baseline investigation was carried out which further highlighted the need for such a study. When existing social interaction behaviours were observed they shared many parallels with the research literature on this problem, highlighting that the current social situation for SMID in inclusive physical education classes had not improved (Block & Obrusnikova, 2007; Hughes et al., 2012). This study found that when the target students were observed in the Baseline Phase, before the cooperative learning intervention was implemented, the interactions between the three target students and their PWOD were infrequent, short, initiated by their peers and were with only a few people. These findings are in line with the review by Hughes et al. (2012) and previous research by Butler and Hodge (2004); Cutts and Sigafoos (2001); Gresham and MacMillan (1997) and de Boer et al. (2012) that found SMID are continuing to experience limited interactions in the school setting with the most common social skill difficulty experienced being “rarely initiating to or engaging in social interaction with peers” (Hughes et al., 2012, p. 290). In addition, several similarities were observed between SMID and PWOD when comparing the results of this current study to other research conducted by Cutts and Sigafoos (2001) and Butler and Hodge (2004) in the inclusive physical education setting. These
similarities included: the prevalence of mainly short interactions; the PWOD predominantly initiating interactions; and that interactions were absent most of the time.

When examining what was the impact of the cooperative learning intervention, the major finding for Research Question One suggested that it had a substantial impact, leading to an increase in the frequency of interactions and some improvements in the quality of interactions of the SMID with their PWOD. This reversed the results found in the earlier studies of inclusive settings that reported on social interaction when teachers mainly used traditional Direct Teaching methods (Butler & Hodge, 2004; Cutts & Sigafos, 2001; de Boer et al., 2012; Gresham & MacMillan, 1997; Hughes et al., 2012). By providing a cooperative learning intervention, this study enabled “both social interaction instruction and opportunities for social interaction to occur with their peers” (p. 305), a suggestion by (Hughes et al., 2012) as a way to increase interactions between students with intellectual disabilities and their PWOD. It reinforces that frequent and positive interactions between SMID and PWOD, a goal of inclusion put forward by Block and Zeman (1996); Slininger et al. (2000) and Vogler et al. (2000) can be achieved if appropriate teaching strategies are employed.

By implementing a teaching approach such as the cooperative learning intervention, this study provided strong evidence in an authentic environment that a functional relationship does exist between the cooperative learning intervention and the social interaction behaviours between the three SMID and their PWOD in the inclusive secondary school physical education setting. The consistency of the evidence stemming from the integration of multiple, rigorous and proven visual analysis strategies across the three SMID confidently confirmed that the cooperative learning intervention was the reason for the increased frequency of interactions and the improved quality of interactions. This result strengthens the results found in the regular physical education literature on the positive social impact of cooperative learning for students (Casey et al., 2009; Dyson & Strachan, 2000; Goudas & Magotsiou, 2009) by adding an interaction benefit in an inclusive physical education setting. In addition, it is in keeping with the association found between socialisation, positive peer relationships and cooperative learning found in the two meta-analysis by (Johnson & Johnson, 2002; Roseth et al., 2008) in the regular education literature. To establish this functional relationship between the cooperative learning intervention and the social interaction behaviours between the three SMID and their PWOD in the inclusive secondary school physical education setting more-specific attention was paid to the frequency of interactions and the quality of the interactions.

With reference to the increased frequency of interactions, the potential that the cooperative learning intervention would lead to an increase in the frequency of interactions was confirmed. It was noted that these increases in the frequency of interaction were substantial,
with both an immediate impact on the initial implementation or experience of the intervention and a sustained impact with gradual increases over the course of the intervention. While there is no research with which to directly compare this result due to the unique nature of this study in the inclusive physical education setting, it strengthens earlier research by Johnson and Johnson (1982); Kaufman et al. (1985); Shachar (2003) on the power of cooperative learning to increase and promote interactions between SWID and PWOD by adding a recent benefit in the physical education setting. Similarly, while not directly comparable due to the different educational settings, the results are in line with the findings of other studies that have implemented a social skill training or preparation component, identified in the Hughes et al. (2012) review. Further, in the physical education setting, the increase in interaction is similar to the findings of Klavina and Block (2008); Klavina et al. (2014), when testing a peer tutoring Approach.

These substantial increases in the frequency of interactions in this current study were combined with some substantial improvements in the quality of interactions. The potential that the cooperative learning intervention would lead to an improvement in the quality of interactions was confirmed with the SMID participating in: longer interactions with their PWOD, interacting with a wider group of PWOD, initiating more of the interactions with PWOD and responding more to others interactions with them. Each of these improvements in interaction quality indicates the strength of the cooperative learning intervention to positively impact interactions between SMID and their PWOD and is reassuring considering the need for students to have more sophisticated interactions in the secondary years identified by Rubin et al. (2004).

With respect to the length of interactions, the results indicated that all three students consistently utilised a greater percentage of medium and long interactions and a substantial immediate reduction in short interactions when the cooperative learning approach was implemented. This is consistent with previous research by Shachar and Sharan (1994) that found students “use more words per turn of speech” (p. 313) when working in small groups cooperatively. While their research did not focus on SMID, it seems that the cooperative learning approach benefits interaction length for a wide variety of students. These results are favourable considering that previous research by Cutts and Sigafoos (2001) identified that interactions between SMID and PWOD are usually of a short nature.

When the number of students the SMID interacted with was examined, the results indicated that all three students interacted with a wider group of peers over the course of the cooperative learning intervention as compared to the Baseline. This result is in contrast to the two studies by Klavina and Block (2008) and Klavina et al. (2014) that tested a different peer assisted learning approach, whereby interactions between SMID and PWOD were confined.
mainly to the tutor and tutees. This suggests that the cooperative learning intervention, through the group and the structures (e.g., Jigsaw), provided opportunities for SMID to interact with a variety of students that may otherwise not be available under both the traditional teaching and peer tutoring Approaches. This opportunity to interact with a wider group of PWOD is important for social inclusion and is in line with research conducted by Bennett and Gallagher (2013), who suggested that interacting with diverse peers benefited students with an intellectual disability.

In relation to the initiation of interactions, the results indicated that the majority of the SMID initiated more interactions with a wider group of PWOD over the course of the cooperative learning intervention than compared to the Baseline Phase. These results are encouraging considering that previous research by Cutts and Sigafoos (2001) and Butler and Hodge (2004) identified that PWOD were initiating the majority of interactions between SMID and PWOD. Even more encouraging was that there was a substantial reduction in peers ignoring one of the SMID when they initiated interactions. Given that Brown et al. (2011), de Boer et al. (2012) and Tripp et al. (1995) found more negative attitudes toward students with behavioural and learning disabilities, this study has shown that a cooperative learning intervention can provide an environment where more-positive attitudes are promoted for these students.

When the responses of the SMID to the PWOD initiating interactions were examined, the results indicated that all three students responded more to PWOD and the teacher over the course of the cooperative learning intervention. Similar increases in responding to PWOD after some instruction from students in their peer networks were observed in the Haring and Breen (1992) study. It is difficult to say in this current study if this type of instruction was given to the three SMID, however, the nature of the cooperative learning approach, whereby positive interdependence is required, could mean that the members of the group must respond to each other in order to complete the assigned task Johnson and Johnson (2009).

While the impact of the cooperative learning intervention on the frequency and quality of interactions between SMID and PWOD was generally positive, the results indicated that there were times when the frequency and quality of interactions declined shortly. While each SMID experienced the decline differently, generally, they coincided with changes in the intervention such as the first two lesson lessons when the groups of four were formed or when groups completed the Preparation Phase and moved into the Application Phase of the intervention. The most noted of the declines was in the frequency of interaction at both times and/or the initiation of interactions when the groups of four were formed. While this result is not unexpected at this time of learning with a group of relatively new people, it does suggest that more attention needs to be paid on developing students’ skills in initiating interactions.
combined with recognising key times when extra support is required to assist students to interact.

In determining the social validity of the cooperative learning intervention the results indicated that while there were some differences in the way each student changed their interactions over the course of the intervention, all teachers felt the changes were positive. Furthermore, while there were challenges in the earlier stages of implementing the intervention for both the teachers and students, overall both accepted the intervention through the cooperative learning group context as an effective strategy for use and participation in the future. This is in line with research by Grenier (2006) that found similar acceptance of the approach despite having challenges with implementing.

10.2.1 Conclusions and Implications for Research Question One. The overall results from Research Question One confirm that the cooperative learning intervention had a substantial impact on interactions, leading to an increase in the frequency of interactions and some improvements in the quality of interactions between the SMID and their PWOD. This finding strengthens the research on cooperative learning by providing social outcomes for the teaching approach that Ward and Lee (2005) identified in their review as lacking in the physical education domain. The positive nature of the interaction findings, as a result of the cooperative learning intervention, are also consistent with the research by Wong (2008) in the inclusive physical and adventure environments. In addition, the immediacy of the results in this study are promising as students with and without a disability and the teacher can see tangible positive improvements early in the introduction of the intervention giving confidence and motivation to continue using the cooperative learning approach despite the challenges faced implementing the intervention in the earlier stages. The results also highlight when extra support may be required after implementing cooperative learning as well as assure teachers that minor setbacks are in the main short lived and by sustaining its use the impact on interactions could still be substantial.

The prime focus of this study, as discussed in Research Question One, was to address the previously identified problem of limited and unfavourable interactions between SMID and their PWOD in the secondary inclusive physical education setting by implementing a cooperative learning intervention. Research Questions Two, Three and Four contributed to this focus by examining more closely what was involved in increasing and improving the social interaction behaviours between SMID and PWOD when using a cooperative learning intervention in the secondary inclusive physical education setting. Whilst previous research by Casey et al. (2009), Dyson and Strachan (2000) and Goudas and Magotsiou (2009) indicates that cooperative learning as a teaching approach can have a positive effect on the social skills and social interactions, it is still not clear how certain factors within the cooperative learning
approach in the secondary school inclusive physical education setting impact the frequency and the quality of these interactions. The broader literature in this area has indicated that increasing social interactions involves both social interaction instruction and opportunities for social interaction with their peers (Hughes et al., 2012) Other research identifies the teacher and the PWOD as important contributors to increasing the social interactions between SMID and PWOD (Nyit & Hsieh, 2004). Additionally theoretical model such as Burke and Stets (2009) identity theory and Allport (1954) contact theory provide a range of factors (e.g., role, social and person, feedback, resources, equal status and support as identified in Table 3.1 p.? ) that are involved in promoting interactions and making these interactions more favourable. This study is the first to examine this range of theoretical factors when implementing a cooperative learning intervention within the secondary school inclusive physical education setting. The discussion will begin by focusing on the impact of role, social and person factors.

10.3 Research Question Two

*How does the presence of role, social or person factors in inclusive secondary school physical education classes impact the social interaction behaviours between SMID and PWOD when using a cooperative learning intervention?*

Research Question Two contributed to the understanding of how to promote interactions and make them more favourable by examining the role, social and person factors that impacted the social interaction behaviours between SMID and PWOD over the course of the cooperative learning intervention. The results indicated that the presence of role, social and person factors, individually and in conjunction with each other contributed to the increase in the frequency of interactions and the improvement in the quality of interactions between the SMID and PWOD over the course of the cooperative learning intervention. What was most promising was that even though there were substantial increases in the frequency of interactions (compared to the Baseline Phase), it was the improvement in some of the quality of the interactions that were most notable.

Over the course of the cooperative learning intervention as the SMID undertook additional roles, became part of a group and adopted a range of personal attributes, they were observed participating in longer interactions with individual PWOD and with all group members together as they contributed to the three or four-way conversations of the group. They were also interacting with a wider group of peers within and outside their group and in some cases the SMID was initiating more of these interactions with their PWOD than in the Baseline Phase. In addition, the SMID were responding more to others initiating interactions with them rather than simply listening and not interacting with others as they did in the Baseline Phase, with the majority of these interactions being positive in nature. Their interactions were animated
as they relied on more types of interactions, incorporating a mixture of speech, gestures and facial expressions. These were all the interaction impacts that came from examining role, social and person factors and the discussion will now focus on each one of these factors individually, beginning with roles.

As discussed by Burke and Stets (2009), identity theory contends that the more roles a person plays and masters, the more likely they are to derive meaning from the situation and have their identity verified and for their interactions to continue and improve with those around them. The results from this current study indicate that the Baseline Phase where roles focused on those of gender, friend and student roles, it was the additional role of being a group member in the cooperative learning intervention where the opportunity for identity verification was more likely and the most important improvements in interactions were noted. Whilst the social interactions improved in frequency and they were interacting with a wider group of peers, it was the quality of interaction results where improvements were also seen.

It was within this additional role of being a group member where they negotiated, undertook and rotated the specific cooperative learning group roles, that the quality of interactions were impacted the most. When the students were equally involved in the negotiations of which cooperative learning role they would play in the lesson, interactions between the SMID and the PWOD in their group were promoted, were longer and involved four-way conversations. With regard to contact theory (Allport, 1954), it appears that these favourable interactions are an indication that equal status was present between group members during these negotiations for a particular role. In some cases a strong preference for a particular role meant that the SMID would initiate these negotiations to ensure they got the role they preferred. This is a promising result, considering the earlier research by Thomson (1993) that found that younger children with an intellectual disability have less influence than their PWOD when negotiating. Therefore, the requirement to choose and negotiate a role for each lesson appears to give the SMID more power in their relationship with PWOD.

When the SMID undertook the specific roles of group organiser, coach or strategist, interactions were promoted with each group member, they were longer and they initiated more of the interactions. The opportunity to play the group organiser role and the subsequent impact on interactions was even more likely when the group members rotated the cooperative learning roles equally amongst the group over the course of the intervention. This group of findings in relation to roles and interaction is in line with Brown et al. (2011) suggestion that the interactions between students with and without disabilities should be supported to encourage each to play a valuable role. It also strengthens the research by Dyson (2001, 2002) on the use
of different cooperative learning roles to promote social effects, by providing more-specific
detail on the factors associated with the different roles that influence interactions.

As discussed by Burke and Stets (2009) identity theory, the predominantly positive
impacts of role factors on the interactions between the SMID and PWOD meant that both were
having more opportunities to have their role identity verified under the cooperative learning
intervention. Firstly, they were being given the opportunity to play and master more roles
through adding the role of group member and the rotation of the cooperative learning roles.
Secondly, this opportunity for mastery alongside the rotation of roles and preference for a role
led to more success in performing their role alongside the successful performance played by
their PWOD in a counterrole. For example, the role of performer and its counterrole of coach
and the four dominant cooperative learning roles used in this study (group organiser, scribe,
motivator and checker). Thirdly, the ability to swap between these cooperative learning roles
and the other roles of friend, student and group member at the appropriate time meant that both
the SMID and their PWOD were adopting different role identities for different social situations.
While the SMID and the PWOD were receiving more opportunities for role identity verification
through these role factors, other factors within the cooperative learning intervention were also
impacting interactions, namely the social factors stemming from being in a group

The results indicated that the Baseline Phase where the SMID were repeatedly observed
being on their own in the lessons and rarely interacting with others, it was their social
membership in the dyads/pairs and more specifically the group of four students in the
cooperative learning intervention that positive improvements in interactions were noted. Most
notably, was the immediacy of the improvements in interaction when the cooperative learning
group was formed followed by sustained improvements over the remaining lessons in the
intervention. This finding is in line with one of the recommendations by Hughes et al. (2012) on
the need to provide opportunities for social interaction with their peers to increase interactions
between them. By using the cooperative learning intervention the three SMID were joining both
pairs initially and then a group, a situation that did not exist in the Baseline Phase. The
immediacy of the interaction impacts was felt stronger in the groups where the SMID had
worked with a group member in the preceding pairs. This is consistent with research by Piper,
Jones, Lacroix, Marrache, and Richardsen (1984), conducted in a group therapy setting, on the
benefits of offering the opportunity to work with the eventual group members before groups are
formed.

With regards to Burke and Stets (2009) identity theory, it appears that the membership
of the group was providing an additional pathway for the SMID to derive meaning from the
social situation and have their social identities verified as indicated by the increased and
improved interactions. This membership, on its own, is, however, in contrast to research by Grineski (1991), Gillies and Ashman (1996), who all suggest that placing students with a disability and PWOD in the same classroom and in groups does not necessarily promote cooperation and social interactions. While this suggests that just being part of the group does not necessarily indicate identification with the group, Identity theory does suggest that just categorising a person as a member of a group is sufficient for an individual to identify with that group and for interactions to continue (Burke & Stets, 2009). The results from this study can help to reconcile the dichotomy between the theory and previous research.

From an identity theory standpoint placing students in groups is important as it can start the process of the SMID identifying with the group and anticipating further interactions with the group members (Burke & Stets, 2009). However, to sustain these increases and improvements in interactions beyond this placement platform other social supporting factors must be involved. To this end, while joining the group was important for interactions, it was the exposure to the formal and informal group bonding processes during the intervention and the influence/similarity of the level of on-task behaviour and the level of interest among group members that came from being part of the group that influenced the interactions more.

The formal group bonding opportunities led in the main to increases in the frequency of and quality of interactions between the SMID and PWOD when groups were first formed with the exception of initiating interactions. The SMID interactions were observed to be longer and animated (i.e., more types of interactions were used) as four-way conversations between group members were promoted. The formal nature of the activities meant that the SMID was also responding more to the interactions directed at them. This inclusion of formal group bonding activities and its positive impact on interactions between SMID and PWOD, strengthens the findings by Johnson and Johnson (1999) by adding inclusive/interaction evidence to the need for trust building activities to make cooperative learning work. Further it is consistent with the findings by Goudas and Magotsiou (2009) on the need to carefully structure the teaching environment towards a cooperation aim. From an identity theory standpoint the formal team building activities were contributing to the social identity verification process and continued interactions by enabling the SMID and the PWOD to participate, act and think like each other which, in turn, was providing recognition, approval and acceptance from each other (Burke & Stets, 2009).

What emerged from this study was that beyond these formal activities the immediate impacts on interactions were sustained and even improved through the majority of the groups instigating informal group bonding experiences. Even more promising was that in some cases the SMID was initiating interactions as they instigated these informal experiences. According to
identity theory the SMID was feeling a sense of belonging in the group as their social identity was being verified making them more willing to be part of and even drive the interactions with their PWOD (Burke & Stets, 2009). This link between the initiation of interactions in the formal team building activities and continued willingness to interact through the informal group bonding experiences is in line with Chowdhury (2005) and Severt and Estrada (2015) findings, which suggest that group members who interact often will likely develop stronger bonds which, in turn, leads to more willingness to interact with group members within and outside the group context. With regard to contact theory, it appears that for these favourable interactions to occur in the formal and informal group bonding activities and experiences, the SMID and the PWOD must have been perceiving common interests and common humanity between each other (Allport, 1954). Beyond these group bonding opportunities, there were, however, other factors that contributed to the identification with the group, social identity verification and continued interactions.

The combination of on-task behaviour and high level of interest in the activities by all the group members within the group produced similar impacts on interactions as the group bonding processes did. While this combination of task behaviour and interest level had the greatest positive impact on interactions, interestingly the results from this current study indicated that when other combinations of these two factors existed (e.g., off-task behaviour and low level of interest), interactions still increased and improved if all or most of the group members displayed the same combination. Consistent with the first combination of on-task behaviour and high level of interest, Gillies and Cunningham (2014) research on cooperative learning offers an explanation, stating that positive goal interdependence, an element of cooperative learning enables cohesiveness in a group to develop as “students understand that they cannot succeed unless others do and they must coordinate their actions to ensure this occurs” (p. 40).

To account for the other combinations, especially where on-task behaviour was low and success in the task less important to the group members, it appears from an identity theory standpoint that the majority of the members in the group including the SMID were becoming similar to each other in thought and action as they adopted the dominant combination being displayed in the group (Burke & Stets, 2009). As with the group bonding process, this similarity provided the opportunity for further identification with the group making it more likely that social and mutual social identity verification was occurring. These opportunities for social identity verification and continued interactions were even more likely as the SMID adopted the dominant combination in the group, displaying their ability according to identity theory to adopt a different social identity for the different social situations (Burke & Stets, 2009). It also further attests to contact theory’s contention that favourable interactions will occur if there is
commonality perceived between two groups (Allport, 1954). Students’ comments from the interviews and focus groups demonstrate that this commonality was emerging and expanding as the intervention progressed.

The immediate and sustained transition to more-active participation in the interaction process that occurred alongside the formal and informal group bonding was associated with the similarity of the combination of task behaviour and interest level. This suggests that all three SMID were being provided more opportunities to have their social identities verified across the course of the cooperative learning intervention. This suggestion is consistent with identity theory’s contention that interactions will continue with those who verify their identity (Burke & Stets, 2009). While the SMID and the PWOD were receiving more opportunities for social identity verification through these factors, other identity factors within the cooperative learning group were also impacting interactions, namely person factors.

According to Burke and Stets (2009) identity theory, verifying one’s person identity is likely to figure more prominently in interactions than role and social identities. The results indicated that the Baseline Phase where the SMID were observed generally displaying isolating personal attributes, it was the presence of a wider range of or more sociable personal attributes of the SMID and the PWOD in their group during the cooperative learning intervention that positive improvements in interactions were noted. Similar to role and social impacts, whilst the social interactions improved in frequency and they were interacting with a wider group of peers, it was the favourable nature of the quality of interactions that was the most promising.

It was within this wider range of personal attributes, where the SMID and the PWOD changed, adapted and were compatible with each other, that the quality of interactions were impacted the most. When the SMID changed their person attributes to be friendlier, more sociable, happier and hardworking as the Baseline Phase when they were apathetic, shy or disruptive, interactions with their PWOD were promoted. Their interactions were more animated as they used a variety of types of interactions such as speech, gestures, facial expressions and combinations of these as the Baseline Phase where one type of interaction (speech or gesture) generally dominated. From an identity theory standpoint, it appears that the more person characteristics they had to choose from the more likely they were to derive meaning from the social situation and have their identity verified and continue interacting (Burke & Stets, 2009).

With respect to compatibility, if the SMID was grouped with PWOD who displayed accepting and supportive person attributes, interactions between the two were more frequent, longer and initiated more equally between them. This took on added importance when changes in the person attributes of SMID occurred slowly, ensuring interactions between them still
continued. According to both contact theory and identity theory this compatibility may have had the effect of reducing or negating any differences in status that may have originally been in place between the SMID and the PWOD enabling the contact between them to be based on the perception of equal status (Allport, 1954; Burke & Stets, 2009).

Additionally, when either or both the SMID and the PWOD displayed a wider range of personal attributes and adapted these to the other’s personal attributes they had more-positive interactions. They responded to each other’s interactions more, looked at each other and smiled more as they interacted. According to identity theory, it appears that by displaying more person characteristics and adopting different characteristics for different social situations both the SMID and the PWOD were distinguishing oneself as unique and identifiable with qualities that the other group members could count on and use to verify their own person identities (Burke & Stets, 2009). This confidence in each other meant that mutual identity verification of both parties was more likely. It is not surprising that the increase and improvement in interactions between the SMID and the PWOD occurred.

While role, social and person factors all contributed to the increase in the frequency of interactions and improvement in the quality of interactions, the results indicated that the distinguishing theme of this study was the combination and interplay of the role, social and person factors that produced a unique group dynamic which contributed substantially to the increase in the frequency of interactions and the identified improvements in the quality of interactions between the SMID and PWOD. While the overall impact on interactions was similar for each SMID as described in each of the role, social and person sections individually, the combinations of the factors were unique to the three different groups and some factors were more salient than others for each group and each person. For example, while in one group person factors were more prominent followed by social and then roles factors, in another group social factors were more prominent followed by role factors and then person factors. Despite these differences and in regards to identity theory, it appears that the positive improvements in interactions meant that the mix and hierarchy of identities in each group were in the main compatible, leading to overall identity and mutual identity verification for both the SMID and PWOD (Burke & Stets, 2009).

The importance of the compatibility of the role, social and person factors within the group on the interactions between SMID and PWOD was even more evident when it did not exist. The results indicated that it took only one group member to be different on the role, social and person factors for interactions between the SMID and the PWOD to be impacted. When just one group member either or together controlled roles, did not think like the others and displayed isolating person characteristics with no attempt to adapt, interactions were more restricted,
shorter and at times aggressive with little eye contact observed, similar to interactions observed in the Baseline Phase. It is noted that these types of role, social and person behaviours correspond to the findings by Dyson and Rubin (2003); Grenier et al. (2005); Killen (2007) on the factors that can lead to negative experiences in conducting group work in the physical education setting. While Johnson and Johnson (1999) recommend that adhering to the elements of the cooperative learning approach will negate these factors, it was clear from the fidelity checks on the implementation of the cooperative learning intervention in this study that these elements were not always observed in every lesson.

While this may be one part of the explanation for the adverse change in the interaction patterns at different times and with different people, from an identity theory standpoint the adverse impact on interactions in this study indicated that either or both the SMID and the PWOD were not having their identity verified by each other or the cooperative learning group and they did not change their behaviour to achieve this identity verification (Burke & Stets, 2009). The results indicated that they did not change their behaviour for a number of reasons, those being a lack of willingness to change, lack of awareness of the need to change, lack of ability to change and a lack of confidence to change. This is in line with contact theory’s contention that certain personalities resist contact with others discussed in the person factors but goes further to suggest reasons for this resistance (Allport, 1954). Fortunately, this resistance was limited and was usually confined to just one member of the group at select times, with the weight of numbers in each group enabling all three SMID to increase and improve their interactions with their PWOD most of the time.

10.3.1 Conclusions and Implications for Research Question Two. From an identity theory standpoint, the predominantly positive increases and improvements in interactions between the SMID and PWOD over the course of the cooperative learning intervention indicated that the unique group dynamic was instrumental in ensuring that the SMID were having their role, social and person identities confirmed more than in the Baseline Phase (Burke & Stets, 2009).

The results from Research Question Two on the impact of role, social and person factors and the interplay of these factors on the social interaction behaviours between SMID and PWOD in inclusive physical education settings highlights the need to consider several implications for practice to ensure interactions between them are promoted and continue.

When considering roles, there is a need to ensure that all students, including the SMID are given the opportunity to master the role of being a group member and the specific cooperative learning roles. In addition, the teacher needs to ensure that these roles are equally shared and rotated among the group and to consider at times giving students a choice of roles.
based on the preferences of the students. There is even a need to teach negotiation skills to all students to ensure equality when choosing roles.

In relation to the development of the social cooperative learning group the teacher should consider offering students the opportunity to work with a variety of students before placing them in the group in order to identify which students work together and which students have difficulty working together with equal-status interactions. In addition, it is also important that time is devoted to conducting formal group bonding activities early in the year or when groups are first formed to ensure commonalities and familiarity are established between group members. Furthermore, the teacher needs to pay attention to when groups begin to bond informally and if possible allow time and space for this to continue in order to ensure that the SMID and the members of the group are given the opportunity to feel a sense of belonging in the group in a more natural setting (Burke & Stets, 2009). In line with these feelings of belonging to the group, the teacher needs to recognise when students are not displaying the same task behaviour or interest level to the rest of the group and attempt to find groups that will provide the match. While this may be problematic in some instances where off-task behaviour and low interest level is the group norm, leaving a SMID in a group that they do not fit could be more problematic. In these cases it is important to design activities that relate to the interest of the group in an attempt to change the dynamic of the group on these two variables.

Focusing on person factors it is important to understand and recognise when students’ personalities do and do not fit together in the group setting. More importantly to identify when students are resisting contact with other students in the group in order to avoid isolation and conflict within the group for this student and the students with whom they are ignoring. In relation to the SMID it is important to identify PWOD who are supportive and accepting, particularly with the SMID, so the experience in the group is more equal. In addition, the teacher should provide opportunities for all students, including the SMID to experience a wider range of personal attributes by exposing them to students who display these attributes as well as creating situations whereby they can practice using them in supportive settings. Furthermore, building the skills of the students to work with and adapt to a variety of different personalities will ensure that all students are developing necessary social skills for not only group work but for life beyond school.

To further establish the explanation for the increase and improvement in interactions and considering that the identity verification process occurs in a feedback loop, other factors were examined. In particular, in order to verify role, social and person identities, individuals looks at the information inherent in the environment (Brown, 2006; Burke & Stets, 2009) to make decisions about their actual behaviour in relation to their perceived ideal behaviour. This
information comes from how they see themselves and from the meaningful feedback they obtain from others. For the purposes of this research the feedback occurring in the environment was examined and was the focus of Research Question Three.

10.4 Research Question Three

How does the provision of feedback received and given in inclusive secondary school physical education classes impact the social interaction behaviours between SMID and PWOD when using a cooperative learning intervention?

Research Question Three contributed to the understanding of how to promote interactions and make them more favourable by examining how the feedback received and given when using a cooperative learning intervention impacted the social interaction behaviours between SMID and PWOD. The results indicated that the receiving and giving of feedback on a small group level as the Baseline Phase when it was generally given and received individually or as a whole class contributed to the changes in interactions between the SMID and PWOD over the course of the cooperative learning intervention. Furthermore, it was obvious that the elements and structures inherent within the cooperative learning intervention also contributed to the increase in the frequency of interactions and the improved quality of interactions between the SMID and the PWOD. Amongst these changes in interactions, the most encouraging was the increased willingness of the SMID and the PWOD to interact with each other.

Over the course of the cooperative learning intervention, the group context enabled more frequent and specific verbal and non-verbal feedback to be relayed between the SMID, the PWOD and the teacher and when this feedback was positive, they were more willing to interact. This is in contrast to the restricted interactions observed in the Baseline Phase when feedback was rarely received and given, was less specific and at times was observed to be of a negative nature. During the intervention the SMID were observed participating in more frequent interactions with their group members and they were interacting more with the teacher than in the Baseline Phase. Their interactions were longer as they gave and received feedback through extended two, three and four-way conversations with group members. This became more prominent when the cooperative learning structures required students to explain and provide feedback on a skill or game (e.g., Performer/Coach or Jigsaw). Linked to this and in addition, the interactions between the SMID and the PWOD became more equal as: the SMID initiated more interactions with their group members; the group members initiated more interactions with the SMID and the SMID responded to more interactions directed at them. The SMID also displayed more types of interactions, incorporating a mixture of speech, gestures and facial expressions as they gave and acknowledged others feedback. All of these findings in relation to interactions are promising considering the long-lasting benefits identified by Beauchamp and
Anderson (2010) on the supportive social relationships that accrue for students who display positive verbal and non-verbal behaviour in their social interactions with their peers.

It was also within the group context where positive verbal and non-verbal feedback was given by the PWOD, the teacher and the SMID themselves and driven by the elements and structures of the cooperative learning approach (i.e., to be in close proximity to each other, to learn how to provide feedback to each other, to bond as a group and reflect in group processing sessions), that other changes in interactions were noted (Johnson & Johnson, 2009). The important change to be noted when the PWOD gave positive verbal and non-verbal feedback to the SMID about their performance, their contribution or fit within the group, was the willingness of the SMID to interact within the group indicated by increased interactions between the SMID and PWOD and the presence of more smiling, laughing and playing around with each other. In turn, facilitated by the same elements and structures of the cooperative learning approach, the SMID was observed returning this positive verbal and non-verbal feedback, a situation that was not observed in the Baseline Phase. This improved willingness to reciprocate is in line with Gillies and Cunnington (2014) claims on the social value of the cooperative learning element of promotive face-to-face interaction. It also strengthens the recommendations by Johnson and Johnson (2009) and the findings by Sapon-Shevin (1994) on the importance of teaching students how to give feedback to their peers in order to contribute positively to cooperative learning activities, by providing an interaction benefit.

In regard to identity theory, the link between the positive verbal and non-verbal feedback and increased interactions between the SMID and PWOD indicates that the positive information being relayed between the two was contributing to identity verification (Burke & Stets, 2009). It seems that through the reflected appraisal process the SMID may have viewed the feedback from their PWOD about their positive contribution and performance as matching their identity standard as a worthwhile, valuable group member. Through the direct appraisal process the SMID may have viewed their own giving of positive and constructive feedback to the PWOD in their group as further evidence of being a worthwhile, valuable group member. This notion of their worth within the group was further supported by the feedback given by the teacher.

More specifically, the results indicated that when the teacher verbally or non-verbally praised the SMID for providing a good idea, performing well in a skill or in the group and developing a strategy, the SMID was observed displaying more types of gestures and facial expressions such as smiling, high fives with their PWOD and raised hands as acknowledgement of this praise. In addition, the frequency of interactions between the SMID and PWOD also increased when this feedback was given. In reference to contact theory, these favourable
interactions indicate that the status of the SMID was being raised and becoming more equal to the PWOD (Allport, 1954). The teacher was supporting this equal-status through the provision of this feedback to the class or group on the SMID ability and contribution. This raising of status is important considering that Solish et al. (2010) and Wiener and Schneider (2002) found that students with intellectual disabilities have less status compared to PWOD.

In turn, it appears from an identity theory standpoint that by having more status as the Baseline Phase, the SMID would have had more identities available to them, providing more opportunities for identity verification in the social situation indicated by the increased and improved interactions (Burke & Stets, 2009). These positive results extend on the findings of Nyit and Hsieh (2004) and Asher (1983) by providing a link between the feedback given and received through a cooperative learning approach and the increased interactions between SMID, their teachers and PWOD and the improved social status with their PWOD. This link between the feedback on ability and likely improved status is also important considering that Nowicki (2011) found that lower social status in a group was associated with the presence of students with intellectual and learning disabilities.

In regard to identity theory, this positive impact on interactions from the frequent and specific verbal and non-verbal feedback from others indicates that the group nature of the cooperative learning approach was providing the SMID more opportunities to have their identities verified as they received more positive and specific information about their actual behaviour (Burke & Stets, 2009). This feedback formed part of the reflected appraisal in the identity process about how they were playing the roles, their fit within the group and the acceptability of their person characteristics. They, in turn, were able to make quicker and better decisions about the fit of their actual behaviour with what they considered should be their ideal behaviour and then if required adapt their behaviour to achieve identity verification and continued interactions. These additional interactions from the SMID then acted to provide feedback to the PWOD about their actual behaviour, providing a two-way exchange of information for the purposes of identity and mutual identity verification.

Similar to Research Question Two the importance of the impact of the more frequent and specific positive verbal and non-verbal feedback was even more evident when it did not exist. Again the results indicated that it took only one group member to be ‘different’ on how feedback was given for interactions between the SMID and the PWOD to be impacted. When just one group member isolated themselves from the group and/or, did not contribute to giving feedback and/or provided negative verbal and non-verbal feedback, interactions were impacted. They were more restricted, shorter and at times aggressive with little eye contact observed, similar to interactions observed in the Baseline Phase. This impact was further felt when the
behaviour from the SMID or the PWOD was combined with less attention by the teacher to the
group or the SMID at that particular time. Fortunately, these situations were limited or confined
to just one group member as the weight of numbers in the group meant that the predominantly
positive feedback was continually being provided.

10.4.1 Conclusions and Implications for Research Question Three. From an
identity theory standpoint, the positive increases and improvements in interactions between the
SMID and PWOD over the course of the cooperative learning intervention indicated that the
more frequent and specific verbal and non-verbal feedback between the SMID, their PWOD and
the teacher was providing more opportunities for identity verification and mutual identity
verification (Burke & Stets, 2009). The results from Research Question three on the impact of
the giving and receiving of feedback on the social interaction behaviours between SMID and
PWOD in inclusive physical education settings highlights the need to consider several
implications for practice to ensure interactions between them are promoted and continue.

It is important for students, including the SMID, to learn early when implementing the
cooperaive learning approach on how to give constructive feedback to their peers on a range of
factors. These factors encompass feedback on their performance, their contribution to the group
and their worth as a group member in order to promote positive interactions between them. This
learning process should involve students recognising what constitutes constructive feedback and
what forms it can be given (i.e., verbal and non-verbal cues). In addition, students should learn
about the impact that different types of feedback, including those that are more subtle, can have
on others behaviour and the success of the group in order to promote positive forms of feedback
(e.g. high fives) and to eliminate negative forms of feedback (e.g., lack of eye contact).

Alongside this training and to further ensure that the feedback given is specific to the
person, the group and the task, it is important to ensure students are given time to understand
and practice the cooperative learning elements and structures. By devoting time to the
cooperaive learning element of group processing in lessons and being specific with what types
of information you are wanting students to relay to each other in this time, all students including
the SMID will be able to make quicker and more informed decisions about their behaviour and
have the opportunity to change their behaviour if the situation requires it. Furthermore,
understanding and practicing the cooperative learning structures such as Performer, Coach or
Jigsaw ensures that students are supported in how to explain and give feedback within a task.

While the teacher is responsible for ensuring this learning, understanding and practice is
conducted they also have a further feedback role during the cooperative learning approach. This
role involves providing the same specific feedback on student’s performance, their contribution
to the group and their worth as a group member on three levels. Firstly, providing specific and
timely feedback to the individual student to ensure they can make quicker and more informed decisions about their behaviour. Secondly, providing specific and timely feedback to the group can enable the group to use this or to change their behaviour for successful completion of a task as a group. Thirdly, providing specific and timely feedback to the class on different student’s positive contribution and performance can help raise the status level of certain students, specifically the SMID which in turn promotes positive interactions between the SMID and the PWOD.

In continuing to establish the explanation for the increase and improvement in interactions and considering identity theory considers that resources are “anything that supports and sustains individuals, groups or interactions” (Freese & Burke, 1994, p. 153), an examination of the flow of resources was the focus of Research Question Four.

10.5 Research Question Four

How does the flow of resources in inclusive secondary school physical education classes impact on the social interaction behaviours between SMID and PWOD when using a cooperative learning intervention?

The results in relation to Research Question Four contributed to the understanding of how to promote interactions and make them more favourable by examining the flow of resources that impacted the social interaction behaviours between SMID and PWOD over the course of the cooperative learning intervention. The results indicated that the availability of more resources with improved access to and control of the social, knowledge and physical resources by SMID and the PWOD contributed to the increase in the frequency of interactions and the improvement in the quality of interactions between the SMID and PWOD over the course of the cooperative learning intervention.

Once again whilst there were a variety of resources available in the group context it was the elements and structures of the cooperative learning approach that enabled greater access to these three types of resources, plus being a resource to support the interactions between the SMID and the PWOD on its own merits. This link between the increased and improved interactions in this study and the elements and structures of the cooperative learning approach is in line with the claims made by Johnson and Johnson (2002) and Gillies and Cunnington (2014) on the social importance of the cooperative learning elements and structures.

Over the course of the cooperative learning intervention as the SMID and PWOD developed their social resources, expanded, shared and controlled their knowledge resources and shared and controlled the physical resources, there was a range of impacts on the social interaction behaviours of the SMID. Overall they were observed participating in more and
longer interactions with their PWOD contributing to the two, three, four-way conversations of
the group, utilising more non-verbal types of interactions than in the Baseline Phase and were
more competent in using a variety of interaction types together (e.g., speech, gestures and facial
expressions together as compared to predominantly speech only observed in the Baseline
Phase). They were also able to initiate more interactions with their PWOD than in the Baseline
Phase and they had the confidence to respond to more interactions directed to them. In
attempting to identify how the different types of resources led to these impacts on the social
interaction behaviours between the SMID and the PWOD, the discussion will focus on the main
findings for each resource type incorporating the support received by the elements and
structures of the cooperative learning approach. The discussion will begin by focusing on the
social resources.

The results indicated that compared to the Baseline results where the SMID relied
solely on their pre-existing social resources within the lessons; it was the additional and
improved access to social resources in the cooperative learning intervention that the
improvements in interactions for the SMID were noted. The most notable of these
improvements in the frequency and quality of interactions occurred alongside the elements of
the cooperative learning approach, where they were physically positioned in face-to-face
interactions, where they participated in and developed interpersonal and small group social skill
building and group processing sessions. This expansion in social resources as a result of the
cooperative learning elements is in line with Johnson et al. (2010) claims on the availability of
social support when in the group context. The main findings from each of these elements will be
discussed further.

When the group members were in a better position to focus on each other the SMID
interactions were increased and longer in length as they interacted freely in two, three and four-
way conversations face-to-face in a group setting. By participating in the interpersonal and
small group social skill preparation activities in the Preparation Phase of the intervention and
the group processing sessions across the intervention, the SMID and their PWOD were better
prepared to interact in the group. The SMID were observed participating in two, three and four-
way conversations with their group members, using a variety of types of interactions, initiating
interactions with others and having the confidence to respond to more interactions directed at
them. These results correspond and extend on the research by Gillies and Ashman (1996),
(2001) on the positive impacts of training students in social skills by offering an inclusion
benefit. It provides further evidence to support the conclusion by Nowicki et al. (2014) on the
“need to teach proactive social skills to all children in inclusive classrooms so that positive and
supportive interactions can be realised” (p. 356). It attests to the notions by Grenier (2006) and
Putnam et al. (1996) on the importance of developing the social skills of students in inclusive physical education settings and regular inclusive contexts. Furthermore, the presence of the social skill preparation activities in the study are in accordance with Johnson et al. (2010), Sapon-Shevin (1994) and Stevahn et al. (2002) recommendations on the need to teach specific social skills for cooperative learning to work.

The positive interaction results for the SMID and the PWOD from these cooperative learning preparation and group processing activities support the idea by Johnson et al. (2010) that they help students to learn how to behave more positively when interacting with others. This suggests that the SMID became more adept at reading verbal and non-verbal social cues, a difficulty highlighted by Chen and Chen (2010) that students with intellectual disabilities encounter. They also begin to address the social skill problems and deficits that Dyson and Rubin (2003), Grenier (2006) and Killen (2007) have identified occur in the physical education setting for all students.

The results from this current study also indicated that the Baseline Phase where the SMID relied solely on their pre-existing knowledge resources and those relayed by the teacher within the lessons, it was the expansion, sharing and control of the knowledge resources in the cooperative learning intervention that the improvements in interactions were noted. The most notable of these improvements in the frequency and quality of interactions occurred alongside the elements of the cooperative learning approach, whereby the group members, including the SMID, were responsible for sharing their diverse knowledge through positive interdependence and promotive face-to-face interactions with each other. The SMID was observed participating in longer interactions and initiating more of the interactions than in the Baseline Phase. The impact on interactions was even more notable when the SMID was in a position to control the knowledge needed for a task. Interactions were more frequent, were longer, were initiated more by the SMID and in some cases were more animated (used a variety of interaction types) as they relayed this knowledge to the group. They also had the confidence to respond to more interactions directed at them. This is further evidence to support Casey and Goodyear (2015) and Johnson and Johnson (2009) claims on the social outcomes derived from the sharing or exchange of ideas when using cooperative learning by adding an interaction benefit.

When the physical resources were introduced as part of the cooperative learning intervention the results from this current study indicated that the Baseline Phase where the SMID was utilising the physical resources in the lesson individually, it was the sharing and at times the SMID control of the physical resources within the group in the cooperative learning intervention that the improvements in interactions were noted. The most notable of these improvements in the frequency and quality of interactions occurred alongside the elements of
the cooperative learning approach whereby the group members, including the SMID, were positioned in face-to-face interactions and were individually accountable for carrying out their role. By sharing the one folder, task sheet or worksheet, the SMID were in a better position (i.e., face-to-face) to interact leading to more frequent two, three and four-way interactions with group members. Even when the SMID controlled the resources for the group, which was a requirement of their role as well as being individually accountable, interactions were longer, more frequent and they initiated more of the interactions with their group members and even the teacher. This result in conjunction with the previous result on the control of knowledge provides a different perspective on the often negative perspective taken when students control or dominate others in cooperative learning identified by Killen (2007). It indicates that to some extent this opportunity to be in control needs to be orchestrated into the cooperative learning approach evenly so benefits for all students in a group are realised.

The results for Research Question Four indicated that the elements and structures of the cooperative learning approach were vital resources in supporting the development, expansion, sharing and control of the other social, knowledge and physical resources. With regard to identity theory it appears that the elements and structures were providing a pathway to connect the flow of actual and potential social, knowledge and physical resources, making identity verification and continued interactions more likely (Burke & Stets, 2009). Considering that Burke (2008) claims that “connecting these resource flows is the fundamental goal of interaction” (p.79) and there were increases and improvements in interactions between the SMID and PWOD in this study, the elements and structures of the cooperative learning approach are indeed important resources. Considering that these interactions were also more favourable it appears from a contact theory perspective, that the elements and structures influence on the flow of resources was also enabling and supporting more equal-status interactions between the SMID and PWOD (Allport, 1954). While it is not being suggested that the interactions were all of an equal status, the evidence suggests that the cooperative learning intervention in the main was raising the status of the SMID the Baseline Phase making it more likely that identity verification was occurring (Burke & Stets, 2009).

The importance of the development, expansion, sharing and control of the social, knowledge and physical resources and more specifically the adherence to the elements and structures of the cooperative learning approach on the interactions between SMID and PWOD was even more evident when these factors did not exist. The results indicated that when the cooperative learning elements were not encouraged or implemented, when students did not attend the interpersonal and social skills training or when the SMID was not given an opportunity to control the knowledge and physical resources as other group members, interactions between the SMID and the PWOD were similar to interactions observed in the
Baseline Phase. They were more restricted, shorter, less initiation of interactions from the SMID and less variety of interaction types. While (Johnson & Johnson, 2009) recommend that adhering to the elements of the cooperative learning approach will negate these factors, it was clear from the fidelity checks on the implementation of the cooperative learning intervention in this study that these elements were not always observed in every lesson.

10.5.1 Conclusions and Implications for Research Question Four. From an identity theory standpoint, the positive increases and improvements in interactions between the SMID and PWOD over the course of the cooperative learning intervention indicated that the cooperative learning elements and structures that were providing a pathway for the SMID and the PWOD to access more social, knowledge and physical resources was providing more opportunities for identity verification and mutual identity verification (Burke & Stets, 2009). The results from Research Question Four on the impact of the flow of resources on the social interaction behaviours between SMID and PWOD in inclusive physical education settings highlights the need to consider several implications for practice to ensure interactions between them are promoted and continue.

Considering the positive impact of the additional and improved access to social resources on the interactions between SMID and PWOD, it is important to provide students, including the SMID the opportunity to develop and maintain their interpersonal and small group skills prior to and during the time they have to use them. Teachers should embed in their programs, activities and structures that focus solely on developing these skills before expecting students to work together in a group on content knowledge. Once these skills are practiced, teachers should then emphasise their use in the content knowledge activities that will follow. Over the course of a school year, teachers should revisit certain skills that are lacking, as well as restricting interactions between students or affecting the success of a group. In line with this development of social resources it is important to place students in a physical position whereby they can maintain eye contact, listen to others and share the resources of the group. This may be achieved by paying attention to the arrangement of desks and chairs in a room and encouraging students to huddle as a group in the physical education environment. This also means avoiding lines or allowing students to sit in a row to have a discussion by specifically asking students to reposition themselves.

Similarly, the positive impact of the sharing and control of the knowledge and physical resources on the interactions between SMID and PWOD also warrants attention. By adhering to the elements and structures of the cooperative learning approach the teacher is able to ensure sharing is occurring as the capacity for sharing is embedded within the approach. Additionally, teachers should provide the opportunity for all students, including the SMID, to control
knowledge and physical resources at certain times and to manage the distribution of this to ensure all students get equal time to be in this position.

10.6 Overall Conclusion and Implications

The findings from Research Questions One, Two, Three and Four leaves no doubt that a cooperative learning intervention, implemented properly, has the capacity to increase and improve the social interaction behaviours between the SMID and the PWOD in inclusive physical education settings. It was through the additional roles, the social nature of the group, the change in the person attributes, the availability of more-frequent and specific feedback and the availability of more and improved access to and control of the resources that this capacity was realised. All of these factors embedded within the elements and structures of the cooperative learning approach contributed to the increase in the frequency of interactions and the improvement in the quality of interactions. By viewing these positive contributions to interactions through the theoretical framework of this study, the power of the cooperative learning intervention as a means for identity verification and equal status interactions between SMID and PWOD is highlighted. These results and connections are important in the context of inclusive education policy as they provide empirical and theoretically based social outcomes that strengthen the capacity of the cooperative learning intervention to address the problem of limited interactions between SMID and PWOD in inclusive physical education settings. In addition, the results provide important considerations for teachers when implementing a cooperative learning approach in inclusive physical education settings.

This study has demonstrated the important role that cooperative learning plays in increasing and improving interactions between SMID and PWOD in an inclusive secondary school physical education setting. Considering the benefits of social interaction for social inclusion and health, the implications of this research for future educational practice include the possibility of utilising the cooperative learning approach more in inclusive physical education settings in order to provide students with the resources they need to support interactions between them. Placing the needs of students at the front of decisions ensures that future practice is considered within this framework and efforts are directed to achieving this aim.

Further to the implications put forward after each research question, overall consideration needs to be given to utilising pedagogical approaches that provide opportunities for SMID and PWOD to learn and interact together cooperatively (Hughes et al., 2012). This will require a move toward a more student-centred teaching and learning approach where students work together in small cooperative learning pairs and groups. This should not be interpreted as just placing students individually in small-sided teams and expecting them to cooperate, it requires the development of carefully selected inclusive pairs and groups that are
prepared and supported through adherence to the elements and structures of the cooperative
learning approach (Johnson & Johnson, 2009). It is within this development that SMID in
inclusive physical education settings will build the resources to support their interactions with
their PWOD.

Apart from the implications put forward, one of the most important considerations in
this development is the initial selection of students in the cooperative learning pairs and groups
and the need for teachers to play a proactive role in this selection in order to foster and sustain
interactions between SMID and PWOD. While current research and practice in cooperative
learning advocates heterogeneous groups of mixed academic and physical ability students, this
study highlights the need to equally consider the social and person fit of students with each
other to ensure groups have the social resources to successfully interact and learn together. To
this end, when selecting PWOD to be in a group with a SMID, this study highlighted the need to
consider PWOD who are supportive and enable equal participation of others in activities, can
adapt their person characteristics to different social situations, provide positive verbal and non-
verbal feedback to others, are willing to share the resources of the group and will distribute roles
evenly among group members. Teachers should avoid PWOD who dominate others by talking
too much, take over the tasks of the group, are dismissive of others, display negative non-verbal
body language, show aggression and rarely talk to others. It is recognised that PWOD who
display these traits need to be placed in a group somewhere in the class, however, there
placement is better served in a group where other PWOD have the social resources and
confidence to manage these traits.

While students may prefer, and may advocate strongly, to be in a pair or group with
their immediate friends, the evidence from this study suggests that this may restrict interactions
for the SMID to this one person and in some cases it might exclude a SMID who does not have
a friend in the class. Teachers therefore need to avoid the temptation to create groups quickly
based solely on this premise, by providing opportunities for students to learn in pairs with a
variety of students before groups of four are formed. This strategy gives all the students the
opportunity to develop a rapport with different students and allows the teacher to observe how
different students learn, support and interact together based on the social and person criteria
discussed above. When selecting the students for the SMID, start by pairing them with a PWOD
who is known to be supportive and then gradually widen the choice of partners. An important
lesson from this study was that while some PWOD were supportive and friendly with some
students they were not always that way with others, including the SMID, hence the need to
observe the fit between students prior to forming groups of four to ensure interactions will flow
freely in the group.
Alongside the pairing strategy and of equal importance to the careful selection of group members, is the need to prepare students to be part of a cooperative learning environment. This preparation should involve training students in the use of interpersonal and small group social skills required for working together followed by the opportunity to practice these skills in supported environments. In conjunction with this training and practice, students need to place the importance of groups in their lives, understand and practice the roles they will play in the group, learn and practice the cooperative learning structures. In this study, these skills were introduced in the classroom-based health classes and then applied in the corresponding physical education setting in the same week, utilising the syllabus outcomes to achieve it. It is suggested that this training and application could occur in a variety of contexts to suit the school and its timetable and that it would be preferable if the entire school was involved in the training early in the year to ensure all students were prepared to work together cooperatively over the course of the year. One teacher in this study suggested that the roll-call groups, where students meet at the beginning of the day for 15 or 20 minutes to register their attendance, could be one avenue to conduct this training. Extending from this training, it is then recommended that all teachers in the school apply the skills being taught in the roll call in their respective key learning area to further build the social resources of the all students in the school.

Furthermore, the preparation of students should also aim to build the resources of all students by creating an environment where the conditions for identity verification and the principles of equal-status contacts are more likely to occur. This includes:

1) training and practice on the roles they will undertake to ensure mastery and appropriate selection of these roles for the situation;

2) participation in group bonding activities that enable students to identify and to find commonalities with their group members;

3) expanding person characteristics to suit the various situations that students will be faced with in the group;

4) learning how to provide constructive feedback and how their actions impact the behaviour and actions of others and the success of the group as a whole;

5) how to use and build the social, knowledge and physical resources of the group and to allow access to these for everyone in the group; and

6) how to be supportive of other group members’ contributions and to ensure equal contribution to the group by everyone.
Once groups are formed and students prepared, it is the role of the teacher to support the students to connect the flow of resources they have built through the adherence to the elements and structures of the cooperative learning approach. This role may take several forms: designing and facilitating the cooperative learning activities; providing timely and specific feedback to the groups and students on their contribution; paying attention to raising the status level of some students within groups; allowing time for groups to participate in informal group bonding experiences; ensuring groups and their members reflect on their groups ability to work together; revisiting particular interpersonal or small group social skills that are limiting interactions and to supporting students who are having difficulty adapting within the groups.

While professional development of current teachers and training of future teachers in the implementation of a cooperative learning approach in physical education settings is important, it should not focus solely on the how to implement the approach. This development and training should also incorporate: understanding those aspects that are driving or motivating students to behave in the way they do in a particular social situation; how to build the resources of all the students in their class so they can participate and interact on an equal basis; and recognising when and how to intervene to allow connection of these resources for continued and favourable interactions. While these student factors are important, professional development should also emphasise the importance of persevering with teaching strategies such as cooperative learning in order to realise the inclusive and long-term benefits of such an approach for all students.

10.7 Limitations

The results of this study are subject to several limitations. Firstly, the schools and teachers who participated in this study represent volunteers from a larger pool of potential participants. It is possible that these teachers may be more motivated to implement the cooperative learning intervention than those who opted not to participate. Secondly, while the teachers were supported with a program, resources and regular options for advice throughout the study, the initial one day training provided to the teachers on the intervention may not have been sufficient for some to fully understand its’ operation affecting the full implementation of the intervention. This, however, was reduced by the researcher making time available for professional development support, when required. While results were still substantial for the frequency of interaction, the identified improvements in the quality of interactions and were consistent across the three SMID, fidelity checks did indicate that the intervention was not always implemented as it was originally intended. Given the nature of secondary schools such changes can be expected from time to time. Thirdly, for privacy and welfare purposes the three
SMID were not aware that they were the focus of the investigation. It was also considered that knowledge of being the focus of investigation would pose a threat to internal validity.

Fourthly, the presence of the author and cameras at each of the inclusive PDHPE classes may have resulted in reactivity by the participants. Teachers may not consistently adhere to intervention implementation or continue with it if a researcher is not present, especially in the early transition stages to the cooperative learning intervention when some students voice opposition to the change. Both the SMID and PWOD may not be as compliant with the approach and interactive with each other without this closer observation. Conversely, the interactions between the SMID and PWOD might have been restricted by the presence of the cameras, as they were embarrassed to talk. Such close observations, however, were necessary to gain in-depth information.

Fifthly, the limited data points in the Baseline Phase, as a result of restrictions on the amount of time at the site, meant that more complete inferential statistical analysis of data were not possible. The visual analysis of graphs was, however, sufficient to determine a functional relationship between the cooperative learning intervention and the social interaction behaviours of SMID (Horner et al., 2005).

Finally, by conducting the study in the authentic environment a number of limiting factors were present and may have had a bearing on the results. These included: the cancellation of the lessons due to teacher absence; adverse weather conditions and the absence of the SMID meant that lessons did not always occur in sequence; the inability to hear all the content of the interactions occurring due to the noisy outdoor environment; and the differences in implementation of the intervention due to the different content between the three schools and the different experience levels of the teachers.

Further, the complex nature of PDHPE in the Australian school system meant that the amount of lessons we could collect data at the schools was limited in number and was confounded by many factors. This was more obvious at John’s and to a certain extent Peter’s school where the number of lessons collecting data were reduced due to student absence, wet weather, teacher changes and absence and the expressed need by the teacher to finish the study at the end of a unit and term. This meant that it was difficult to fully determine the trending of data for some interaction behaviours. Caution should then be exercised when generalising these results to other contexts.

10.8 Recommendations

There are a number of areas for further research that this study has highlighted. Due to the restriction of time placed on this study in the authentic environment, further research over a
longer time-period would be beneficial in order to overcome the difficulties experienced in the
trending of data in this study. Additionally, longitudinal studies that revisit the class three to six
months later could assist in determining whether the initial impacts on interactions gained from
the cooperative learning intervention were sustained over time.

Further investigation of the specific conversations within the inclusive cooperative
learning groups could provide rich data for further theoretical analysis. For example, by being
able to hear all the conversations within the formal and informal group bonding sessions and
experiences, further indications of identity verification or non-verification could be uncovered.
This study, backed up by extensive literature, highlighted the importance of preparing all
students in the inclusive physical education setting to participate in cooperative learning groups
and activities. To this end, it is recommended that further research investigate the
implementation of an interpersonal and small group development program for an inclusive
physical education class. Conducted at the beginning of a school year, such an investigation
could then follow the short and long-term social, academic and physical impact of this program
over a year for the students in the class in order to ascertain its effectiveness for the physical
education setting.

Further investigation of the link between identity verification and cooperative learning
is warranted considering the valuable insights and implications for practice that have been
gained from this study alone. While this study has begun to make these links, there is still a way
to go to realise its full potential in the educational setting. A number of avenues are
recommended such as: 1) the development of identity theory to provide a means to identify
identity verification or non-verification and its components in a setting where in-depth
questioning and surveys of students are not practical; and 2) the possibility of utilising identity
theory and the identity verification process as one means to ascertain the effectiveness of
teaching approaches in inclusive settings. Both avenues would require testing to ensure their
validity and reliability as a tool for creating more inclusive settings.

10.9 Conclusion

This study has provided necessary empirical social outcomes to prove the worth of the
cooperative learning intervention as a teaching strategy to increase the frequency of interactions
and improve some of the quality of interactions (specifically length of interactions) between
SMID and PWOD in inclusive physical education settings. By achieving these substantial and
consistent positive interaction results across three SMID in three different schools with varying
syllabus content, the flexibility of the cooperative learning intervention was emphasised.
Furthermore, the perceived value of the wider cooperative learning approach from the teachers
and the preference from the majority of the students to work in cooperative learning groups as
opposed to individually means that teacher’s and educators should consider its use in inclusive environments.

The study goes further to strongly support the value of the cooperative learning intervention, when conducted properly, as a means for providing the opportunity for identity verification and equal status interactions for and between both SMID and PWOD. Considering the link between: identity verification and continued interactions; equal status and favourable interactions; the findings have strong implications for identity theory and its application to people with intellectual disabilities, cooperative learning and inclusive environments.

This research has highlighted the need for educators and teachers to actively work toward building the resources of both SMID and PWOD through the elements and structures of the cooperative learning approach, in order to maximize the interaction opportunities between them.

While it is acknowledged that introducing the cooperative learning intervention had its challenges for both students and teachers in the early stages of the intervention, the longer term positive interaction results between the SMID and their PWOD was promising. This potential attests to the need to consider teacher training in how to implement cooperative learning, to maximize identity verification opportunities and to support equal status interactions. Even though support structures are improving for SMID, a lot more needs to be done. This study has demonstrated cooperative learning as a viable approach for bridging the policy-practice divide.
References


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Appendix A

Letter to the Principal

University of Wollongong

14th October 2010

Dear Principal

Your school is invited to participate in a study being conducted by Wendy Dowler. It is part of a Doctor of Philosophy (PhD) degree, being supervised by Dr Roselyn Dixon and Dr Gregg Rowland from the University of Wollongong. We are asking for your permission to conduct the research in your school.

We are trying to find out how students with a mild intellectual disability interact with others in physical education lessons when exposed to a different learning strategy eg cooperative learning. We will observe a PDHPE class as they are currently learning and then we will introduce the cooperative learning intervention and observe if there is any change. These classes will also be videotaped. A program will be provided for the teacher and all lessons will be guided by the NSW Board of Studies Yrs 7-10 PDHPE syllabus and the unit the class is currently working on.

Students without a disability and their parents will not be informed that we are specifically observing the student with a mild intellectual disability for privacy and protection of this child. Please refer to the attached information sheets. The parent of this child will be informed and consent required to observe their child. This research is being conducted in other schools at the same time to allow us to attribute any change in interactions to the cooperative learning strategy being used and no other cause.

The research is anticipated to begin in the last 3 weeks of term 1, 2011 and be completed at the end of term 2, 2011. We will require an inclusive physical education class that already includes a student with mild intellectual disability and a willing PDHPE teacher. Before the research begins we will require contact with the PDHPE teacher, their head teacher and a teacher from the support unit, anticipated to be two 30 minute meetings and subsequent short email contact. We will also have to attend one class at the beginning of Term 1 to distribute information and consent forms and explain the project, anticipated to be 10 minutes. We may need to send out extra forms if the initial forms are not returned by the due date.

There will be minimal extra time required from the students, as all activities will be conducted in their regular PDHPE class time including individual interviews with 4 students and one focus group with approx 6 students. The students will be withdrawn from the PDHPE class for these, anticipating two lessons to complete all these. The PDHPE teacher will be required for a one-day professional development, weekly guidance contact and journal reflection for about 20 minutes, and two 60 minute interviews. The interviews and focus groups will be audio taped. We will pay for casual relief for the professional development day to cover their commitments. Below is a time line for the research.

<table>
<thead>
<tr>
<th>Research Activity</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meeting with Head Teachers (PDHPE &amp; Support Unit)</td>
<td>Term 4, 2010</td>
</tr>
<tr>
<td>Meeting with volunteer PDHPE Teacher</td>
<td>Term 4, 2010</td>
</tr>
</tbody>
</table>
Contact with the parent of student with a disability: Beginning Term 1, 2011
Distribution of information sheets and consent forms: 2nd week Term 1, 2011
Potential re-sending of consent forms: Week 5, 6 or 7 Term 1, 2011
Begin research observations – initial observations: Week 8 Term 1, 2011
Train teacher: Week 1, 2 or 3 Term 2, 2011
Begin preparation lessons with students: Week 1, 2 or 3 Term 2, 2011
Conduct interviews and focus groups: Week 4, 5, or 6 Term 2, 2011
Begin Application lessons with students: Week 4, 5 or 6 Term 2, 2011
Conduct final interviews and focus groups: Week 10 Term 2, 2011

Participation is voluntary and your school will only take part if you and the teacher, students and parents give permission. If you do decide not to take part, it will not affect your relationship with the, university or the researchers. If you change your mind about taking part, even after the study has started, just let the researcher or their supervisors know and any information already collected will be destroyed.

Please find attached the following information:

1. Information sheets and consent forms for students, teacher, parent/caregivers, parent/caregiver of targeted student, cooperative learning intervention notification slip.
2. Questions for interviews and focus groups
3. Cooperative learning framework
4. Social interaction data collection instrument
5. Cooperative learning verification Instrument

We appreciate your consideration of this request and if you require further information, Wendy Dowler will be available to answer any questions you may have. If you would like to know more at any stage, please feel free to contact:

1. Wendy Dowler, Insert phone and email
2. Rose Dixon, Insert phone and email
3. Gregg Rowland, Insert phone and email
4. Human Research Ethics Committee (Social Science, Humanities and Behavioural Science) of the University of Wollongong, Insert phone

This study has been reviewed by the Human Research Ethics Committee of the University of Wollongong. If you have any concerns or complaints about the conduct of this research, you can contact the Ethics Officer, on Insert phone.

Regards
Wendy Dowler
Faculty of Education
University of Wollongong
Insert email
Appendix B

Teacher Information Sheet

University of Wollongong

TEACHER INFORMATION SHEET

Research Project: Cooperative Learning and Interaction in the Inclusive Physical Education Lesson

You are invited to take part in a study being conducted by Wendy Dowler. It is part of a Doctor of Philosophy (PhD) degree, being supervised by Dr Roselyn Dixon and Dr Gregg Rowland from the University of Wollongong. We are asking you if it is okay for you to take part in this project.

We are trying to find out how students with a mild intellectual disability interact with others in physical education lessons when exposed to different learning strategies. We (researcher above and an assistant) will observe the class as they are currently learning and then we will introduce a different learning strategy and observe if there is any change. All lessons will be guided by the NSW Board of Studies Yrs 7-10 PDHPE syllabus.

To avoid you changing the way you teach and the students changing the way they interact we will inform you, the students and their parents what the strategy is after the initial observation lessons. Other students and parents will not be informed that we are observing the student with a mild intellectual disability for privacy and protection of this child. The parent of this child will be informed and consent required to observe them. The Department of Education and Training have been informed of the strategy and have approved its use. This research is being conducted in other schools at the same time to allow us to compare and contrast the findings. Please note that we are observing the students and not so much you in the lesson, however there may be some crossover. (or attribute any change in interaction to the learning strategy being used).

The information from the study will be used to provide yourself and other teachers with different learning strategies that may engage adolescent students and we will report the results in a final thesis, at conferences and workshops, in journals and books. We will also provide the school with a summary for you to access.

We will ask you to be willing to have your classes observed in your regular physical education lessons, participate in a one-day training session on the learning strategy, then implement it in the regular physical and health education lessons. A program of activities will be provided to you based on the syllabus outcomes you are working on with the class. We would like you to complete a journal throughout the process, which will take about 10 minutes after each lesson and participate in two 45minute interviews, half way through and then at the end.

We will observe the class in the last three physical education lessons in Term 1 and potentially another one or two at the beginning of Term 2. We will be staggering the introduction of the learning strategy at different schools based on the initial observations. You will then participate in a one-day professional development session on the learning strategy. You will then, using the program provided train the students in the new learning strategy for 8 lessons (4 health lessons and 4 physical education lessons) before applying the strategy in your physical education lessons for the remaining of the term (put in number of lessons – dependent on school). The interviews will be conducted after the 8 training lessons and again in the last week of school term.

Participation is voluntary and your class will only take part if both you and the students and parents agree. If you do decide not to take part, it will not affect your relationship with the school, university of the researcher. If you change your mind about taking part, even after the study has started, just let the researcher, their supervisor or the Principle of your school know and any information already collected will be destroyed.

No-one will be able to identify you from the results of the study and we foresee minimal risk to you in this study. Only the researchers will have access to this information, except when you or the students are identified as being at risk of harm from themselves or others. In this case, the names of these students will be given to the school principal.
The information you provide us will be stored in a locked filing cabinet at the researchers home located in a security building during the study and at the University of Wollongong after the study is complete. It can only be accessed by Wendy Dowler and it will be kept for a period of 5 years.

You should also be aware that if you take part in this study you …….(include other factors that may influence a decision to allow the child to participate)……………………………………………………………………………..

Video and audio recordings of you classes and interviews will be made as part of this study. These recordings will be:

- Collected during each physical and health education lesson we observe (video) and in the interviews (audio)
- Stored as mentioned earlier and then they will be destroyed
- Only viewed or listened to by the researchers and their supervisors. You will be given the opportunity to view the video recordings of the class to assist you in your reflections.
- We will use the recordings to confirm the data we collect during the class and to assist you in the implementation of the learning strategy. They will not be used for any other purpose outside the study.

If you would like to check that you are OK with the information or recordings from the study, you need to let the researcher know what information you are seeking. We will provide you with transcripts of the interviews to check.

When you have read this information Wendy Dowler will be available to answer any questions you may have. If you would like to know more at any stage, please feel free to contact:

- Wendy Dowler, Insert phone and email
- Rose Dixon, Insert phone and email
- Human Research Ethics Committee (Social Science, Humanities and Behavioural Science) of the University of Wollongong, Insert phone

This information sheet is for you to keep. Students and parent have also been given information about this project. Please find attached.

Please complete the attached consent form and return to Wendy Dowler by (date). The research cannot begin without you and all the students in the class returning the form regardless of their choice of participation. If we do not receive student forms by the due date we will be contacting parents to make sure we are okay to start the research.
Appendix C

Teacher Consent Form

TEACHER CONSENT FORM

Research Project: INTERACTION IN INCLUSIVE PHYSICAL EDUCATION LESSONS

I (print name)……………………………………………………………………………………………………
give consent to my participation in the research project described below.

TITLE OF THE PROJECT: Interaction in inclusive physical education lessons

CHIEF RESEARCHER: Wendy Dowler, insert phone and email

CO-RESEARCHER: insert name, Phone, fax, e-mail

In giving my consent I acknowledge that:

1. The procedures required for the project and the time involved have been explained to me
   and any questions I have about the project have been answered to my satisfaction

2. I have read the Teacher Information Sheet and have been given the opportunity to discuss
   the information and my involvement in the project with the researchers

3. I understand that my participation in this project is voluntary; a decision not to
   participate will in no way affect my relationship with the school and I am free to withdraw
   my participation at any time.

4. I understand that my involvement is strictly confidential and that no information about me
   will be used in any way that reveals my identity.

5. I understand that video and audio recordings will be made as part of the study. These
   recordings will take place during:

   a. All physical and health education lessons being observed.

   b. The individual interviews conducted half way through and at the and at the end of
      the project in the (place).

Please cross out any activity that you do not wish to participate in.

Signed………………………………………………………………………………………………………………

Name………………………………………………………………………………………………………………

Date………………………………………………………………………………………………………………

If I have any concerns or complaints regarding the way the research is or has been conducted I
can contact the Ethics Officer, Human Research Ethics Committee, Office of Research,
University of Wollongong on insert phone
Appendix D

Parent/Caregiver Information Sheet

Research Project: Cooperative Learning and Interaction in Inclusive Physical Education Lessons

Your child is invited to take part in a study being conducted by Wendy Dowler. It is part of a Doctor of Philosophy (PhD) degree, being supervised by Dr Roselyn Dixon and Dr Gregg Rowland from the University of Wollongong. We are asking you if it is okay for your child to take part in this project.

We are trying to find out how students interact with each other in physical education lessons when exposed to different learning strategies. We (researcher above and an assistant, Loren Gurtner) will observe the class as they are currently learning and then we will introduce the cooperative learning strategy, where students work together to master the content of the class, and observe if there is any change. All lessons will be guided by the NSW Board of Studies Yrs 7-10 PDHPE syllabus. This research is being conducted in other schools at the same time to allow us to provide solid evidence in the practical setting.

The information from the study will be used to provide teachers with different learning strategies that engage adolescent students and we will report the results in a final thesis, at conferences and workshops, in journals and books. We will also provide the school with a summary for you to access.

We will ask your child to be willing to be observed in regular physical education lessons and then participate in the training and application of the cooperative learning strategy in their regular physical and health education lessons. At some point in the term we may ask your child to be part of a focus group and this will take them 45 minutes. Four students will be chosen for an individual interview to be conducted after the training and the application lessons and this will take them about 20 minutes each time.

The students will be observed in the last three physical education lessons in Term 1 and potentially another one or two at the beginning of Term 2. We will be staggering the introduction of the cooperative learning strategy at different schools based on the initial observations. The students will then be trained in the new learning strategy for 8 lessons (4 health lessons and 4 physical education lessons) before we ask them to apply it in their physical education lessons for the remaining of the term. The focus groups and interviews will be conducted after the 8 training lessons and again in the last week of school term 2.

Participation is voluntary and your child will only take part if both you and your child agree. If you do decide not to take part, it will not affect your child’s results or progress at school. If you or your child, change your mind about taking part, even after the study has started, just let the researcher know and any information already collected about your child will be destroyed. You or your child can also let the teacher know if you no longer want to be part of the study. Your child will remain in the class but they will not be observed, videoed or interviewed.
No-one will be able to identify you or your child from the results of the study. Only the researchers will have access to this information, except when students are identified as being at risk of harm from themselves or others. In this case, the names of these students will be given to the school principal. We foresee minimal risk to your child in this study however students in the focus group will hear what other students have to say. They will be asked not to mention other student’s names when answering the questions. Typical questions may include: What parts of the new learning strategy did you like or did not like? What roles did you play? Who did you interact with?

The information you provide us will be stored in a locked filing cabinet at the University of Wollongong. It can only be accessed by Wendy Dowler and it will be kept for a period of 5 years.

Video and audio recordings of your child will be made as part of this study. These recordings will be:

- Collected during each physical and health education lesson we observe which will be video taped only. The focus groups and interviews will be audio taped only
- Stored as mentioned earlier and then they will be destroyed
- Only viewed or listened to by the researchers and their supervisors. Some of the video recordings of the class may be viewed by the teacher.
- We will use the recordings to confirm the data we collect during the class and to assist the teacher in the implementation of the learning strategy. They will not be used for any other purpose outside the study.

If you would like to check that you are OK with the information or recordings from the study, you need to let the researcher or teacher know what information you are seeking. Due to the need to protect the privacy of all students, video recordings cannot be viewed by other people other than those stated above. We can provide you with the information your child offered in the focus group or interview for you to check.

When you have read this information Wendy Dowler will be available to answer any questions you may have. If you would like to know more at any stage, please feel free to contact:

- Wendy Dowler, wendyd@uow.edu.au
- Mrs Powell (Teacher) 42 561 888
- Rose Dixon, 42 215 292, roselyn@uow.edu.au
- Human Research Ethics Committee (Social Science, Humanities and Behavioural Science) of the University of Wollongong, 42 214 457

This study has been reviewed by the Human Research Ethics Committee of the University of Wollongong. If you have any concerns or complaints about the conduct of this research, you can contact the Ethics Officer, on (02) 4221 4457.

This information sheet is for you to keep. Your child has also been given information about this project.

Please complete the attached consent form and return to your school by the date on the attached form. The research results cannot be used without all students in the class returning
the form regardless of your choice of participation. If we do not receive them by the due date we will resend the forms to make sure we are okay to use the information in the research.

Regards

Wendy Dowler
Faculty of Education
University of Wollongong
Appendix G

Follow-up Consent Forms Prompt to Parent/Caregiver

Dear Parent / Caregiver

Attached is an information sheet we sent early this year. At this point we have not received a consent form for your child.

The research has begun and the researcher cannot use any of the results until all students send back a consent form.

When reporting on the results of the research, the school and your child are not identified. We may use quotes from the students if they offered something but we do not use their name.

Regardless of whether you consent or not you need to return the consent form. If we do not receive this by insert date, we will have to contact you as required by the research process to obtain this written consent.

If you have any questions you can contact the researcher, Wendy Dowler on insert phone. Wendy will then return your call so you do not pay for the call. You can also talk to insert teacher name at the school.

Regards

Wendy Dowler
Faculty of Education
University of Wollongong
Appendix H

Social Interaction Data Collection Instrument - SIDCI

1. Introduction:

This instrument has been developed as a measure of interaction of students with a mild intellectual disability (SMID) in the inclusive physical education setting. The instrument was developed after examination of two instruments already established and validated social interaction / inclusion instruments.

AIPE-S has been used to assess social inclusion of students with both physical and intellectual disabilities (Butler & Hodge, 2004; Place & Hodge, 2001). Hughes et al (2002) used an instrument to describe the social interaction of students with an intellectual disability. Social validity was determined in an earlier study by Hughes (1999) where conversational behaviours of general high school students were identified and validated as being essential skills to target when observing social interaction for students with an intellectual disability in inclusive settings.

The format and structure of this instrument was adapted from the SOFIT: system for observing fitness instruction time (McKenzie et al, 1991)

2. Schedule of assessment

- During the study the lead observer will record data on the social interaction data collections instrument for 100% of the lessons. The reliability observer will collect data on 40 to 50% of the lessons.

- The lessons to be observed during the PhD study using the social interaction data collection instrument are the following (see attached schedule). If the reliability observer cannot attend one of the nominated lessons they will code from watching the video of that lesson.

- If the SMID is not present for the lesson suspend the quantitative observations and the reliability observer will attend another lesson during study. The lead observer will take qualitative data on the cooperative learning approach during these suspended observations.

3. Observer Training

- Observers will complete a training session prior to the study on how to use the social interaction data collection instrument. Training will consist of video analysis of similar physical education sessions utilising the social interaction data collection instrument.

- Interobserver agreement will be calculated during the training sessions to determine interobserver reliability of the instrument. Percent agreement between the scores from the ‘lead’ and ‘reliability’ observers will be computed on an interval by interval basis. A minimum of 80% agreement between scores is expected.

- If reliability is below the 80% agreement the lead and reliability observers will revisit the coding definitions and protocols to discuss areas of disagreement and then re watch the training video in order to reach an 80% agreement.

4. Methodology

- Observers will alternatively observe and record during 20second intervals?

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• Using 20 seconds observe/record the researchers will yield three observations every 2 minutes and 75 observations for a 50 minute lesson.

• Pre-recorded verbal prompts on an MP3 will be used to keep the observers on pace throughout the lesson. Observers will share the same MP3 with different headsets to ensure they are observing and recording at the same time.

• Observe for frequency of interaction, duration, reciprocity of initiation, response, type and topic of interaction and lesson context during the observe interval and record the results during the record interval on one line on the recording sheet.

• Observation will begin as the SMID enters the class. This may occur as they are walking toward the designated area of the class with other students. If they attend the class from a different class to the other students only begin observations when they have reached the area where the class is to take place and other students are present.

5. Definitions & Coding

Social Interaction is defined as the SMID and another person / s in the class producing verbal or nonverbal behaviour (eg nodding, smiling, calling) directed toward the other within the context of the lesson or activity. (Kennedy et al 1997 cited in Hughes et al 2002)

5.1 Frequency of Interaction

• Code whether interaction occurred between the SMID and any other person in the class. If no interaction occurred in the observation interval circle NO. If any interaction occurred circle YES.

5.2 Duration of Interaction

• Interaction may be as short as a one-word response or statement or a nonverbal gesture. Code the length of the interaction using the three options with Sh being short one word or quick nonverbal gesture, Med being more than Sh and less than Lo, Lo being interaction for the entire 20 sec observation interval. The SMID does not need to respond for interaction to occur as long as the interaction is directed at the SMID or to them within their cooperative learning group or other students and the teacher in the class. If more than one interaction occurs in the 20 sec interval record the first interaction observed in the interval.

5.3 Reciprocity of Initiation

• Reciprocity of Initiation refers to what extent the SMID and any other person equally initiated social interaction during an observation interval (Breen & Haring 1991 cited in Hughes et al 2002). Coding will occur using
  o P = peer initiated interaction
  o S = student initiated interaction
  o R = other student responded
  o – (negative symbol) = record only if there is a negative interaction

Negative can be as strong as a fight, showing no interest or can be ignoring the person. Record the type of response on the comments section.

• Once the above is determined record the person/s you observed this interaction occurring with. Record the initials of coop group members if interaction occurs within the coop group

• PG = Peer / s from the co-op group and initials

• OP = Peer / s from another group
T = Teacher
WG = Interaction with the whole group

5.4 Type of Interaction

- Type of Interaction refers to the type of verbal or nonverbal behaviour exhibited within the observation interval. Two types of interaction can be recorded in the same interval.

- S = Speech
  
  FE = facial expression
  
  G = gesture

5.5 Topic of Interaction

- Topic of Interaction refers to the topic area that the interaction was produced from within the observation interval.

  *Conversational topics* (C) may include: (adapted from Hughes et al, 2002 observation sheet)

  - talking about peers (appearance, personality, actions, gossip)
  - school events - social (sports carnivals, excursion)
  - school events – academic (teachers, class, assignments)
  - non-school events (common interest, afterschool activities, family)
  - TV, Movies, Bands, Celebrities
  - Jokes/Teasing
  - Money
  - Food
  - Greeting

- *Activity Related* (AR) topics refer to any interaction related specifically to the tasks given in class and may include:

  - Facilitation
  - Giving an idea
  - Responding to another idea
  - Giving a score
  - Encouraging
  - Coaching
  - Talking in the game (related to playing)
  - Providing feedback
  - Giving assistance
  - Receiving assistance
• The observer circles either C or AR and writes what the specific topic included during the observational interval. If unable to hear the type of interaction a question mark should be placed next to the coding variables and this can be confirmed from watching the video.

5.6 Lesson Context

• Lesson context refers to what activity is happening in the lesson at the time of the observation interval. (adapted from SOFIT, McKenzie, 1991)

  I = instruction (from the teacher)
  M = management
  G = co-operative group activity
  T = Transition
  O = other (record what other is in comments section)

6. Directions for observers

• Arrange at the school 1/2hr before the scheduled start time of the class to meet the lead researcher. Make sure you register your entry to the school at the front office.

• Assist the lead researcher to set up the video and/or audio equipment at the class site.

• While waiting for the students to arrive gather your recording clipboard and check to see if the following is enclosed:
  o 7 social interaction recording forms (complete details at top of form)
  o 1 summary form
  o pencil
  o cued pre-recorded audio to pace the observations (enclosed in an arm band or with a clip, in case observers have to move)
  o one headset attached to main audio device
  o digital watch / timer

• It is advisable in outdoor classes to prepare by wearing a hat and sunscreen and to wear clothing appropriate to an outdoor school setting.

• Be seated at least 5 minutes before the class is scheduled to begin and mentally rehearse the coding sequence.

• Observation will begin as the SMID enters the class. This may occur as they are walking toward the designated area of the class with other students. If they attend the class from a different class to the other students only begin observations when they have reached the area where the class is to take place and other students are present.

• The lead researcher should check that the reliability researcher has a visual on the SMID and then verbally cue the reliability researcher on when to begin observations as well as turn on the audio device. Also note on the video when recording has started so the video confirmation can be cued to the exact interval.

• Record the start time of the class on the recording form.
• All observations must be as discrete as possible to avoid targeting the SMID. This means scanning the target group from a distance and looking away discretely if the student looks at you.

• It is expected in outdoor classes that both researchers may have to relocate to observe the SMID. When the lead and reliability researcher are working together off the same audio device a hand signal needs to be used to signal to the other that they need to move.

• Observe for frequency of interaction, duration, reciprocity of initiation, response type and topic of interaction, lesson context throughout the ‘observe’ interval and circle codes and write comments on the recording form in the ‘record’ interval.

• Avoid discussions with the other researcher and students in the class. If a student asks you a question politely tell them “I am sorry, I am in the middle of a task. I will try and answer your question at the end of the class”.

• The lead researcher needs to pause the audio device if the disruption is significant and note this on the recording form if they are recording on their own. When two observers are present and the other researcher has not been disrupted they should continue recording. When the other researcher returns let them know which number interval to start back on. The disrupted observer then needs to watch the video to complete the missing sections.

• Finish observing when the teacher has dismissed the class and the SMID is no longer near other students in the class. NB: The student may leave the class and interact with members in the class so it is important to continue observations until they are out of sight or are no longer in close proximity to class members.

• Record the end time of the class / observations on the recording form. Thank the teacher.

• Once completed observations cue the audio for the next lesson, turn off the video equipment, remove the tape and note the date, time and lesson number on the tape for future reference.

• Complete the header information on the recording form and tabulate totals vertically for each of the coding categories at the bottom of each of the pages.

6.1 Summary Form

• Directly after the observations copy the summary scores across to the summary form

• Calculate the totals across all pages and record under TOTAL

• Complete the header information of the summary form and record any special notes for the class eg. disruptions that may have occurred, any difficulties experienced etc.

6.2 Reliability Checks

• 40% of lessons will be coded simultaneously by two independent observers. Reliability checks will be completed for these lessons.

• A single audio player will be used to pace both observers using two headsets.

• The principal researcher will be the lead researcher and their data will be used for analysis. The other researcher will be the reliability observer, which will be indicated on the recording form. The reliability observer will record YES on the header of the recording form next to Rel Obs and the lead researcher will indicate NO on the header of the recording form next to Rel Obs.
• Both observers will begin recording at the same time. The lead observer will signal verbally to begin and will start the audio once they consider the SMID has entered the observation area. Refer to above.

• The following steps will be used to calculate percentage agreement for the major categories on an interval-by-interval basis using the formula (agreements/observed intervals multiplied by 100):

  **Step 1:** Compare the lead observers recordings to the reliability observers recordings

  **Step 2:** On the reliability observer’s form asterix in red the instances of disagreement for the categories.

  **Step 3:** Total the number of disagreements (asterix) for the categories and write the number at the bottom of each page and then across all pages.

  **Step 4:** Complete a table for the entire lesson (below)

  **Step 5:** Calculate the reliabilities (percent agreement) using the formula

  \[
  \text{Precent agree} = \frac{\text{Total#Agree}}{\text{Total # Obs}} \times 100
  \]
Interobserver Agreement Table

Lesson No. __________________

Date of Lesson. ________________ Type of Lesson: ________________

School: ______________________

<table>
<thead>
<tr>
<th>Intervals</th>
<th>Agreements</th>
<th>Disagreements</th>
<th>% Agreement</th>
</tr>
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<tbody>
<tr>
<td>Interaction</td>
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<td>Interaction Length</td>
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<tr>
<td>Reciprocity of Initiation</td>
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</tr>
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<td>Type of Interaction</td>
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</tr>
<tr>
<td>Topic of Interaction</td>
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<tr>
<td>Who the student interacted with</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Context in which interaction occurred</td>
<td></td>
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</tr>
</tbody>
</table>

Procedure

**Step 1:** Compare the lead observers recordings to the reliability observers recordings

**Step 2:** On the reliability observer’s form asterix in red the instances of disagreement for the categories.

**Step 3:** Total the number of disagreements (asterix) for the categories and write the number at the bottom of each page and then across all pages.

**Step 4:** Complete a table for the entire lesson (below)

**Step 5:** Calculate the reliabilities (percent agreement) using the formula

Precent agree = (Total#Agree)/(Total # Obs) x 100
**Social Interaction Recording Form**

Date:__________ School:__________ Period:________ Week Day:________ Time Start:_______ Time End:________ Length:________

Teacher:_____________ Observer:_____________ Rel Obs:______ No of Obs:______ Page 1 2 3 4 5 6 7 of ___

Activity of Lesson:_____________ Type of Lesson:_____________ Lesson No:______

No of Group members: ______________ SMID present:_____________

<table>
<thead>
<tr>
<th>Interval</th>
<th>Interaction</th>
<th>Duration</th>
<th>Initiation/Response</th>
<th>Who</th>
<th>Int</th>
<th>Type</th>
<th>Topic</th>
<th>Context</th>
<th>Comments</th>
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<tbody>
<tr>
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<td>Sh Med L</td>
<td>P S R</td>
<td>PG OP T WG</td>
<td>S FE G</td>
<td>C AR</td>
<td>I M G T O</td>
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<td>I M G T O</td>
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<td>PG OP T WG</td>
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<td>C AR</td>
<td>I M G T O</td>
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<td>I M G T O</td>
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<td>C AR</td>
<td>I M G T O</td>
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**SUM**

**DISAG**
## Social Interaction Summary Form

School ___________________________ Observer ___________________________ Date ____________

Lesson Length ___________ min  Total Observed Intervals ___________

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<th>PAGE</th>
<th>1</th>
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**References**


Appendix I

Pilot Project

Results from the Pilot Project

The researcher conducted a case study from March to May 2010 in a secondary school on the south coast of NSW. The study examined the development and implementation of a six-week cooperative learning intervention in a secondary school physical education class that included a student with a mild intellectual disability (SMID). The teacher was provided with a program to implement that was assessed by an expert panel from leaders in the field of cooperative learning. The teacher and students were given training on CL before having to implement the approach in the physical education class.

Data was collected through interviews, focus groups, journal entry and observations. The interviews were conducted individually with the teacher and four students in the one cooperative learning group, which included the SMID. One focus group was conducted with six students (one randomly chosen student from each of the other groups in the class). A social interaction data collection instrument was also trialed in 66% of the classes. The data from the study was analysed and triangulated through sorting and coding of the data using the Nvivo software package to answer the following research question.

Research Question 1

What are the perspectives of the physical education teacher when implementing a cooperative learning approach in a secondary school physical education setting that includes a student with a mild intellectual disability?

a) What are the experiences of the students when participating in physical education lessons utilising a cooperative learning approach?

The researcher identified five categories from the data. These are a) group selection, b) preparing for CL, c) activity design and implementation of CL d) support of the SMID and e) CL resources.

Group Selection: Data from the interviews, focus groups and observations indicated that the interaction and participation of students in CL activities was affected by the initial selection of group members. A final comment made in the journal by the teacher at the end of the study was “I felt that some combinations in groups were good whilst other groups should have been grouped differently.” In relation to the TG the teacher commented, “I felt that some groups worked well the whole way through – in particular the SMID groups. I feel one main factor here was the grouping of students. The students in these groups were on the whole cooperative and keen to do the activities to the best of the ability.” However, when talking to Sally (the SMID) about her group “… we didn’t have much in common really, just our siblings, younger sister but accidental things not really interests the same.” When asked if this affected their group Sally commented “a bit because we did not have much interests, but not much to talk about.” Even though the students were cooperating to participate in the activities the interaction in the TG although occurring was not as forthcoming as other groups due to Allison, (PWOD) isolating herself from the group socially.

Comments made by the students on the make-up of the groups were varied with all students keen to have a friend in their group. Simon was happy to be with a friend “Yeh, it was good …because John was in my group as well.” As opposed to Jason “The people, some people in your team were like lazy… and they didn’t do anything.” When asked about being in a group with people that weren’t their friends Allison commented “Yep, because then you get to know more people, because you would just stay with the same people then you won’t branch out and make more friends.” Interestingly Allison’s focus was regularly on her friends group. The teacher noted, “Allison I feel was at times uninterested in the activities and more concerned in looking out for her peer group. This I feel had an impact on Sally as she then became more reserved (eg 2-2 activity).”

Preparing for CL. In this study, there was limited time to prepare the interpersonal skills of the students to participate effectively in the cooperative learning activities. Three lessons were provided to conduct the training and due to time
constraints not all skills were addressed before the students had to work together in groups to achieve a task. The teacher reflected in her journal “I felt that in the early sessions there were too many activities to complete in one session. I felt I rushed to get through some activities for the sake of trying to finish all activities and I did not instruct/ explain/ discuss activities as well as I should have. This may have been the cause of students not understanding some activities.” In the first lesson when practicing listening skills with a partner, Sally was paired with Allison. Due to time constraints observations noted that they did “not finish the listening activity conversation”. In later lessons a field note recorded: there was limited interaction off the court with Allison and Sally. Allison sits a distance away from Sally on the bench so hinders communication and has her back to her.

Critical components of CL were not always conducted or limited time was left for them. The teacher commented that group processing “ is a good idea but again it was just time. Maybe it was something I should have made sure I did at the end of each lesson because I think it is good idea that kids stop and reflect on what they have done.” It is noted that due to time constraints and availability, the teacher also only received two hours of training on the CL approach at the beginning and commented, “Yes for me I was learning along the way.”

Activity Design and CL Implementation. The way the activity was designed and implemented in the lessons impacted both positively and negatively on the SMID participation and interaction in the class. When the activity incorporated all the CL principles and they were adhered to, participation and interaction within the TG was excellent. This was evident in the training activity where the group had to develop a name for their group based on their common interest. The teacher commented “the students who took this activity seriously worked well – they seemed to take on their roles well, listened to each other and provided good ideas for their group motto.” Sally when referring to the activity commented “we always asked everyone to come up with an idea, everyone did and then sometimes someone didn’t have an idea so we asked and that was the main thing.” Field notes describe the teacher’s influence

John hands across the sheet. Sally picks it up to have a look. Sally not sure what to do and puts up hand. Allison now looks at the sheet when the teacher comes over. Sally reads out what is being said. Teacher suggests something to the group. Teacher asks them to reduce down their name. Sally gives a suggestion with more animation in her face than last lesson.

Conversely design and implementation of the CL activities at times prevented the SMID participating and interacting. The SMID’s interaction was stifled when both gender pairing and difficult positioning of students was evident or instructions were too long. Field notes repeatedly referred to the gender pairing eg Boys at front, girls at the back. Sally with her hands on her hips. The two boys are talking only to each other. – Endball and Sally and Allison are not getting involved in the game much at all as the boys are stopping the ball before it goes to them. The teacher noted the gender issue in the Volleyball game “There was that time under the Colah where, and I put it down to the fact that it was gender based and she was sitting with the girl in the group and the girl was not interested in her, she was too focused on where her friends were and I think that was sending a signal to Sally and she maybe just shut down for a while.”

In relation to the game in the last lesson the teacher reflected that “the main issue with this game is that I was confused with a few of the organisational details……. I felt I spent a lot of time explaining/ demonstrating the game also, which left limited time to play.” Students were not always positioned to participate in face-to-face interaction. They were sometimes waiting in lines and sitting apart from each other as was recorded in the field notes eg. Activity finished – all four students sit down in a line. Simon, John, Allison and Sally, an opportunity to talk to each other but there is no communication.

Supporting the SMID. The CL approach did provide support for Sally through its inherent group work nature. Field notes identified that Sally understood the tasks, was assisted in the tasks by her group and was able to assist others in her group. Eg Allison is a bit confused about what to do when she gets the ball. Her group communicate with her on what to do. Sally also gives her a direction of where to throw the ball. John commented about helping people his group “I guess a little bit with the girls, throwing them a ball and make it easier to catch.” The teacher provided support throughout the lessons but felt that at times less support was given to Sally due to other students with more behavioural issues taking her attention away.

“Being conscious of them (SMID) too, because a lot of time they do not ask questions and they get lost in the room and that is the frustrating thing about teaching generally it is just helping those kids sometimes. They are great kids, they do what they are asked, they are not a discipline problem and so really sometimes they get lost
in that system and your not providing anything additional for them. You think they are doing ok but there not a lot of the time.”

**CL resources.** The use of the folder and worksheets in the CL lessons created a focus and structure for the group when participating in CL activities and at times promoted interaction among group members. A field note explains:

Teacher comes over to look at what they are doing. Teacher talks about looking at their common interest. Sally opens up the folder to look at last weeks sheet. Em looks at the folder. JL says something to Em and she responds about what is in the folder.

The teacher also commented

“I think it is a great idea. I think it is good that it was something that was used right from the start so the kids identified, ok we have got to use this and put things in it, this is our group and I guess they are taking a little ownership of something that belongs to their group. Especially that activity where they go through and name their group and putting a sticker with their name on front helped as well.”

**Research Question 2**

What are the operational considerations when utilising the social interaction data collection instrument (SIDCI)?

The SIDCI was trialled in four out of the six lessons. The following inter-observer reliability averages were obtained using the point-by-point agreement method: Frequency of interaction = 94%, duration of interaction = 85%, reciprocity of initiation = 88%, type of interaction = 82%, topic of interaction = 97%.

Results from the trial found that responses of the SMID and the PWOD, which was not included, had a significant impact on interactions when video observation of the class was later undertaken. Difficulty hearing all interactions in the physical education setting meant that the topic of interaction was not always clear. High inter-observer agreement, however, was obtained in this variable in the study by relying on broader definitions of topic eg conversational, group related or other rather than the specific topic discussed. Duration of the interactions using a 5-point likert scale was also difficult with disagreements occurring specifically between the extremes of the scale. In the first two lessons recording all the data in the 20second observe and record interval was difficult but this improved as the researchers gained experience using the recording sheet and minor adjustments were made to the recording tools.

**Recommendations**

Based on the above results the following recommendations have been made for the PhD study:

1. Conduct the study in more classes to ascertain if the same results are replicated across other SMID and PWOD in different schools.
2. Take data before the CL intervention on what happens in the regular PE classroom to more accurately determine a relationship between CL and the social interaction behaviours of SMID.
3. Increase the length of the study to enable more time to prepare students and time to observe the results of this training.
4. Add a response component to the SIDCI to more accurately reflect the quality of interactions occurring in the class and more clearly define the definitions of some components in the instrument eg duration.
5. All teachers are provided with a casual teacher to cover their classes at the beginning so proper training is provided before having to implement the CL approach.
6. Increase the number of lessons devoted to training the students and focus on one interpersonal skill each lesson eg listening, non-verbal communication and decision-making / problem solving. Teach about the skill in the health lesson and then apply that skill in the next available PE lesson via a CL activity to enable transference of the skill.
7. Have one friend in each group to make the transition to working together in groups more smoothly.
8. Regularly swap partners in the group so all students get an equal chance to work with all group members (facilitated by the teacher).
9. Encourage and provide the teacher with suggestions on how to support the SMID and PWOD to interact more in the class.
Appendix J

Cooperative Learning Intervention Framework

The cooperative learning intervention will consist of a teacher training session, eight student preparation lessons (approximately 4 weeks) and 5 to 6 weeks of application lessons where cooperative learning will be the dominant strategy used in lessons. To validate the intervention an expert panel comprising of leaders in cooperative learning and intellectual disability reviewed the intervention. The intervention was then trialled in the school setting through the Masters study. Refinements were then made after discussion with students and teachers in the study to develop the following.

Teacher Training

The PDHPE teacher will be provided with a one-day individual training session on the concept of cooperative learning approach and how to implement such a strategy in lessons. The teacher will be provided with resources to achieve this and will have access to the researcher before and after lessons to discuss ideas and concerns as they arise.

Preparation Lessons

Skills Developed: During the preparation lessons students will work together on mastering the group work/interpersonal skills required to participate in cooperative learning activities. The skills developed are linked to the PDHPE syllabus through Stage 4, Strand 1, Self and Relationships. They include listening skills, how to provide encouragement, how to make consensus decisions, how to solve conflicts within the group, how to give explanations, feedback and ask for assistance and how finally to reflect on group performance. The 8 lessons will be broken into four theory lessons and four practical lessons. Interpersonal skills will be introduced in the health (theory) class and immediately followed up and applied in the physical education (practical) lessons.

Grouping

The teacher will also use the first four lessons to observe interactions between students in order to develop heterogenous groups of four students that will work together for the remainder of the intervention (Johnson & Johnson, 1999; Killen, 2007). During the first four lesson students will be grouped in smaller dyads or triads in order to practice skills and build up to the group of four (Dyson & Rubin, 2003). Groups will consist of one higher ability student, two middle range ability students and one lower ability student (SMID). Students will be placed with at least one student they are friendly with, not specifically their best friend (Dyson, 2002). The student with an intellectual disability is to be placed in a group of supportive students. Groups consist of two males and two females if there is a mixed class (Dyson & Rubin, 2003; Lou et al., 1996).

Assessment:

At the end of the eight lessons students will be given an opportunity to peer assess another group in order to consolidate their understanding of group work concepts and provide and receive valuable feedback on group performance. This will also be used as a comparison for groups and the teacher at the end of the intervention.
**Application Lessons**

In the application lessons the students remained in the same cooperative learning groups and applied what they had learnt and practiced in the Preparation lessons more independently. The number of lessons was different for each school and was dependent on how many lessons each school could provide. The lessons were practical in nature (i.e. in the physical education setting) and the content was dependent on the schools scheduled program from the NSW BOS PDHPE Syllabus through Stage 4, Strand 2, Movement Skill and Performance (Board of Studies., 2003; Grineski, 1996).

**Resources**

Each group will have a folder that will be used in each lesson with introductory tasks, activity task / sheets, assessment sheets, group processing sheets included. A group facilitator from the base group is nominated in the previous lesson to collect the group folder and facilitate the group activities for that day. This person will be different for each lesson to allow students to share the roles (Brown, 2006; Tiberius, 1995). All work developed by the group will be kept in this folder and used as a source of review, reflection and assessment (Dyson & Grineski, 2001; Dyson & Rubin, 2003).

**Lesson Structure**

All lessons will begin with the teacher communicating cognitive, affective and physical goals for the lesson (Grineski, 1996). At either the beginning, during or at the end of the lesson or activity students will be given the opportunity to connect with each other based on these goals through a group processing / connection session. In early lessons the teacher will scaffold the process and later lessons this will be lead by the group facilitator for that lesson using group processing sheets (Dyson & Rubin, 2003; Johnson & Johnson, 1999). During this session students are given time to contribute to their folder or prepare for the lesson activities or revisit group processing goals (Allport, 1954).

**Lesson activities**

The activities will incorporate the main components of CL (Board of Studies., 2003; Johnson & Johnson, 1999). Early lessons will focus on simpler, shorter CL activities starting with rotating pair work within the base group (Dyson & Grineski, 2001; Dyson & Rubin, 2003). Teacher guidance during the early lessons will be focused on scaffolding the activities and monitoring and reinforcing appropriate interpersonal skills (Gillies, 2007; Grenier, Dyson, & Yeaton, 2005; Karpov, 2006). Later lessons will bring the base groups together as a group of four with task cards / sheets driving the lesson activities (Dyson & Rubin, 2003). Teacher guidance in later lessons will be focused on supporting group cohesion, questioning to extend critical thinking and assessment. Students will be given more opportunity to decide on what they will be learning as the lessons progress (Dyson & Grineski, 2001; Johnson & Johnson, 2009).

All lesson activities will be organised to incorporate the elements of the CL approach. The teacher will monitor and encourage the use of positive interpersonal and small group skills. Activities will be designed to promote the use of face-to-face interaction. Tasks will be organised to develop positive interdependence between group members as they strive together to achieve a common goal. Activities will be designed, monitored to ensure individual accountability with related assessment requirements. Students will be encouraged to discuss progress of the group through a group processing session (Johnson & Johnson, 1999).
Assessment:

Students will participate in peer assessment similar to the preparation lessons based on group work skills. Self and peer assessment will also be used to ascertain attainment of physical skills using CL checklists. Options of teacher assessment ideas will be provided based on syllabus outcomes and group work processes. Lifeskills outcomes will be considered for the SMID if necessary (Board of Studies., 2003; Grenier et al., 2005).

Reference List


Board of Studies. (2003). Personal Development, Health and physical education Years 7 -10 Syllabus. Sydney: Board of Studies NSW.


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| 6   | PE      | Practice of Decision Making and Group Roles | Group Processing

NSW Syllabus: Stage 4, Strand 2 & 4 Movement Skill and Performance & Lifelong Physical Activity

| 7   | Classroom | Conflict Resolution | Group Processing

NSW Syllabus: Stage 4, Strand 1 Self & Relationships

| 8   | PE      | Practice of all social skills Assessment | Group Processing

NSW Syllabus: Stage 4, Strand 2 & 4 Movement Skill and Performance & Lifelong Physical Activity

| 9   | PE      | Application of group work skills | Group Processing – Assessment

NSW Syllabus: Stage 4, Strand 2 & 4 Movement Skill and Performance & Lifelong Physical Activity

| 10  | PE      | Application of group work skills | Group Processing – Assessment

NSW Syllabus: Stage 4, Strand 2 & 4 Movement Skill and Performance & Lifelong Physical Activity

Change of Focus and Plan for this school

Application Lessons (Various)
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*N/B: The above is the planned Intervention for each school. In practice, there was some variation to the above sequence and scheduled Cooperative Learning Structures due to weather, previous lesson completion and time constraints in the lesson*
Appendix K
Lesson Activity Description

**Activity:** “Pitch & Bowl” (Performer and Coach)

**Timing:** 45 minutes

**Equipment/Resources:**
- Group Folder
- Task Card – pictures & cues (bowling & pitching)
- Skill Checklists
- Soft balls
- Bases

**Purpose/Aim:**
To understand and practice the techniques involved in providing explanations to other students and ways of providing feedback on performance

**Link to PDHPE Syllabus**

**Students will learn about:**
1. interpersonal communication (apply from previous lesson on assessment)
2. types of movement skills - specialised
3. influences on skill development and performance - applying skills across contexts, importance of practice, safety.
4. the features of movement composition -performing

**Students will learn to:**
1. practice and refine fundamental and specialised movement skills in predictable learning environments
2. participate in movement activities that demonstrate and reinforce the transfer of skills across different movement contexts.
3. participate safely in movement activities
4. provide and make use of constructive feedback to refine movement performances

**Organisation:**
Base groups take on roles of coach, player, checker & performer. Students swap around roles. Three groups are bowling and three groups are pitching.

**Operation:**
Using a **Performer and Coach** technique students learn, practice and refine the techniques of pitching and bowling. Tell students that they will be implementing these skills into the game tomorrow.

- Teacher demonstrates with the class both the bowling and pitching technique using the cue words. (5min)
- Teacher explains the process of the performer coach activity. (5 min)
  - One player (performer) is pitching/bowling over the base / to the wicket
  - One player is the catcher/wicket keeper returning the ball to the performer
  - One person is the checker standing to the side looking at the performer and completing the checklist
  - One person is the coach standing to the side looking at the performer, consulting with the checker and then providing feedback to the performer.
- Once the performer has pitched/bowled they are given feedback from the coach/checker, they then perform again taking into account these ideas. Coach & checker repeat the process again so the performer gets 3 attempts at pitching/bowling. (5min)
- Swap roles so player becomes performer and vice versa and coach becomes checker and vice versa.
- Swap so all get a chance to do all roles. (15min)
- Bring class back together and randomly asks questions what the coach/ checker did that helped them improve. Provide some suggestions if required. (5min)
- Swap groups from pitching to bowling (10min)
### Cooperative learning Elements:

**Interpersonal Communication** – students involved in two-way communication when giving feedback and asking for assistance with technique

**Face-to-Face Interaction** – students have to face each other when providing feedback and consulting with each other

**Positive Interdependence** – students are relying on each other to play their role to improve their technique

**Individual Accountability** – students are individually responsible for performing, improving performance, providing concise and clear explanations and feedback. Checklist records performance

**Group Processing** – Questioning students on what was successful when working together and implementing these ideas on the next rotation.

### Support Suggestions:

1. Doing a demonstration at the beginning gives the students an idea of technique.
2. Provide clear and concise cues to read. Suggest that both students read the cues first together.
3. Teacher suggests that the students who feel more confident should try the coaching role first and then swap, to allow for another example for the target student.
4. Questioning students assists with ideas half way so struggling students can use this next rotation
5. Teacher observes the groups and provides suggestions to individual students.
Appendix L

Teacher Training Agenda

Tuesday 10th May 2011

Preparation:

Please read over the background material provided. Write down any questions you may have

9.30am – 9.45am Discussion on Background Material
9.45am – 10.00am Understanding Cooperative Learning (CL)
10.00am – 10.15am Understanding the CL verification tool
10.15am – 10.45am Preparation Program Unit Outline

10.45am – 11.00am Break

11.00am – 11.15am Understanding the individual lesson activities layout
11.15am – 12.15pm CL activity examples / discussion
12.15pm – 1.00pm Group Selection

1.00pm – 1.45pm Lunch

1.45pm – 2.15pm Management of the CL class
2.15pm – 2.30pm Journal Entries
2.30pm – 2.45pm Equipment and Resources
2.45pm – 3.30pm Questions and Discussion
## Appendix M

### Cooperative Learning Verification Tool

**Verification of Cooperative Learning**

<table>
<thead>
<tr>
<th>Observer: _________________</th>
<th>Content: ________________</th>
<th>School: ________________</th>
</tr>
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<tbody>
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**Summary Items**

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**Field Notes:**
### Cooperative Learning Verification Tool Results - Ian’s School

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#### Field Notes:

The results from the CLVT indicated that in each lesson heterogeneous groups and cooperative learning structures were present with the teacher facilitating the activities and monitoring and interacting with the students and students listening...
to each other for 100% of the lessons. The lessons scored high on: groups having shared ownership with roles assigned; face to face promotive interaction; small group skills and social skills; and student improvement. The components of the lessons that were not implemented as planned were the statement of goals at the beginning of the lessons (specifically physical and cognitive goals), the individual accountability and the group processing. While options were given for individual accountability they were not always utilized in the lessons. The beginning of the Preparation Phase of the intervention, where students were learning to work in groups may have accounted for the instruction not always being student-centered. The teacher at this time was more directive as he was managing the new way of learning in the class and was learning to adapt his teaching style as well.
### Appendix O

**Cooperative Learning Verification Tool Results- John’s School**

#### Verification of Cooperative Learning

<table>
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**Field Notes:**

The results from the CLVT indicated that in each lesson cooperative learning structures were present with the teacher facilitating the activities and monitoring and interacting with the students for 100% of the lessons. The lessons scored...
high on: positive interdependence; goal interdependence; and small group skills and social skills with face-to-face promotive interaction and student-centered instruction present 75% of the time. The components of the lessons that were not implemented as planned were the statement of goals at the beginning of the lessons (specifically cognitive goals), the individual accountability and the group processing. While options were given for individual accountability they were not always utilized in the lessons. The nature of the class being a class of students with behavioural difficulties may have accounted for the limited amount of students encouraging each other and the low score on academically focused class time.
### Verification of Cooperative Learning

**Observer:** ________________  **Content:** ________________  **School:** ________________

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<td>Groups assign students to specific roles; groups record/chart contribution of each group member; and groups use peer teaching to help teammates.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Did students work together? Was there face-to-face promotive interaction?</strong></td>
<td>NN</td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td><strong>Did students listen to one another?</strong></td>
<td></td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td><strong>Did the task/s enhance students’ Positive Interdependence?</strong></td>
<td>NN</td>
<td>70</td>
<td>30</td>
</tr>
<tr>
<td><strong>Did the task/s ensure Goal Interdependence?</strong></td>
<td></td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td><strong>Were there small group skills and social skills?</strong></td>
<td>NN</td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td><strong>Individual accountability: Performance assessment strategy</strong></td>
<td>NN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Is there a Physical assessment?</td>
<td></td>
<td>60</td>
<td>20 20</td>
</tr>
<tr>
<td>b) Social or Emotional?</td>
<td></td>
<td>20</td>
<td>60 20</td>
</tr>
<tr>
<td>c) Cognitive?</td>
<td></td>
<td>10</td>
<td>50 40</td>
</tr>
<tr>
<td>d) Was there student improvement</td>
<td>NN</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td><strong>Did student self-assess</strong></td>
<td></td>
<td>20</td>
<td>40 40</td>
</tr>
<tr>
<td>Were students involved in assessment (peer, group, task sheet)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Was there problem solving?</strong></td>
<td></td>
<td>60</td>
<td>30 10</td>
</tr>
<tr>
<td><strong>Did students encourage one another?</strong></td>
<td></td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Did the teacher facilitate group processing to draw out:</td>
<td>NN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) What Happened? Description</td>
<td></td>
<td>60</td>
<td>20 20</td>
</tr>
<tr>
<td>b) So What? Interpretation</td>
<td></td>
<td>20</td>
<td>20 60</td>
</tr>
<tr>
<td>c) Now What? Transfer</td>
<td></td>
<td>20</td>
<td>20 60</td>
</tr>
</tbody>
</table>

**Summary Items**

<table>
<thead>
<tr>
<th>Summary Item</th>
<th>Low</th>
<th>Moderate</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>High academically focused class time (ALT-PE)</td>
<td>10</td>
<td>80</td>
<td>10</td>
</tr>
<tr>
<td>High level of student attention/interest/engagement</td>
<td>10</td>
<td>80</td>
<td>10</td>
</tr>
</tbody>
</table>

**Field Notes:**

The results from the CLVT indicated that in each lesson the teacher facilitated the activities and monitored and interacted with the students for 100% of the lessons with heterogeneous groups and cooperative learning structures present 90% of
the time. The remaining 10% of these two components were found within a lesson that utilised a large game and although there was some evidence of these components being present they were not being conducted as planned. The lessons scored high on: face to face promotive interaction; students listening to each other; goal interdependence; and small group skills and social skills. The components of the lessons that were not implemented as planned were the cognitive statement of goals at the beginning of the lessons, the individual accountability and the group processing. While options were given for individual accountability they were not always utilized in the lessons. The beginning of the Preparation Phase of the intervention, where students were learning to work in groups may have accounted for the instruction not always being student-centered. The teacher at this time was more directive as he was managing the new way of learning in the class and was learning to adapt his teaching style as well.
Appendix Q

Teacher Interview Questions

Interview Questions for Teacher Interview

Completion of the application lessons

This will be a semi-structured interview with the following questions guiding the discussion.

Cooperative learning

1. What is your understanding of CL as a teaching / learning strategy?
2. What CL activities did you find the most appealing/easy to implement for a Yr 8 class? Why?
3. What CL activities did you find the least appealing/difficult to implement for a Yr 8 class? Why?
4. What did you find happened in the classes that distracted from the CL activities?
5. What did you find happened in the classes that enhanced the CL activities?
6. What were the main areas you had to provide support for in the CL lessons?
7. Did you notice any difference in all of the students ability to use the CL approach from the preparation lessons? Comment
8. What comments do you have on the folder and worksheets/task sheets used in the classes?
9. Now that you have used the approach do you have any suggestions in regards
   a. to preparing the students for participation in CL groups? And
   b. conduct of the CL approach
10. How do you feel now about having to use CL in your PE lessons?
11. Comment on the format of the material / program provided to you?
12. Comment on the usefulness of the cooperative learning verification tool?

Interaction

1. Did you see a difference in interaction between the SMID and their PWOD over the course of the intervention? Comment
2. What were the most significant things (good and not so good) you found about interaction in the class for the
   a. SMID and their group?
   b. Other groups?
3. What do you think you did as a teacher to improve the interactions in the class? Comment on their success
4. Comment on the interactions of the SMID and their group in relation to the following
   a. roles they played in the group?
   b. resources that were available to them?
   c. the feedback they received from you and other students
5. What other factors in the CL approach do you feel impacted (both positively and negatively) on the interactions between SMID and their PWOD?
6. What CL activities seem to promote interaction more between the SMID and their peers and in general for the whole class?
7. Is there a difference between your expectations in the last interview and the reality of what happened in regards to interactions? Comment
8. Do you have any other ideas, suggestions or comments about interactions?

Future

1. Would you want to use this strategy again? If yes what and why. If no why?
2. Do you have any suggestions in regards to conducting CL in the PE environment?
3. What do you consider you need as a teacher to implement CL in PE?
4. How would you as a PDHPE teacher want to be given a resource/unit that incorporates CL?
5. What would you say to a teacher who is thinking about using this approach in their lessons for the first time?
6. Do you have any other comments, ideas or suggestions
Appendix R

One-on-One and Focus Group Interview Questions

Individual Interview / Focus Group Questions

Completion of the application lessons

The interviews will be semi-structured and the questions are a guide but are not limited to the following. If the students do not understand the question the researcher will reword.

1. Can you remember any of the activities you did with your group with Mr/s xxx since the preparation lessons?
2. What did you like about the activities?
3. What didn’t you like about the activities?
4. What did you learn about working in a group?
5. Did you like working in a group to do the activities. Why or Why Not?
6. What roles did you play in your group?
7. Which roles do you like doing the most and least? Why
8. Did you feel that everyone in your group was included in the activities equally? If yes, how where they included? If no, why?
9. Did you find you talked to everyone equally in your group or did you talk more to some people than others? Why?
10. What were some of the things that other people in your group did to make you feel part of the group?
11. What were some of the things that other people in your group did that did not make you feel part of the group?
12. Did you get the chance to help anyone in your group? If yes, how. If no, why?
13. Did you ask for help from anyone in your group? If yes, why. If no, why
14. Did your group have to ask the teacher for help? For what?
15. Had you talked to the people in your group before?
16. Have you talked to the people in your group outside of PE since we started?
17. Were there any problems in your group? If yes how did your group deal with it?
18. What effect did the group folder have on your group?
19. What effect did the task sheets / worksheets have on your group?
20. Did you feel that the 8 lessons at the beginning prepared you for working in a group? How?
21. Would you prefer to work in a group, on you own or a combination of both when doing PE.?