Outdoor loose part materials mediating collaboration in primary play spaces.

Submitted by

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Loose parts materials, unstructured free play, primary school children, collaboration, intersubjectivity.

ABSTRACT

This study is about outdoor unstructured play with recycled loose parts materials by primary school aged children. Specifically, it is an exploration of how loose parts play materials mediate the creation of intersubjectivity leading to collaborative behaviours between children. Using a micro-ethnographical approach, this study explored how groups of primary aged children (10-11 years old) from the same year group in a school located in Queensland, Australia used outdoor recycled loose parts as tools to create shared understandings and meanings leading to the construction of collaborative interactions and outcomes. Framed by sociocultural theory, verbal and non-verbal gestures, utterances and physical manipulations of the loose parts materials were observed and analysed to determine how play with loose parts can promote collaborative behaviours.

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LIST OF ABBREVIATIONS

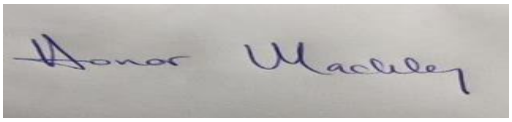
ACARA	Australian Curriculum, Assessment and Reporting Authority
ACHPER	Australian Council for Health, Physical Education and Recreation (ACHPER)
DEEWR	Department of Education, Employment and Workplace Relations
EYLF	Early Years Learning Framework
CI	Collaborative interactions
CO	Collaborative outcomes
HPE	Health and Physical Education
HREC	Human Research Ethics Committee
IS	Intersubjectivity
NHMRC	National Health and Medical Research Council
P21	Partnership for 21st Century Learning skills
QCAA	Queensland Curriculum and Assessment Authority
SD	Secure digital
SDP	Sociodramatic Play
SIR	Sound image recording
SOPLAY	System of Observing Play and Leisure Activities in Youth
SOOP	System for observing outdoor play
ToP	Test of Playfulness
WHS	Workplace Health and Safety

STATEMENT OF ORIGINAL AUTHORSHIP

This thesis contains no material that has been extracted in whole or in part from a thesis that I have submitted towards the award of any other degree or diploma in any other tertiary institution.

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

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

Signature: 

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Chapter 1: Introduction

This chapter is comprised of three main sections: section one introduces the focus of the research and provides contextual background to the study; section two presents the key research questions relative to the phenomenon under exploration; and section three offers a brief outline of the chapter by chapter structural content of the thesis.

1.1 Background

1.1.1 Personal orientation to the research.

This study is about a loose parts play space which facilitated the development of collaborative behaviour amongst senior primary aged children (10-11 years of age). As a primary Health and Physical Education (HPE) specialist teacher, my role is to teach and guide children through Australian Curriculum content strands relating to personal, social and community health and movement and physical activity. I am always on the lookout for opportunities to compliment my students learning experiences, particularly ways to enhance their development of personal and social skills, such as communication, collaboration, problem-solving and critical/creative thinking, during movement and physical activities.

In 2016, I introduced a collection of recycled moveable loose parts materials into a space on my teaching school's oval. My intention was to provide an alternative and stimulating play space to the existing school oval for students to use during break times. The loose parts materials introduced to a section of the oval included tyres, buckets, ropes, plastic pipes, containers, wood planks and hay bales and I called this play area 'The Creative Corner'. I had read about research on this type of play space in a publication issued by the Australian Council for Health, Physical Education and Recreation (ACHPER) which is an association representing teachers and other professionals working in the areas of health and physical education. The study, detailed in the literature review in Chapter Two (Hyndman,

Benson, Ullah, & Telford, 2014), focused on evaluating the effects of introducing moveable loose parts materials into school playgrounds on children's physical activity levels.

After the introduction of the Creative Corner, I was delighted to observe that the play space became a popular meeting place for children at break times, and formed a hub of activity as students became highly engaged with the materials. I soon began to notice that the children started to spontaneously work together to create projects such as building cubbies and inventing games involving the materials. They seemed to engage in a wide range of face to face cooperation skills in order to problem solve and negotiate the direction of play, social management skills which were not detailed in the literature. I noticed that many of the children appeared to successfully collaborate to complete their play projects and this led me to ponder the value of play with these materials in developing collaboration type skills.

I became interested in what it was about the loose parts materials that facilitated collaborative behaviours amongst primary children and wanted to explore the nature of those collaborative behaviours which developed through play with the materials. In other words, I became interested in the value of play with the materials for developing social and personal skills of collaboration and felt that this area of research is under-explored in the literature.

These initial general inquiries prompted my journey into this research area in order to gain insight and understanding of how collaboration is mediated by play with loose parts materials. Through this research, I seek to contribute and build onto the existing literature by focusing specifically on how play with loose parts materials can provide opportunities for creating collaborative behaviours amongst primary school peers. This is important because collaborative behaviours and the skills required to support the development of such behaviours are recognised in a variety of global, national and state level curriculum documentation as important outcomes for new millennium learners globally (Australian Curriculum Assessment and Reporting Authority, 2013; Partnership for 21st Century

Learning Skills, 2016; Queensland Curriculum & Assessment Authority, 2017; World Economic Forum, 2015; Wright et al., 2013).

1.1.2 Collaboration skills as crucial learning competencies for the 21st century.

Research into collaboration skills is of academic importance because the provision of 21st century skills such as critical thinking, communication, collaboration, and creativity (Partnership for 21st Century Learning Skills, 2016) have emerged in the post millennium era as global educational challenges. In the Minority world, where the minority of the world's population is situated (traditionally referred to as 'developed'), this reflects an educational shift away from traditional manufacturing competencies towards information and knowledge based competencies which embrace innovation and collaboration (Binkley et al., 2012). In these changing global societies, educators seek to prepare students to work collaboratively at multiple levels in order to build knowledge together (Sawyer, 2006).

Partnership for 21st Century Learning skills (P21) (2016) have flagged collaboration as an important learning and innovation skill for success in the workforce. This non-profit coalition of United States national business groups, education leaders and policy makers identified collaboration skills as important learning competencies for the future, marking collaboration as part of the four Cs (Collaboration, Communication, Critical thinking, Creativity) of 21st century learning.

The World Economic Forum in 2015 reported 16 vital proficiencies for education in the 21st century. Collaboration was listed as a crucial competency, along with communication and critical thinking skills and was defined as the "ability to work in a team towards a common goal, including the ability to prevent and manage conflict" (World Economic Forum, 2015, p. 23).

The International Baccalaureate Organisation (IBO) which offers a continuum of education programmes around the world also refers to the importance of developing

collaboration skills. The organisation defined collaboration as "a social process of knowledge building that requires students to work as an interdependent team towards a clear objective resulting in a well-defined final product, consensus, or decision" (Wright et al., 2013, p. 1), thus reflecting the need to develop learners who "are able to collaborate with others in a world with an ever-expanding focus on global exchange" (Wright et al., 2013, p. 9).

In Australia, the importance of 21st century skills is demonstrated in the general capabilities of the Australian Curriculum across all learning areas. Social management is one of four interrelated elements in the learning continuum for Personal and Social Capability. Social management promotes effective and respectful interactions with adults and peers through the development of collaborative skills such as working in teams, negotiating and communicating effectively, and conflict resolution. Social management involves students learning to positively contribute to groups, collaboratively make decisions and reach positive outcomes (Australian Curriculum Assessment and Reporting Authority, 2013).

Queensland Curriculum and Assessment Authority (QCAA) explicitly list collaboration and teamwork as important skills required by students in the 21st century. QCAA defines collaboration and teamwork skills as "working and interacting with others to maximise their understanding of concepts" and "recognising diverse perspectives to help achieve shared goals" (Queensland Curriculum & Assessment Authority, 2017, p. 2).

The development of collaboration skills thus has global, national and state recognition as key desirable learning goals within education. Therefore, research into the nature of collaborative behaviours, and how collaboration skills can be pedagogically promoted in primary school settings is of academic merit. This study aims to contribute to the literature by exploring how unstructured play, with loose parts materials, can provide opportunities for

the development of learning experiences and outcomes related to developing collaboration skills.

1.1.3 Play in Education.

Play has long been considered an important vehicle for promoting social management and general development (Burdette & Whittaker, 2005; Ginsburg, 2007). Play can be viewed as a way of complementing national curricula where children learn without being explicitly taught (Malone & Tranter, 2003). Play can contribute to a range of developmental areas in children, including cognitive, physical, social and emotional skills (Ginsburg, 2007; Parten, 1932; Piaget, 1945/1999; Rubin, Fein, & Vandenberg, 1983; Vygotsky, 1987). Play with peers provides opportunities to promote "the social-emotional, cognitive, language, and self-regulation skills that build executive function and a prosocial brain" (Yogman, Garner, Hutchinson, Hirsh-Pasek, & Golinkoff, 2018, p. 1). Moreover, literature positions play as "fundamentally important for learning 21st century skills, such as problem solving, collaboration, and creativity" (Yogman et al., 2018, p. 2).

Core benefits of play are suggested to be the development of sustained attention, improvement of self-regulation and control (Vygotsky, 1987), improvement of problem solving and increased mental flexibility (Hirsch-Pasek & Golinkoff, 2003), all of which are skills crucial for success in adulthood. Through play children learn about themselves and the world and through reciprocal actions, such as role and pretend play, facilitate an understanding of others' points of view (Bundy et al., 2009), an important component of social management in the Australian Curriculum.

Unstructured, active or free play can encourage children to work in groups learning to share, negotiate and practice conflict resolution (Ginsburg, 2007) thus providing important opportunities for the cultivation of social management skills essential for positive social interactions and success in the workplace (Burdette & Whittaker, 2005). Moreover,

Golinkoff, Hirsh-Pasek and Singer (2006) suggest the children who play together "learn to work together" (p. 4).

Play-based learning is common pedagogical practice for early childhood educators adhering to the principles of the Early Years Learning Framework (EYLF) in Australia. Play-based learning is stated by the EYLF as providing opportunities for children "to create social groups, test out ideas, challenge each other's thinking and build new understandings" (Department of Education, Employment and Workplace Relations (DEEWR), 2009, p. 17). Although prevalent in preschools, opportunities for play-based learning in many primary educational settings has become increasingly limited as curriculums mandate increased academic targets and school learning becomes more formal and academically orientated (Jay & Knaus, 2018). In primary schools, particularly for senior primary year groups (years three to six), play is an activity which is generally restricted to recess periods in outdoor playgrounds and play spaces during lunchbreaks. Therefore, it is important that these recess play areas provide fun quality learning opportunities through the provision of stimulating play equipment and play materials, based on pedagogically sound principles.

1.1.4 Play with loose parts materials.

Play spaces incorporating movable loose play parts have been attributed to achieving a range of physical, social, and cognitive benefits for children (Bundy et al., 2009; Hyndman, Benson et al., 2014). Hyndman and colleagues (2014, 2017) define play spaces comprising of 'loose parts' as having no single defined function deriving from recycled and moveable items - for example, car tyres, hay-bales, ropes, buckets, milk crates, wood planks, boxes and so on. These items can be used in many ways to invent and experiment through play and can be comprised of natural and synthetic materials. Loose parts materials offer no fixed play purpose and are generally not regarded as traditional school play equipment (Hyndman et al.,

2017). In other words, the moveable nature of loose parts offers multi-dimensional ranges of flexible play options in contrast to purpose built fixed play equipment (for example, slides and monkey bars) which provide mainly predetermined play functions. Literature relating to play with loose parts materials is expanded upon in Chapter Two.

1.2 Research questions

Most of the reviewed literature, detailed in Chapter Two, which examined collaboration during play is informed by the sociocultural concepts of Vygotsky (1978). In the sociocultural literature reviewed, the concept of shared meanings, also known as intersubjectivity, is frequently referred to as significant to achieving collaboration. According to the literature, intersubjectivity implies a synthesis of different perspectives to create new shared meanings and understandings (Garte, 2015; Ligorio, Talamo, & Pontecorvo, 2005; Stahl, 2016; Whitington & Floyd, 2009). The creation of shared meanings and understandings (intersubjectivity) amongst the participants of an activity is recognised in the literature as important to negotiating and establishing shared goals (Göncü, 1993). This study views the creation of intersubjectivity during play with loose parts materials as important to understanding the nature of collaborative interactions.

This study investigates the role of outdoor loose parts materials in developing collaborative behaviour during free play amongst interacting primary children. Specifically, the study looks at how loose parts materials acted as tools to mediate the development of intersubjectivity, an important ingredient towards achieving collaborative behaviour. Therefore, the guiding research questions for this study are:

1. How do loose parts play materials operate as tools during outdoor free play to support the development of intersubjectivity?
2. To what extent do the identified occurrences of intersubjectivity lead to collaboration as an outcome of interactional activity?

This project explored how and to what extent an easy to implement intervention such as the inclusion of recycled loose parts materials in primary outdoor school spaces could provide opportunities for children to build intersubjectivity, the foundation of collaboration, thus complementing the social management components of the Australian Curriculum.

1.3 Structural outline of this thesis

In Chapter One, the aim of this study is introduced which is the exploration of how loose parts materials mediate the development of intersubjectivity leading to collaboration. Contextual background to the study is provided, positioning collaboration skills as global, national and state recognised learning outcomes for 21st century students, thereby framing the importance of implementing pedagogical approaches to developing these skills. Play as a vehicle for learning is introduced as common pedagogy in pre-school environments, however this chapter raised the issue that play as a pedagogical approach to learning is not as commonly used in primary school education settings, particularly from years three to years six. The notion of loose parts play is then introduced, providing an outline of what the materials are and a brief overview of how they encourage multi flexible play opportunities. In the latter sections of the chapter, the two research questions are introduced and positioned as providing guiding lines of inquiry throughout the study.

Chapter Two, the literature review, is structured into four key sub-headings: 1) categories of play; 2) loose parts play; 3) collaboration; and 4) intersubjectivity. Chapter Two examines categories of play and subsequently focuses on studies of loose parts play comprising of large-scale mixed methods interventions and smaller studies conducted in preschool and primary educational settings in Australia and overseas. The review of literature about collaboration and intersubjectivity focuses on empirical research presented from a sociocultural lens conducted in Australia and overseas. Based on the available literature, it is concluded that further exploration is needed to better understand how

collaboration stemming from intersubjectivity is mediated by play with outdoor loose parts materials.

Chapter Three discusses the theoretical framework adopted in this study. A sociocultural perspective is employed to explore the guiding research questions. The concepts of leading activities and resulting development processes, mediated by cultural tools, are discussed in detail. Play as a leading activity and a natural zone of proximal development is examined in the context of loose parts materials acting as mediating tools.

Chapter Four focuses on the methodological design of the study employed to explore the guiding research questions. It provides an overview of the philosophical underpinnings supporting frameworks associated with qualitative research and focuses on social constructivism as best aligning with the theoretical framework and research questions of this study. Following on from this, micro-ethnography is argued as a viable methodology for the project. Methods of data collection are detailed, along with an examination of the processes of data analysis. Ethical considerations are discussed in the latter sections of this chapter.

Chapter Five presents findings that suggest loose parts materials operate as tools to create four dynamic phases of play during the observed free play sessions: 1) gathering play; 2) constructive play; 3) sociodramatic play; and 4) functional play. Within each of the phases of play, it is established that loose parts materials mediated the development of intersubjectivity in different ways leading to varying extents of collaboration, as an outcome of interactional activity. Due to the scope of this chapter, the presentation of all the findings within each of the observed play progressions is not possible, thus the findings presented focus only on sociodramatic play, as sociodramatic play forms the longest duration of play each week. This phase of play produces the most data and consistently reveals patterns and themes which dominated most observation sessions. Key finding one, addressing research question one suggests that loose parts materials operate as tools to mediate the development

of intersubjectivity within sociodramatic play. Key finding two, in response to research question two, suggests that within sociodramatic play, intersubjective interactions mediated by loose parts materials lead to collaborative interactions and frequently collaborative outcomes. Both findings one and two are further elaborated in this chapter.

Chapter Six provides a summary and discussion of the two key findings in relation to the research questions, reviewed literature and theoretical framework. Each key finding is discussed, exploring connections to the literature which include some consolidation with and some divergence from prior research. The chapter further discusses how when considered together, key findings one and two suggest three important ideas for contributing to the understanding of collaborative behaviours within loose parts play spaces amongst senior primary children. The chapter suggests that the study extends the literature by: 1) focussing on the loose parts materials as units of analysis, and not the participating children thereby providing a unique insight into how such tools mediate the negotiation and agreement of shared meanings; 2) suggesting that the establishment of intersubjectivity, using loose parts materials, can provide a foundation upon which collaborative behaviours are constructed; and 3) arguing a role for outdoor play-based learning, supported by loose parts, in primary schools.

Chapter Seven reviews the context of the research phenomenon and the two research questions seeking to explore the phenomenon. The main findings are briefly summarised, and the significance of those findings, in terms of contribution to the literature and value to educational practitioners, are presented. The significance of the research is argued as making three important contributions to knowledge: 1) new methodological approach to studying loose parts materials; 2) new understandings of how collaborative behaviours can be achieved through play with loose parts materials; 3) new understandings of how play can act as a

leading activity for primary aged children. Limitations to the study are recognised and further research is outlined.

Chapter 2: Literature Review

2.1 Introduction

Literature for this review was selected from four primary sources. Firstly, theoretical literature regarding play was reviewed to gain an understanding of play types or categories of play which been used by researchers and educators over the years when evaluating play. Key search terms included 'definitions of play', play types', and 'play categories', 'children'.

Secondly, literature was reviewed from contemporary research conducted in loose parts play spaces which focused on studies comprised of large scale mixed methods interventions and smaller studies conducted in preschool and primary educational settings in Australia and overseas. Many of these studies primarily looked at measuring the physical benefits of loose parts play such as physical activity rates (Bundy et al., 2008; Engelen et al., 2013; Hyndman et al., 2017). More recent studies focused on social and cognitive benefits arising from play with loose parts (Engelen et al., 2018; Mahony, Hyndman, Nutton, Smith, & Te Ava, 2017). The review of loose parts play literature sought patterns and common themes of play emerging from engagement with loose parts play materials. A variety of search terms were included such as 'loose parts materials', 'loose play parts', 'free play', 'unstructured play', 'children,' 'outdoor play', 'active play', 'playgrounds', 'play categories', 'social interactions' and various combinations of terms such as 'loose parts materials and outdoor play'.

Thirdly, literature focusing on collaboration from a sociocultural perspective was selected from search terms such as 'collaborative learning', 'cooperative learning', 'peer learning', 'peer collaboration', 'peer cooperation' and 'peer scaffolding'.

An examination of literature about collaboration revealed frequent references to the importance of intersubjectivity in collaborative processes, which subsequently prompted a

fourth exploration of the literature referring to the concept of intersubjectivity as the creation of shared meanings and understandings during social interactions amongst children. Literature related to intersubjectivity looked at studies conducted in educational settings in Australia and overseas. Search terms included 'intersubjectivity', 'shared meanings', 'shared understandings', 'shared perspectives', 'play', 'children' 'sociocultural theory' and combinations of these terms such as 'intersubjectivity' and 'play' and 'children'.

All search terms were processed through a number of data bases including ProQuest Education, JSTOR, ERIC, EBSCO and Google Scholar. Searches were progressively refined by selecting exclusion criteria of contemporary date ranges, Boolean search words and peer reviewed empirical research articles.

2.2 Categories of play

The following section provides overviews of key characteristics and associated categories of play examined in general play theory literature. Literature has long debated the defining characteristics of play and the different types or categories of play which emerge from interactions amongst children (Smith, Takhvar, Gore, & Vollstedt, 1985). Play as an area of study "has been subjected to an enormously rich variety of theory and methods" (Pellegrini, 2009b) and as a result, many types of play categories have been cited by the literature and used by educators over the years.

Developmental theorists, such as Piaget (1945/1999), proposed three successive stages of play (functional or practice play, symbolic play and play with rules) which outlined the evolution of children's play (Nicolopoulou, 1993) and reflected cognitive development. According to Piaget, functional or practice play was characterised by repetitions of actions involving objects, which progressively became more purposeful as the child established goals relating to sequences of actions or constructions with those objects. Piaget postulated that

practice play then progressed to symbolic play as the actions or constructions became pretend or make believe in nature. Piaget suggested that play further progressed to implementing and acquiring rules and evolved into games with rules. Piaget viewed a child's progression through the three stages of play as the progressions from individual play to social play (Nicolopoulou, 1993), therefore play reflected increased complexity and increased cognitive development.

Situated in the context of sociocultural theory and the concept of the zone of proximal development (discussed in detail in Chapter Three), Vygotsky (1967) viewed play as particularly significant to cognitive development and positioned play as an entirely social activity. Whilst Vygotsky did not specify categories or stages of play, he defined all play as sociodramatic or make-believe within which "children create imaginary situations, take on and act out roles, and follow a set of rules determined by those specific roles" (Bodrova & Leong, 2015, p. 274). Vygotsky therefore viewed play as creating imaginary situations and rules implicit within those imaginary situations (Nicolopoulou, 1993). Vygotsky positioned sociodramatic play as a leading source of development of higher mental functions in preschool years (1967).

Rubin, Fein, and Vandenberg (1983) characterised play as having three primary dimensions. Firstly, based on Piaget's theory of development (1945/1999) they categorised play into behaviours which could be readily observed (play as observable behaviours). These were defined as: 1) Functional (characterised by repetitions of actions and movements which were mastered by a child); 2) Symbolic (pretend, fantasy or make-believe play); and 3) Games with rules (a form of play where rules are created by the players and are flexible). Rubin and colleagues (1983) also examined play from a psychological dispositional perspective (play as disposition), describing play as being intrinsically motivating to a child.

Intrinsic motivation referred to the notion of play occurring for its own sake or having a purpose in itself, or in other words being autotelic in nature.

In addition, within this dimension of play, Rubin and colleagues (1983) defined play as being free from externally applied pre-set rules but subject to internally negotiated rules amongst players. Likewise, they described play as an active engagement with the activity where the child's attention is focused on that activity. From this dispositional perspective, Rubin et al. (1983) defined play as process or means orientated rather than ends focused, in other words the play activity itself is more important than the outcome. Rubin and colleagues (1983) also discussed play as context, referring to the conditions or contexts necessary for play as necessitating free choice and minimal adult input, along with familiarity with materials/objects or other people.

Classifications which focus on social aspects of play have also been proposed and used by researchers and educators over the years. Parten (1932) presented an observational framework for examining play relating to a child's sequential social participation in play. Parten suggested that social participation in play increased with age as pre-schoolers progressed from solitary participation (playing alone), onlooker (observing other children at play but not engaging with them in play), parallel (playing beside rather than with others), associative (playing with others but without coordinated purpose) through to cooperative play (playing with others to achieve a goal).

Based on Piaget's (1945/1999) three successive stages of play (functional, symbolic and games with rules) which reflect cognitive development, Smilansky (1968) further expanded these play stages by including an additional specific category of construction play. Smilansky's four-stage play scheme has been extensively cited and refined over the years as "as a classification device, and as a hierarchical model which provides an index of a child's maturity" (Takhvar & Smith, 1990, p. 112). Smilansky described these four stages of play as

an age related hierarchy (Pellegrini & Perlmutter, 1987) suggesting sequential progression from functional play (practice play with or without objects where a child engages in repetitive muscle movement), to constructive play (building and creating using objects), to dramatic/symbolic play (pretend/make believe and imaginative play) and then to games with rules (acceptance of a priori rules).

Reflecting the multidimensionality and heterogenous nature of play (Pellegrini, 2009a), many dimensions and categories have been combined and refined in the literature by contemporary researchers. For example, Rubin (2001) combined Smilansky's (1968) cognitive dimensions of play with Parten's (1932) social dimensions to provide a model from which to examine play known as the Play Observation Scale (POS). This created a matrix of play behaviours signalling the importance of both social and cognitive perspectives of play. Many contemporary educational researchers have modified and combined categories of play in order to observe or measure play behaviours. Examples of these are cited in the next section which reviews play in the context of loose parts play materials.

It can thus be seen from the literature that play has been categorised in variety of ways through history resulting in a plethora of scales and frameworks from which to examine play behaviour. The following section examined the forms of play reported in the literature related specifically to play with loose parts materials.

2.3 Play with loose parts materials

This section of the literature review focuses on studies of play specific to interactions with loose parts play materials, and the play types primarily associated with loose parts play. In the next section, the literature on loose parts play is further examined to explore the types of social interactions emerging from those dominant play forms which could be perceived as collaborative in nature.

2.3.1 Forms of play mediated by loose parts materials.

Active free play with movable loose parts has been credited with achieving a range of physical, social, and cognitive benefits (Bundy et al., 2009; Hyndman, Benson et al., 2014) for children. Prominent work within the literature suggests that children develop social and language skills as well as physical skills through play (Parten, 1932; Piaget, 1945/1999; Vygotsky, 1978). Active free play refers to a child engaging in an activity which is unstructured in nature, lacks external rules and is intrinsically motivating (Bundy et al., 2008, 2009; Engelen et al., 2013; Hyndman et al., 2014, 2017; Rubin et al., 1983). In the literature reviewed, active free play outdoors is viewed as unstructured and self-directed free play. Unstructured play is defined as child-led play where children control the play, engaging in their own decision making and "actively explore their own social and physical power, in relationship to the world, and to other children" (Hewes, 2014, p. 42).

Active free play can lead to the development of complex and longer lasting play forms (Tremblay et al., 2015). These forms of play can frequently overlap and combine and are not mutually exclusive. Play types evolving from active free play described in the reviewed literature on play with loose parts materials are categorised into (but not limited to) three general forms adapted from play theory literature: construction, functional and imaginative (see Table 2.1). All studies examined play forms in the context of active free play which, similar to Rubin et al.'s (1983) dispositional perspective on play, was regarded as intrinsically motivating and free from externally applied pre-set rules.

Construction play was generally characterised as building and combining loose materials into constructs, and being goal orientated (Armitage, 2010; Engelen et al., 2013; Hyndman et al., 2017; Luchs & Fikus, 2013; Maxwell, Mitchell, & Evans, 2008). Increases in construction play with objects was theorised to indicate higher levels of complexity of play reflecting increased levels of cognitive development (Parten, 1932; Smilansky, 1968).

Table 2.1

Forms of free play developing from loose parts

Research	Forms of play
Armitage (2010)	Rough and tumble, construction, imaginative/pretend
Bundy et al. (2008/2009)	Creative (imaginative, construction, rules-based), social
Bundy et al. (2011/2017)	Creative/imaginative, construction
Engelen et al. (2018)	Construction, creative
Hyndman (2014)	Imaginative, building/construction
Hyndman (2017)	Imaginative, building/ construction, sports (rules)
Luchs & Fikus (2013)	Construction, functional, imaginative/role/symbolic, play with rules
Malone & Tranter (2003)	Physical motor, social, cognitive (including imagination and construction)
Maxwell et al. (2008)	Construction, imagination/dramatic/fantasy, functional, play with rules

During play with loose parts materials, imaginative/creative play, also termed sociodramatic, fantasy or pretend play (Maxwell et al., 2008) and role/symbolic play (Luchs & Fikus, 2013), was characterised by children working individually or in groups to act out make believe roles of interest to them. In imaginative play children frequently take on roles during which they pretend to be something or someone else (Maxwell et al., 2008). During imaginative play children experiment and explore with language, imitating others, and incorporating objects into their play (Vygotsky, 1978). Vygotsky (1967) situated sociodramatic play as a leading activity in the development of higher mental functions in preschool age children.

Functional play in the loose parts play literature was referred to as comprising of repetitive muscle movements (Maxwell et al., 2008) or repeated physical actions. Another form of play identified in the literature was play with rules (Hyndman et al., 2017; Luchs & Fikus, 2013; Maxwell et al., 2008) indicating play of this nature contains structure and regulations, for example sports related play.

In addition, Armitage (2010) described a form of observed play as rough and tumble. DeWolf (1999) characterised this type of play as competitive play fighting and play chasing. Rough and tumble play was identified in the literature as comprising of physically challenging activities such as chasing and pretend fighting (Tannock, 2008). Rough and tumble play can mimic aggressive physical actions and "is symbolic of being aggressive but both players have to be willing partners, otherwise the play ceases" (Moyles, 2012, p. 129). Such play is suggested to promote a range of social and cognitive benefits such as interpreting other's feelings and moods (Moyles, 2012).

In a large mixed method study conducted in eight primary schools in the United Kingdom, Armitage (2010) conducted an independent evaluation on the effects of the introduction of play pods. Play pods were large shipping containers filled with a mixture of 'junk' loose parts materials donated by local businesses. There were three play pods in total and each one spent twelve weeks in a school before being relocated to another school. Findings of rough and tumble play were observed in the initial stages of the play pod intervention. However, this was reported as short lasting and soon evolved into construction type play progressing further into complex imaginative play. The findings of this study suggested that play with the loose parts materials was more popular with the participants in comparison to play with existing fixed play equipment at each of the schools.

Bundy et al. (2008, 2009) adopted a mixed methods approach to examining the impact of an intervention of loose parts materials to a traditional school playground for 11

weeks. They examined the playfulness of 20 participants, aged five to seven years, by using an observational assessment, the Test of Playfulness (ToP) to record children's approach to play. Based on Rubin and colleague's (1983) dispositional interpretation of play, ToP defined playfulness according to key elements: intrinsic motivation, internal control, freedom from the constraints of reality, and the giving and reading of cues (framing). In addition, Bundy and colleagues (2008) interviewed nine teachers who were on playground duty during the intervention period to record their perceptions of the effect of the intervention materials on the participants' play. Data examined from the observational assessment revealed that playfulness increased significantly during the 11-week intervention, along with physical activity rates (Bundy et al., 2009). Interviews conducted with teachers indicated that the materials were used in construction play, rules-based play and imaginative play. Play activities were generally perceived as more active, creative and social when the loose parts materials were included on the playground (Bundy, 2009).

A large cluster randomised controlled trial called 'The Sydney Playground Project' (Bundy et al., 2017, 2011) introduced a playground intervention to 12 Australian primary schools over 13 weeks. The intervention incorporated recycled loose parts materials onto the participating schools' playgrounds for use by randomly selected children from kindergarten to year one (ages five to seven years) at break times. Physical activity levels, measured by accelerometers, of the participants were reported to increase. In addition, video observations, photographs and interviews recorded increases in play activities, particularly creative type play.

In a comparative mixed methods study using one intervention primary school (123 participants) and a matched control school (152 participants), Hyndman et al. (2014) examined the effects of the introduction of loose parts materials to the schools' playgrounds in order to assess changes to the children's quality of life, enjoyment and physical activity

rates. Participants from both schools were aged 5-12 years old and were examined during free unstructured play at lunchtimes. This study measured physical activity levels by pedometers and direct observation. In addition, this study used the System of Observing Play and Leisure Activities in Youth (SOPLAY) to record contextual information regarding the participants physical activity in the playgrounds (including coding for imaginative play with/without the materials and construction play with/without the materials). Participants in the intervention school showed significant positive increases in physical activity rates, in comparison to participants in the control school. Participants in the intervention school were also reported to use the materials for imaginative and construction play.

In another comparative mixed methods study, Hyndman and colleagues (2017) used direct observation and descriptive qualitative field notes to compare how physical activity on three different primary school playground settings complemented the Australian primary Health and Physical Education (HPE) curriculum. One school's playground was empty, devoid of play materials and fixed play structures. Another was comprised of loose parts and the third had traditional fixed play structures. The physical activity types and intensity levels were measured using a direct observation instrument called the System of Measuring Play and Observing Leisure Activities in Youth (SOPLAY), while detailed fieldnote observations were used to record the contextual details of the recorded activities. The physical activity types were categorised according to specific sports such as basketball and cricket, while play types were categorised as imaginative play and building/constructive play. The predominant activities recorded in the loose parts play space were imaginative play followed by constructive play. The loose parts play space also recorded the highest levels of vigorous activity rates.

Luchs and Fikus (2013) in a German study compared the play activities of 59 preschool children in two schools with differently designed playgrounds. The playground in

one of the preschools contained fixed equipment providing monofunctional play opportunities. The other school's playground was structured with naturally occurring moveable loose parts. Using naturalist direct observations, three forms of play classifications were applied to play participant activities; 1) Play with (functional play and construction play); 2) Play as (role play and symbol/imaginative play; and 3) Play for (play with rules used for competitions and organised activities. It was reported that higher levels of 'Play as', classified within the study as role/symbolic play, occurred in the natural play space. In addition, it was reported that the natural playground promoted longer lasting play episodes which progressively developed in complexity. The majority of reported play forms sequentially progressed from building and construction to more complex role and imagination play.

Malone and Tranter (2003) conducted a large-scale mixed method study in five Australian primary schools with different playgrounds with the aim of exploring the role of school grounds as sites for teaching and learning. This study categorised play behaviours into categories of social activities (for example; observing others, verbally interacting with others), and cognitive activities (for example; constructing activities, imaginative activities, exploring activities), and physical/motor skills activities (for example; playing on fixed structures, playing with free equipment). Using observational and interview research techniques, data showed that the highest levels of construction and imaginative play occurred in one of the schools which had a large pine forest and educational garden containing many natural loose parts.

Maxwell et al. (2008) conducted a two-staged mixed methods study of preschool children which looked firstly at the types of play behaviour supported by different playground design features. Secondly, this study examined how a loose parts intervention would then enhance play behaviours. The study coded play according to observed play

behaviours (functional, constructive, dramatic, non-play) and types of social interaction (solitary, parallel, positive interactions, negative interactions) as well as using field notes recording the children's conversations. Results showed that increased constructive play occurred in the play areas which were provided with loose parts. The newly created constructs were observed to support the development of imaginative play and frequently both constructive and dramatic play occurred simultaneously during the context of constructing. The authors felt that the development of dramatic play was particularly beneficial to the development of social interaction and, in addition, it was reported that children chose to play with loose parts over fixed play structures.

Engelen and colleagues (2018), using an observational instrument called 'System for observing outdoor play' (SOOP) developed from their previous research on the Sydney Playground Project (Bundy et al., 2011), looked at changes in outdoor play activities and play types following the addition of recycled loose parts materials to one primary school's playground. Play was categorised into a number of types such as construction play and creative/imaginative play, along with categories such as inactive play (sitting or standing); inactive – not social (alone or no interaction); and inactive – (social, sports). Direct observations of participants interacting with the intervention materials at break times revealed the development of construction play and creative play, play types which were not observed at baseline prior to the intervention.

Overall the loose parts literature indicates out of the publications reviewed in the loose parts literature, the most dominant play themes were construction and imaginative play (see Table 2.1). The literature suggests that the provision of loose parts materials during active free play predominately led to the development of imaginative play (including dramatic, symbolic and role play) and construction play. Most studies noted from both observations and interviews that construction and building preceded imaginative forms of play. Some

studies reported that construction originated first, providing opportunities for subsequent imaginative play within the constructs built by the children (Armitage, 2010; Bundy et al., 2008, 2009; Maxwell et al., 2008). Some studies acknowledged that play forms can overlap and combine and are not necessarily exclusive of each other (Luchs & Fikus, 2013; Malone & Tranter, 2003). The next section of this chapter focuses on the findings of those publications in relation to social interactions between participating children.

2.3.2 Forms of social interaction mediated by loose parts materials.

Interviews of teachers (Armitage, 2010; Bundy et al., 2008, 2009) revealed that increases in construction and imaginative play were thought to be facilitated by the lack of fixed structure and purpose in loose parts play materials as the children manipulated and combined the materials in novel ways. Bundy and colleagues (2008) said the more creative the children became, the more social interactions developed. Moreover, increased creativity was reported to develop detailed verbal interactions and complex narratives to support imaginative play (Bundy et al., 2009; Hyndman et al., 2017). Luchs and Fikus (2013) reported that play with loose parts resulted in longer lasting play episodes than play with fixed equipment and that this led to increased creativity. Armitage (2010) reported that the constructive use of the loose parts materials became increasingly complex and cooperative particularly when the children were engaged in cubby house building. In fact, most studies reported increased cooperation as important social outcomes.

A progression from independent exploration of materials to the formation of small groups engaged in cooperative play was also noted by Armitage (2010). Likewise, children were described as becoming more helpful to each other especially when engaged in more physically demanding tasks such as staking bales of hay (Bundy et al., 2009). Studies conducted by both Hyndman et al. (2017) and Maxwell et al. (2008) observed verbal

interactions which involved cooperative negotiation over loose building materials such as blocks.

Mahony and colleagues (2017) compared social behaviour in two different primary school playgrounds. One school's playground contained traditional fixed equipment while the other contained moveable loose parts materials. Participants (5-12 years old) were observed at play during lunch breaks in each school. This study reported on types of social play and noted wider ranges of cooperative play in the loose parts play space where the children were observed to engage in teamwork and "planning for a common outcome or goal" (Mahony et al., 2017, p. 173).

Negative social interactions were also reported in the literature, such as arguments and active defence of materials by participants (Armitage, 2010; Bundy et al., 2008). However, some studies reported findings of increased patience when turn taking and during role play (Bundy et al., 2008, 2009; Hyndman et al., 2017). Moreover, Bundy and colleagues (2008) commented that such reciprocal actions can facilitate an understanding of other children's perspectives, suggesting the potential for the creation of shared meanings between participants. In fact, in both these studies it was noted that children discussed in detail the content of their play and the stories which guided their imagination, again potentially enhancing a sense of shared meaning.

Hyndman and colleagues (2017) described peer observation occurring between participants to develop understanding of activities. Maxwell et al. (2008) observed a more complex process where children were frequently observed teaching each other how to construct an object or boundaries for a play space. Play with loose parts materials was noted as being more inclusive than play with traditional fixed structures as in some studies, participants engaged with children that they usually did not play with (Armitage, 2010;

Bundy et al., 2017, 2008, 2009), resulting in the integration of different ages and abilities (Bundy et al., 2017, 2008).

From the literature, it appears that the flexible and manipulative nature of loose parts, combined with lack of specified function, resulted in forms of play that promoted social peer interaction. Constructive and imaginative play were shown to co-occur with the development of a range of social interactions such as cooperation, negotiation, detailed narratives and discussions, turn taking, understanding others' perspectives, peer observations, peer tutoring. These social interactions are commonly perceived as collaborative in nature. The next section of this literature review examines concepts of collaboration from a sociocultural perspective.

2.4 Collaboration from a sociocultural perspective

Dominant play types such as construction play and imaginative play, and social interactions such as cooperation and negotiation, reported in the review of loose parts literature indicated the development of behaviours commonly perceived as collaborative in nature. Kumpulainen, Van der Aalsvoort, and Kronqvist (2003) define collaboration "as a co-ordinated activity during which participants collectively process and solve problems towards a joint outcome" (p. 333). The process requires more than one participant, each possessing unique perspectives and potential actions which they bring to the task or activity. According to Kumpulainen and colleagues (2003), collaboration is both social and cognitive in nature involving the co-construction of knowledge through exchanges of ideas and opinions. Tomasello, Carpenter, Call, Behne and Moll (2005) propose that people are adapted for achieving shared goals through collaboration by the uniquely human ability to want to understand others' goals, intentions and motivations during the shared interactions.

According to Tomasello et al. (2005) to collaborate during interactive activities, participants are required to coordinate and negotiate meaning to establish a shared goal.

Most of the reviewed literature examining collaboration during play was informed by the thinking of Vygotsky (1978). Head (2003), drawing on the works of Vygotsky (1978), said that collaboration is a complex process that can exist on two levels: functional and effective. At a basic functional level, Head argued that collaboration is made up of procedural social interactions such as cooperating, coordinating, consulting and communicating which occur in a prescriptive context and must be performed satisfactorily to enable participants to function as a group to achieve a predetermined goal. To progress to a higher, more effective level of collaboration, participants need to examine the effectiveness of the joint activity for the success of the group in achieving shared, not imposed, meaning. Head (2003) explained that collaboration becomes effective through the development of a collective knowledge base which facilitates the creation of new shared knowledge and meanings unique to that group. This shared knowledge base allows the individuals to achieve more as a collective entity than as participants working individually side by side. Thus, in sociocultural literature, the notion of the creation of shared meanings and understandings is suggested to be important for establishing collaborative interactions. The next section explores the concept of intersubjectivity in relation to collaboration.

2.5 Intersubjectivity as a prerequisite to collaboration

The concept of creating shared meaning within sociocultural literature is known also as intersubjectivity (Vygotsky, 1978) and emerged as a common theme within the literature regarding collaboration canvassed in this review (Garte, 2015; Head, 2003; Kumpulainen et al., 2003; Parsons & Howe, 2013; Whitington & Floyd, 2009). According to Stahl (2016), in his research on computer supported collaborative learning, intersubjectivity drives the

formation of true collaboration. Moreover, Ligorio and colleagues (2005) described intersubjectivity as going beyond an individual's perception to incorporate another's way of thinking. Understanding of other children's perspectives was also noted as a social outcome in the literature on loose parts play (Bundy et al., 2009). Intersubjectivity was viewed by Ligorio et al. (2005) as a social process occurring between a child and more competent others when different points of view are combined into new collective joint understandings.

The notion of intersubjectivity is used in a variety of ways across the literature to refer to shared subjectivity, or " seeing from the same eyes" (Garte, 2015, p. 192), the inclusion of others' perspectives into one's own view (Ligorio et al., 2005), moments of mutual gaze and joint attention (Trevarthen & Aitken, 2001), social collaboration and mutual focus (Lanphear & Vandermaas-Peeler, 2017), "actively aligning their own experiences with the experiences of others" (Tomasello et al, 2005, p. 714), shared understanding of meaning (Stahl, 2016) and shared meanings (Tudge, 1992). DeWolf (1999) defined intersubjectivity as "the joint negotiation of shared understanding by participants during a social interaction" (p. 8) where, through an exchange of verbal and non-verbal acts, participants negotiate individual understandings into shared understandings.

Göncü (1993) viewed intersubjectivity as the establishment of joint understanding between interacting participants. Based on observational data of play sessions of 24 preschool children aged three to four and half years old, Göncü determined three elements involved in the development of intersubjectivity in social pretend play. They were; 1) joint focus of attention; 2) meta-communication; and 3) communication. The study suggested that intersubjectivity in peer pretend play is evident from three years of age in pre-schoolers.

Whitington and Floyd (2009) stated that intersubjectivity is evident from a very early age and can be observed in pre-schoolers through a range of play forms and problem-solving tasks. Furthermore, different forms of play result in different levels of intersubjectivity.

Moreover, Trevarthen and Aitken (2001) reported that intersubjectivity develops from infancy when active "self-and-other" (p. 3) awareness emerges. According to Trevarthen and Aitken (2001) "mutual self- other-consciousness is found to play the lead role in developing a child's cooperative intelligence for cultural learning and language" (p. 3).

Based on categories of intersubjectivity developed by Trevarthen (1988) and further defined by Göncü (1993), Whitington and Floyd (2009) used three elements to establish the creation of intersubjectivity during sociodramatic play in Australian pre-schoolers: joint focus, meta-communication and communication. In this study of four-year olds, data recorded by video and observational field notes were coded to reveal that intersubjectivity was created in approximately one-third of play episodes during sociodramatic play. It was also noted that intersubjectivity occurred when the play episodes were of longer duration. Many play acts, generally classified as verbal, non-verbal and utterances, were identified in the study as supporting the creation of intersubjectivity. This study supports sociocultural thinking that the co-construction of joint understanding and meaning supports cognitive development in a social play context.

Garte (2015) in a study of seventy pre-schoolers, examined intersubjectivity through three dimensions (social behaviours, joint attention and conflict) by video observations to explore how young children achieve social competence. It was reported that group and play characteristics influence intersubjectivity levels and dimensions, and that social competence is achieved through high levels of intersubjectivity. Moreover, Garte found that longer periods of play interactions resulted in higher levels of intersubjectivity across all dimensions. According to Garte (2015) intersubjectivity can be viewed as a "social tool" (p. 189) to develop play interactions. Moreover, the interactions required for sustaining high intersubjectivity "underlie the ability to collaborate during peer interaction" (Garte, 2015, p. 191).

In a study of pre-school age male dyads, Parsons and Howe (2013) reported how both pretend play with superhero toys and play with generic toys necessitated the children to construct shared meanings to come to an understanding about the course of their pretend play. Drawing also from the works of Göncü (1993), Parsons and Howe developed catogories of coding to establish the construction of shared meanings which included maintenance strategies, clarifications, responses, prosocial behaviours, and non-maintenance behaviours.

Literature suggests that shared meaning can be constructed through a number of communicative strategies such as extending a play mates' ideas, explanations of one's actions, clarification and maintenance techniques and helping other playmates (Göncü, 1993; Howe, Petrakos, Rinaldi, & LeFebvre, 2005; Parsons & Howe, 2013). Such communicative strategies can facilitate the dynamic creation of shared meanings as children continually exchange information to create new meaning and construct knowledge.

Communicative strategies were examined in a study of sibling dyads, between the ages of three to seven years old, to explore how they co-constructed shared meanings during pretend play (Howe et al., 2005). It was reported that developmental differences and birth order within the dyads accounted for variations in the way strategies were implemented by the children to construct shared meanings. DeWolf (1999) also examined intersubjectivity using the three elements defined by Göncü (1993) during rough and tumble play in preschool children. DeWolf's findings suggested that participants negotiate personal understandings into shared understandings and that these negotiations led to the creation of shared meanings.

It can thus be suggested that intersubjectivity is significant to achieving collaborative outcomes as it implies a synthesis of different perspectives to create new meanings in order to achieve shared goals. Thus, this current study is based on the conceptualisation of intersubjectivity as the creation of shared meanings constructed during the social context of

free outdoor play with loose parts materials, as peers attempt to negotiate ideas and rules mediated by the materials.

2.6 Conclusion

This chapter reported on the investigation of the literature concerning categories or forms of general play, forms of loose parts play along with reported forms of social interactions, collaboration from a sociocultural perspective and intersubjectivity. It was found that active free play with loose parts materials often led to the development of play forms categorised into three general types adapted from play theory literature: construction play, functional play and imaginative play. Such play types were not mutually exclusive and sometimes occurred in combination. The literature regarding play with loose parts materials also noted the development of social interactions co-occurring within the categorised play forms. These social interactions included turn-taking, negotiation, cooperation, peer observations and peer tutoring. Literature concerning collaboration, which was informed from a sociocultural perspective, suggested that the creation of intersubjectivity between peers was linked to achieving collaboration.

Based on the literature reviewed it appears that further work needs to be conducted to better understand how free play with loose parts materials can mediate the development of intersubjectivity between senior primary peers. The term senior primary peers refers to children enrolled in Years Five to Six of primary school who are of similar age (10-11 years old), share similar classes and who frequently engage with one another. Sociocultural literature suggests that the establishment of intersubjectivity is associated with collaborative behaviours. The ability to successfully collaborate is cited across national and international curriculums as vital learning outcomes for 21st century learners. Therefore, it would be of value to extend the literature to examine how intersubjectivity is established between peers in

a loose parts play context, and how occurrences of intersubjectivity, mediated by loose parts materials, can subsequently lead to collaborative behaviours.

This literature review has guided the direction of research focus in seeking to explore how the provision of outdoor loose parts materials can provide play opportunities to build intersubjectivity leading to collaborative outcomes. Moreover, this review of literature has helped to conceptualise the primary lines of inquiry for the study and has provided context from which to select an appropriate theoretical framework. The theoretical framework is discussed in the next chapter.

Chapter 3: Theoretical Framework

3.1 Introduction

This chapter outlines the theoretical framework used to inform the study in four key sections. Firstly, the chapter examines some of the theoretical ideas of Affordance Theory (Gibson, 1979) and the Theory of Loose Parts (Nicholson, 1971) employed in the literature on loose parts play. Next this chapter, proposes key concepts of sociocultural theory as a viable lens from which to explore the two research questions:

1. How do loose parts play materials operate as tools during outdoor free play to support the development of intersubjectivity?
2. To what extent do the identified occurrences of intersubjectivity lead to collaboration as an outcome of interactional activity?

Within sociocultural theory, the idea of leading activities and resulting development processes, mediated by cultural tools, is discussed. Play as a leading activity and a natural zone of proximal development is examined in the context of loose parts materials acting as mediating tools. The chapter concludes by providing a visual framework for tool mediation from which to understand the relationships between the subjects (children from the same school year group), mediation tools (loose parts materials, language, signs and symbols) and object (intersubjectivity) resulting in an outcome (collaboration) during play.

3.2 Theoretical perspectives in loose parts play research

3.2.1 Affordance theory.

Some studies examined in the Literature Review (Luchs & Fikus, 2013; Malone & Tranter, 2003; Maxwell et al., 2008) framed their research through Gibson's Affordance Theory (1979). Gibson's theory applied ecological psychology's concepts of object affordance to everyday life where objects were viewed by individuals as potential things for use in a complex and ever-changing environment. Gibson proposed the notion of affordances "in order to explain the relation between organism and environment" (Pedersen & Bang, 2016, p. 733).

Gibson postulated that features or elements of any environment offered different opportunities or possibilities for action, and these opportunities were perceived differently for each individual person interacting with that environment. According to Gibson (1979), the term affordance referred to possibilities the environment offered "the animal" (p. 127) and how that animal perceived and then used or acted on that affordance. Every animal perceived and acted on affordances in different ways:

> A reptile in a desert might perceive a large rock as a place to sunbathe or a place to hide; a human might perceive the same rock as a weapon or a building material. There is no "correct" use for the rock, only the affordances perceived by various perceivers. It is this relationship between organisms and the environment that is the crux of the concept of affordance. (Gibson, 1979, p. 127)

Gibson interpreted affordances "as the available perceptual properties of an environment that inspire participants to 'take up' the opportunities to interact with and explore these properties" (Kuh, Ponte, & Chau, 2013, p. 50). Some of the reviewed literature applied Gibson's concepts to play, where children perceived a range of affordances and functional

opportunities for play from their surrounding environment (Luchs & Fikus, 2013; Malone & Tranter, 2003; Maxwell et al., 2008).

Affordance theory in a loose parts play context offered a useful lens to explore how a child perceives play possibilities afforded by that play space. The concepts can provide an understanding of how such an environment can lead a child to act on loose part materials (objects) in different ways. For example, a crate could be perceived as a building block by a child for a shelter, and a tarp as a roof for that shelter, and these perceptions might lead the child to develop actions related to constructive play for example. Within the context of this study however, affordance theory did not appear to offer an understanding of social processes or "the societal character of human life" (Pedersen & Bang, 2016, p. 734), nor did it sufficiently theorize the role objects or materials play in human cognitive development and interactions.

3.2.2 Theory of loose parts.

Armitage (2010), Engelen and colleagues (2018), Luchs and Fikus (2013), Malone and Tranter (2003) and Maxwell et al. (2008) referred also to the Theory of Loose Parts proposed by Nicholson (1971), a landscape architect. Utilising the concepts of affordance theory and design theory, Nicholson critiqued design principles of play environments of his era. He suggested that play spaces can afford more creativity and fantasy by providing loose parts materials. He introduced the term 'loose parts' to describe open-ended play materials which can be manipulated by children in multiple ways. He suggested the inclusion of loose parts resulted in more changeable multi functionable play environments which can afford increased imaginative play. According to Nicholson (1971), loose part materials can be used by children to invent, construct and modify play spaces resulting in creativity which is directly attributable to the number and kinds of loose parts variables available. "In any

environment, both the degree of inventiveness and creativity, and the possibility of discovery, are directly proportional to the number and kind of variables in it" (Nicholson, 1971, p. 30). The inclusion of loose parts materials in an outdoor play space was suggested therefore to provide infinite play possibilities (Nicholson, 1971) or affordances for a child. Nicholson's concepts offered understandings about how loose parts materials can increase an environment's potential for creativity, however it did not provide an understanding of the social processes of group interactions which evolve around the materials.

The research questions of this study did not seek to explore the affordances of loose parts as per Gibson, nor did they seek to examine the nature of open-ended materials as per Nicholson. This study explored how outdoor loose parts materials mediated the creation of intersubjectivity. This study further explored how collaborative behaviours subsequently arose as outcomes from intersubjective interactions around loose parts. Hence, this study required a theoretical perspective providing a framework for understanding complex social relations and development processes which are enabled by the loose parts. Tool mediation, embedded within the concepts of sociocultural theory, provided a theoretical perspective from which to explain the human relationship with loose parts materials during play.

3.3 Sociocultural theory

Collaboration, as an outcome of intersubjectivity, demonstrates a basic premise of sociocultural theory that knowledge is jointly shared and co-constructed in a social context. Vygotsky theorised that children learn or acquire the knowledge practices of their local communities as they interact with others and that this knowledge acquisition leads the cognitive developmental processes (Edwards, 2003). Vygotsky (1967) theorised that a child progresses through mediated stages of cognitive development characterised by age periods and new formations of maturing psychological functions which are marked by leading

activities. The following sections discuss these theoretical concepts focussing on how children transition through age periodisation by mastering leading activities and developing higher mental functions, mediated by internal and external tools. Play is discussed as a leading activity which provides a natural zone of proximal development enabling opportunities for the development of intersubjectivity and collaboration.

3.3.1 Leading activities.

According to Vygotsky, a child's development is supported by leading activities which change over time according to specific age periods (Wong & Fleer, 2013). A leading activity is the most influential activity out of any number of activities in which children engage during an age period of development. The leading activity plays a dominant role in a child's cognitive development and "prepares them for the transition to the next age period" (Karpov, 2015, p. 513). Age periods are historically (through a history of human practices) and culturally (through social interactions with others) situated relative to leading activities. The history of human practices and social interactions (culture) play a central role in a child's development and progression through age periods, according to Vygotsky (1967). Vygotsky conceptualised culture "as a living continuous flow of practices that stretch throughout history and are enacted by each generation of people" (Vianna & Stetsenko, 2006, p. 89). Present generations of people are perceived as engaging in, continuing and transforming the practices of the past so that "the present is an enactment of the past that transforms the past but also inevitably carries it on, in superseded and often negated (opposite) forms, into the future" (Vianna & Stetsenko, 2006, p. 89). The principles of dialectical transformation hence underpin Vygotsky's view of culture and history as influencing the leading activities of child development.

Vygotsky's concept of leading activities was further elaborated by Leontiev and El'konin into a periodisation framework (Kravtsova, 2006) which detailed five periods marked by key leading activities enabling transition from one age period to another. Leontiev and El'konin stated that leading activities defined "the specific nature of a child's development at a given age" (Kravtsova, 2006, p. 8).

In the first year of a child's life, the relationship between the caregiver and the child forms the prominent activity between the child and her environment (Karpov, 2015). It is this emotional interaction between the infant and caregivers or "direct emotional communication with an adult" (El'Konin, 2010, p. 22) which forms the leading activity for that early development stage. Through interaction with caregivers, the infant slowly starts "to respond to adult initiations of emotional interactions, and then, to initiate these interactions themselves by smiling, vocalizing, and using body gestures" (Karpov, 2015, p. 513). This reciprocal emotional interaction by the infant thus indicates a new motive which drives the emotional interaction becoming a lead activity of that age period.

During the second and third years of the child, the leading activity becomes object centred joint activity between the toddler and the caregivers (Whitebread & O'Sullivan, 2012). In other words, the "dominant activity in early childhood is precisely object-instrumental activity, in the course of which the child acquires socially evolved modes of action with objects" (El'Konin, 2010, p. 23) provided by caregivers. Having mastered ideas around objects, the leading activity transitions into play during the preschool years between approximately three to six years old (Whitebread & O'Sullivan, 2012), where the pre-schooler develops interest in social roles and relationships in their environment. During this age period, pre-schoolers begin to imitate and explore those social roles though play (Karpov, 2015), and thus play becomes a leading activity in the development of higher mental functions (discussed in section 3.3.1.1).

Through play, from six years onwards, children come to understand that they are not yet adults and must acquire knowledge at schools instead of adopting pretend adult roles through play (Karpov, 2015). Therefore, learning becomes motivation for the next leading activity. The fifth age period is the period of adolescence where interaction with peers form the leading activity as adolescents engage in "formal-logical thought" (Karpov, 2015, p. 515).

The guiding assumption throughout age periodisation is that initially the infant, toddler, pre-schooler, school age or adolescent cannot perform a leading activity on her own, so this activity must be mediated by adults or more knowledgeable others through the use of mediating tools. As a result, "the outcome then of adult mediation during the period of dominance of each leading activity is that the child performs the activity independently and the motive to engage in the next leading activity emerges" (Whitebread & O'Sullivan, 2012, p. 200).

The leading activity within a specific age period is "crucially determined by the society in which children live" (Karpov, 2015, p. 513) and therefore influenced by her environment. Vygotsky termed a child's relationship to her environment the social situation of development. He stated that the transition to a new development period was started "when a new, unique child–social relation or a new social situation of development appears" (Ma, 2018, p. 3). Therefore, Vygotsky viewed the social situation of development as "the unique relation between the child and the social reality surrounding them at the given age" (Ma, 2018, p. 3). Therefore, an age period is characterised by the dominant relationship between the child and her social environment. According to Vygotsky, this social situation initiates a range of dynamic development changes that can occur during any age period as the child challenges her current psychological capabilities with her needs and desires, and with the demands and possibilities of the environment (Chaiklin, 2003).

Vygotsky theorised that the leading activity in an age period promotes the child's mastery of key psychological (internal) tools and material (external) tools, such as language, concepts, signs, and symbols (Karpov, 2015). Once the child can independently perform a leading activity through mastery of psychological and material tools, this signifies a transition to the next age period, and the development of higher mental functions.

3.3.1.1 Tools mediate the development of higher mental functions.

Vygotsky postulated that the development of human mental functions is mediated by historically developed tools or artefacts which are made by people and influenced by culture (Verenikina, 2003a). These cultural tools can be material artefacts such as paint brushes, pens, or tables for example, or more complex psychological tools such as language, concepts, signs and symbols (Karpov, 2015). Human mental functions that are mediated by cultural tools are called higher mental functions to distinguish them from lower mental functions which are unmediated and involuntary (Karpov, 2015). Vygotsky theorised that lower mental functions are genetically inherited and included basic functions such as "sensations, reactive attention, spontaneous memory and sensorimotor intelligence" (Verenikina, 2003a, p. 3) whereas higher mental processes are socially acquired, voluntarily co-constructed and mediated by social means (Gajdamaschko, 2015). Higher mental functions "include mediated perception, logical thinking, deliberate attention and memory" and are acquired through learning and teaching (Verenikina, 2003a, p. 3). Higher mental functioning was defined as being uniquely human, "mediated by tools and by sign systems such as natural language" (Wertsch, 1993, p. 21).

Vygotsky (1978) proposed the concept of tool mediation to explain how semiotic interactions with psychological and material tools mediate the development of higher mental functioning as the child progresses through age periodisation. Vygotsky theorised that tool mediation provides the link from what is social (external) to what is individual (internal)

(Fernyhough, 2008), thereby enabling internalisation (discussed in 3.3.1.2) of that external culture.

Upon mastery of cultural tools, the child's social situation of development changes and is evident when the child can verbalise her actions within that activity thereby signifying a mental progression (Edwards, 2016). This then necessitates the development of new psychological functions for supporting "the evolution of the next leading activity" (Edwards, 2016, p. 197). Edwards (2011) states that a leading activity acts as a "bridge that supports a child's transition from one psychological function to another across the developmental lifespan" (p. 196). Therefore, the shift from one age period or development phase to another is characterised by a change of leading activity marking a change in the child's relationship to her environment (social situation of development) mediated by a range of cultural tools which can develop higher mental functions (for example, mediated perception, logical memory, abstract thinking, deliberate voluntary attention and the formation of concepts).

3.3.1.2 Tools mediate the internalisation of social experiences.

An important aspect of the successful mastery of a leading activity is the ability of a child to internalise psychological tools acquired during social activities (Karpov, 2015). Vygotsky theorised that childhood development originates from external social sources and that these externally derived social experiences are then internalised or actively reconstructed on an internal plane into individual mental processes. According to Vygotsky (1978), cultural tools enable the internalisation of social and individual functioning, and therefore mediate the external (social) and the internal (individual) leading to the development of higher mental processes such as logical thinking, attention, memory and mediated perception (Verenikina, 2003b). Vygotsky said that a higher mental function firstly progresses through an external phase in development, before progressing to "an internal, truly mental function

because it is initially a social function" (Verenikina, 2003b, p. 2). This was termed internalisation. In Vygotsky's words:

> Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological), and then inside (intrapsychological). All the higher functions originate as actual relations between human individuals. (Vygotsky, 1978, p. 57)

Therefore, it can be seen that Vygotsky conceptualised development "as the transformation of socially shared activities into internalized processes" (John-Steiner & Mahn, 1996, p. 192).

3.3.1.3 Tools mediate the establishment of intersubjectivity.

The achievement of intersubjectivity is theorised as an important step towards internalisation of mediated experiences (Fernyhough, 2008) and is central to the concept of tool mediation (Verenikina, 2003b). In the context of childhood development, Vygotsky postulated that establishment of shared understandings (intersubjectivity) is a process which occurs in social interactions between a child and a more knowledgeable other (Verenikina, 2003b). It is viewed as a process "whereby two participants in a task who begin with different understandings of it arrive at shared understanding in the course of communication" (Tudge, 1992, p. 1365).

Intersubjectivity is an external process negotiated between two or more individuals and is mediated by tools such as language, signs and symbols. Once achieved, the establishment of intersubjectivity enables the internalisation of shared external understandings into internal individual and independent understandings, thereby enabling the development of higher mental functions.

3.3.2 Play creates the zone of proximal development of a child.

Within the concept of age periodisation, Vygotsky (1967) recognised imaginative play as a leading activity marking the transition from one central psychological function to the next. He said that imaginative play promotes the creation of voluntary intentions and the formations of real life plans "as a way of interacting with the social and cultural world" (Edwards, 2016, p. 198) through the use of a range of cultural tools such as language, symbols, and material artefacts (Vygotsky, 1967). Vygotsky (1967) referred to the employment of material artefacts for imaginative purposes during play as object substitution. According to Vygotsky, object substitution occurs when a child uses an object symbolically for something else. El'konin elaborated on this concept by describing play with objects as progressing from object centred to more relationship focused where children change their use of objects, incorporate role specific language, and develop relationships between play roles and play relationships, thus reflecting mature forms of play (Bodrova & Leong, 2015).

Vygotsky (1967) stated that play, acting as a leading activity in development, creates the zone of proximal development of a child. The concept of the zone of proximal development was used by Vygotsky as "a metaphorical tool for elaborating how interactions between individuals and their environments, including objects and social others, took place" (Yamagata-Lynch, 2010, p. 19) during problem solving activities. Vygotsky focused on "the implications of the zone of proximal development for the assessment of intelligence and for the organization of instruction" (Wertsch, 1993, p. 28) within education. He proposed the notion of the zone of proximal development to explain how learning precedes development. Vygotsky (1978) said that the social nature of play provides opportunities to create natural zones of proximal development within which learning can "awaken a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers" (p. 90).

Vygotsky (1987) argued that a child's development should be determined by clarifying it at two levels. He called the first level the actual developmental level. This signified the child's already established mental functions and was based on the development cycles she had already completed for a given age period. The second level related to the near or potential level of higher mental functions a child has the potential to achieve. In a learning/teaching context, Vygotsky postulated that "instruction should be tied more closely to the level of potential development than to the level of actual development" (Wertsch, 1993, p. 28).

Vygotsky felt that interaction with more competent others can provide assistance in reaching this potential when the established maturing psychological functions are not yet mature enough for independent performance. "With collaboration, direction, or some kind of help the child is always able to do more and solve more difficult tasks that he can independently" (Vygotsky, 1987, p. 209). In other words, the zone of proximal development reflects the distance between the actual developmental level and the level of potential development achieved through adult guidance or in collaboration with more capable peers (Vygotsky 1978).

The actual development level characterises cognitive development retrospectively, while the zone of proximal development characterises cognitive development prospectively (Vygotsky, 1978). The zone of proximal development hence describes mental functions that have not yet matured but are in the process of maturing in the near future. The assistance of the more knowledgeable other however is only of benefit to a child when certain maturing functions are already present (Chaiklin, 2003). The assistance provided should thus extend slightly beyond the child's existing competency level and should be constructed on the child's existing abilities.

Therefore, the concepts of tool mediation giving rise to the creation of intersubjectivity and internalisation, as discussed in the previous sections, can operate within the zone of proximal development in play, leading to the development of higher mental functions. In this zone, a child's external performance can be socially mediated by more knowledgeable others through the use of cultural tools to negotiate intersubjectivity and subsequent internalisation of key psychological and material tools. Once internalised into higher mental functions, the key cultural tools can then be used by the child independently to transition from assisted performance to independent performance.

3.3.3 Loose parts materials as mediating tools.

The social activity of play, mediated by psychological tools (language, signs, symbols) and material artefacts (loose parts materials) can create zones of proximal development where shared understandings are negotiated between peers and subsequently internalised to develop higher mental functions.

Figure 3.1, adapted from Vygotsky's basic mediated action triangle (1978), provides an overview of the concepts discussed in the preceding sections of this chapter and offers a visual framework for tool mediation for the context of this study. The figure shows the relationship between subjects, mediating tools, and object, and the resulting outcome. Through interactions between subjects, tools and objects, it was theorised that the subject's use of psychological and cultural tools mediates the development of shared meanings (intersubjectivity) of their world, thus leading to internalisation of those tools and the development of higher mental functions.

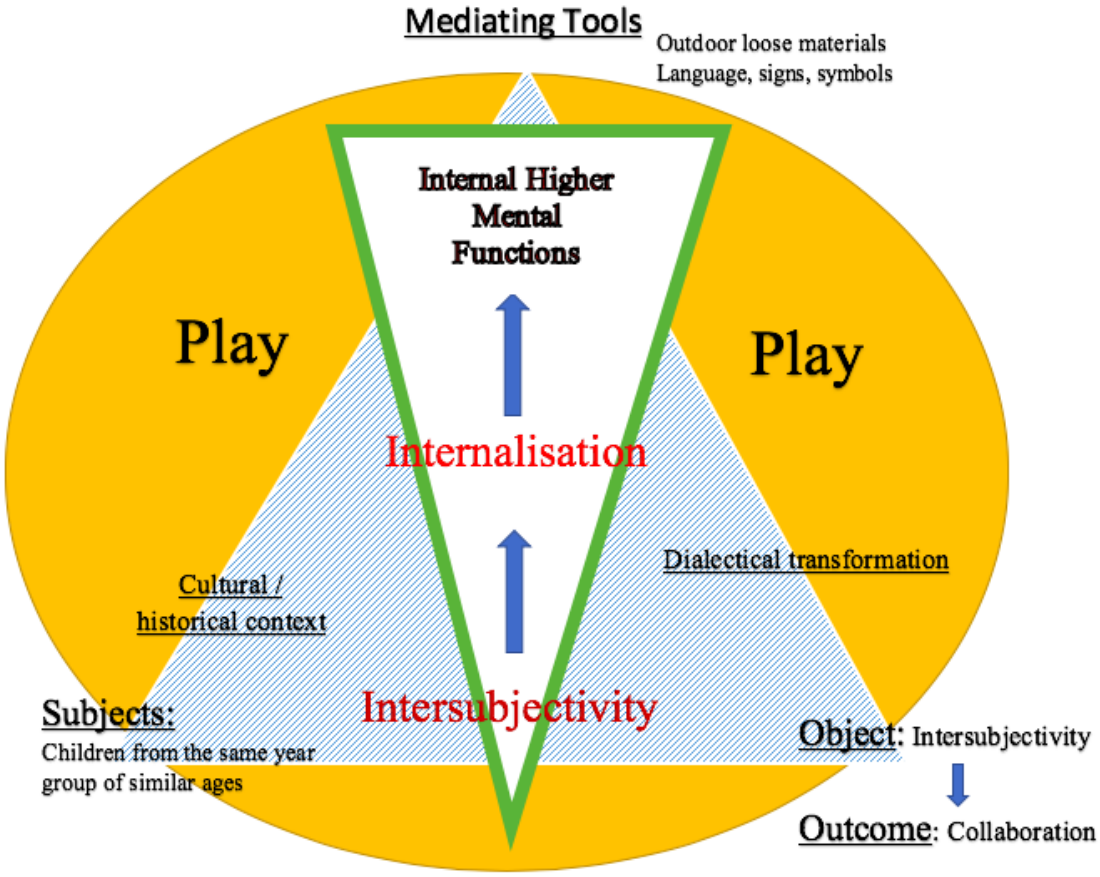

Figure 3.1. Adaptation of Vygotsky's (1978) basic mediated action triangle.

The subjects in this diagram are interacting peers of approximately the same ages from the same primary school year group. The mediating tools include a range of recycled outdoor loose parts materials, along with psychological tools such as language, signs and symbols, reflecting cultural and historical influences. Loose part materials in Figure 3.1 are considered cultural tools in the form of material artefacts. A cultural tool is viewed as an "artefact that has gained value within participants' activities rather than as a temporary tool for engaging in an immediate activity" (Yamagata-Lynch, 2010, p. 17).

The open-ended nature of loose parts materials enable the subjects to use these tools in a myriad of play possibilities so "subjects may discover new tools across multiple activities and the value of a tool may change over time as they engage in new activities" (Yamagata-Lynch, 2010, p. 22). The object refers to the motives of the subjects for

participating in the activity of play. In this study, the object is the establishment of intersubjectivity, the creation of shared understandings necessary for play to continue and develop. Intersubjectivity in this diagram is suggested as a precursor to the outcome of interactional activities during play: collaboration. Collaboration, as an outcome, is viewed as the successful development of collaborative interactions and collaborative outcomes.

Figure 3.1 shows how loose parts materials acting as material artefacts (along with psychological tools) mediate the relations between subjects (peers), object (intersubjectivity) and outcome (collaboration). This triangle represents a dialectical relationship (discussed in section 3.3.1) between subjects, tools and objects with each component influencing the other and play, the leading activity, as a whole. Loose parts materials in this figure mediate peer negotiation of ideas, experiences and practices through interpersonal communication to create shared meanings (intersubjectivity) resulting in the achievement of shared goals (collaboration).

Therefore, Figure 3.1, adapted from Vygotsky (1978), demonstrates how tools (outdoor loose play parts) mediate between the subject (peers) and the object (outcome), influenced by the cultural and historical context of the school environment and surrounding communities. The cultural and historical context (discussed in section 3.3.1) of the school and local communities shape the way the subjects interact with the loose parts materials. Thus, the loose parts materials can be used as tools to create and transform the nature of play reflecting particular cultural traditions developed through history.

Based on Vygotsky's key concepts of tool mediation, loose parts materials can foster intersubjective interactions between interacting peers at play, creating natural zones of proximal development where more competent peers guide and help less competent peers to establish intersubjectivity around the materials. Intersubjectivity can subsequently support

internalisation of key psychological and cultural tools (loose parts materials) leading to collaboratively developed elaborations of the play activity.

3.4 Conclusion

This chapter has outlined the theoretical framework used in this study. It has detailed the sociocultural concept of tool mediation embedded within the core constructs of leading activities in the development of higher mental functions. This chapter has recognised the importance of play as a leading activity and the creation of naturally occurring zones of proximal development within play. These constructs are useful as they can provide a lens from which to understand the potential role of loose parts materials during play operating as tools to mediate shared understandings between peers. The chapter was concluded by providing a visual framework for tool mediation showing the relations between the subjects (children from the same school year group), mediation tools (loose parts materials, language, signs and symbols) and the object (intersubjectivity) resulting in the outcome (collaboration). This framework hence provides the theoretical basis for interpretation, analysis and discussion of the primary findings of this study.

Chapter four discusses the methodological design along with the methods of data collection employed to address the research questions.

Chapter 4: Methodology

4.1 Introduction

This chapter focuses on the methodological design of the study employed to explore the guiding research questions:

1. How do loose parts play materials operate as tools during outdoor free play to support the development of intersubjectivity?
2. To what extent do the identified occurrences of intersubjectivity lead to collaboration as an outcome of interactional activity?

Organised into ten sections, this chapter firstly provides an overview of the philosophical underpinnings supporting frameworks associated with qualitative research. Social constructivism as a branch of constructivism is explored in detail in this section, laying the foundations in section three for justifying the adoption of micro-ethnography as a viable methodology for this project. Sections four and five provide details of the study's context and participant recruitment. Section six details the methods employed for this study whilst section seven looks at the processes of data analysis. In the latter sections of this chapter, relevant ethical considerations and potential trustworthiness of this study are discussed.

4.2 Philosophical underpinnings of a qualitative approach

Education research evolves from many inquiry traditions, originating from the natural sciences guided by fundamental belief systems which shape methodological choices of researchers (Wahyuni, 2012). Ontology and epistemology form the foundational realms of philosophy, mutually supporting one another (Schuh & Barab, 2007) and are hence fundamentally intertwined. Ontology seeks to address philosophical questions about the nature of reality (Creswell, 2007) which in turn influences a researcher's epistemological

views about what can be known and is worth knowing (Hatch, 2002). Moreover, such questions guide the formation of overall paradigms or world views in education research. A paradigm is a belief system around which consensus coalesces based on ontological, epistemological and methodological assumptions (Guba & Lincoln, 1994). Paradigms influence how knowledge is discovered and analysed in a systematic way, thus guiding methodological approaches to research. The specific methods of research are subsequently dictated by the methodology which in turn influence the ethical stance (axiology) adopted by the researcher (Wahyuni, 2012).

Kuhn (1970) in 'The Structure of Scientific Revolutions' claimed that the development of paradigms was not a linear steady accumulation of facts and knowledge. Instead, the development of belief systems was interrupted by periods of crisis which sought to solve puzzles or 'anomalies' arising from a belief system, causing major evolutionary shifts in world views (Fuller, 2002). Based on this, many paradigm shifts have influenced and shaped education research, all of which claim sets of assumptions that differ fundamentally from each other in terms of how the world is ordered, what can be known about it and how this knowledge can be gathered. Upon scrutiny of these assumptions which range from positivism founded on the notion of realism to post-structuralism (Schuh & Barab, 2007), the philosophical approach which most closely aligns with the theoretical imperatives of this research is that of constructivism. Sociocultural theory, described in Chapter Three and closely associated with social constructivism (a variation of constructivism), guided the epistemological perspective adopted in this study. As a result, this study was philosophically premised by the concept that knowledge is socially constructed from social practices through shared understandings. Hence, from an ontological perspective, social constructions produce not just one but multiple realities. Therefore, ontologically and epistemologically this study

positions itself within social constructivism, a variation of the constructivist paradigm as discussed in the next section.

4.2.1 Constructivism.

Viewed through a system of ontological and epistemological questions as outlined by Hatch (2002) and similar to Guba and Lincoln (1994), constructivism is described as the move from ontological realism to ontological relativism. Realism is an ontological assumption which views the physical world as "external to individuals" (Schuh & Barab, 2007, p. 71) thereby interpreting reality as existing independent to the mind. Relativism postulates that reality is socially and experientially constructed by the individual and as a result, is specific to that individual and context (Schuh & Barab, 2007).

Constructivists are associated with the general principles of relativism, viewing reality and knowledge as subjectively constructed by the individuals' consciousness. Therefore, reality is not universally the same for everyone which implies the construction of multiple realities (Denzin & Lincoln, 2008; Hatch, 2002). Constructivists postulate that knowledge evolves dynamically from the individual's subjective perspectives of reality and is continuously revised through dialectical influences of a social nature (Day, 1983; John-Steiner & Mahn, 1996). Researchers aligning with this paradigm seek answers about how social experience is created and meaning is made, thereby assuming a value laden nature of inquiry (Denzin & Lincoln, 2008).

4.2.2 Social constructivism.

Constructivism is an umbrella term representing "a heterogeneous body of theoretical approaches across different disciplines" (Vianna & Stetsenko, 2006, p. 81). Major frameworks on human development, aligned with Piaget and Vygotsky, for example, have drawn on constructivism as philosophical bedrocks. While cognitive constructivism is

associated with Piaget, social constructivism is associated with the developmental views of Vygotsky (Schuh & Barab, 2007). Piaget postulated that "knowledge was constructed by individual children as they engaged with the external world" (Edwards, 2003, p. 255), acknowledging that development is affected by external social influences of society (Vianna & Stetsenko, 2006) but constructed by the individual child. Thus, central to cognitive development in the Piagetian tradition was the individual child's "exploratory behaviours in the external world" (Edwards, 2003, p. 255) where children adapt to society's influences as they pass through standardised biological maturation which awakened their cognitive development.

Vygotsky offered a different approach to how children constructed knowledge. He said that children cognitively developed by actively engaging with and changing the world or society that they lived in (Vianna & Stetsenko, 2006). Vygotsky postulated that through a process of transformative collaborative practices children transform society rather than adapt to it. According to Vygotsky, this transformation was mediated by psychological tools and cultural artefacts influenced by the historical heritage of previous generations and internalised to develop higher mental functions (Vianna & Stetsenko, 2006). Therefore, social interaction was viewed as fundamental to the development process from a sociocultural perspective of social constructivism.

Social constructivists, in the tradition of Vygotsky, therefore view knowledge as shared constructions as opposed to individually constructed ones implying that interactions with others influences development. Knowledge is viewed "as embedded, situated, distributed, and co-constructed within contexts while also being intrinsically interwoven into these contexts" (Stetsenko, 2008, p. 477). Cultural and historical contexts are viewed as dialectically intertwined and play a central role in social constructivism, "The present is an enactment of the past that transforms the past but also inevitably carries it on, in superseded

and often negated (opposite) forms, into the future" (Vianna & Stetsenko, 2006, p. 89). Therefore, social constructivists in the tradition of Vygotsky conceptualise culture as a continuous flow of practices, enhanced by tool mediation stretching throughout history, enacted by generations of people (Vianna & Stetsenko, 2006).

Consistent with the principles of social constructivism, a qualitative and interpretivist methodology was thus employed acknowledging this study's theoretical framework. This involved analysing the world from an interpretative, naturalistic lens thereby studying phenomena in natural settings in order to interpret the meanings people bring to them (Denzin & Lincoln, 2008). This analysis is aided by an emic approach to research where the participant's perspective in the study is captured (Baker, Green, & Skukauskaite, 2008; Devos, 2016) to make sense of the meanings others have about the world (Creswell, 2003).

Interpretative research can be viewed as a concern with the specifics of knowledge construction in the immediate scenes of face-to-face interactions (Erickson, 1985). The domain of interpretative research however encompasses a large family tree with many intertwined methodological branches. These branches are reflective of evolving research trends from a range of disciplines and provide numerous inquiry strategies from which to choose. Having consolidated the epistemological stance, the next section of this chapter considers the method as determined by the research problem and research questions.

4.3 Micro-ethnography

Drawing from Creswell's (2013) comparative analysis of qualitative methodologies amongst others, a micro-ethnographical approach was selected for this study (see Table 4.1). Ethnography in general seeks to explore culture sharing groups with the intent of describing and interpreting shared patterns of behaviours, beliefs, values and language (Creswell, 2007). The emphasis in ethnography is on culture, which can be broadly defined as representing the

values and norms of practice in a group of people (Creswell, 2012) and can include a group's language, communication styles, rituals, interactions, economic and political structures (Creswell, 2015). Micro-ethnography, also known as the ethnographic microanalysis of interaction (Erickson, 1992; Garcez, 2008) and positioned within ethnography, is likewise concerned with the analysis of culture but is employed to examine a specific setting in a 'micro' focused manner. In educational research, the 'culture' micro-ethnography describes tend to be individual class groups or schools rather than larger entities as is common in other forms of ethnography (Streeck & Mehus, 2005).

Facilitated by improvements in audio and video technology in the 1970s, micro-ethnography originated from disciplines of anthropology, psychology, and sociology (Garcez, 2008; Streeck & Mehus, 2005) and includes sociolinguistic methods such as discourse and conversation analysis. However, micro-ethnographers approach these forms of analysis from a broader perspective intending also to capture the non-verbal elements of communication (Streeck & Mehus, 2005) symbolised by use of tools and physical artefacts (Leeds-Hurwitz, 1987). In this way, a holistic interpretation of interaction is studied as participants co-construct meaning and context during their activities together, "Thus emphasizing the micro-ethnographic view that face-to-face interaction is built on actions in physical time and space, rather than simply on the exchange of meaningful utterances" (Garcez, 2008, p. 262).

Table 4.1

Adapted from Creswell's comparative analysis of qualitative methodologies (2013)

Attribute	Micro-ethnography	1. How do loose parts materials operate as tools during outdoor free play to mediate the development of intersubjectivity? 2. To what extent does the development of intersubjectivity lead to collaboration as an outcome of interactional activity?
Focus	Describing & attributing a specific aspect of a cultural group in a specific situational setting	**Cultural group**: Established primary year group **Specific aspect of cultural group**: Co-construction of intersubjectivity leading to collaboration **Setting**: Timetabled free play in an outdoor loose parts play space
Type of problem best suited for design	Describing and interpreting the shared patterns of culture of a group	Seeks to explore how outdoor loose parts play materials influence patterns of social interactions amongst a cultural group, specifically how loose parts act as tools to create intersubjectivity and subsequent collaborative outcomes
Unit of analysis	Studying a group that shares the same culture	Loose parts materials used as tools by an established cultural group
Data collection forms	Using video enabled observations Collecting other sources during time in the field	Video observations of real time face to face interactions as children co-construct shared meaning through play with outdoor loose parts Observation notes Photographs of constructed artefacts
Data analysis strategies	Analysing data through description of the culture sharing group; themes about the group	Analysis of naturally occurring talk to describe patterns/themes of intersubjectivity leading to collaborative outcomes Analysis of non-verbal and physical interaction to describe patterns/themes of intersubjectivity leading to collaborative outcomes Analysis of still photographs of constructed artefacts to look for collaborative outcomes

Micro-ethnography is characterised by the analysis of minute aspects of human behaviour with a view to focusing on fine details of communicative interaction as children construct their understanding of one another and the world (LeBaron, 2006). In other words, micro-ethnographers "seek to examine and interpret the roles various micro behaviours may have on face-to-face interaction that allow the actors to create meaning and achieve intersubjectivity" (Devos, 2016, p. 111). Micro-ethnographers therefore study interactions in a moment-by-moment fashion with attention to the sequential progression of interactional processes within which they take place (Streeck & Mehus, 2005). This minute focus is typically facilitated by video/audio enabled analysis of naturalistic interactions allowing for the generation of data that can be micro analysed through repeated viewing or listening (Erickson, 2011; Jewitt, 2012; Leeds-Hurwitz, 1987). Hence, video is regarded as a central and integral partner to capturing relevant segments of interaction for analysis (Baker et al., 2008; LeBaron, 2008) allowing for holistic analysis through the facilitation of repeated multiple viewings for different purposes (Fitzgerald, Hackling, & Dawson, 2013).

Early micro-ethnographical studies focused extensively on micro social practices in primary classroom settings (Garcez, 2008) while micro-ethnography conducted in preschools focused on interactions arising from play that arose from smaller groupings as opposed to whole class formations (Mehus, 2006). This project likewise used micro-ethnography in an educational setting but focussed on the loose part materials as the unit of analysis. Therefore, consistent with this study's research questions and guiding conceptual framework of tool mediation and the zone of proximal development, the loose parts play materials formed the focus of analysis. Interactions between the participants (subjects) and outdoor loose play parts (tools) were micro-analysed through video enabled observations to explore occurrences of intersubjectivity leading to collaborative practices.

Micro-ethnography thus offered a valid methodology with which to capture how a group of children play together in a specific setting to share and create meanings through social practices mediated by tools of loose parts, thereby facilitating not just an analysis of verbal and non-verbal interactions but also the physical manipulations of material resources at hand.

4.4 Research setting

Figure 4.1. Loose parts play space.

The study was conducted in an outdoor play space in a Queensland primary school. A wide array of recycled loose parts materials was introduced to a designated area on the school's premises. This space was approximately 70 metres in length and approximately 20 metres in width and was bordered on all sides by a fence or brick wall. Weather proof loose parts materials such as ropes, tyres, milk and bread crates, tarps, buckets, wood planks, plastic spools, tubes, pipes and garden water hoses amongst others were distributed throughout the play space (see Table 4.2). The types of loose parts materials chosen for use in the study were based on a number of principles: 1) the materials were not typically associated with play; 2) the materials were multipurpose; 3) the materials required no monetary cost; 4) the materials were safe for use. All the materials were discarded items,

previously used for other functional purposes (apart from play) and were sourced from a range of resource recovery centres, kerbside collections, charity shops and as used giveaway items from local businesses. The quantity of individual loose parts materials collected reflected the number of materials available in a two-month collection period prior to the start of the project.

Table 4.2

List of loose parts materials

Type of LPM	**Quantity**	**Type of LPM**	**Quantity**	**Types of LPM**	**Quantity**
Milk crates	50	Buckets	7	Plastic pipe (Large)	1
Wood planks	40	Plastic pipes/tubes	7	Plastic sheet	1
3m Ropes	20	Sticks	3	Golden crate	1
Bread crates	15	Large tarps	2	Rubber band	1
Tyres	15	Hardboard	2	Plastic spool (small)	1
Containers	15	Cardboard boxes	2		
3m Hose pipes	9	Plastic spools(large)	2		
Small tarps	8	Poles	2		

All materials were waterproofed, cleaned and regularly inspected for sharp edges and breakages. In addition, tyres were spray painted on the insides using white paint (toxin and lead free) to discourage bugs and spiders, and to make such insects easier to detect by the children. The loose parts play space was subjected to a Workplace Health and Safety (WHS) risk assessment review by the school's designated WHS officer. The space did not contain fixed play structures or traditional play equipment normally found in a school playground. In this play space, each individual loose part lacked an obvious play purpose but when used in combination with other parts provided multiple play opportunities (Hyndman et al., 2017).

Figure 4.2. Images of loose parts materials.

4.5 Participants

The participants in this study were primary aged children from a state school in Brisbane, Queensland. Students at this school represented a range of socioeconomic backgrounds, with 64% from the highest quartile and 3% from the lowest quartile. 15% of students attending the school had a language background other than English, and 2% of the children were of Indigenous Australian background. Following ethics approval (HREC Registration 2017-309H) from the Australian Catholic University (Appendix A), permission to access the school was sought from the Queensland Department of Education and granted (Appendix B), in addition to permission from the school's Principal and Deputy Principals (Appendix C).

For this project, the strategy for participant selection was to invite a sample of children to the study at the convenience of the school management team so as not disrupt the normal function of the school. During initial discussions with the school, the researcher originally proposed recruitment of a class or year group which was regularly timetabled for outdoor free play to minimise inconvenience and disruption to the learning routines of that group. The researcher sought participants from an established year or class group who shared similar ages, relationships, attitudes, and written and unwritten rules shaped by the school's specific institutional history, thereby aligning with a micro-ethnographical approach to the research (Streeck & Mehus, 2005).

The school suggested inviting a group of Year Five students (ages 10-11 years) who were not involved in a weekly Religious Instruction (RI) program. The school offered an opt

in/opt out policy for attendance to RI, resulting in approximately 50% of children of that year group not taking part in the once weekly program of 30 minutes' duration. The children who did not participate in RI were supervised in classrooms and undertook supervised learning activities of their individual choice. Therefore, it was suggested by the school to invite participation from the Year 5 children not attending RI, thereby providing those students with an alternative activity to supervision during scheduled RI classes.

Upon agreement with the school's management, 39 children from the Year Five group, who did not participate in RI, were invited to take part in the study during an information session. The information session clearly outlined the purpose of the study (Appendix D) and basic play guidelines including stacking restrictions to crates and tyres. Each child received plain language information (Appendix E) and parental information letters (Appendix F) and parental consent forms (Appendix G) to bring home for approval. As Guillemin and Gillam (2004) articulate:

> Informed consent is at heart an interpersonal process between researcher and participant, where the prospective participant comes to an understanding of what the research project is about and what participation would involve and makes his or her own free decision about whether, and on what terms, to participate. (p. 272)

In line with the National Health and Medical Research Council's (NHMRC) principle of respect for participants, it was clearly explained to the children during the information session that they had a choice to participate and that they could choose at any time to withdraw from observations without negative consequences. Thirty-one children returned signed parental approvals. Upon return of these approvals, the children were asked to sign the child assent form, signifying their own understanding and agreement to participate. It was further explained that each child could decide to choose or not to choose to take part in

observations prior to the start of each session by indicating this on a weekly assent form (Appendix H). All 31 children indicated on the child assent form that they choose to take part in observations. In addition, participating children were asked to choose a pseudonym which was recorded and used throughout the research to maintain their privacy. Hence, only children who returned both the parental and child assent form, had the choice to participate in the weekly observation sessions. Children who did not provide signed consent nor assent forms were supervised as per the normal timetable in a classroom by a teacher. Of the 31 participants, 18 were boys and 13 were girls.

As a result, this study adopted convenience sampling as a method of participant recruitment. Convenience sampling is a method of participant recruitment where selection of participants is dependent on their availability (Hibberts, Burke Johnson, & Hudson, 2012) and the availability of participants is generally based on geographic proximity or other types of accessibility (Waterfield, 2013). In the case of this research, availability was based on access to a group of same age students selected by the school, so as to minimise academic timetable disruption to that group.

4.6 Methods

Three primary methods of data collection were employed in this study during six sessions of observations, each session of approximately 25 minutes' duration:

1. Video observations
2. Observation notes
3. Photographs

4.6.1 Video observations.

Audio-visual technology enables researchers to collect and examine frame by frame or play by play minute verbal and non-verbal interactions thus creating rich transcripts for

analysis (Whitington & Floyd, 2009). According to Derry and colleagues (2010), "Accessible video technologies provide researchers with powerful 'microscopes' that greatly increase the interactional detail that can be obtained and permanently stored for comprehensive analysis and reanalysis by multiple investigators" (p. 6) thus providing a useful tool for collecting data.

Video observations have been credited with providing rich contextual data regarding details of setting, gestures, facial expressions and other interactional cues which provide vital insights on the negotiation and construction of meaning (DuFon, 2002). Moreover, according to DuFon (2002), visual information contained in video footage also provides "information on the directionality and intensity of attention" (p. 44) which can potentially enhance data regarding interactions of mutual attention signalling the occurrence of intersubjectivity. Erickson (1982, 2011) referred to the facility for repeated play back viewing as enabling the observer additional time for intensive interpretation, not permitted by real time observations. Sound image recording (SIR) as described by Erickson (1982), facilitates a micro-ethnographic analysis of interactions as "the researcher repeatedly revisits the record of the same event" (p. 216). Moreover, Erickson (2006) stated that "fine-grained information about the actual conduct of social interaction comes best from making audio-visual recordings of it from which either detailed transcriptions of the interaction can be prepared and analysed, or careful moment-by-moment coding can be done" (p. 176). Derry et al. (2010) argue that play by play review of video footage facilitate an effective analysis of sequential development of context and subsequent outcomes and can support the interpretations of "how multiple actions and people collectively produce phenomena" (p. 22).

This study adopted an approach to observations which utilised a mobile video recorder to capture how the loose parts materials were used in play by peers, without the researcher specifically participating in the play activities. Spradley (1980) detailed different levels of

observations ranging from passive participation where there is no interaction with participants to active participation where the researcher becomes fully engaged in the activities. In between these levels, lies the 'moderate' participant who establishes a peripheral role within the setting, occasionally interacting with the participants but for the most part remaining on the sidelines outside of the activities. It is this moderate approach that was used in this study. Adler and Adler (1987) described this type of observation as a peripheral membership role where the researcher is recognised and accepted by members (participants) as an insider but does not directly interact with the central group members or participate in activities that stand at the core of group membership. Therefore, in this type of observation the researcher does not have a functional role within the group.

To facilitate this observational approach, it was planned to initiate a familiarisation program prior to the commencement of data collection with the intention of desensitising the children to the presence of both the: 1) 'moderate' participant and 2) video equipment. It was expected that after a trial observation, children would become habituated to the moderate participant with the camera (Heath, Hindmarsh, & Luff, 2010; Rosenstein, 2002). The researcher planned to use the first observation day as a trial session and not to include data collected in the analysis. However, the researcher did not anticipate the degree of significance of the participant's first exposure to the loose parts as they made initial exploratory contact with the materials. Important data was revealed in this first session and as a result, the researcher felt it appropriate to include it in the full data set. This did not alter the ethical parameters of the study as parents /caregivers and students had given consent to participate in a total of six weeks of 30-minute observations and this first session did not exceed that amount.

4.6.1.1 Procedures for deciding what to film.

Due to the potential generation of large and complex volumes of data, procedures were detailed for the selection of specific play episodes for filming. A play episode was defined as a period of interactive play amongst two or more children (Luchs & Fikus, 2013) using a loose part material and/or group of loose parts materials. Play episodes were initiated by invitations from the participants, such as calls for attention or expressions of a desire to play and concluded by terminations such as expressions or actions demonstrating conclusion of play (Göncü, 1993).

The first step in determining a play episode for observation was to locate two or more children interacting with the same loose parts materials. If a play episode of reciprocal interaction with loose parts was observed, it was originally planned to observe the play episode until it terminated and then move on to video another episode of reciprocal interactions. However, during the first observation session, it became apparent that play episodes conducted amongst this group of children were of long duration, many lasting for the full session and not terminating until instructions to end play and return to class. As a result, it was felt that focussing on a single episode until it terminated at the end of the session was too restrictive and would limit the richness and diversity of potential data collection. Therefore, it was decided to focus on four or five play episodes in each session with the intention of moving back and forth between episodes as play interactions developed. Play episodes were selected for observation based on the size of a group interacting with materials. Groups which comprised of larger numbers of children were chosen as the focus of observations as it was expected that more members would produce more interactions and thus increased data.

Based on this protocol for videoing, the following types of play episodes were not videoed:

- Individual children playing independently with loose parts
- Two or more children reciprocally interacting but without loose parts

A mobile compact light weight video camera (Panasonic HC-VXF990 4K Ultra) was employed for videoing which was of high quality with powerful external microphones (Rode Stereo Videomic Pro). During the first two observation sessions, the researcher scanned all play groups as they settled into play and then chose four or five groups to focus on intensely during their play, based on their larger size. The researcher turned off the recording as she moved between groups and started it again once she focused on a new group reciprocally interacting with loose parts materials. This procedure was revised after the second observation session to allow the camera to continuously record even when moving between groups. This enabled the researcher to capture extra contextual details which otherwise might have been missed once the camera was turned off.

During the first observation session, it was quite challenging to clearly hear participant interactions as the quality of audio was affected by wind, background shouting, group members speaking at the same time or participants speaking in low voices. To mitigate these challenges, from the second session onwards, headphones were attached to the camera which allowed the researcher to hear exactly what she was videoing and therefore change her stance and position to get less interference in the event of cross wind noise or background shouting. The researcher also used an artificial fur wind shield (Rode Dead Cat) on the external microphone of the camera. In addition, the researcher positioned herself closer to the participants to follow their interactions more clearly. By the second session, the participants seemed to be mainly desensitised to the presence of the camera.

Consistent with the sociocultural perspective of intersubjectivity emerging from within social interactions, the inclusion of all interacting participants in an observed play episode was sought to be captured through wide angled views of the episode (Erickson, 2011).

However, close-ups and zoom ins were periodically required to capture facial expressions and body language, likewise to capture still images of the loose parts in use and finished loose part constructions by the children. Close-ups were preceded and followed by contextualizing wide-angle shots to facilitate a holistic interpretation of the play episode under observation.

In the event of a child displaying anxiety to the camera or communicating any type of verbal or non-verbal indication of aversion to the observation process, it was planned to immediately terminate any video recording. However, this did not eventuate. This procedure was imperative to maintaining the ethical principles of justice whereby participants are treated fairly and with respect.

4.6.2 Observation notes.

Observation notes, based on repeated play backs of the video footage, were used during this study to provide additional descriptions of the setting and reflections on the transcriptions of video observations. The intention was to facilitate a more in-depth interpretation of context and activities related to how the loose parts materials, operating as tools, mediate intersubjectivity. The observation notes were derived from repeat viewings of recorded play episodes which were formulated immediately after the field observations. In this project, it was not possible to hand write field notes during observations as the researcher used the mobile hand-held video recorder at all times.

Observation notes were very detailed consisting of text descriptions of how the loose parts materials were physically manipulated and integrated into interactional turns. They also included non-verbal details observed related to physical movements, facial expressions, types of play and so on. The observation notes also contained records of personal reflections relating to any ideas, hunches or themes that researcher saw emerging (Creswell, 2015).

Observation notes were stored on a password protected computer and on an external hard drive accessible only by the researcher.

4.6.3 Photographs.

The use of still digital photographs of the loose parts materials in use and finished artefacts in various stages of completion were used to further enhance interpretation of interactions and add contextual support. The video camera used by the researcher enabled both video footage and still photo images to be taken simultaneously when required. This allowed the researcher to capture still images as well as video footage without having to switch between devices. In addition, screen shots of selected video footage were taken to further supplement contextual detail allowing for frame by frame capture of interactions arising around the materials. Pink (2007) argues that photographs both complement and work well with text such as transcriptions. However, photographs without accompanying text may well risk contextual ambiguity (Holm, 2014). In this study, photographs with text such as brief narratives, were used as symbolic evidence of collaborative practices stemming from intersubjectivity. Photographs were organised and categorised according to dates, times and numbered play episodes to facilitate ease of sorting and mapping to observational transcripts and codes. The same secure storage procedures were used for photographs as for the video footage, observation notes and memos.

4.6.4 Data management.

For the first two observation sessions, collected video data was organised into numbered and labelled play episodes to reflect the stop/start nature of the recordings according to play episodes as outlined previously, for example, Day 1, Episode 1, 'The Black Market'. From the third session onwards, video data was labelled according to numbered observation sessions only, reflecting the continuous nature of footage, for example Day 3.

Each play episode was subsequently identified and labelled during the ensuing transcription process.

Once video observations were downloaded from the camera, labelled and stored on a hard drive, the data was then ready for transcription. The transcription process was conducted by the researcher and aided by version 11.4.3 of NVivo's 'transcribe' features. NVivo (QSR International Pty Ltd., 2015) is a qualitative data analysis computer program which was used in the data analysis process. The transcribe function helped the researcher in transcribing the video file as she listened to it. This function enabled her to manually transcribe dialogue and create new transcript rows, which were timestamped, as the speaker changed. A speed slider was used to adjust the speed of the audio when necessary. This proved useful when the quality of audio was muffled, and the researcher required a slower speed to adequately hear what was being said. Transcripts thus became sources of key data that were used for coding, interpreting or creating other analytical representations and were revised iteratively to provide a reliable record of important aspects of interactions (Erickson, 2006) for coding.

The hard copies of all collected data in the form of secure digital (SD) cards and external hard drives were stored in a secure locked location while soft copies were electronically stored on a password protected computer only accessible by the researcher. This procedure strove to ensure confidentiality and privacy related to ethical principles of respect for persons. Moreover, to further protect respect for the participants, pseudonyms selected by the children were utilised during all stages of analysis.

4.7 Data analysis

4.7.1 A Priori coding.

Coding was employed as the main categorising strategy (Maxwell, 2009) during data analysis. Protocols for coding were established a priori to data collection and were deductive in nature. NVivo was used to store and organise data enabling the researcher to assign codes to that data and to facilitate in-depth searches through the data (Creswell, 2015).

According to Wahyuni (2012), coding is a system of labelling that involves the assignment of codes to data thereby creating core categories of information. During this process, "each code is given a label, a definition or description to guide how to apply the code, and an example of the texts" (Wahyuni, 2012, p. 76). Derry and colleagues (2010) further define the coding process as an analytical tool, which is cyclical and iterative in nature involving sorting, revisiting and linking groups of coded data into categories of similar characteristics. This process facilitates the emergence of patterns and themes which can address a study's research questions.

Saldana (2009) commented that some researchers feel that choice of coding methods and a provisional list of codes should be determined prior to commencement of research "to harmonise" (p. 56) with the conceptual framework and to enable an analysis that directly answers the research questions. In this approach, Saldana acknowledges that pre-existing theories and literature based on these theories can drive the coding process. Stuckey (2015) referred to a priori coding as "predetermined coding (which) may be based on a previous coding dictionary from another researcher or key concepts in a theoretical construct" (p. 8). Informal notes, in the form of coding memos, were employed to record and explain decisions made on any emerging codes stemming from the predetermined coding system. Memos were written to explain and justify the adoption of new codes or for the combination or splitting of

existing codes. As coding progressed, new codes and sub codes emerged which contributed to more holistic interpretations of the research questions. Examples of the addition of sub codes within sociodramatic play are provided in section 4.7.3. The researcher regularly evaluated each sub code's relevance to the research questions, which at times, necessitated the merging of codes with similar meaning. Examples of merged codes are provided in section 4.7.6.

All decisions were recorded in the coding memos and were discussed with the researcher's supervisors to corroborate the accuracy of any identified codes and themes. These memos were stored separately from coding transcripts to ensure transparency and avoid confusion between original comments made on transcripts and in observation notes (Stuckey, 2015).

Sociocultural theory frames the research questions and consistent with this, was employed to guide the initial coding scheme. The research focussed on how intersubjectivity leading to collaboration was facilitated through tool mediation (Vygotsky, 1978) of loose parts materials. As discussed in the literature review, there are many interpretations of intersubjectivity but for the purpose of this study, intersubjectivity was conceptualised as the creation of shared meaning (Farver, 1992; Matusov, 1996) and was expected to be evident in verbal and non-verbal interactions through shared actions with loose parts play materials. It is theorised from a sociocultural view that the establishment of intersubjectivity is necessary for children to collaborate successfully during play (Cannella, 1993; Garte, 2015; Lai, 2011; Whitington & Floyd, 2009) and occurs within the zone of proximal development (Vygotsky, 1978).

Literature suggests that children employ a range of communicative strategies ranging from simple (descriptions of actions and imitations) to more complex communicative strategies such as extensions and build-ons to create intersubjectivity (Göncü, 1993) during

play. It is said that intersubjectivity is created by children through "building onto and extending their partners' ideas, explaining actions, clarifying roles, and helping one another" (Parsons & Howe, 2013, p. 193). The intention was to extend this literature by focusing on how loose parts play materials act as tools to develop or inhibit the creation of intersubjectivity in children's play leading to collaborative behaviour. It was expected that intersubjectivity would occur as group members interacting with loose parts coordinated their actions with each other through accurately interpreting and responding to each other's verbal and non-verbal cues (Garte, 2015). It was also expected that these same interactive features influenced the ability of a group of children to collaborate during play episodes with loose parts materials. In line with this, a priori coding analysed data in six sequential stages:

1. Coding for cases (unit of analysis)
2. Coding for play progression
3. Coding for intersubjectivity (joint attention to loose parts materials)
4. Coding for intersubjectivity (meta-communication)
5. Coding for intersubjectivity (communication)
6. Coding for collaborative interactions and outcomes

4.7.2 Coding for case (units of analysis).

All transcripts and observation notes were firstly coded, using the software package NVivo, for 'case' to identify individual loose parts materials as units of analysis. This involved creating a case for each loose parts material and subsequently coding further references to the loose parts material under each relevant case as shown in Figure 4.3.

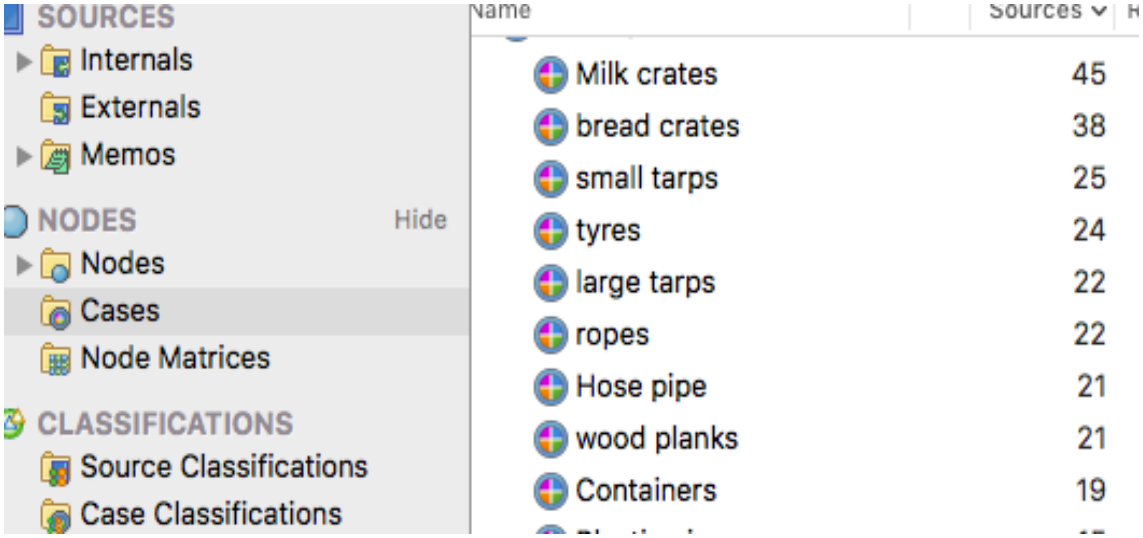

Figure 4.3. Coding for case examples.

4.7.3 Coding for play phase.

Each case was then coded for the type of play phase it mediated, that is, each loose parts material (case) was coded according to how it was used by participants to initiate, create or sustain phases of play. Therefore, as shown in Figure 4.4, when loose parts materials were gathered, collected and stored, this characterised the *Gathering* phase of play. When loose parts materials were used to build or construct things after being gathered, this signified progression into a *Construction* phase of play. Likewise, if loose parts materials were employed in dramatic/pretend play, this characterised a progression into the *Sociodramatic* play (SDP) phase of play. Sociodramatic play is defined in the literature as the development of pretend activities and routines which are related to organisational features like the family, school and workplace in their local peer culture (Garte, 2010). When participants engaged in repeated movements with the loose parts materials (repetitive actions which they found enjoyable), this was coded as *Functional* play.

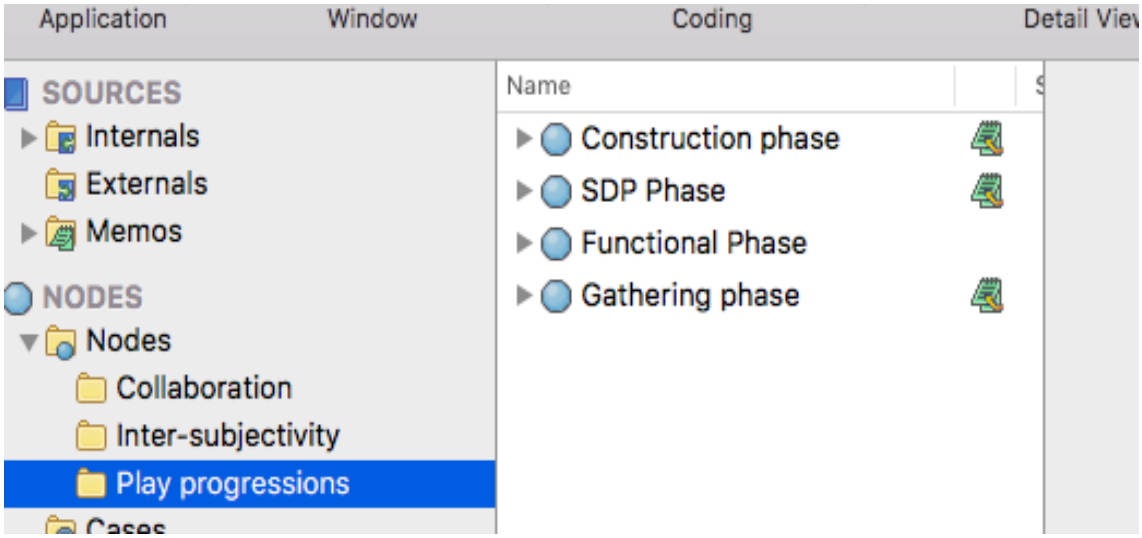

Figure 4.4. Coding for play phase example.

During analysis, sociodramatic play was further coded into several sub codes reflecting how the loose parts materials were used within that play phase, as shown in Table 4.3.

Table 4.3

Sub coding for sociodramatic play

Parent Node	Child Node	Sub Child Node
Sociodramatic play	Trading	Donations & Freebies
	Stealing	Coordinated stealing
		Opportunistic stealing
	Protection	

For example, the sociodramatic play phase was further coded into *Trading* play which referred to the use of loose parts materials as items of trade/bartering. Trading play was sub coded to reflect interactions where loose parts materials were given away for free in the form of *donations or freebies*. Sociodramatic play was also coded for *Stealing* play which referred to occurrences of acquiring loose parts materials by theft rather than by trade. Stealing play was sub coded into *Coordinated stealing* referring to pre-planned methods of theft by two or

more participants, and *Opportunistic stealing* referring to unplanned random acts of theft by individual participants. In response to opportunistic and coordinated stealing, many participants incorporated forms of protection to stop or reduce occurrences of theft during trading, and so sociodramatic play was further coded for *Protection* play.

4.7.4 Coding for intersubjectivity (joint attention to a loose parts material).

Having coded for cases and play types, each play progression enabled by loose parts materials was then coded for development of intersubjectivity. Intersubjectivity for this study, as detailed in the literature review, was conceptualised as the construction of shared meanings and understandings between play members and could develop when joint focus, meta-communication and communication were present during interactions (Göncü, 1993). This construction was a dynamic process, changing and evolving as meaning was continuously exchanged and negotiated between play members. Therefore, to facilitate this process, transcripts of interactional turns based on the definition by Göncü (1993) as everything a play group member said and did before another play group member responded were only coded when there was an opportunity for intersubjectivity to occur. For example, when a loose parts material or group of loose parts materials became the focus of joint attention for two or more participants and mutual interactive behaviour was observed. As a result, intersubjectivity was coded as developing when joint attention to a loose parts material occurred simultaneously during interactions with the following two elements, meta-communication and communication.

4.7.5 Coding for intersubjectivity (meta-communication).

Meta-communication occurred when participants agreed on the symbolic/pretend meaning of a loose parts material instead of the actual meaning of a loose parts material. For example, a crate was not a plastic container but instead became a seat or piece of furniture, or

a valuable head piece to be worn, or a building block to construct a trading shop, or a valuable trading tool to secure during the gathering phase. Thus, referring to the participant's agreement on the pretend nature of the activity. Meta-communication of the pretend use of loose parts materials, established verbally (explicitly) or non-verbally (implicitly) through posture, stance, gestures and movement, implied that play members agreed on the pretend use of loose parts materials to further play. As shown in Table 4.4, as the study progressed, meta-communication was sub coded into four general characteristics reflecting the agreed value and pretend use of loose parts materials.

Table 4.4

Sub coding for meta-communication

Coding protocol for meta-communication	
Meta-communication to stockpile	Signifying implicit or explicit agreement to gather and accumulate loose parts materials for use by group members.
Meta-communication to construct	Signifying implicit or explicit agreement to employ loose parts materials as building tools for use by group members.
Meta-communication to trade	Signifying implicit or explicit agreement to use loose parts materials as tools to trade/exchange by group members.
Meta-communication to steal	Signifying implicit or explicit agreement to use loose parts materials as items to steal or steal with, reflecting agreed desires by group members to acquire loose parts materials by thievery.

4.7.6 Coding for intersubjectivity (communication).

Communication referred to the verbal and non-verbal interactions necessary to relate to other group members' intentions within those shared symbolic meanings of a loose parts material. Verbal interactions referred to the use of spoken words during communication while non-verbal interactions referred to the use of actions and body language employed to convey meaning which did not involve verbal articulation of that meaning. For example, eye

contact between participants, facial expressions, body orientation, use of space and proximity to other participants, posture, hand and head gestures. Communication therefore related to the ability to negotiate and coordinate the continuation of the shared meanings and intentions of play. Communication was sub coded for the occurrences of the interactions listed in Table 4.5. These coding categories, adapted from the literature (Garte, 2015; Göncü, 1993; Howe et al., 2005; Parsons & Howe, 2013; Whitington & Floyd, 2009) are indicative of the development of intersubjectivity during play. At times, decisions were taken to merge certain codes which had similar meaning. For example, at the beginning of the study 'Positive exclamations' and 'Positive encouragement' were coded separately under 'Agreement interactions' within communication coding. However, the researcher decided to merge the two codes as both indicated similar types of agreement responses to an action or an idea. In another example, the researcher recoded 'Clarifying questions' under 'Maintenance interactions' as it was decided that these types of questions resulted in sustaining the interaction around the loose part material and generally required detailed responses.

Table 4.5
Communication interactions supporting the development of intersubjectivity

Category	Sub-Categories	Coding examples
Maintenance interactions to sustain play-based around pretend meaning of loose parts materials	Calls for attention/invitation to play.	Hey guys! Can I join your group?
	Introduction of new play themes/ideas/suggestions	I have an idea, how about we put these at the back?
	Imitations/repetitions of other play member's actions or words.	It has silver! (Tom) It has silver! (Tra)
	Descriptive statements of actions by play members.	That's very tall!
	Extensions where a child adds new information or new expectations to a play member's idea previously expressed in a preceding turn.	Maybe we can use rope to tie it up? (Jane) And then tie it to the ground like a tent? (Milo)
	Build-ons where a play member adds new information to her own previously expressed idea.	We need currency! Our currency can be rocks…. the bigger the rock the better!
	Explanations/justifications where a play member explains her own actions or offers explanations for another's actions.	I'm just filling up this bucket so it can weigh the rope down.
	Trading requests where a play member tries to engage another in trading	I'll give you two pieces of rope for the tyre and the milk crate!
	Advertising where a play member verbally advertises a trading item for sale.	New deal everyone! 90% off everything!
	Negotiation where play members haggle over the 'prices' of trading items.	One crate for a tyre? (Pro) No, two crates for the tyre! (Zoe)
	Instructions where a play member directs another member verbally.	Okay pull now!
	Non-verbal actions where a play member maintains interactions by gestures, stance, eye contact and/or facial expression.	The four boys lean over the shop counter holding their items up for the shop keeper to see. They maintain eye contact with him as they try to trade.
	Negative statements where a play member makes a negative/critical comment that does not disrupt play.	This is a horrible shop layout!
	Clarifying questions where a play member asks a question leading to shared understanding or agreement.	Do you think we have enough things to trade?

Clarification interactions to request short clarifications of actions or ideas around pretend meaning of loose parts materials	End of dialogue tags requesting agreement or acknowledgement.	Ok? Right?
Agreement interactions to agree on actions/ideas around pretend meaning of loose parts materials	Acceptances/consensus/agreements where play members agree on ideas and actions.	This could be for the roof (Ella). Yes, use it for the roof! (Jane)
	Revisions where a play member rejects another's idea and then changes or revises it to incorporate new elements.	Don't use the pole for that! Let's make a pole section and put it in there!
	Positive encouragement/exclamations which show agreement with action/idea.	Guys we've got the best shop by far!
	Submission where a play member complies against her will or preference.	We can trade one of those seats! (Scate) No, they're too important! (Walt) They're just seats buddy… but ok (Scate)**.**
	Compromises where play members mutually agree to change an idea/action.	How about we team up? (Net) But then there won't be any shops to trade with! (Burton) Ok no teaming, we are not teaming, we'll trade! (Net)
	Non-verbal actions of agreement like nodding and smiling.	The two boys nod and smile at each other as they exchange items for trade.
Non-maintenance interactions to disrupt play around pretend meaning loose parts materials	Disruptive actions where a play member physically stops or hinders play.	Two boys from same trading group engage in tug o' war over a tarp.
	Negative statements where a play member uses verbal aggression to interfere with play.	Your market s**ks!
	Exclusion of a member from play	Now get out! You're suspended from the market!
	Terminations where a play member(s) brings the shared activity to an end.	One boy steps on the tarp repeatedly in order to prevent the formation of the Chinese Dragon.
	Rejections where a play member rejects another's idea or actions.	No more stealing – don't steal, it's not a good idea!
	Non-verbal actions such as shaking head in disagreement.	Boy wags his finger and shakes his head at a potential thief.

4.7.7 Coding intersubjectivity for collaborative actions and outcomes.

Once interactional turns and accompanying observation notes were identified as containing joint attention, meta-communication and communication (comprising intersubjectivity), these interactions were further coded for Collaborative interactions and Collaborative outcomes. If an interactional turn did not identify the development of intersubjectivity, it was not coded for collaboration. For this study, collaborative interactions were defined as two or more group members working together on the same task towards achieving a shared intention/goal with the same group of loose parts. Collaborative outcomes were defined as the completion of activities or achievement of shared intentions or goals (Head, 2003; Tomasello et al., 2005) or the successful creation of something new that group members could not successfully complete alone (Cannella, 1993) when engaged with loose parts materials. Once intersubjectivity was established, interactional turns and observation notes were further coded for collaborative interactions and outcomes as shown in Table 4.6.

Table 4.6

Collaborative interactions and outcomes

Coding categories	Sub categories	Coding Examples
Collaborative interactions (Verbal and/or non-verbal interactions when two or more group members work together on the same task towards achieving joint intentions/goals)	**Shared intentions/goals.**	"Amelia, Let's get other stuff to trade!...OK Let's go Ella, come on Ella let's go to the market!" Amelia looks at Ella and walks towards her using two white poles as walking sticks. Ella places the looped rope over her shoulders and starts to pull the sled. They walk side by side up the slope, towards the Black Market.
	'We' statements.	"Guys what do we need?" and "We're extending the shop!"
	Help requests.	"Um Mario help me! I need help!"
	Helping another group member.	Group members help each other to sort the materials into different sections. They work in close proximity with bodies orientated towards the same task.
	Sharing loose parts materials.	"There's more crates for the shop!" Mario deposits more crates in front of the boys in his market.
Collaborative outcomes (Verbal interactions indicating the completion of activities or achievement of shared intentions or goals which could not be achieved alone)	**Achievement of shared intentions/goals.**	"We're rich…… we've got tonnes of stuff!" "This is a good business!"
	Creation of something new.	"Ha ha! Exactly it's a trap to see who's a stealer!" The group discuss a plan to lie a length of hose on the ground which Mario discreetly holds the end of. The hose would act like 'bait' so that when someone comes to steal it would be held by Mario.

Figure 4.5 provides a visual representation of the progression of coding from intersubjectivity (comprised of joint focus of attention, metacommunication and communication) to collaborative interactions and collaborative outcomes.

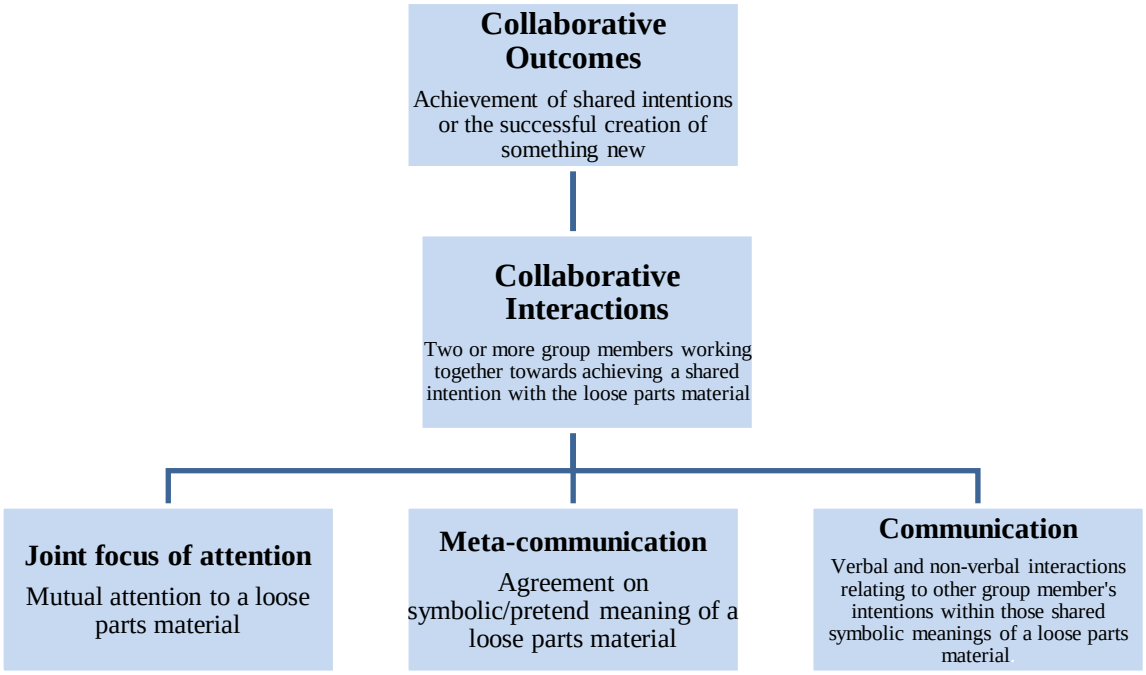

Figure 4.5. Coding progressions from intersubjectivity to collaborative interactions to collaborative outcomes.

4.7.8 Coding summary.

In sum, interactional turns and accompanying observation notes were coded sequentially for case (loose part materials as tools), play progressions mediated by those cases and then for intersubjectivity. Once joint focus of attention to loose parts materials, meta-communication of loose parts materials and communication around loose parts materials were identified in an interactional turn, intersubjectivity was established to be developing. Interactions of a collaborative nature were subsequently coded from any identified intersubjective turns. This sequence of coding responded to the research questions by exploring how the participants used mediating tools (loose parts materials) to develop intersubjectivity to create an outcome of collaboration.

The following are two examples of interactional turns coded in NVivo for case, play phase, intersubjectivity and collaboration. The first is shown in Figure 4.6.

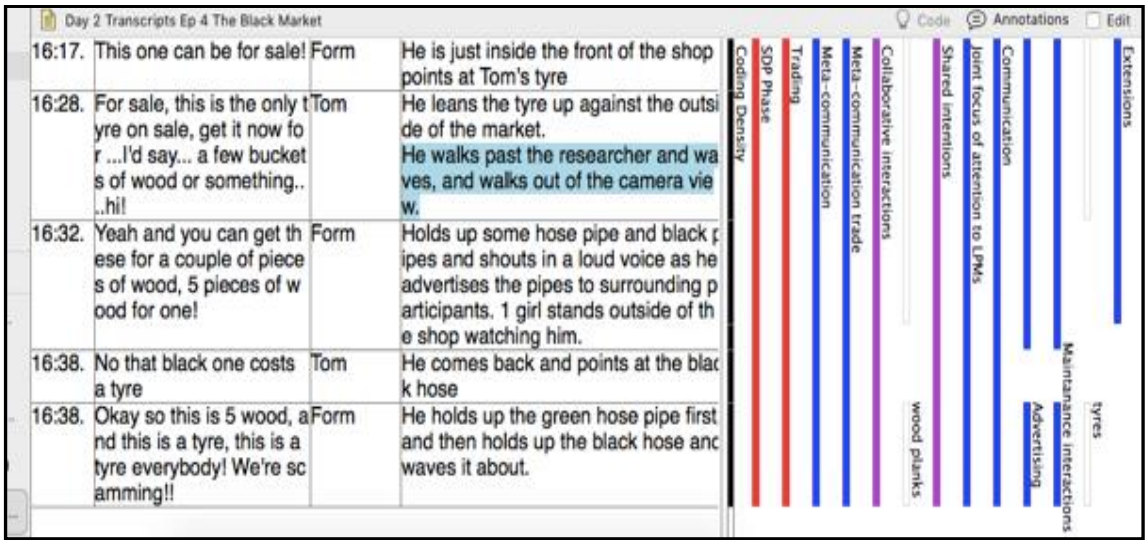

Figure 4.6. Example of interactional turns coded for play phase, intersubjectivity and collaboration.

This figure shows interactional turns featuring time stamps, transcripts, speakers and observation notes. Alongside each interactional turn, coding stripes are highlighted for case (white), play progression (red), elements of intersubjectivity (blue) and collaboration (pink). This example facilitates exploration of my first research question (How do loose parts play materials operate as tools during outdoor free play to mediate the development of intersubjectivity?) by showing coding for:

1. Cases (tyres and wood planks)
2. Play phase (sociodramatic play - trading)
3. Joint focus of attention to loose parts materials
4. Meta-communication to use materials to trade
5. Communication (maintenance interactions-advertising, extensions)

This example also facilitates exploration of my second research question (To what extent does the development of intersubjectivity lead to collaboration as an outcome of interactional activity?) by showing coding for:

- Collaboration interactions – shared intentions to advertise, ‘we’ statements
- Collaborative outcomes – the creation of a new play theme e.g. “*We’re scamming!*”

Therefore, adhering to coding protocol, the development of intersubjectivity was first identified (blue stripes), before corresponding interactional turns could be coded for collaboration (pink stripes and gold stripes). In addition, two sentences were highlighted (annotated) to record an incident of camera awareness. Incidences of camera awareness are discussed in section 4.7.

Another example of an interactional turn coded in NVivo for case and play phase but lacking in the elements of intersubjectivity and therefore not coded for collaboration is shown in Figure 4.7.

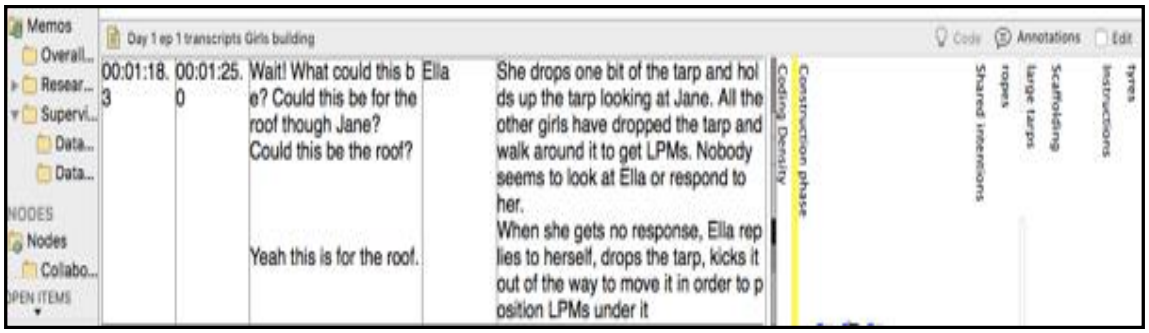

Figure 4.7. Example of interactional turns not coded for intersubjectivity and collaboration.

This interactional turn was coded for tarp (case) and construction (play phase) but could not be coded for intersubjectivity as the interaction was not reciprocated, and Ella was the only participant focused on the loose parts material. Hence it could not be coded for collaborative interactions and therefore not used in the findings.

In addition, still photographs of loose parts materials in use and some constructed artefacts were analysed and coded for collaborative outcomes (see Figure 4.8). Photographs were coded for collaboration when they showed two or more participants interacting with joint attention to a loose parts material or group of loose parts materials and when verbal or non-

verbal communication was evident from the photograph. Meta-communication of the agreed symbolic use of the loose parts materials was evidenced implicitly through body stances and positions, and gestures.

Figure 4.8. Example of a photograph coded for collaboration.

This example shows participants gathered around a large group of loose parts materials constructed into a trading shop. In response to my first research question, the photograph was coded for:

1. Case (bread crates, containers, hose pipes, milk crates, tyres)
2. Play progression (sociodramatic play – trading)
3. Joint focus of attention to loose parts materials
4. Meta-communication to use the materials as tools to trade (leaning towards the 'shop-keeper' with hose pipes and wood plank raised in offer to trade)
5. Communication (negotiation-evidence of verbal communication and non-verbal communication such as eye contact, facial expression and body orientation)

In response to my second research question, it was further coded for

- Collaborative interactions (shared intentions to engage in trading)

4.8 Ethics and researcher reflexivity

The National Health and Medical Research Council (NHMRC), the key Australian research funding body and organisation that issues research ethics guidelines (Guillemin &

Gillam, 2004), proposes general ethical issues to consider when designing and implementing research projects. These guidelines provide a framework from which to foresee key issues and challenges which might arise during data collection and analysis within a naturalistic environment (Creswell, 2015). The NHMRC detail four key principles to ensure that researchers comply with high ethical standards ensuring that the rights and welfare of human participants are protected; Research merit, Respect for persons, Beneficence and Justice. During each stage of this study's methods design, the researcher referred to the principle which she felt guided that method's ethical choices.

Differentiating between procedural practice and ethics in practice, Guillemin and Gillam (2004) advocate for the implementation of research reflexivity as a "potential tool" (p. 262) to ensure more robust ethical practice in qualitative research. Procedural ethics "usually involves seeking approval from a relevant ethics committee to undertake research involving humans" (p. 263) while ethics in practice relates to "the everyday ethical issues that arise in the doing of research" (p. 263), also referred to as "microethics" (Guillemin & Gillam, 2004, p. 265).

To bridge the gap between these concepts and to provide a more ethically sound approach to qualitative research, Guillemin and Gillam (2004) suggest that the meaning of reflexivity should be expanded to include increased awareness and sensitivity to potential ethical tensions and "ethically important moments" (p. 262) or the unpredictable situations which can arise in everyday research. It is within everyday ethics in practice, that the researcher must learn to recognise and acknowledge the ethical dimensions of research practice and learn how to respond appropriately. Guillemin and Gillam (2004) advocate an approach to reflexivity that includes not only the traditional view of the researcher's reflexivity as improving the quality and validity of the research methods and data through critical reflection but also as an approach which encompasses critical ethical reflections of the

researcher, participants and the context. This ensures that "the purpose of research reflexivity is gradually being extended beyond ensuring the rigour of research to ensuring its ethical soundness" (Mcevoy, Enright, & Macphail, 2017, p. 170).

With ethical soundness of importance, the researcher sought to extend her personal critical reflections to encompass ethical ones. In this study, the researcher perceived herself as an interpreter or as a gatherer of interpretations (Yazan, 2015) charged with the subjective task of interpreting meaning constructed by others and reporting on these constructions framed through the lens of her own interpretations. Qualitative researchers form interpretations of what they see, hear, and understand, interpretations which cannot be partitioned from their own background, history, context, and prior understandings (Creswell, 2007). Therefore, the researcher's role was to construct knowledge through a process of critical reflection "requiring scrutiny, reflection, and interrogation of the data, the researcher, the participants, and the context that they inhabit" (Guillemin & Gillam, 2004, p. 274), bridging the divide between procedural ethics as approval to conduct the research from the Australian Catholic University Human Research Ethics Committee, and ethics in practice through a continuously iterative process of reflexivity.

4.9 Trustworthiness

Lincoln and Guba (1985) offer four criteria for evaluating the trustworthiness of qualitative research which are frequently cited in the literature. Credibility, comparative to the quantitative term of internal validation (Wahyuni, 2012), relates to the accuracy of interpretations of the observed phenomenon. Video recordings facilitate repeated play backs and viewings, thereby helping to accurately record descriptions leading to themes and patterns arising from both a priori coding and any emergent codes. Credibility was enhanced by the process of investigator triangulation (Patton, 2002) whereby regular critical

discussions on codes and themes were held with my academic supervisors. Data triangulation also supported credibility. Here, the three types of data collection (video observations, observation notes and photographs) were examined for corroborating evidence to support patterns and themes (Creswell, 2015).

Transferability, corresponding to external validity (Lincoln & Guba, 1985) involves the generalisation of findings to other contexts. Due to the context specific nature of this study, it is acknowledged that the findings may not be transferable to other settings. Despite the provisions of rich, detailed explanations and descriptions of the research site and the units of analysis, the data generated by this study may differ from future projects as the loose parts materials might be used to generate different play themes by different groups of participants.

Dependability corresponds to the concept of reliability which facilities the ease of replication of a study (Lincoln & Guba, 1985). In this study's design, the researcher attempted to provide a detailed and clear explanation of the design and processes required to repeat this study by future researchers.

Confirmability or the extent of neutrality of the research findings was facilitated by minimising biased interpretations. The process of reflexivity as outlined in the previous section helped the researcher to recognise and acknowledge how any personal bias might influence interpretations. This was recorded throughout the research process in content logs and coding memos which provide an "audit trail" (Wahyuni, 2012, p. 78) of reflections, opinions and decisions made by the researcher.

4.10 Conclusion

This chapter has provided a detailed overview of the methodological approach used to conduct this study. Firstly, this chapter established the qualitative nature of the research which was informed by sociocultural interpretations of social constructivism. Micro-

ethnography was then presented as a viable methodological approach for exploring the two key research questions:

1. How do loose parts play materials operate as tools during outdoor free play to support the development of intersubjectivity?
2. To what extent do the identified occurrences of intersubjectivity lead to collaboration as an outcome of interactional activity?

The chapter further described the procedures for participant recruitment and the contextual background of the project. The research methods of video observations, photographs and observation notes were detailed as the methods of data-collection for the study. Seven stages in data analysis were described in detail, and ethical considerations and limitations were presented in the concluding sections. The next chapter presents a detailed report of key findings.

Chapter 5: Findings

5.1 Introduction

This chapter presents findings in response to the research questions:

1. How do loose parts materials operate as tools during outdoor free play to mediate the development of intersubjectivity?
2. To what extent does the development of intersubjectivity lead to collaboration as an outcome of interactional activity?

It was found that loose parts materials operated as tools to create four dynamic phases of play during the observed free play sessions: 1) gathering play; 2) constructive play; 3) sociodramatic play; and 4) functional play. Gathering play was observed to occur at the beginning of each play session and was initiated as soon as participants received instructions to commence free play and became engaged in collecting and stockpiling materials. Figure 5.1 shows a collage of participants gathering tyres, tarps, milk crates and plastic spools at the beginning of a session.

Figure 5.1. Participants collecting tyres, tarps, milk crates and plastic spools in the gathering phase of play.

Each week gathering play quickly progressed to construction play where participants used the gathered materials to build structures to aid development of subsequent play activities, as shown in Figures 5.2 and 5.3.

Figure 5.2. Participants engaged in construction play.

Figure 5.3. Participants engaged in construction play.

Sociodramatic play was observed to commence once participants progressed to developing pretend activities in or around the structure constructed. These activities and routines were observed to be related to organisational features within participant's local peer

culture and were observed to form the most sustained duration of all play types. Figure 5.4 and 5.5 illustrate sociodramatic play in the form of trading play.

Figure 5.4. A boy approaches the shop counter to trade with a group of girls.

Figure 5.5. Four boys engage in trading play with Mario, who stands behind the shop counter.

Functional play occurred when participants engaged in repeated movements with the loose parts materials which they found enjoyable and stimulating. Functional play was observed to occur least frequently compared to other play types and generally did not follow

the same order of play progression as the others. This was evident when participants intermittently engaged in repetitive fun actions with the loose parts materials before returning to their group to continue construction play or predominantly sociodramatic play. Figures 5.6 – 5.8 demonstrates participants engaged in functional play.

Figure 5.6. Four boys repeatedly pulling and dragging each other up the play space with a tarp.

Figure 5.7. A boy in functional play using buckets and ropes to move around the play space.

Figure 5.8. Boy in functional play uses hardboard as a 'fidget spinner' by repeatedly spinning it on the tyre.

It was observed throughout all six sessions that loose parts materials were used to progress play sequentially from gathering to construction to sociodramatic types of play with functional play occurring intermittently. The duration of time spent in gathering and construction play types decreased significantly as the weeks progressed, resulting in increased time in sociodramatic play. This enabled participants to quickly accumulate loose parts materials necessary to construct specific structures required to develop sociodramatic play. It was also observed that participants built on and further developed sociodramatic play themes, such as trading and stealing (detailed in the next sections) from previous weeks as the sessions progressed. Figure 5.9 outlines three of the main play progressions, along with examples of transcripts highlighting the play types.

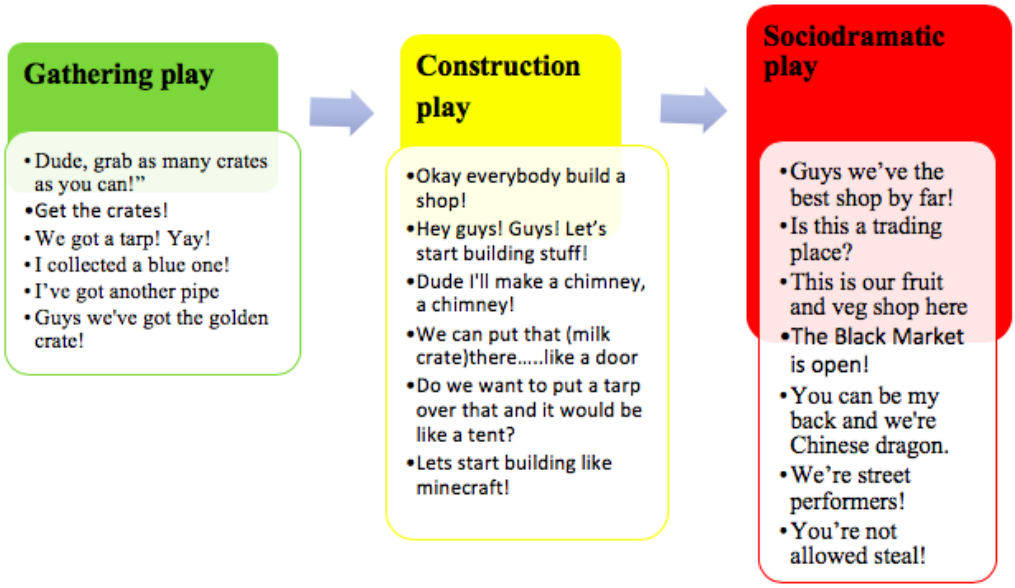

Figure 5.9. Three key play type progressions and examples of verbal interactions.

It was observed that the flexible and manipulative nature of loose parts materials, along with non-prescriptive play purposes, provided opportunities for participants to explore and develop many play progressions. Participants were observed to move the materials with ease, thus facilitating variable positioning and combining of materials to create different imaginative play progressions necessitating complex social interactions. Moreover, the context of free play with the materials (devoid of adult instructions) allowed for an uninhibited exchange of ideas between peers within each of three play progressions.

Within each of the three play progressions, it was established that loose parts materials mediated the development of intersubjectivity in different ways, varying the extent of collaboration as an outcome of interactional activity. The presentation of all the findings within each of the observed play progressions was beyond the scope of this thesis, therefore findings presented focus only on sociodramatic play. The sociodramatic phase of play was selected as significant because 1) it formed the longest duration of play each week therefore

producing most data; and 2) the sociodramatic play phase consistently revealed patterns and themes which dominated most observation sessions.

This chapter now details the sociodramatic play patterns and themes according to two findings addressing the research questions. Finding one, addressing research question one suggests that loose parts materials operated as tools to mediate the development of intersubjectivity within sociodramatic play. This finding is divided into sections outlining the key patterns of activity observed within sociodramatic play followed by the key themes of intersubjectivity arising from those patterns. Finding two, in response to research question two, explores key themes of collaboration observed within sociodramatic play arising from intersubjectivity. An overview of the findings is presented in Figure 5.10.

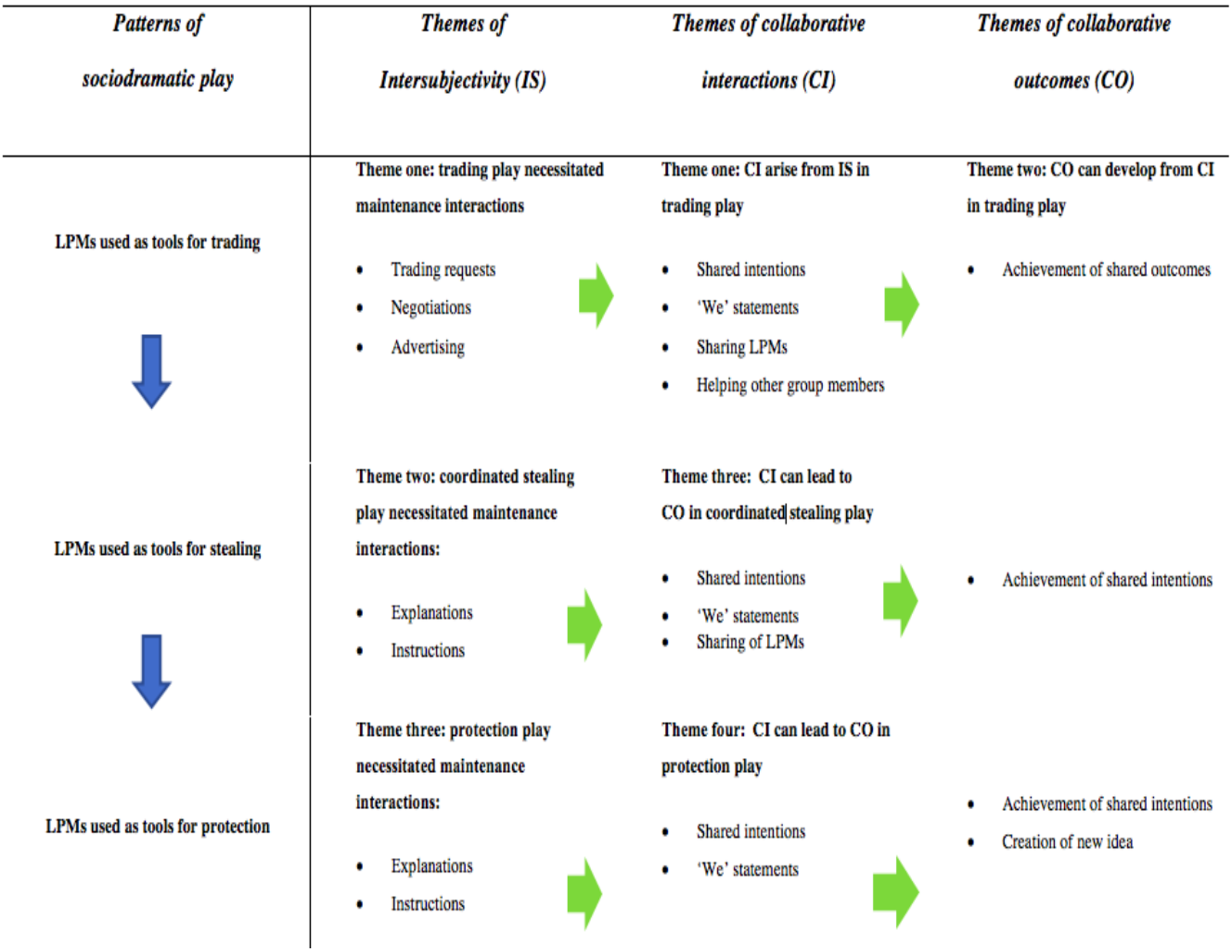

Figure 5.10. Overview of the two findings showing patterns and themes of intersubjectivity and collaboration.

5.2 Key finding one: Loose parts materials operated as tools to mediate the development of intersubjectivity within sociodramatic play phases of play

There were three significant patterns of sociodramatic play which emerged from observations. Pattern one revealed trading play which dominated sociodramatic play interactions, pattern two revealed stealing play as emerging from trading and pattern three revealed protection play in response to stealing. Themes of intersubjectivity were observed to arise from these key patterns and are explored in the following sections.

5.2.1 Sociodramatic play pattern one: Trading.

As discussed in the introduction of this chapter, play was observed to progress sequentially from the gathering of and construction with loose parts materials, to play where participants utilised their structures or gathered materials for sociodramatic purposes. The development of sociodramatic activities and routines in and around these structures was observed to be related to organisational structures such as family, school and local society. Observed sociodramatic play thus framed customs, norms and rules associated with local culture groups which necessitated interactions with others in a social context. The emergence of trading interactions amongst participants, using loose parts materials as tools for trading, reflected culture sharing values and rituals which developed into a dominant pattern of sociodramatic play throughout the observations.

5.2.1.1 Characteristics of trading structures.

Trading activities characteristically arose around purpose-built structures in the form of markets or shops, all of which were comprised of loose parts materials. Generally, these market type structures were constructed with milk and bread crates, tarps and wood planks. See Figures 5.11 and 5.12.

Figure 5.11. Trading market constructed with bread and milk crates, with a tarp used as a counter top.

Figure 5.12. Boys construct the shop walls and trading counter.

Loose parts materials formed walls and boundaries and were also used as divisional sections in which to display similar items (loose parts materials) available for trade. The following exclamations provide examples of the type of sections created,

I've got a wooden pole, put it in the pole section. Put it in the pole section!

And this is our pipe section!

This is where we put anything on sale!

Figure 5.13 shows how wood planks were sorted into display sections for trade.

Figure 5.13. Boy sorts wood planks into sections for display.

In addition, Figure 5.14 captures how these display sections were stacked on milk and bread crates to create a shop counter type structure to facilitate ease of trade.

Figure 5.14. Display sections on shop counter top.

5.2.1.2 Characteristics of trading interactions.

Trading was observed to occur when participants came to a market structure with loose parts materials to trade and engaged in bartering. Bartering occurred when the materials were traded or exchanged for other loose parts materials desirable to a group or

individual participant. Bartering frequently necessitated communication interactions of negotiation and advertising as participants endeavoured to add value to a loose part material for trade to maximise that trade. Communication strategies specific to trading within sociodramatic play were observed to become more complex as the weeks progressed as trading scenarios were continued and developed from previous weeks. Moreover, participants were observed to adopt forms of verbal advertising to promote their trading hubs. Advertising became prevalent as the number of trading hubs increased and participants saw a need to compete with rival trading groups to maximise trade.

Participants were thus observed to employ communication strategies which facilitated the creation and maintenance of shared meanings. The coding of these communication strategies along with joint focus of attention to materials (when two or more participants focussed on a loose part material or group of loose parts materials) and meta-communication signifying the symbolic meaning/use of the loose parts materials as trading items (implicit or explicit agreement to use loose parts materials as tools to trade) were found to mediate the development of intersubjectivity. Coding revealed that the first theme of intersubjectivity suggested that the use of loose parts materials for trading activities necessitated maintenance interactions of communication.

5.2.2 Intersubjectivity theme one: Trading play necessitated maintenance interactions.

To construct shared meanings and intentions to trade, participants needed to communicate, share ideas and negotiate the use of the loose parts materials. Therefore, as sociodramatic play progressed, trading specific scripts and language were employed to frame and ascribe meanings to loose parts materials. Intersubjectivity was developed through the employment of communication strategies consisting of maintenance, agreement and

clarification interactions. Maintenance interactions are defined as communication strategies adopted to sustain play, and analysis of coding revealed that these interactions dominated communication in sociodramatic play. Key maintenance interactions during trading play within sociodramatic play incorporated the use of trading requests, negotiation and advertising, each of which are explored in detail in the following sections.

5.2.2.1 Trading requests.

Trading requests were frequently used to initiate trading interactions within sociodramatic play and therefore maintained the development of intersubjectivity through sociodramatic play. Trading requests were defined as the asking of another participant or trading group to engage in an exchange for a loose part material. The following is an example of a trading request made to a group of boys by Ella and her friend. She approaches the boys who stand behind a 'shop' counter made of milk crates. She is pulling a sled type structure made of a bread crate with a rope attached, designed to transport loose parts materials for trade.

> Border: *Welcome to the market!*
>
> Ella: *We would like to trade this or that!* Ella uncovers a black tarp covering the contents of the sled to reveal a plastic spool and a wood plank.
>
> Ella: *We need something like that tube.* Ella points in the direction of the large white pipe behind the counter.

This interaction reveals joint focus of attention to loose parts materials including the plastic spool, wood plank and white pipe, along with meta-communication signifying the symbolic meaning of the loose parts materials as trading items and the employment of trading requests as communication maintenance interactions to continue the development of shared meanings. In another example of a trading request, a boy approaches a shop front to request a trade.

Border: *What are you selling? What are you selling?* He calls out to a group of boys.

Burton: *What do you want?*

Border: *I'll have the tarp*

Burton: *This one?* He holds up a small green tarp.

Border: *Yeah.* He places a black hose on the counter (milk crate) in exchange for the tarp and walks off.

This scenario reveals joint attention to a tarp and black hose by Border and Burton, meta-communication signifying the symbolic meaning of the loose parts materials as trading items and communication through maintenance interactions in the form of trading requests. In this next scenario, trading is requested by Tra who approaches a 'shop' counter, behind which Burton is standing.

Tra: *What will you give me for a tyre?* He rolls a tyre up to Burton and stops it in front of the shop counter.

Burton: *What do you want?* He looks at the tyre and taps it with his foot. Then he turns his back on Tra and stands at the front of the shop.

Tra: *Guys what will you give me for a tyre?* He calls to get their attention again.

Burton: *Um we don't want one (tyre).* Tra gives a little shrug of his shoulders and turns and leaves.

This scenario reveals joint attention to a tyre, meta-communication signifying the symbolic meaning of a loose parts material as a trading item and along with a trading request which is denied. In this next interaction, trading is requested by Milo as she approaches Border who is positioned behind the shop counter. She holds two plastic spools in her hands for trade.

Milo: *Can you help me?*

Border: *Sure!* He rolls up a piece of black tarp.

Milo: *I want something useful um….*

Border: *What's useful to you?*

Milo: *Do you have any big tarp?*

Border: *Um this, black tarp?* He unrolls the tarp he was handling.

Here, joint focus of attention to the plastic spools and black tarp is established and meta-communication to engage in trading is evident, along with the maintenance interaction of a trading request. In the following interactions, Rose approaches Mario, who has just finished transferring planks of wood out of a green bucket onto the market counter. He looks up as Rose approaches the market with two red buckets.

Rose: *Can we trade a tyre for these?* She holds up the buckets.

Mario: *What! They were ours! What do you want for them?* He points to the loose parts materials.

Rose: *A tyre*

In this scenario, joint attention to the tyre and buckets, along with meta-communication signifying the symbolic meaning of the loose parts materials as trading items are furthered by the request to trade.

Therefore, trading requests for loose parts materials along with joint focus of attention to loose parts materials and meta-communication to trade were observed to maintain the development of intersubjectivity regardless of the success of the trade. Shared meanings and understandings were observed to be continued and maintained through trading requests, along with joint attention and meta-communication to trade despite the acceptance or refusal of a trading request. During all observed trading requests loose parts materials acted as tools

of engagement for trade and a NVivo analysis of matrix coding of individual loose parts materials revealed that milk crates, tyres, wood planks and plastic containers were the most frequently items utilised during trade.

5.2.2.2 **Negotiation interactions.**

As stated previously, trading was characterised by interactions of bartering when loose parts materials were exchanged for other loose parts materials of similar value desirable to a specific group or individual participant. Bartering frequently necessitated interactions of negotiation as participants attempted to add value to a loose parts material for trade to maximise that trade. Interactions of negotiation therefore appeared to maintain and develop shared intentions of trading within sociodramatic play. Furthermore, negotiation interactions attributed meanings to the value of loose parts materials as tools of play, meanings which were shared and adopted by the wider play community as more trading hubs were established. Therefore, language specific to negotiation evolved as the weeks progressed. The following is an example of negotiation interactions between Border who is a member of a trading hub called Black Market, and two boys, Tom and Tra who initiate negotiations.

Tom: *We want to trade something for that red rope*. He asks Border to trade and points at the red rope.

Border: *How much you want to pay?* Border stands outside the shop on the opposite side of the counter with his hands on the blue supply box with the ropes in it.

Tom: *This box, it even has silver on it!* Tom picks up the white container and shows it to Border, pointing out the silver on the handles.

Border: *No, we've too many boxes.*

Tom: *It has silver!* He emphasises the silver. Border looks at the container.

Tra: *It has silver!* Tra repeats Tom's words.

Tom: *You guys need boxes you said*! Tom moves closer to Border and the blue supply box with the ropes in it.

Border: *Okay, here you go!* He takes out the green rope and uncoils it.

Tom: *The red rope!* Tom takes the rope but motions towards the red rope.

Tra: *The red one!* Tra repeats Tom's request and points to the red one.

Border: *Okay!* Border starts to take the green rope from the container.

Tom: *And one piece of wood, just like a small piece of wood!* He points to the wood on the ground inside of the shop

Border: *Can you please pass me that back then?* He first asks for the green rope back before exchanging for the red rope.

Tom: *Thank you!* Tom exchanges the rope, picks up the wood plank and turns away.

During these interactions, participants established joint focus of attention to the container, ropes and subsequently to the wood plank. They established meta-communication to view these items as trading tools and engaged in communication to maintain this trade through trading requests and negotiations. Through this process of negotiation, Tom increased the value of his box by highlighting the silver handles as a positive attribute and successfully maximising his exchange for an additional object. Therefore, within this play episode, specific loose parts materials have been ascribed value and meaning, thus showing that interactions of negotiation develop and maintain intersubjectivity within trading using the loose parts materials as tools.

In the next trading scenario, Cate and Ella enter negotiations with Tom and Net over an exchange of buckets of wood for tarp.

Ella: *No! It's not a donation! The buckets are included. What do you have?* Ella addresses Tom, and laughingly pulls her container away from him which holds two

buckets with wood inside. It appears Tom thought that she was giving them to him for free.

Tom: *Ah we can trade that for the red one with the wood inside…with the wood?* He holds up the white container to show Ella and Cate.

Cate: *Um……* She appears undecided and looks around.

Ella: *We're looking for tarp!*

Cate: *We're looking for tarp!* Cate repeats Ella's request.

Net: *We have some tarp!* He points to the centre of the shop where there are a couple of tarps on the ground.

Tom: *Yeah, we've got some tarp!* He reiterates Net.

Cate: *Can we pick the blue one over there?* She points to the pile of tarp.

Net: *Agh…. No.*

Ella: *Why?*

Net: *Well Actually* …. He seems to reconsider his refusal to exchange for the tarp.

Cate: *You can have everything in here*. She adds to her offer for the tarp and gestures towards one of the buckets that Ella is holding.

Net: *I'll give you that tarp for everything*. He gestures towards both buckets of wood.

Cate: *No!*

Net: *I'll give you two tarps for everything!* He ups his offer to negotiate.

Cate: *You give us one tarp for three things!* She holds one finger up to Net to reinforce her meaning.

Ella: *We've got to check how big it is!* Ella interjects the negotiations.

Tom: *Okay - one tarp!* Tom starts to put one tarp into her container.

Net: *No two tarps! I've already made the deal!* He contradicts Net's offer and takes the two buckets of wood from Ella's container.

Cate: *Okay let's go!* She takes the other tarp and pushes it into her container.

During these negotiations, participants established joint focus of attention to the buckets of wood and tarps, established meta-communication signifying these loose parts materials as symbolic trading tools and employed communication strategies of trading requests and negotiation to maintain and further develop their interactions. Through negotiations, both parties successfully increased the exchange value of their loose parts materials and trade was completed. Maintenance strategies of negotiation thus communicated the changing value of the loose parts materials and intentions of the participants to use these materials as tools to maximise 'the deal'.

In the following scenario, Cody and Walt approach Tom to negotiate a trade.

Cody: *Um can we have a hose for this wood?* He holds a container with wood planks in it.

Tom: *A hose?* Tom looks at the container.

Cody: *And a string.* Cody adds to his request.

Cody: *Have a feel!* Cody lifts the box up towards Tom, so he can feel how heavy and full of wood it is.

Walt: *No no, don't trade that! Don't trade that! That's only one hose for all that wood.* Tom gets a hose and tries to give it to Cody but Walt does not want Cody to accept the trade. Both boys turn away from Tom and walk towards another trading group.

Tom: *Here you go!* Tom calls after the boys but they ignore him.

This trading interaction shows joint focus of attention to the hose and container of wood planks, meta-communication signifying the use of these loose parts materials as symbolic trading tools and communication strategies of trading requests and negotiation. During this

negotiation both parties did not agree on a shared value for the exchange, and so negotiations were terminated. However, through the employment of negotiation interactions, play was furthered, and shared meanings sustained despite a failure to reach an agreed exchange for the specific loose parts materials.

In the following interaction, Pro is offered a loose parts material in exchange for the golden coloured crate. This crate is in high demand as it is the only one of that colour.

> Pro: *No! Hell no! It has to be something of the most value!* When offered a black milk crate for exchange against the golden crate.

This interaction shows that individual loose parts materials were attributed significant worth or value in the context of trading and negotiation by the participants. An analysis of the coding matrix according to NVivo shows that milk crates, tyres and wood planks were the loose parts materials that were the items which dominated negotiated interactions.

5.2.2.3 Advertising interactions.

In addition to trading requests and negotiations, language and communication strategies specific to advertising were observed to develop and become more complex as the weeks progressed. From week two onwards, trading hubs employed forms of verbal advertising and offers of discounted prices on loose parts materials to promote their goods. This appeared to arise in response to the increasing number of trading hubs that necessitated communication strategies which enabled trading groups to compete with rival groups to maximise trade and sustain play.

Moreover, to differentiate themselves as competitors, some trading hubs named or branded their shops. For example, in week two a group of boys named their trading space 'The Black Market' thus providing the general play space with a common frame of reference

for that group. This name and indeed the group persisted for the duration of the entire research, establishing a shared understanding that the Black Market were an identifiable and unique trading entity. Likewise, in week four a group of trading girls named themselves the 'The Right Market' in direct competition to the Black Market,

The Black Market: *Guys this is the best shop open and everything!*

This is the best market in all of Australia!

The Right Market: *The Right Market is the best!*

Find something at the Black Market and we'll beat it at the Right Market!

We'll make a better trade at the Right Market!

We have wood, we have rope… we'll beat it by 10%!

If you find something anywhere else on sale, we'll beat it by 10%!

The Right Market, people, where you've got your best deals and best offers!

Come to the best trading centre! We have the most crates that anyone can have! Not the Black Market! The Black Market is terrible!

All trading groups employed verbal advertising strategies in the form of announcements and shout outs to the general play community. On many occasions, specific loose parts materials were used as tools to enable the announcements. For example, hose pipes or ubend tubes were frequently used as 'microphones' to facilitate a greater range of volume when shouting out advertisements,

Zoe: *Amelia! Amelia! You took our microphone!* She calls out to Amelia who has the ubend pipe and moves out from behind the shop counter towards Amelia.

Lela: *We have a microphone?* She sits on a tyre behind the counter.

Zoe: *Yeah, we have a microphone!*

In the following interaction, Amelia instructs Cate on how to make an advertising announcement with the 'microphone',

Amelia: *You're the caller! You say "the Right Market! Come get your belongings at the Right Market!".* She gestures the ubend pipe at Cate and passes it to her.

Cate: *The Right Market is the best! See you later!* Cate accepts the pipe and calls into it. Amelia then takes the pipe from Cate and makes another announcement holding it up to her mouth in the direction of the Black Market.

Amelia: *Come to the Right Market, get your supplies! Ow, that hurt my nose ha ha!*

Figures 5.15 and 5.16 show how the black hose pipe operated as a tool to facilitate the call out of advertising announcements.

Figure 5.15. A girl at the Right Market making announcements via a black hose pipe.

Figure 5.16. The Right Market girls use loose parts materials to advertise announcements.

In the right-hand side of the photograph, Zoe can be seen holding the grey ubend pipe to her mouth to also make announcements. As shown in Figure 5.17, the Black Market also employed loose parts materials as tools to amplify their advertising announcements,

> Net: *Buy and sell from the Black Market! Buy and sell from the Black Market!* He walks around the general play space yelling announcements into black hose.

Figure 5.17. Boy from Black Market uses black hose pipe to make advertising announcements.

Through communication strategies via advertising, language specific to trade and sales discounts was shared with and adopted by the general play community. This enabled rival trade groups to publicise reductions of trade prices for specific or groups of loose parts materials. For example,

> Zoe [The Right Market]: *We have wood, we have rope… we'll beat it by 10%. If you find something anywhere else on sale, we'll beat it by 10%!*
>
> Tom [The Black Market]: *For sale, this is the only tyre on sale, get it now for ...I'd say... a few buckets of wood or something!*
>
> Form [The Black Market]: *Yeah and you can get these for a couple of pieces of wood, five pieces of wood for one!* Form holds up some hose and black pipes and shouts out as he advertises the pipes to surrounding participants.
>
> Burton [Boys' Trading Group]: *Give two crates and you get four tyres in exchange!* He walks around the general play space and shouts into the ubend pipe advertising deals.
>
> Mario [The Black Market]: *New deal- 90% off! New deal- 90% off!* Mario walks around calling out the new deal to everyone through the ubend pipe.
>
> Mario [The Black Market]: *Buy one, get one free! Buy one, get one free!* Mario walks around the area in front of the Black Market, yelling out announcements.
>
> Burton [Boys' trading group]: *Two for four deal! Get two poles for four tyres. Thank you and good bye! Give two crates and you get four tyres in exchange!* He walks around and shouts into the ubend pipe advertising deals.

In week three, the Black Market were observed to employ a discount strategy of offering loose parts materials for free for a limited time, to attract more customers to their trading hub.

Burton: *Everything is for free!*

Net: *For ten seconds, everything is for free!*

Mario: *Freebies over here! Freebies people!*

Mario: *Sale ended! Sale ended!* He shouts out using the ubend pipe after a couple of seconds of sale time.

Form: *Missed opportunity!* Shouts out whilst sitting on the tyre.

Burton: *Now tyres will cost four milk crates!* He yells out from inside the market.

Another group of participants, called the Hobos Trading Centre also adopted this strategy in week 5.

Peter: *Come to the Hobos Trading Centre! Get stuff for free!*

JD: *Hey does anyone want a free tyre?*

JD: *Free hose! Free Hose!*

Moreover, increased complexity in advertising language was observed as specific advertising slogans evolved,

The Right Market: *Come to the Right Market, it's the right decision for all the right purchases!*

Come to the Right Market, it's on the right side as you walk down the hill!

Come to the Right Market, get the best deals and more!

Therefore, maintenance interactions of advertising developed a common references and understandings of the value of specific loose parts materials across trading hubs.

5.2.2.4 Summary of theme one.

Maintenance interactions of trading requests, negotiations and advertising developed common references and meanings for the use of loose parts materials as trading tools within

sociodramatic play. For play to become established, continue and develop further, participants were required to implement shared rules and understandings of trading during sociodramatic play, along with the assignment of shared understandings of the roles of loose parts materials as tools of play.

Loose parts materials operated as tools for trade and acted as the focus of trading requests, negotiations and advertising. Loose parts materials also operated as symbolic tools (microphones) to enhance advertising interactions. Table 5.1 shows a list of loose parts materials (LPMs) and their frequency of coding for trading interactions.

Table 5.1.

Matrix coding analysis of loose parts materials showing trading interactions

Type of LPM	**Trading interactions**	**Type of LPM**	**Trading interactions**
Milk crates	62	Buckets	14
Wood planks	51	Rubber bands	10
Tyres	51	Large white pipes	10
Bread crates	24	Poles	9
Containers	23	Large plastic sheets	8
Ropes	20	Plastic pipes	8
Small tarps	20	Plastic spools	6
Large tarps	20	Hardboards	5
Hose pipes	19	Rocks	4
Golden crate	15	Stick	3

5.2.3 Sociodramatic play pattern two: Stealing.

Stealing was observed to occur when commonly shared rules of trading play and commonly assigned trading values of loose parts materials broke down or were suddenly changed by a participant or group. Stealing was defined as occurring when participants took loose parts materials without permission or without offering to exchange a loose parts material for something of agreed similar value. Stealing was frequently undertaken surreptitiously as participants sought to furtively acquire loose parts materials without being noticed by the targeted trading hub. On other occasions, participants were observed to openly abscond with pilfered loose parts materials, often in pursuit by the victims. The following interaction depicts a stealing act where a participant grabs a loose parts material from a rival trading group and runs off with it:

> Mario: *We have a robbery! Contact the police!* He yells out to everyone, after a boy from a rival trading hub grabs a blue tarp from the market counter and runs off with it. Members of the Black Market chase after him.
>
> Border: *I got it back.* He runs back to the group with the tarp.
>
> Mario: *Robbery alert is over! Robbery alert is over!* He announces to the general play community via ubend pipe.

5.2.3.1 Characteristics of stealing.

Observed acts of stealing were characterised as being either 1) opportunistic or 2) coordinated. Individual participants who stole loose parts materials on their own without prior planning, relying on chances of opportunity, were characterised as engaging in opportunistic stealing. Groups of two or more participants who engaged in interactions to pre-plan and coordinate stealing acts were characterised as engaging in coordinated stealing. Stealing, whether opportunistic or coordinated, was frequently retaliatory in nature, undertaken by participants in response to a theft committed against them. Instances of

stealing whether opportunistic or coordinated, sometimes produced negative responses and interactions whereby participants would express frustration and anger when a loose parts material was pilfered. These sentiments sometimes led to a group or individual attempting to take back their material from an alleged thief. The following scenario from week four highlights an incident of retaliatory stealing between Mario from the Black Market and Cate and Ella from the Right Market,

> Ella: *Drop that! Hey you!* Cate and Ella run past the camera chasing Mario.
>
> Tom: *Mario stop! Mario stop!* Mario runs behind the Black Market's shop counter holding a green container pursued by Cate. Tom is a Black Market member and is standing behind the counter.
>
> Cate: *This is why we are stealing!* She says to Tom, explaining why her group stole from the Black Market originally, inferring retaliation as the reason.

The interaction develops further as the Black Market members debated whether to engage further retaliative stealing.

> Tom: *Mario, no more stealing!*
>
> Mario: *They were stealing from us!* As he sits on a tyre.
>
> Tom: *No more stealing!* Tom leans towards Tra who arrives back to the market with a crate. Tom points his finger at him and then walks off.
>
> Net: *No more stealing!* Net wags his fingers at Tra.
>
> Net: *Mario, I'm head of the Black Market now!*
>
> Mario: *No! Who said that?*
>
> Net: *Ah Tom because you guys keep stealing.*
>
> Mario: *I only stole one thing!...and then I returned it.*
>
> Tra: *I didn't steal anything though!*

Net: *Then why are they stealing from us?*

Tra: *Because it's just not fair!*

Net: *Fine, you both can steal two items!*

Tra: *Yesssss!* He jumps up with glee and runs in the direction of other trading hubs.

These interactions present an understanding of participant motives for engaging in acts of stealing whether opportunistic or coordinated. Opportunistic stealing acts carried out by individuals working alone did not require intersubjectivity to be established as there was a lack of joint focus of attention by two or more participants to a loose parts material. Many coordinated stealing acts, however, did necessitate the development of the three elements of intersubjectivity to develop to implement stealing acts.

5.2.4 Intersubjectivity theme two: Coordinated stealing play necessitated maintenance interactions.

Two groups of participants, Chinese Dragon and the Thieves adopted coordinated approaches to stealing. Coordinated stealing necessitated two or more participants establishing joint focus of attention to a loose parts material or group of loose parts materials, meta-communication signifying the symbolic meaning of loose parts materials as items to steal or tools to steal with, and communication interactions to coordinate the continuation of shared meanings and intentions to steal.

Coordinated stealing utilised specific loose parts materials as tools to enable theft and required the employment of a range of maintenance interactions such as the use of explanations and instructions to develop those shared meanings.

5.2.4.1 Explanations and instructions – Chinese Dragon group.

Explanations were coded as occurring when a group member explained her own actions or offered explanations for another group members' actions. Instructions were coded as occurring when a group member issued directions or orders to another group member. The Chinese Dragon group was made up of several interchanging boy participants who initially utilised a large tarp as a tool for symbolic play (imitating a dragon dance),

Pro: *Guys, come on! We need to do the Chinese Dragon! Sean, Chinese Dragon with Walt!* Pro calls out to the two boys. He pokes Sean gently with his stick to get his attention.

Sean: *Oh, Chinese Dragon! You want to do Chinese Dragon?* He calls to Walt.

Walt: *Yeah!!* He moves towards the tarp.

Sean: *Three way! Three way!* The boys start to position themselves under the tarp with Pro at the head of the 'dragon'. The boys, forming a conga type line of two or three participants, draped the tarp over their bodies, like performances of dragon dances used to symbolise Chinese culture.

Pro: *Get under! You can be my back! We'll be a Chinese Dragon. We're street performers!* Pro holds a stick in one hand, then drapes the tarp over himself encouraging Sean to join him.

Sean: *Street gang!* Sean joins Pro under the tarp and they move up the space imitating a Chinese Dragon.

Figure 5.18 show examples of boys moving throughout the general play space as a Chinese Dragon.

Figure 5.18. Dragon group use the large tarp to move around the play space.

From week four onwards, the 'Chinese Dragon' large tarp was used as a tool for coordinated stealing, requiring the two or three participants to coordinate their actions in order steal a loose parts material from a trading hub,

> Net: *Yeah, we have to steal from other people!* He has a tarp and is making a Chinese Dragon with two other boys.
>
> Net: *It means we steal stuff from the other markets!*

In this interaction, Net explains the changed purpose of the Chinese Dragon, demonstrating along with joint focus of attention to the tarp and meta-communication to use the tarp as a tool to steal with, maintenance strategies of instructions (*we have to steal)* and explanations (it means we steal).

The general modus de operandi was for a Chinese Dragon group to move around the play space led by a participant at the head of the dragon. The dragon would approach an unsuspecting trading hub, position the tarp close to or over an unattended loose parts material

and then furtively take that loose parts material. The stolen item would then be placed under the Chinese Dragon tarp to hide it. The following is an excerpt from observation notes recorded in week five.

> The Chinese Dragon group continue to move around the space, led by Net. There are two boys positioned in a line directly behind him under the tarp. They approach the Right Market shop counter and Net appears from under the tarp. He talks to some of the Right Market group members. As he talks, the dragon (tarp) seems to hover over a blue crate which is sitting in front for the shop, and when they leave the crate is gone – stolen!

The following scenario demonstrates the success of this type of strategy,

> Sean: *Did that just happen? Did that just happen?* He points to a moving tarp (Chinese Dragon) which has just taken a tyre from the side of the counter unseen by the girls.
> Pro: *Do you realise that they just took one of your tyres?* Pro says to Zoe. The girls at the Right Market seem unperturbed by the theft.

The Chinese Dragon group, through coordinated stealing, were thus observed to employ the large tarp as a tool for appropriating loose parts materials, developing the three intersubjective elements of joint attention, meta-communication and maintenance interactions to further their play.

5.2.4.2 Explanations and instructions – The Thieves group.

The Thieves group were a group of boys whose primary methods of acquiring loose parts materials was through theft. They did not engage in trading play instead they relied on nefarious means of accumulating loose parts materials mainly through opportunistic stealing.

However, two of the group's members, Migu and Scate, created a coordinated stealing strategy utilising a large piece of cardboard to mask or disguise their approach to targeted trading hubs. In other words, they hid behind their cardboard pieces as they inconspicuously attempted to get close to a shop counter. Figure 5.19 shows the boys preparing to engage in coordinated stealing using a piece of hardboard each. They hold a hardboard each in front of their bodies.

Figure 5.19. Migu and Scate prepare to embark on a stealing act.

Figures 5.20 to Figures 5.23 capture how this strategy evolved as the boys approached the targeted Right Market with their focus of attention constantly fixed on the loose parts materials displayed on the counter.

Figure 5.20. Migu and Scate (top right corner) position themselves behind their hardboards.

Figure 5.21. The boys gradually move closer to the Right Market.

Figure 5.22. The boys continue to move closer to the market without being noticed.

Figure 5.23. Migu edges closer.

The image in Figure 5.23 shows Scate is spotted by a Right Market member and stands up. Soon after, Migu was spotted too

> Sunny: *Migu! Go away!* She waves her hands at Migu who is crouched close to the market behind the hardboard. He stands and runs.

Although this coordinated stealing attempt was unsuccessful, the three elements of intersubjectivity were captured in the following interaction which preceded this stealing attempt on the Right Market,

> Migu: *OK I'm going in!* In the background, Migu and Scate start to hold their hardboards up. Migu starts to jog towards the Right Market with his board.
>
> Scate: *I'm going in too!* He holds his board up and runs off behind Migu.
>
> Migu: *No…Ok here we go!*
>
> Migu: *Get the crate!* Migu says to Scate. He starts to crouch down with the board over his head as he gets closer to the market. Scate follows him, and both boys crouch down side by side as they get close.

This interaction demonstrates joint focus of attention to loose parts materials (both to their own tools of theft - hardboards, and to loose parts materials they target for stealing - crates), meta-communication and maintenance interactions of communication as the boys explain their actions and intentions to each other and issue instructions (*Get the crate!*). When later utilised, this coordinated strategy did prove successful when Migu managed to steal a white pole as shown in Figures 5.24 and Figure 5.25.

Figure 5.24. Migu crouches behind the cardboard and reaches surreptitiously for a white pole.

Figure 5.25. Migu is seen running away with the white pole in his hand, unobserved by members of the trading hub.

5.2.4.3 Summary of theme two.

Coordinated stealing arising within trading sociodramatic play requires specific loose parts materials to operate as tools. Coordinated stealing also mediates the development of intersubjectivity amongst stealing group members through the use of explanations and instructions, along with joint focus of attention and meta-communication.

5.2.5 Sociodramatic play pattern three: Protection play.

In response to opportunistic and coordinated stealing, many participants incorporated forms of protection play to stop or reduce occurrences of theft during trading. Frequently, this involved a participant standing guard in front of their trading hub and using their body as a barrier to prevent a suspected thief from getting close to their stock of loose parts materials.

In the following interaction, a girl from the Right Market spots a boy she suspects is attempting to steal from the market,

Lela: *Guys um, guys um there's a stealer!* She points to Scate and he runs off.

Lela seems to position herself in front of the shop counter to protect it.

Similarly, in the next interaction, Pro suspects Tom of attempted theft and tries to intervene,

> Pro: *Oi, stop stealing Tom! Stop stealing Tom!* Tom is seen sprinting up to the shop counter and Pro moves to position himself between Tom and the counter, using his body as a protection shield.

Although the above interactions did not demonstrate intersubjectivity (there was no joint focus of attention of two or more participants to a loose parts material), the symbolic use of protection was further developed by a group of boys who invented a complex protection strategy in the form of a 'stealer trap'.

5.2.6 Intersubjectivity theme three: Protection necessitated maintenance interactions.

It was observed that the stealer trap protection strategy implemented maintenance communication strategies, joint focus of attention to loose parts materials and meta-communication to establish intersubjectivity amongst group members. Key communication strategies employed by participants were instructions and explanations to maintain play.

5.2.6.1 Instructions and explanations – Stealer Trap.

In week six, Tom, Mario and JD in response to the prevalence of stealing, decided to organise a method of protecting their group's loose parts materials from theft. They used a green hose pipe as a tool to trap potential stealers who approached their loose parts materials. They positioned one end of the hose pipe under a tyre which Mario sat on, holding his end of the hose secretly in his hand. The other end was deliberately left exposed lying on the ground in front of the tyre. The idea was that when a stealer attempted to take the pipe, he/she would be tethered to Mario who covertly held the other end, thus alerting the boys to the theft and identity of the thief. Figures 5.26 to 5.29, along with accompanying interactions, capture the sequence of events demonstrating the stealer trap.

Figure 5.26. Tom (out of the camera lens sitting on the blue crate) gives Mario instructions about how to position the hose.

Figure 5.27. As instructed by Tom, Mario threads the hose through the centre of the tyre.

Tom: *Mario! No! Put the long bit (of the hose) in the other side…No! The other side!*

Figure 5.28. JD, a group member, picks up the exposed end of the hose.

Figure 5.29. JD pulls the hose to test it and addresses Mario

.

JD: *This can be like bait and then when someone comes, you'll just be attached to the end.*

Tom: *Mario, Mario it's a stealer trap so we can see whose stealing stuff so you'll feel someone tugging at it!*

JD: *Yeah, we'll see who's stealing then! Ha Ha! Exactly it's a trap to see who's a stealer!*

These interactions demonstrate joint focus of attention to the hose pipe, meta-communication signifying the pipe as a protection tool, and communication strategies of instructions (*Put the long bit in the other side*) and explanations (*This can be like bait*). Approximately two minutes later, Net approaches with the Chinese Dragon and attempts to steal the hose. However, Mario is holding the other end so the Chinese Dragon is unsuccessful as shown in Figures 5.30 and 5.31.

Figure 5.30. Chinese Dragon attempts to steal the hose.

Figure 5.31. Net comes out from under the tarp to investigate why he can't make off with the hose.

5.2.6.2 Summary of theme three.

Protection strategies arising from incidences of stealing necessitated the development of intersubjectivity through joint focus of attention to loose parts materials, meta-communication and maintenance interactions of instructions and explanations. Furthermore, the successful employment of loose parts materials to operate as tools of protection to implement planned strategies required the creation and development of shared meaning

5.3 Key finding two: Within sociodramatic play, intersubjective interactions mediated by loose parts materials can lead to collaborative interactions and collaborative outcomes

Finding two in response to research question two (To what extent does the development of intersubjectivity lead to collaboration as an outcome of interactional activity?) explores key themes of collaboration arising from identified intersubjective interactions. Collaboration for this study is explored through themes relating to 1) collaborative

interactions and 2) collaborative outcomes, arising from intersubjectivity. These themes are presented within the patterns of sociodramatic play identified in the previous sections: trading, stealing and protection.

Collaborative interactions were observed to occur when two or more participants worked together on the same task towards achieving joint intentions/goals through utilising loose parts materials as tools of play. Collaborative outcomes were observed to occur when two or more participants successfully completed activities or achieved shared intentions/goals or created something new which they could not otherwise have completed alone, through engagement with loose parts materials as tools of play.

As detailed in Chapter Four, once intersubjectivity amongst participants interacting with the same loose parts materials was identified, then interactions of a collaborative nature were subsequently coded from those identified intersubjective turns. In other words, the simultaneous occurrences of joint focus of attention to loose parts materials, meta-communication of loose parts materials and communication around loose parts materials were necessary precursors to any explorations of collaborative interactions and collaborative outcomes. Therefore, all collaborative scenarios presented in the following sections were coded as intersubjective prior to being examined for themes of collaboration. Collaborative interactions were explored through an examination of coding protocol relating to reciprocal interactional strategies employed by participants, once intersubjectivity was established. A list and explanation of these strategies is provided in Table 4.6, page 98. Collaborative outcomes, arising from collaborative interactions, were also explored through examinations of collaboration protocols. A description of these protocols is also provided in Table 4.6, page 98.

Key themes of collaborative interactions and collaborative outcomes arising from intersubjectivity within trading, stealing and protection play are presented in the following sections.

5.3.1 Collaboration theme one: Collaborative interactions arise from intersubjective interactions within trading play.

Intersubjective interactions, within trading play, which were observed to frequently lead to collaborative interactions were dominated by a number of reciprocal acts: 1) the use of 'we', 'us' and 'our' pronouns; 2) the identification of shared intentions/goals; 3) helping another participant with a shared activity; and 4) sharing loose parts materials to achieve a common goal. This section provides examples of the use of the reciprocal acts which frequently produced collaborative interactions. Each example is accompanied by a figure illustrating the identification of intersubjective elements leading to the development of collaborative interactions.

Within trading play in sociodramatic play, the frequent implementation of 'we', 'us', 'our' pronouns by participants, engaged in the same activities with loose parts materials, suggested an awareness of the concept of togetherness and cohesiveness in their approach to that activity. The use of these pronouns indicated that participants did not consider themselves single independent units in an activity, but rather as co-dependent entities in a shared activity. In addition, 'we' statements in interactions suggested non-hierarchical membership to a group where group members collaborate jointly to achieve something. In this respect, the employment of pronouns such as 'we', 'us' and 'our' within intersubjective interactions mediated by loose parts materials, suggested a shared identity and collaborative approach to activities. In the following scenario, a group of girls approach the boys trading group.

Amelia: *Guys what do we need?* She asks Ella and Lela, as they approach the market. Ella has a supply sled made of a bread crate pulled by rope containing black tarp. Amelia holds a bread crate and Lela is empty handed.

Border: *Welcome to the market!* Border addresses the three girls.

Ella: *We would like to trade this or that!* Ella uncovers a black tarp covering the contents of the sled to reveal a plastic spool and a wood plank.

Ella: *We need something like that tube.* Ella points in the direction of the large white pipe.

Border: *Oh, do you want that?* He points towards the pipe which is stacked against a tree trunk.

Lela: *Yes please! We do! We have some wood!* (in exchange for the pipe). All of them move closer to the tree upon which the pipe is leaned.

The employment of 'we' statements by the girls in all the above interactions demonstrates a shared group identity as they interact with Border in a cohesive approach to trading. This scenario also demonstrates shared intentions and goals by the girls. Shared intentions and goals are indicative of collaborative interactions as they suggest a joint commitment to an outcome which can provide benefits to the group. In the above scenario, both Ella and Lela express a shared intention to obtain the white pipe through trading. This is communicated verbally by Ella when she specifically requests the pipe on behalf of the group (*We need…*) and by Lela reinforcing this intention (*Yes please! We do!),* and by all three moving closer to the pipe, thus non-verbally communicating their intentions. Figure 5.32 presents a summary of the three elements of intersubjectivity within this conversational turn leading to collaborative interactions.

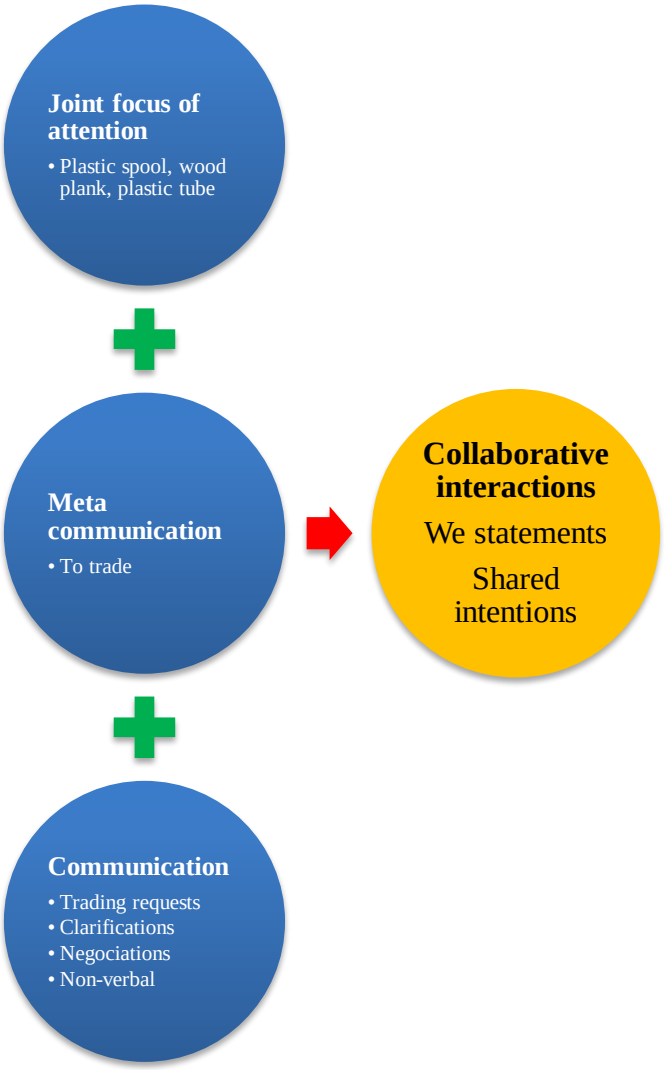

Figure 5.32. The three elements of intersubjectivity leading to collaborative interactions.

In the following scenario, two boys from the Black Market prepare their shop for trading.

> Scate: *And this is our pipe section*. He places the large pipe on top of the ubend pipe in the bread crate.
>
> Mario: *We'll put the pipes like this*. Mario comes to help Scate sort the pipes out.

Here, both boys engage in collaborative interactions demonstrating membership to the same group (our, we'll) and a shared intention to organise their loose parts materials by verbalising the aim of their actions. In addition, Mario moves to physically help Scate with this task thus indicating the development of a shared collaborative activity. Figure 5.33 presents a

summary of the three elements of intersubjectivity leading to collaborative interactions amongst this group of boys.

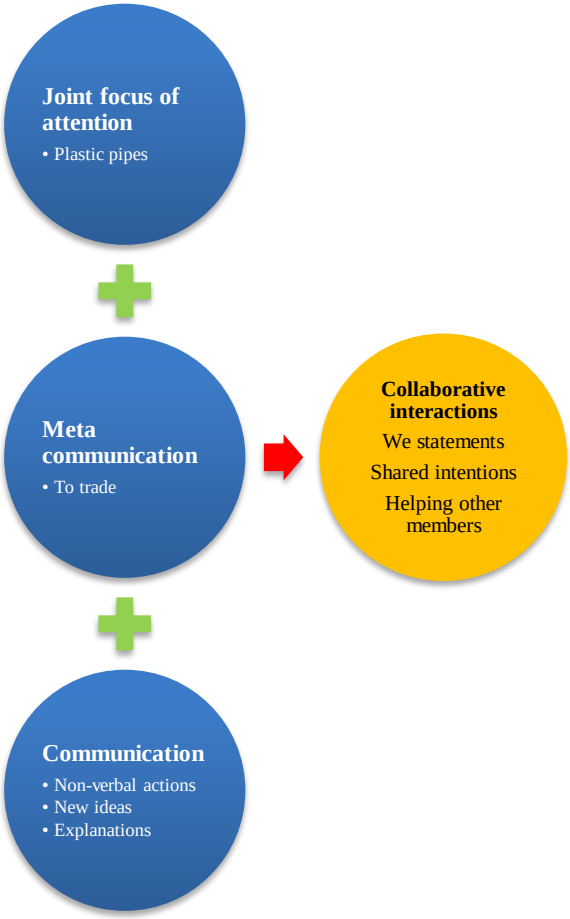

Figure 5.33. Intersubjectivity developed between Scate and Mario leading to collaborative interactions.

In the following interactions, Cate, Ella and Amelia prepare to embark on trading.

> Cate: *What should we do now?* She stands looking at Ella with her hands on her hips.
>
> Ella: *Will we both go trading?* She is holding the white container containing the buckets she has traded with the Black Market.
>
> Cate: *Ok! What's something we don't need?* She lifts up a piece of plastic inquiring if the group does not need it, and so might be available for trade.
>
> Ella: *No, we don't need that.*

Cate: *Amelia, do we need this?* She shouts out to Amelia who is on the other side of the counter and holds up the plastic for her to see.

Here, the use of 'we' statements is prevalent amongst the girls, suggesting joint ownership of a shared group identity. Likewise, both Cate and Ella have identified shared intentions to trade the loose parts materials which the group does not require in the shop. The girls also demonstrate that they intend to share the piece of plastic to achieve that intention to trade. Sharing loose parts materials to achieve a common goal suggests interactions which are collaborative in nature. Figure 5.34 identifies the three elements of intersubjectivity leading to collaborative interactions between the girls.

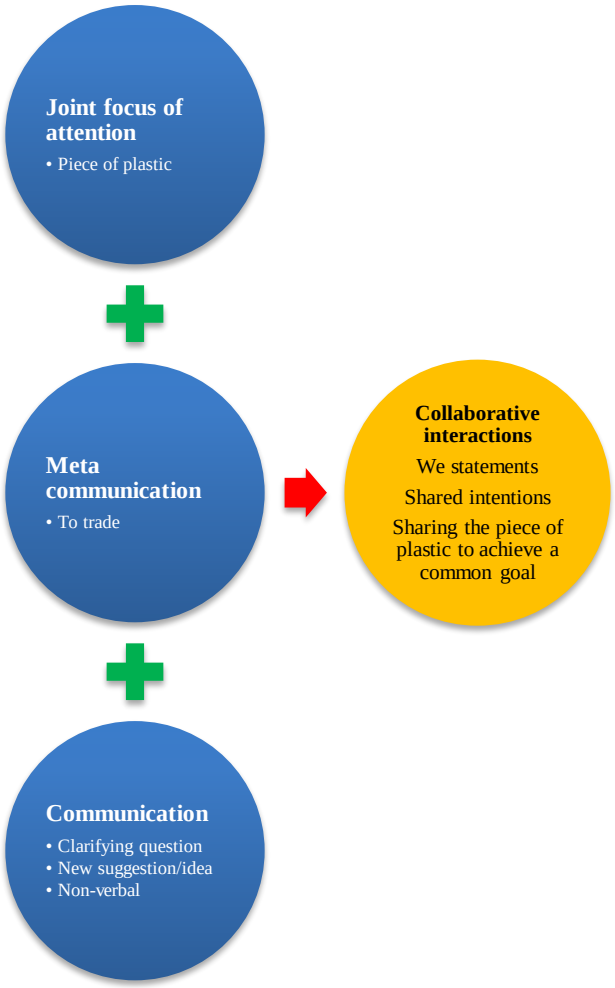

Figure 5.34. Intersubjectivity leading to collaborative interactions between Cate, Ella and Amelia.

In the following interactions, a group of boys at the Black Market realise that they are accumulating a large quantity of loose parts materials but do not have the space to accommodate them all.

> Mario: *We're going over the top on our storage areas here! Alright we gotta extend! We gotta extend!* He jumps out from behind the counter and starts moving and extending the counter outwards to increase space.

Figure 5.35 shows Mario attempting to lift crates (shop counter) outwards.

Figure 5.35. Mario begins to move the bread crates to create more space for the stock.

> Tra: *We're extending! We're extending the shop! Even more stuff in stock!* Tra shouts out to the play space via the black pipe used as a mega phone as Mario starts to move the stock outwards.

In Figure 5.36, Tra is visible using the pipe to make these announcements.

Figure 5.36. Tra in the bottom right corner announces the expansion of the Black Market.

The image in Figure 3.36 also shows Tom, in the background, moving to help Mario expand the market area to create more space for the materials.

In Figure 5.37, Tom joins Mario to help him reposition the crates into an extended shop counter.

Figure 5.37. Tom helps Mario.

JD arrives back to the Black Market with more crates and throws them on the counter as the boys continue to expand the space in the background as shown in Figure 5.38.

Figure 5.38. JD contributes more crates to the market.

Net: *There's more crates for the shop!* Net also returns holding more crates.

He too then helps Mario in extending the space as shown in Figure 5.39.

Figure 5.39. Net helps Mario to move the crates.

Net: *We're going to open it again! We are just restocking!*

Tom: *Yeah, we're restocking!* He puts more loose parts materials up on the counter.

These interactions demonstrate frequent use of 'we' statements suggesting membership to and identity with the same group of participants. Shared intentions to expand and restock are clearly expressed (*We're extending! We're restocking!*) as group members collaborate towards the same goal of expanding the market space. Group members also engage in physically helping each other with this goal of extending (Net and Tom). Group members also share all the accumulated loose parts materials to help extend the shop, and in addition some members continue to gather and contribute more loose parts materials to add to the stock, therefore contributing more materials to share (JD and Net). Figure 5.40 presents the three elements of intersubjectivity developed amongst the boys, leading to collaborative interactions.

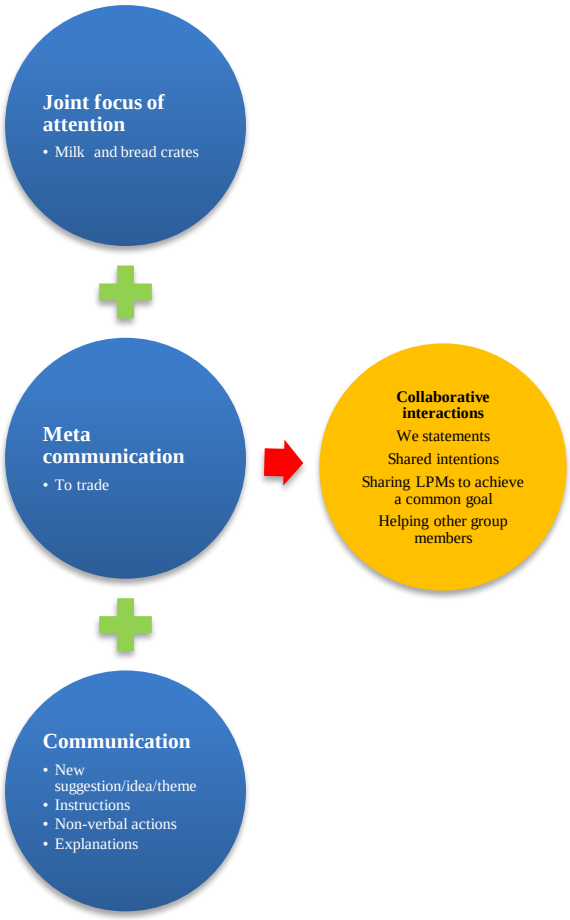

Figure 5.40. Three elements of intersubjectivity leading to collaborative interactions between the boys.

5.3.1.1 Summary of collaborative interactions during trading play.

Identified intersubjective episodes of trading play, utilising loose parts materials as tools, were always observed to lead to collaborative interactions amongst participants. Collaborative interactions were generally characterised by the explicit or implicit formulation of shared intentions or goals, the helping of other members to achieve those intentions, the articulation of 'we' statements and the sharing of loose parts materials. These collaborative interactions appeared to develop from intersubjective interactions of joint focus of attention to loose parts materials, meta-communication to symbolically use loose parts materials as tradable items and communication. Therefore, once two or more participants engaged in intersubjective interactions around trading play, employing loose parts materials as tools, collaborative interactions were always observed to develop.

5.3.2 Collaboration theme two: Collaborative outcomes can develop from collaborative interactions during trading play.

It was observed that some collaborative interactions, arising from play episodes of intersubjectivity during trading play, led to the development of collaborative outcomes. Collaborative outcomes were said to occur when two or more participants successfully completed activities or achieved shared intentions/goals which they could not otherwise have completed alone. Collaborative outcomes were also said to occur when two or more participants created something new with the same loose parts materials to form a new construction or new play theme for sociodramatic play. This section provides examples of interactions identified as collaborative outcomes, along with figures to illustrate the establishment of intersubjectivity leading to collaborative interactions which in turn developed into collaborative outcomes, for each of those examples.

In the following intersubjective episode, Tom remarks to his group members (the Black Market) that their stock, arising from trading, is increasing,

> Tom: *We're rich…… we've got tonnes of stuff.* Tom places more loose parts materials on the Black Market shop counter. Burton returns carrying more milk crates and buckets and places them beside the counter.
>
> Tom: *We're too rich!* He says as he walks around the counter.
>
> Border: *We're too rich?* Border sits on a tyre behind the counter.
>
> Tom: *We're dirty rich guys!* He clarifies to Border indicating that they have accumulated a large quantity of traded loose parts materials.

This interaction suggests that this group have achieved shared intentions to trade materials. The fact that they have obtained large numbers of loose parts materials suggests that their trading interactions have indeed resulted in successful outcomes. Tom's declaration of his groups acquired wealth (*We are dirty rich!)* indicates that the group have been successful in achieving their goals to trade. In addition, Tom and Burton have both shared their loose parts materials with the group by physically placing them on the shop counter. Figure 5.41 presents how play with loose parts materials acting as tools during trading play establishes intersubjectivity leading to collaborative intentions which in turn result in collaborative outcomes.

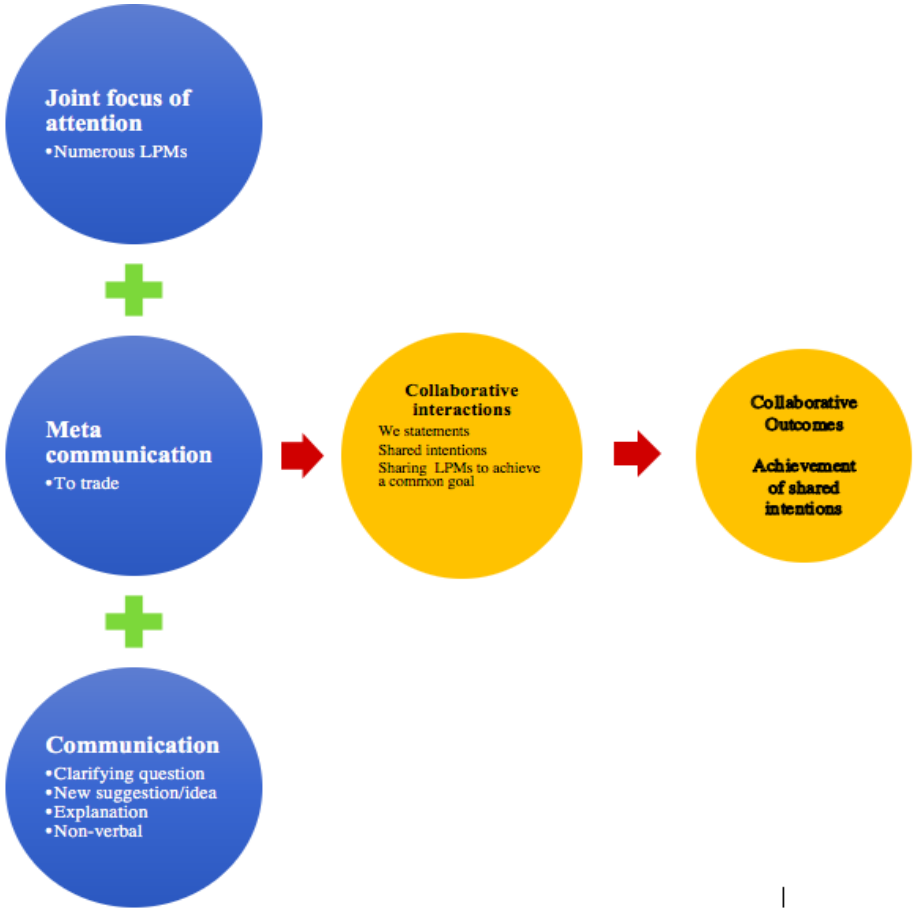

Figure 5.41. The development of collaboration amongst the Black Market.

In the following trading interactions, Sunny and Rose have established a small trading post which has milk crates, a tyre, wood planks and buckets for sale. They discuss which items are available for sale as customers approach their trading post. Figure 5.42 shows Sunny standing in front of their small trading post.

Figure 5.42. A small trading post managed by Sunny and Rose.

Sunny: *Is the tyre for sale?* She calls to Rose who is standing close by.

Rose: *Yes, everything's for sale!*

Sunny: *Yes.* She turns to Dawn who is holding a rope outward towards Sunny.

Dawn: *Ok…. The tyre for this?* She indicates the rope in her hand and taps it on the tyre.

Rose: *Ok, take that over there.* Rose approaches Dawn and Sunny, and points at the tyre to take. Rose then takes the rope in exchange. At the same time, Ella comes up to the trading post and gives Sunny the large white pipe in exchange for two milk crates and walks away.

Dawn: *Thank you!* She rolls the tyre away. Rose sorts out the loose parts materials in sections.

Sunny: *She traded this!* She says smiling to Rose. She holds up the rope, and then drops it into the white container.

Rose: *Yeah that's good! Ok, put the pipe next to that! This is a good business!*

These intersubjective interactions suggest collaborative interactions of shared intentions to trade their acquired loose parts materials (*everything's for sale!),* thus also implicitly demonstrating agreement amongst Sunny and Rose to share their loose parts materials to work towards that common intention. These interactions thus developed into completed trades between Dawn and the two girls (tyre successfully exchanged for rope), and also between Ella and the two girls (white pipe successfully exchanged for two milk crates). Both girls appear to be satisfied with these trading outcomes as they are smiling and indicate that their business is successful (*That's good!* and *This is good business!*). Therefore, these interactions suggest that the participants successfully achieve their shared intentions to trade achieving collaborative outcomes. Figure 5.43 shows intersubjective elements in these interactions leading to collaborative interactions resulting in collaborative outcomes.

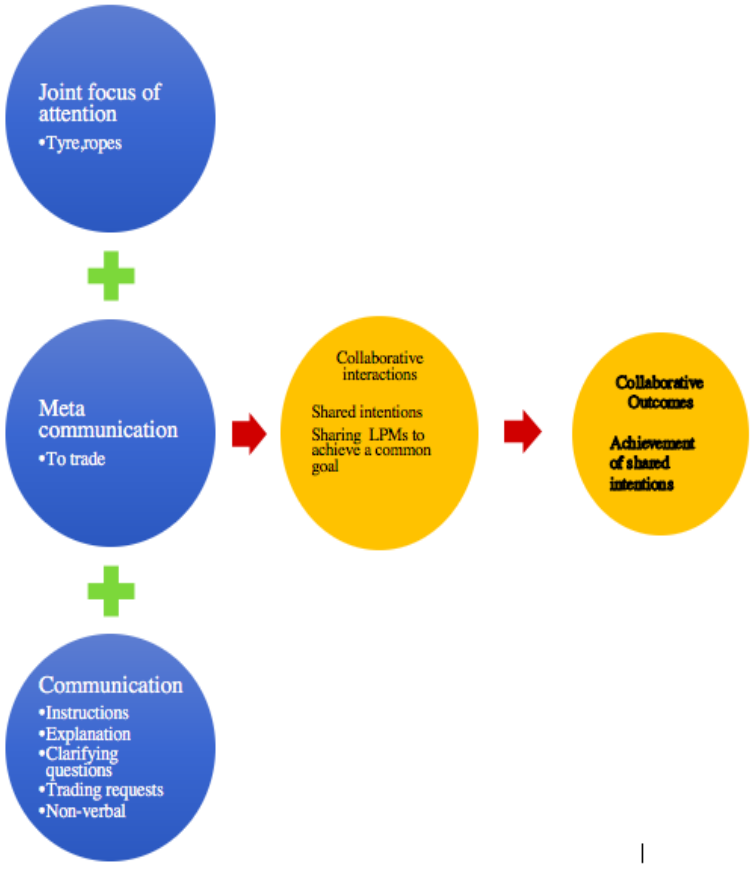

Figure 5.43. The development of collaboration between Sunny and Rose.

In the next interaction, Form and Net (the Black Market) discuss how trading is going,

> Form: *We're really successful!* He sits on the tyre behind the counter keeping an eye on the stock and smiles at Net.
>
> Net: *Yeah, we are!* Net agrees and nods as he sorts out milk crates on the shop counter.
>
> Net: *If we were selling for real money, we'd be millionaires!*
>
> Form: *Yeah, I know!* He smiles at Net.

Here the boys use collaborative interactions ('we' statements, shared intentions to trade, sharing of materials) and verbally establish that those shared intentions have resulted in successful outcomes (*We're really successful! We'd be millionaires*!). This interaction thus indicates that their common goals have been achieved. In addition, the boys employ non-verbal communication interactions of nodding and smiling to express agreement. Figure 5.44 presents the key intersubjective elements in these interactions leading to collaborative interactions resulting in collaborative outcomes.

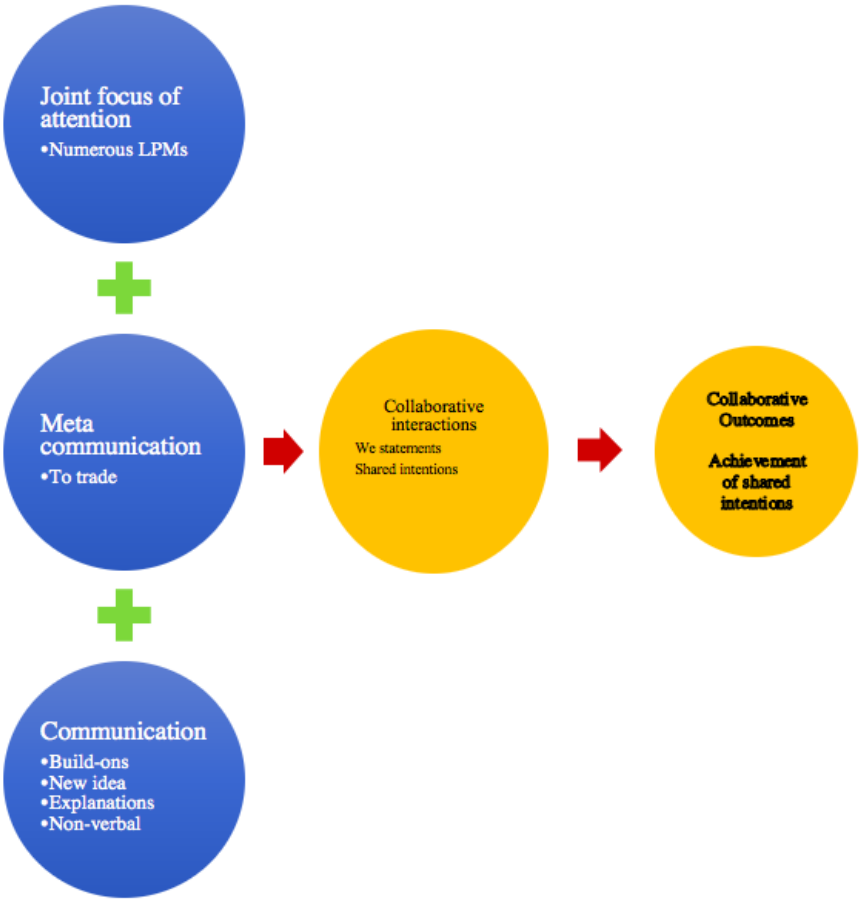

Figure 5.44. The development of collaboration between Form and Net.

5.3.2.1 Summary of collaborative outcomes during trading play.

In many episodes, collaborative interactions arising from intersubjective interactions during trading play often resulted in collaborative outcomes where shared intentions were successfully achieved. Implicitly and /or explicitly communicated shared intentions, the sharing of materials and the use of inclusive 'we' statements resulted in collaborative outcomes (the joint achievement of shared intentions/goals).

However, there were also trading episodes observed which did not lead to the development of collaborative outcomes. The following scenario gives an example of when collaborative interactions, developed from intersubjective trading interactions, did not

progress to the development of collaborative outcomes. In the following trading interactions, JD attempts to trade with Border, Migu and Burton in the boys trading shop.

> JD: *Can I just trade these two for a tyre?* Border turns to JD who approaches with two milk crates.
>
> Border: *Sure!*
>
> Migu: *No!* Migu interjects as he continues to fix up the tyre on the tree branch. He does not want to trade the tyre for two crates.
>
> Burton: *Three milk crates for a tyre!* Burton walks towards JD and starts to negotiate. He looks directly at Border and makes hand gestures holding up three fingers.
>
> JD: *No no! That's way too much!* He shakes his head and walks away.

Here there is evidence of intersubjectivity through joint focus of attention to the crates and tyre, meta-communication and communication of maintenance interactions. Border, Migu and Burton develop collaborative interactions through a shared intention to trade the tyre, although they do not agree on the number of crates to exchange for the tyre. However, they are prepared to engage in trading that specific tyre signifying an agreement to share the group's resources. This trading exchange was unsuccessful as the group did not achieve their shared intentions/common goals to trade the tyre, thereby indicating that collaborative outcomes were not achieved.

5.3.3 Collaboration theme three: Collaborative interactions arising from intersubjectivity can lead to collaborative outcomes in coordinated stealing play.

As discussed in section 5.2.4, groups of two or more participants who engaged in interactions to pre-plan and coordinate stealing acts were characterised as engaging in coordinated stealing. The Chinese Dragon group were identified as establishing intersubjectivity through their coordinated use of and interactions with the large tarp to steal

loose parts materials from other groups. When further explored for collaboration, this group were found to employ collaborative interactions of shared intentions to steal, implicit through their coordinated use of the tarp to cover their bodies on approach to a targeted market and through their use of the tarp to hide the stolen materials from sight. Moreover, their willingness to share the tarp to achieve those intentions of theft suggests collaborative approaches to interactions.

Collaborative outcomes resulting from such approaches were evident when the group worked together to use the tarp in a novel and creative way to steal. Collaborative outcomes were also apparent when the group achieved their shared intentions to steal, in other words when they successfully stole a loose parts material from another group. Figures 5.45 to figure 5.47 show an example of the success of this collaborative strategy.

Figure 5.45. The Chinese Dragon group (on the right of the picture) approach the Right Market.

The image in Figure 5.45 shows the Chinese Dragon group move closer to the market counter unobserved to initiate their stealing strategy (a participant under the tarp has a hand on the tyre).

Figure 5.46. Having successfully secured the intended loose parts material (tyre), the group conceal the tyre beneath the tarp and move away from the market.

Figure 5.47. The group move further away from the Right Market with the tyre just visible beneath the tarp.

Figure 5.48 outlines the three intersubjective elements identified in these interactions (as discussed in the section 5.2.4.1) along with the development of collaborative interactions leading to collaborative outcomes.

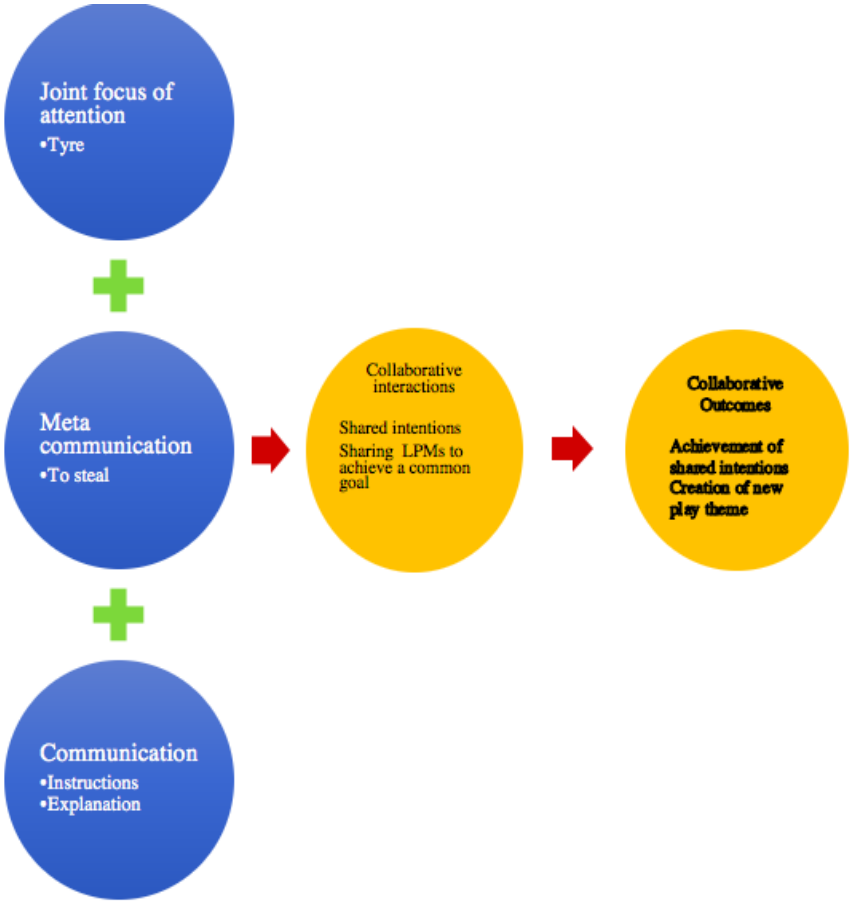

Figure 5.48. The development of collaborative outcomes amongst the Chinese Dragon group.

The Thieves group, as discussed in section 5.2.4.2, also engaged in coordinated stealing acts through the development of intersubjective interactions. These interactions were further examined for the development collaboration and were judged to form collaborative interactions and outcomes. Figures 5.49 and 5.50 show two members of the Thieves group preparing to target the same market for loose parts materials to steal.

Figure 5.49. The Thieves prepare.

Figure 5.50. The Thieves take a tyre.

Both participants approach the same market at the same time from behind their pieces of hardboard, demonstrating shared intentions to steal from that market. One of the boys manages to successfully secure a tyre and makes off with it, thereby showing that this collaborative approach to stealing achieved their shared intentions.

In another coordinated stealing play episode, two participants from the Thieves group approach the same market at the same time from different angles, demonstrating implicit shared intentions to steal loose parts materials from that market, thereby establishing collaborative interactions. Figure 5.51 shows one of the boys successfully acquiring the

targeted loose parts material (blue container) from the left-hand side of the market, while Figure 5.52 shows the other boy successfully taking two crates a couple of seconds later from the right-hand side of the market. Thus, demonstrating both participant's success in achieving their group's shared intentions to steal.

Figure 5.51. Container is taken.

Figure 5.52. Milk crates are taken.

Figure 5.53 shows the intersubjective interactions leading to collaborative interactions developing into collaborative outcomes.

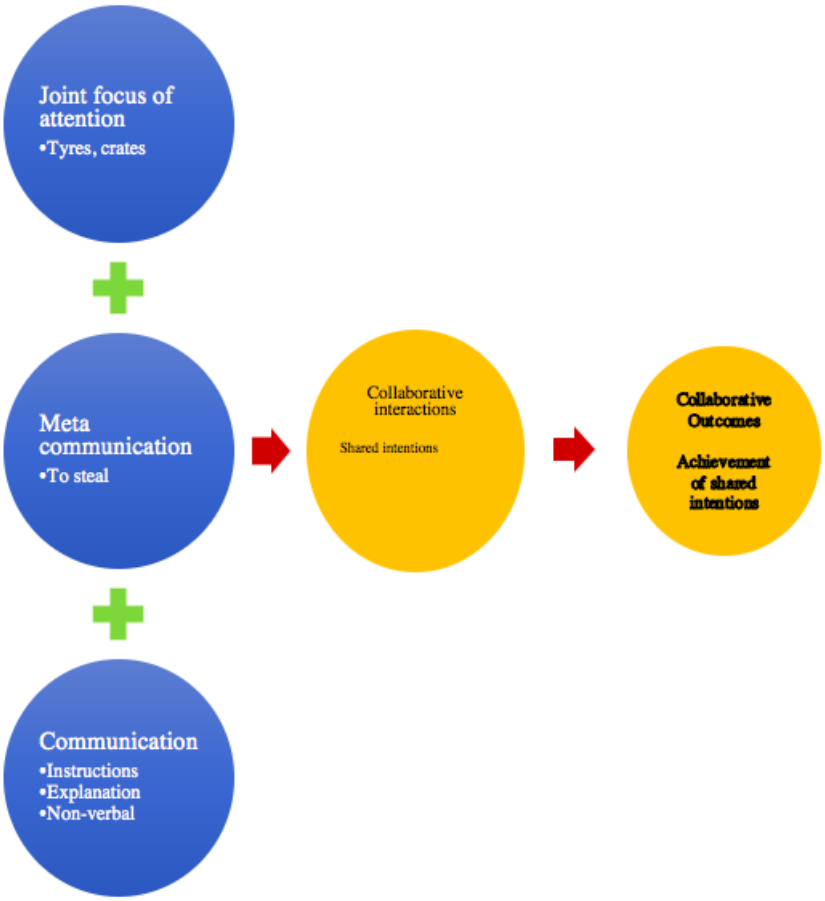

Figure 5.53. The development of collaboration between the Thieves group.

5.3.3.1 Summary of collaborative interactions and collaborative outcomes during coordinated stealing play.

Coordinated stealing play amongst the Chinese Dragon group and the Thieves group was coded to always develop collaborative interactions from intersubjective interactional turns. The employment of implicit and explicit shared intentions and the sharing of loose parts materials to carry out these intentions frequently resulted in collaborative outcomes where the groups successfully achieved their joint goals to acquire other groups' loose parts materials by theft. However, there were some episodes when both groups were unsuccessful in achieving their shared intentions. These episodes, lacking in collaborative outcomes, were

mainly characterised by the targeted group spotting the Thieves in action and managing to prevent the theft.

5.3.4 Collaboration theme four: Collaborative interactions arising from intersubjectivity can lead to collaborative outcomes during protection play.

As discussed in section 5.2.6, in response to opportunistic and coordinated stealing, many participants incorporated forms of protection play to stop or reduce occurrences of theft during trading. Sometimes these protection strategies took the form of individual participants electing to stand in front of their group's market to physically deter any aspiring thieves. Individual protection strategies could not be coded for intersubjectivity because they lacked joint focus of attention to loose parts materials between participants, and so were not explored for collaboration. However, the stealer trap (detailed in section 5.2.6.1) was viewed as establishing intersubjective interactions and was therefore further explored for the development of collaboration. 'We' statements (*it's a stealer trap so we can see who is stealing stuff)* and (*we'll see who is stealing then*), along with explicitly expressed shared intentions to catch potential thieves and the sharing of materials to achieve common goals, suggested collaborative interactions.

As shown in Figure 5.54, the effectiveness of this protection strategy was evident when Net, from the Chinese Dragon, attempted to steal the hose but could not as it was tethered to Mario, thus revealing Net to be the thief. As a result, these interactions were established to successfully achieve the group's shared intention to identify and catch a stealer, therefore producing collaborative outcomes. This play episode was also co-creating a new play theme (collaborative outcome) as the concept of a stealer's trap was a novel one, previously not observed by any group.

Figure 5.54. Net emerges from under the Chinese Dragon tarp to pull the hose.

Figure 5.55 shows the relationships between the establishment of intersubjectivity, collaborative interactions and collaborative outcomes.

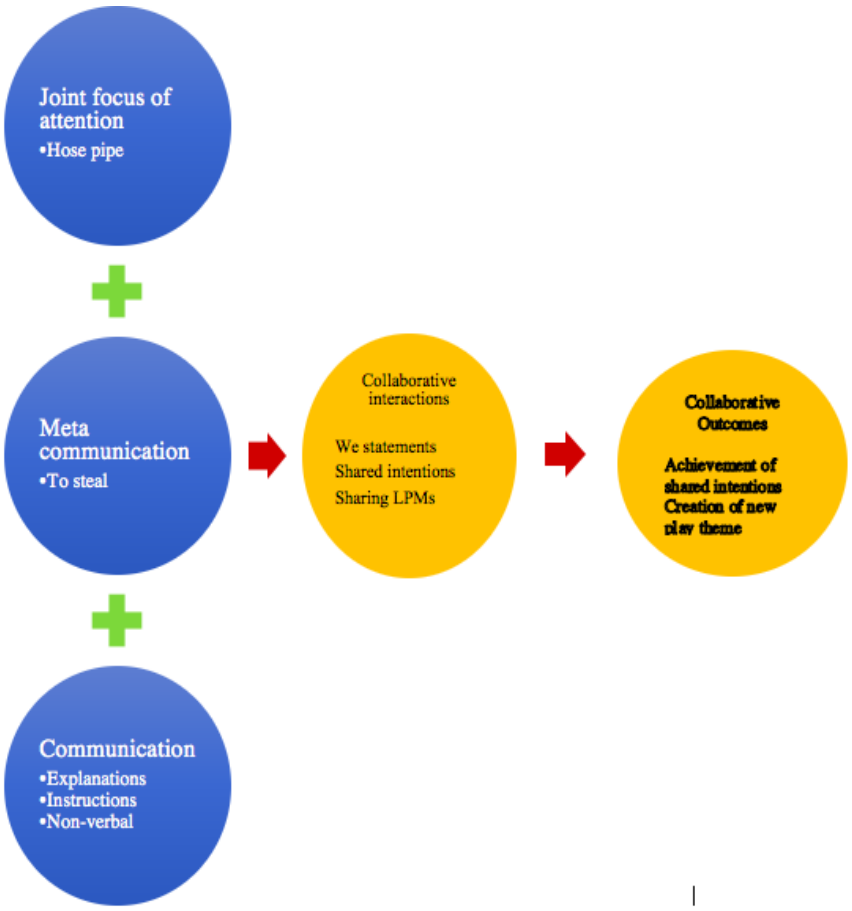

Figure 5.55. The development of collaboration from the ‘Stealer’s Trap’.

5.3.4.1 Summary of collaborative interactions and outcomes within protection play.

Intersubjective interactions, within protection play employed by the Stealer's Trap, always developed into collaborative interactions characterised by shared group intentions, the sharing of loose parts materials to carry out those intentions and the use of inclusive 'we' statements suggesting shared group identity and cohesion. Collaborative outcomes resulting in the creation of a new play theme and the achievement of shared intentions (to catch the stealer) also developed frequently from those interactions, although not always.

5.4 Conclusion

This chapter has presented findings for the research questions informing the study. The findings are that loose parts materials created four patterns of play; gathering, construction, sociodramatic and functional. Sociodramatic play was found to be the most significant of these as it formed the longest duration of play each week, therefore producing data which consistently revealed patterns and themes dominating most observation sessions.

In response to research question one, it was found that the manipulative and flexible nature of loose parts materials facilitated their use as tools to create trading, coordinated stealing and protection type play episodes. It was reported that the use of loose parts materials operating as tools of play during many of these episodes positively mediated the development of intersubjectivity amongst groups of two or more participants by promoting joint focus of attention to loose parts materials, meta-communication about the symbolic use of loose parts materials and communication around loose parts materials.

In response to the research question two, it was established that the three elements of intersubjectivity identified within interactions of trading, coordinated stealing and protection, always developed into collaborative interactions. It was also observed that collaborative interactions frequently, but not always, developed into collaborative outcomes.

The next chapter provides a full discussion and interpretation of the findings with reference to the literature.

Chapter 6: Discussion

6.1 Introduction

This chapter provides a summary and discussion of the two key findings in relation to the research questions and reviewed literature. Each key finding is discussed, exploring connections to the literature which in places consolidated and differed from prior research. The chapter also discusses how this project extends the literature by offering new interpretations of collaborative behaviour during play with outdoor loose parts materials.

6.2 Key finding one: Loose parts materials operated as tools to mediate the development of intersubjectivity within sociodramatic play

This key finding addressed the first research question 'How do loose parts materials operate as tools during outdoor free play to mediate the development of intersubjectivity?'. In response to key finding one, the nature of loose parts materials and emergent play types were discussed in the next sections. Focusing on sociodramatic play, the most dominant play type, the significance of loose parts materials as tools in mediating three elements of intersubjectivity; joint focus of attention, meta-communication and communication were examined.

6.2.1 Flexible manipulative nature of outdoor loose parts.

The open-ended nature of loose parts materials provided opportunities for participants to explore and develop many play themes. Moreover, the context of free play with the materials (devoid of adult instructions) allowed for an uninhibited exchange of ideas between peers. It was found that the flexible nature of the loose parts facilitated ease of movement and variable positioning/repositioning of materials. Each loose part material lacked any form

of pre-assigned play purpose, thereby allowing for unlimited play potential and infinite possibilities for meaning making. As a result, participants manipulated and combined loose parts materials in many imaginative ways to create structures, for example shop counters enabling organisations such as trading markets, which facilitated the emergence of play themes necessitating complex social interactions. These findings concur with prior research on loose parts play (Armitage, 2010; Bundy et al., 2008, 2009; Engelen et al., 2013; Hyndman et al., 2014, 2017; Mahony et al., 2017; Malone & Tranter, 2003; Maxwell et al., 2008) which reported that a lack of fixed structure and predetermined purpose of loose parts materials facilitated the development of specific types of play.

6.2.2 Play types emerging from loose parts play.

Consistent with the literature, this project demonstrated the emergence of construction, imaginative play and functional play (Maxwell et al., 2008) arising from interactions with loose parts materials. This study found that loose parts materials were used by the participants to create four patterns of play each week: gathering play, constructive play, sociodramatic play and functional play. As all episodes of imaginative play in this study involved complex social interaction with other participants, the term sociodramatic play was employed throughout the findings indicating a more advanced form of imaginative play imitating social situations influenced by the sociocultural environment (DeWolf, 1999).

This project also echoed other studies (Armitage, 2010; Bundy et al., 2008, 2009; Maxwell et al., 2008) through reporting a consistent pattern in the development of these main play types, finding that construction play preceded imaginative play and thus provided opportunities for the subsequent development of imaginative play within or around those constructs. This study therefore consolidated prior research by reporting the development of

construction play (*Okay everybody build a shop!*) which led to sociodramatic play (*The Black Market is open!*), with functional play occurring haphazardly throughout the observations.

Recent research in loose parts play (Hyndman et al., 2017; Mahony et al., 2017) reported that groups of children formed teams to collect materials and set up play stations within which construction play developed. This current study also showed how participants formed social groups (the Right Market, the Black Market, the Thieves, Chinese Dragon) and established play boundaries for their groups within which they constructed their shops, with sociodramatic play subsequently developing. Mahony and colleagues (2017), Armitage (2010) and Maxwell et al. (2008) noted how participants appeared to work cooperatively during construction play engaging in verbal communications and negotiations on the design and formation of their constructions. Although construction play was not the focus of the presented findings, it was also noted in this study that participants cooperatively interacted and negotiated ideas and suggestions during the development of their structures.

This study supported and built on the existing literature by exploring the nature of social interactions within the sociodramatic play phase of play with loose parts materials. Specifically, this study contributed to the literature by drilling down into the nature of collaborative type communications around play with loose parts materials. Thus, providing a noteworthy exploration of the processes involved in establishing collaborative behaviours in sociodramatic play supported by loose parts materials acting as tools for the creation of intersubjectivity.

The current study found that participants used the loose parts materials as tools to co-construct shared meanings around how play was developed and sustained during the observation periods. Supported by the loose parts materials, participants were observed to employ a sophisticated range of communication strategies dominated by complex maintenance interactions (for example, trading requests, advertising strategies, instructions,

explanations), along with a range of meta-communication strategies (for example, meta-communication to trade or to steal) when negotiating shared meanings around those loose part materials. This offered a unique contribution to the literature by breaking down and unpacking the verbal and non-verbal communications around the use of the materials. In sum, this study offered a novel examination of how loose parts materials were used by interacting peers to negotiate and create shared understandings, thus providing insight into how senior primary children, through play, progress to developing collaborative relationships.

The emergence of imaginative/creative, dramatic play was also reported in the literature on loose parts play, and it was noted that the more imaginative the children became, the more social interactions developed (Bundy et al., 2008). This current study explored, in detail, emerging play themes within sociodramatic play which were directly mediated by the availability of the wide array of loose parts materials. It was observed that participants built on and further developed sociodramatic themes of trading, stealing and protection as the weeks progressed. For example, the layout of the markets became more sophisticated as the weeks progressed when participants incorporated specific divisional sections in which to display similar items (loose parts materials) available for trade, or to denote items for sale (*This is where we put anything on sale!).*

Likewise, trading became progressively more sophisticated as participants adopted forms of verbal advertising to promote their trading hubs and compete against rival trading groups (*This is the best market in all of Australia*!). In addition, some groups also began to implement discount pricing strategies to gain a competitive edge over another group (*If you find something anywhere else on sale, we'll beat it by 10%!*). This study found that successful trading play around loose parts materials necessitated the co-creation and negotiation of shared meanings through a range of communication strategies which

developed in complexity as the weeks progressed. The progressive development of complexity suggests transitions to higher mental functioning (for example, mediated perception, logical memory, abstract thinking, deliberate voluntary attention and the formation of concepts) as participants internalised shared meanings through the development of complex psychological tools of language, concepts, signs and symbols mediated by the available loose parts materials.

It was observed that stealing in some groups developed from opportunistic 'grab and run' occurrences to more complex organised planned theft (the Thieves and Chinese Dragon group) necessitating two or more group members to adopt a coordinated approach to stealing (*It means we steal stuff from the other markets!*). Protection play was also observed to become more sophisticated as the weeks progressed and some groups employed organised strategies for protection, for example the Stealer's Trap (*it's a stealer trap so we can see who's stealing stuff*).

Play strategies such as trading and stealing and protection may be consistent with the social and environmental influences of the local community, an inner-city suburb with many businesses and shops. It was observed that the provision of loose parts materials mediated opportunities for the participants to act out traditionally perceived adult roles, social roles which children generally do not get a chance to engage with in real life (Vygotsky, 1978). In this study the proliferation of trading episodes and structures, supported by the materials, where buying, selling, bartering and haggling became enthusiastically embraced by participants, highlighted the children's engagement in fantasy (*We're rich, we're dirty rich!* and *If we were selling for real money, we'd be millionaires*!).

Likewise, the development of opportunistic and coordinated stealing episodes highlighted participant desires to experiment with not adhering to social rules and to explore what happens when rules of play break down. The findings suggest that, supported by a

range of loose parts materials, primary children can explore accepted social rules and norms and experiment with impulses and inclinations which generally cannot be fulfilled in real life. Negative social interactions were noted in this study when social rules of play broke down, evident when groups or individuals embarked on opportunistic or coordinated stealing and 'victims' of crime expressed anger or frustration often leading to retaliatory incidences of stealing. This corroborates other research (Armitage, 2010) particularly when arguments arose during the defence or protection of loose parts materials from theft.

Bundy et al. (2017) observed the "hoarding" (p. 753) of materials at the beginning of that loose parts intervention, which was noted to decline as the intervention progressed. The hoarding or gathering of materials did not decrease over time in this project. The current study builds on existing literature by exploring the gathering processes of loose parts materials in detail. In this study, the gathering phase was viewed as a distinct play type which was consistently observed in the early stages of play each week. Gathering play arose from the necessity of participants to acquire as many loose parts materials as possible at the beginning of each session to progress to construction play and subsequently to sociodramatic play (*Dude, grab as many crates as you can!*). Gathering play (although not the focus of this study) was thus noted as a vital phase in the development of subsequent play themes. After the first session during which children familiarised themselves with the materials, it became apparent that children began to identify the potential play significance of materials, prompting the children to target specific loose parts materials (for example, the large tarps and the golden crate amongst others) for collection, racing to be the first to acquire these. Some loose parts materials were available in small quantities, so these items became highly desirable and prized by participants (*Guys we've got the golden crate!*).

The gathering phase, from week two, thus highlighted how participants became aware of the importance and value of loose parts materials as tools for enabling and sustaining play

themes. Likewise, during this phase, participants sought to collect as many materials as possible as quickly as they could reflecting an increasingly competitive nature of this phase. As a result, the fewer loose parts materials which a group acquired during this phase resulted in fewer opportunities for the engagement in trading play.

Sociocultural theory, discussed in Chapter Three, offers an understanding of how the loose parts materials in this study were used as mediating tools by interacting peers throughout sociodramatic play to create shared meanings. Tool mediation (Vygotsky, 1978), discussed in section 3.3.3, provides a theoretical lens from which to view the relationship between interacting peers (subjects), loose parts materials (mediating tools) and intersubjectivity (object), and any resulting collaboration (outcome). The concept of tool mediation suggests that the interacting peers used the loose parts materials as material artefacts to mediate the development of shared meanings of their world, leading to internalisation of those tools and the development of higher mental functions such the formation of concepts**,** abstract thinking, voluntary attention and logical memory. In this study, the object (intersubjectivity) referred to the motive of interacting peers for participating in a play episode because the co-creation of intersubjectivity was vital for play to be maintained and further elaborated. Intersubjectivity in this study was therefore suggested as a vital precursor to collaboration (the outcome of a play activity). Collaboration, as an outcome (discussed in section 5.3), was viewed as the successful development of collaborative interactions and collaborative outcomes.

As the most dominant play type throughout the study, sociodramatic play was examined for development of intersubjectivity when the loose parts materials became the centre of joint interactional activity. Specifically, intersubjectivity was coded as developing when interactions between two or more participants included joint focus of attention to a loose part material or group of loose parts materials, meta-communication between those

participants on the symbolic or pretend meaning of those loose parts materials, and communication amongst participants necessary to construct shared meanings relating to those loose parts materials.

The next sections discuss how this study offers a distinctive contribution to existing literature by providing a detailed exploration of how the materials supported the creation of three elements required for the development of intersubjectivity; joint focus of attention, meta-communication and communication.

6.2.3 Joint focus of attention to loose parts materials during sociodramatic play.

Joint focus of attention to a loose part material occurred when all interacting participants viewed that loose part material (or group of loose parts materials) as central to interactional activity. In other words, joint focus of attention to a loose part material was evident when participants mutually gazed at the material and /or physically engaged with the material and /or referred verbally or non-verbally to the material. The loose part material thus became a potential tool for the co-construction of play themes and therefore necessitated all interacting participants to view the material as the central focal point of interaction. This is a significant finding in understanding how loose parts materials mediated the initial development of intersubjectivity.

It was found that the materials acted as physical objects which could be manipulated into representing a myriad of potential play opportunities by jointly interacting participants. Joint focus of attention during trading play occurred when two or more participants engaged in bartering for a specific loose part material or groups of materials. Likewise, during coordinated stealing play, participants were observed to focus directly on the targeted loose parts materials and use specific materials as tools for stealing. Joint focus of attention

occurred during protection play when participants focused on specific loose parts materials for use as the Stealer's Trap. Hence, it was found that this play space necessitated joint focus of attention of participants to a loose part material to initiate the development of intersubjectivity.

6.2.4 Meta-communication to loose parts materials during sociodramatic play.

The array of play possibilities presented by the physical manipulative nature of loose parts materials, required interacting participants to negotiate and agree on collective symbolisms for each material or group of materials in use. The concept of using an object during play as a symbolic substitute for something else is referred to as object substitution (Vygotsky, 1967) and is a sign of a mature stage of play as it signifies that a child can substitute an object for meaning. During this study, meta-communication occurred when participants agreed on the symbolic/pretend meaning of a loose parts material instead of the actual meaning of a loose parts material

Meta-communication during trading play, was evident when interacting participants appeared to implicitly/explicitly agree on a symbolic use of loose parts materials as objects to use as bartering tools. Loose parts materials were assigned pretend/symbolic values evident through the development of negotiations and exchanges of loose parts materials between interacting and trading participants. In some cases, the assigned meanings and values of a material reflected societal influences and practices. For example, pipes were frequently used as 'megaphones' to announce and advertise sales or discounts, milk crates and containers were frequently used to construct shop counters for trading with special areas designated as discount sections. Hence, common societal trading practices were observed to be implemented and developed by the participants.

Meta-communication during coordinated stealing play was observed when participants, engaging in coordinated stealing, implicitly agreed on the symbolic use of certain loose parts materials as tools to use for stealing. For example, pieces of hardboard were used as shields for camouflage behind which to hide approaching thieves. Likewise, meta-communication in protection play was observed when the 'Stealer's Trap' group symbolically used loose parts materials as tools to catch potential thieves through elaborate planning.

6.2.5 Communication around loose parts materials during sociodramatic play.

Communication, the actions and language necessary to construct shared meanings around joint focus of attention and meta-communication, was dominated by maintenance interactions throughout play episodes of trading, organised stealing and protection. Maintenance interactions were defined as verbal and non-verbal forms of communication employed by participants to initiate and sustain play. During trading play, maintenance interactions in the form of trading requests, negotiations and advertising dominated communication interactions, while the use of explanations and instructions were prevalent in both coordinated stealing play and protection play.

Howe and colleagues (2005), Parsons & Howe (2013) and Whitington & Floyd (2009) suggested that intersubjectivity can be constructed by pre-school children through communicative strategies such as extensions, introductions, build-ons, prosocial statements and acceptances. This current study augments this literature by observing similar communicative strategies employed by this study's group of senior primary participants in the form of agreement, maintenance and clarification interactions, with maintenance interactions dominating. In this study, explanations and instructions formed common

communication interactions around loose parts materials during sociodramatic play. Trading requests, negotiations and advertising were also prevalent - communication strategies not previously reported in either loose parts play literature or intersubjectivity literature, to my knowledge. Thus, the dominance of these communication strategies, requiring complex levels of negotiated shared meanings, differ somewhat from findings reported in previous studies based on pre-school aged children.

As this study explored senior primary aged children at play, such advanced communication strategies reflect more mature stages of cognitive development and different social situations of development. Thus, the sustained themes of sociodramatic play which consistently emerged each week for extended periods suggest the ability of older children to maintain more complex interactions. This is reflective of Göncü's (1993) observation of developmental changes between younger and older preschool age children, noting that older pre-schoolers more successfully employed communication strategies to facilitate the creation of shared meanings.

Intersubjectivity literature considered in the Literature Review chapter of this thesis focussed on children in a pre-school setting, thus this study contributes further to the literature by offering a school aged population for consideration. Findings reported in this study found that all sociodramatic play episodes continued for long periods of time, many not terminating until the researcher indicated it was time to finish at the end of the session. This suggests an ability by older children to negotiate, sustain and adapt to changing dynamics of intersubjective play. These findings concur with literature which indicates that longer social interactions result in complex play leading to higher levels of intersubjectivity (Garte, 2014). Indeed, prior research also suggests that longer durations of intersubjective interactions are most likely to develop into complex forms of collaboration (Garte, 2010). The findings in this study also reflect sociocultural theory of cognitive development of progression through

age periodisation, where children of primary school age are generally motivated to continue their learning and maintain their play interactions for long periods. The next section discusses links between intersubjective interactions and progressions to collaborative behaviours.

6.3 Key finding two: Within sociodramatic play intersubjective interactions mediated by loose parts materials can lead to collaborative interactions and collaborative outcomes

This key finding addressed the second research question: 'To what extent does the development of intersubjectivity lead to collaboration as an outcome of interactional activity?'. In response to key finding two, collaborative interactions and collaborative outcomes arising from intersubjectivity are discussed in the next sections. Collaborative interactions were defined as occurring when two or more group members worked together on the same task towards achieving joint intentions/goals through utilising loose parts materials as tools of play. Collaborative outcomes were established upon completion of activities or achievement of shared intentions or goals which group members could not have successfully completed alone. Collaborative outcomes were also coded when group members worked together to successfully create something new, including new play themes.

6.3.1 Intersubjectivity arising from sociodramatic play with loose parts materials always resulted in collaborative interactions.

Within sociodramatic play it was observed that once the three elements of intersubjectivity were established within interactions of trading, organised stealing and protection, intersubjectivity always developed into collaborative interactions. This is a significant finding because it offers an insight into the development of collaborative processes established in loose parts play spaces during sociodramatic play of this age group.

Moreover, this finding is noteworthy because it suggests that collaborative interactions can be mediated by loose parts materials during sociodramatic play therefore contributing to the achievement of curriculum goals. As discussed in the introduction chapter, the development of collaboration skills is recognised globally (Partnership for 21st Century Learning Skills, 2016; World Economic Forum, 2015; Wright et al., 2013) and nationally (Australian Curriculum Assessment and Reporting Authority, 2013; Queensland Curriculum & Assessment Authority, 2017) as important learning outcomes for 21st century learners. The ability to successfully work in teams, negotiate and communicate effectively are targeted as vital collaborative skills for learners in an increasingly connected world. This study suggests that the provision of low cost easily implemented play interventions, such as the introduction of recycled loose parts materials, can complement the development of collaborative behaviours in primary play spaces.

Collaborative interactions and outcomes were frequently evident in this study where trading activities demonstrated implicit or explicit agreement of shared intentions amongst participants when members showed joint commitment to exchanging/bartering loose parts materials for other loose parts materials. Likewise, collaborative interactions and collaborative outcomes were evident in complex coordinated stealing play where members of the Chinese Dragon groups and the Thieves group demonstrated shared intentions to engage in stealing raids which had the potential to benefit their group as a whole. Similarly, the 'Stealer's Trap' group always demonstrated collaborative behaviour of shared joint intentions to use loose parts materials as a trap to ensnare thieves. In addition, participants were frequently observed to physically help other group members to achieve those shared intentions demonstrating collaborative interactions. These findings are important because they suggest that loose parts materials form vital mediating tools for the development of collaborative behaviours arising from intersubjective interactions.

Mahony and colleagues (2017) noted more cooperative type play and purposeful collaboration emerging from a primary playground comprised solely of loose parts materials, in comparison to a fixed structure playground. Children in that study were reported to show persistence in developing teamwork and, as in this current study, showed planning for common goals. This study adds to the literature by showing that the creation of shared meanings always leads to collaborative interactions around loose parts materials, thus suggesting a role for outdoor loose parts play spaces in supporting the development of collaboration skills in primary schools.

6.3.2 Collaborative interactions arising from intersubjectivity frequently, but not always, developed into collaborative outcomes.

It was observed that collaborative interactions (arising from intersubjectivity) frequently, but not always, developed into collaborative outcomes. This finding is interesting and provides new insight into the ways in which loose parts materials can support peer interactions resulting in collaborative interactions and collaborative outcomes. The findings show that the materials acted as tools to mediate the development of sociodramatic play themes and strategies which required complex peer negotiation of shared meanings and understandings. In all play episodes, which were observed to show joint focus of attention, meta-communication and communication around a loose part material, peer group members always displayed collaborative interactions of shared intentions to work together on a joint activity. The loose part materials always became the collective focus of the group as the peers centred their meaning making around the material. This shows joint peer motivation to construct shared meanings leading to collaborative interactions necessary to enable the continuity of play.

Collaborative interactions frequently developed into collaborative outcomes during, for example, trading play episodes when there was successful bartering/exchanges of loose parts materials for sale. However, when trading groups could not agree on exchanges, trading play episodes did not result in collaboratively achieved outcomes. Similar observations were noted during stealing and protection play episodes, that is, collaborative interactions frequently but not always developed into collaborative outcomes. These findings are important as they indicate that collaborative outcomes regularly developed from collaborative interactions arising from intersubjectivity mediated by loose parts materials.

Relating these findings to sociocultural theory, loose parts materials were always observed to act as tools mediating between the subjects (peers) and the object (intersubjectivity). Collaboration as an outcome of mediation (in the form of collaborative interactions within peer groups) was always observed to arise from intersubjectivity, while collaborative outcomes between peer groups frequently but not always occurred. Interacting peers, although of approximately the same chronological age, were likely operating at different levels of cognitive development and within different zones of proximal development. Sociocultural theory suggests that different zones of proximal development (Vygotsky, 1967) in play can be collaboratively supported by more knowledgeable peers (Karpov, 2003) as they collectively share and interpret ideas to further develop play themes. This concept can be applied to the findings of this study where it was observed that the establishment of mutual understandings during joint activity was intrinsic to the development of collaborative interactions and successful collaborative outcomes because agreement on play themes and strategies required negotiation between differences in individual perspectives in order to establish common shared understandings.

Therefore, in this study the concepts of tool mediation and zones of proximal development offer an understanding of the interpsychological and then intrapsychological

processes at work in an outdoor play space supported by loose parts materials, and thus give weight to the argument that the addition of outdoor loose parts play spaces can provide viable pedagogical approaches to outdoor play-based learning in primary schools.

6.4 Key finding one and two: What do they tell us about collaborative behaviours?

When read together, key findings one and two suggest three important ideas for contributing to the understanding of collaborative behaviours within loose parts play spaces amongst senior primary children. Firstly, establishing loose parts materials as the units of analysis is significant because this provides valuable insight into how children engage with and use the materials as tools of play. Secondly, loose parts materials mediate the co-construction of intersubjectivity acting as a precursor to collaborative behaviours, thereby providing a foundation for the development of collaboration amongst peers. Thirdly, play as a leading activity has pedagogical value in primary schools offering important contributions to developing key curriculum outcomes.

6.4.1 Loose parts materials as units of analysis.

In many studies on intersubjectivity in the Literature Review of this thesis (DeWolf, 1999; Garte, 2015; Howe et al., 2005; Parsons & Howe, 2013; Whitington & Floyd, 2009) socially interacting dyads or larger interacting groups formed the units of analysis. This current studied differed however by presenting the loose parts materials as the sole foci of analysis. Loose parts materials were analysed as mediating tools generating multiple play themes around which shared meanings could be developed. In this respect, focussing on the loose parts materials as units of analysis, and not the participating children, sought to provide a unique insight into how such tools mediated the negotiation and agreement of shared meanings, reflecting the cultural contexts of participant's local environments. By viewing the materials as the units of analysis, this study drew on Vygotsky's theoretical concept of tool

mediation in his theory of child development. In this study, as discussed in section 6.2.2, the loose parts materials (tools) mediated the relations between subjects (peers), object (intersubjectivity) and outcome (collaboration) during unstructured play around which shared understandings were negotiated between peers and subsequently internalised to develop higher mental functions. By viewing the materials as mediating tools, this study provided an interesting exploration of how loose parts materials supported the development of complex play themes such as trading and stealing during sociodramatic play.

6.4.2 Co-construction of intersubjectivity: a base for the development of collaborative behaviours.

This study showed that the establishment of intersubjectivity using loose parts materials can provide a foundation upon which collaborative behaviours are constructed. Loose parts materials were observed to act as essential mediating tools providing physical and contextual focus around which negotiation over the symbolic pretend meanings and play roles of loose parts materials became possible. The creation of shared meanings and play themes, externally developed in the social context of free play with loose parts materials, is theorised by Vygotsky (1978) to lead to internalisation of those mediated experiences (through internal reconstruction of the participants shared social external interactions) and develop into higher mental functions such as imagination, the formation of concepts, abstract thinking and voluntary attention.

Applying sociocultural concepts of the zone of proximal development (Vygotsky, 1967) to this loose parts play context, the more knowledgeable peers scaffolded the less knowledgeable peers in the development of intersubjectivity, with the latter internalising this new knowledge and subsequently applying it to future play episodes. It was observed that explanations and instructions were common communication interactions between peers and

groups of peers especially during episodes of coordinated stealing and protection play, thus suggesting the occurrences of peer assistance. For example, scaffolding was observed during Tom's step by step provision of guidance to Mario on how to successfully create a "Stealer's Trap" (detailed in section 5.2.6.1). In other examples, the Chinese Dragon group (detailed in section 5.2.4.1) and the Thieves group (detailed in section 5.2.4.2) coordinated their stealing plans through the use of instructions and explanations as more knowledgeable peers guided and directed less knowledgeable peers. Therefore, sociodramatic play mediated by loose parts materials acted as a bridging of current knowledge with newly acquired knowledge. Interacting peers built on previous understandings and experiences to comprehend new ideas, firstly on a social plane and then on an individual level, leading to an extension of play themes.

The findings suggest that the provision of outdoor loose parts materials to primary play spaces should be viewed as a viable pedagogical intervention in primary schools to develop collaborative skills and behaviours between interacting peers. It adds to the theoretical literature by suggesting that outdoor loose parts materials act as mediating tools to promote intersubjectivity by necessitating mutual/joint focus of attention to the materials to enable participants to jointly negotiate the symbolic play purpose of those materials. This study also adds to the literature by suggesting that unstructured play in a loose parts context creates zones of proximal development amongst interacting peers where the materials act as joint foci of attention around which more knowledgeable peers guide less knowledgeable others towards co-constructing shared meanings, shared intentions and shared goals. Building on the work of Mahony et al. (2017)**,** Bundy et al. (2009, 2011), Hyndman et al. (2014, 2017) and Engelen et al. (2013) which reported that play with loose parts materials facilitated opportunities for positive social outcomes along with cognitive and physical benefits, this

study offers a detailed exploration of the interactive social processes mediated by the materials, leading to collaborative behaviours.

6.4.3 Play, as a leading activity, has pedagogical value in primary schools.

The findings of this study argue a role for outdoor play-based learning, supported by loose parts, in primary schools. Play-based learning in Australia is generally adopted as a pedagogical approach within early childhood education settings. A national Early Years Learning Framework (EYLF) was introduced in 2009 and promotes a strong play-based focus to learning. The EYLF views play as an important vehicle for learning which provides pre-schoolers with opportunities to organise and understand their social environments, through interaction with social others, as well as objects and representations (DEEWR, 2009). Play-based learning thus forms key tenets of pedagogy in pre-schools. Play in children aged 3-7 years old (pre-school and lower primary years) is theorised from a Vygotskian perspective, to form a leading activity (discussed in 3.3.1) central to cognitive development, bridging two central psychological functions of emotions and memory.

Play as a leading activity is formed through the development of imagination which acts as a new psychological function arising from a child's existing knowledge, consciousness and self-awareness (Edwards, 2011). Imagination as a new psychological function is theorised to emerge from imagination in action (social situation of development) characterised by a change in the relationship between the adult and the child (Kravtsova, 2006). Applying sociocultural concepts, imagination as a psychological function is viewed as the child making connections to reality and interacting with her social and cultural world (Edwards, 2011). Sociocultural theory thus informs the majority of pre-school educational environments and some lower primary settings (Foundation to Year Two) by implementing key pedagogical approaches of play-based learning.

In senior primary school year groups (Years 3-6) however, there are fewer opportunities for play as the curriculum is more academically focussed and formalised than in early childhood and lower primary settings. Learning in primary schools is more teacher directed and instructional (Jay & Knaus, 2018) with less provision for student directed play inside the classroom. Sociocultural literature theorises that once play as a leading activity is mastered by pre-school or lower primary school children, children progress to a new social situation of development known as collective theorising. This social situation of development provides the basis for the emergence of a new psychological function of attention, which in turn supports the development of learning activity as the next leading activity (Edwards, 2016). It is theorised that children progress through this age period from the ages of 7-10 years. During this age period, children become self-aware that they are required to engage in learning with others at school in order to progress their development in literacy, numeracy and other learning areas. Guided by teachers and a formal curriculum, primary students of this age are theorised to develop a learning motive to master knowledge and skills necessary for progression through the different year levels and academic milestones. As a result, the concepts of leading activity suggest that formal learning becomes the leading activity for primary school children, particularly in senior primary years, and thus leads the child's development (Wong & Fleer, 2013).

In the context of this study and age group of participants (10-11 years), loose parts materials (units of analysis) acted as tools positioned within play (leading activity) and engaged in imagination in action with those tools (the social situation of development). Despite imagination being theorised as a higher mental function for 3-7 year old children, this study indicates that the development potential of Vygotsky's concepts about play (as a leading activity) can be applicable to older primary age groups. In this study of play in senior primary children (subjects), new psychological functions of imagination, complex

communication, meta-communication and the creation of shared meanings (object) mediated by loose parts materials (tools) resulted in highly desirable curriculum outcomes of collaboration (outcome). This study showed that intersubjective interactions arising from the development of complex communication and meta-communication skills can lead to collaboration supported by the children's engagement with those loose parts materials through play. Therefore, the value of play as a leading activity for older primary aged children is significant, offering important contributions to developing key curriculum outcomes.

In primary schools, more opportunities for play and its associated learning outcomes can exist outside of the classroom within school playgrounds. However, in some primary schools the provision of traditional, sometimes uninspiring, playground equipment, risk adverse playground rules and overcrowded spaces (Chancellor, 2013) limits the development potential of play. Therefore, the findings from this study suggest a pedagogically useful role for outdoor loose parts play spaces within primary schools.

In sum, the findings suggest that once intersubjectivity around materials was established, participants engaged in collaborative interactions where they employed a range of collaborative strategies towards achieving a common goal/outcome or new play idea which benefitted the group as a whole. Thus, this study suggests that the co-creation of shared meanings in a loose parts play context provides a base upon which to further develop collaborative behaviours, acting as a precursor to the establishment of collaboration, desirable skills for learners in the 21st century.

6.5 Conclusion

Recognising the need for increased investigation into the relationships between school children's social development and the design of school playgrounds (Mahony et al., 2017),

this study adds to the body of literature on outdoor loose parts play spaces by suggesting that the inclusion of loose parts materials to play facilitates the negotiation of shared meanings by older primary children leading to collaborative behaviours. These findings are worthy of attention as collaboration skills are emphasised as important educational competencies in the 21st century both in Australia and globally (ACARA, 2013; Partnership for 21st Century Learning Skills, 2016; QCAA, 2017; World Economic Forum, 2015; Wright et al., 2013). In the Australian Curriculum, the ability to work collaboratively is identified as a sub-element of the Personal and Social Capability learning continuum, where students from foundation to year six are expected to share experiences of cooperation in play and group activities; learn to identify cooperative behaviours in a range of group activities; learn to describe characteristics of cooperative behaviour and identify evidence of these in group activities; and learn to contribute to groups and teams, suggesting improvements in methods used for group investigations and projects (ACARA, 2013).

This chapter discussed the two key findings which arose in response to the research questions. With regards to research question one, it was found that the loose parts materials always operated as tools to mediate the development of intersubjectivity within sociodramatic phases of play. The open-ended flexible and manipulative nature of the materials acted as a catalyst for the establishment of joint focus of attention between participants, forming central focus points of interactional activity. To progress play around the materials, participants jointly negotiated and agreed on collective symbolism and pretend meaning for each of the materials, while employing complex communication strategies in the form of agreement, maintenance and clarification interactions to consolidate all shared meaning making.
In relation to research question two, the extent of collaborative behaviours arising from intersubjective interactions during sociodramatic play varied. The findings suggested that

intersubjectivity always led to collaborative interactions. Furthermore, collaborative interactions frequently progressed to collaborative outcomes. However, collaborative outcomes did not always develop from collaborative interactions, as this was dependent on successful trading interactions or the successful implementation of stealing and/or protection strategies.

It has been established from the key findings that analysing loose parts materials as the sole foci of analysis enables meaningful insight into the verbal and non-verbal negotiation and communication processes within a loose parts play space. By focusing on loose parts materials as the units of analysis, the data revealed findings which suggested that loose parts materials acted as important mediational tools in the development of intersubjectivity. This study showed that play with outdoor loose parts materials can be pedagogically beneficial to senior primary aged children in developing higher mental functions of imagination, abstract thinking, voluntary attention, logical memory and the formation of concepts through the negotiation of intersubjectivity.

The findings, framed by sociocultural theory, further suggest that the establishment of intersubjectivity provides a foundation upon which to subsequently build collaborative interactions and outcomes. The findings also suggest that the value of play as a leading activity for older primary aged children is significant, potentially offering important contributions to developing key curriculum outcomes. Therefore, this study strongly suggests that the addition of loose parts materials to outdoor school play areas provides an important pedagogical approach to complementing the development of collaborative behaviour, highly desirable outcomes for students in the 21st century.

Chapter 7: Conclusion chapter

7.1 Introduction

This chapter lays out a concluding overview to the thesis. The significance of the contribution of this study to extending existing knowledge about the role of outdoor loose parts materials in developing collaborative behaviour is articulated through a reprise of the research questions and key findings. In addition, practical implications for the research are discussed, along with the limitations of this project. Finally, further questions arising from the study are proposed.

7.2 Restatement of the research questions

In this thesis, collaboration skills were presented in global, national and state contexts as important learning outcomes for new millennium learners. At a national level in Australia, the ability to collaborate with others is recognised in the Social Management components of the Australian Curriculum. Play was presented as a vehicle for complementing the development of collaboration skills although, in Australian primary schools, increased focus on academic learning outcomes has resulted in less opportunities for play-based learning. Indeed, in many primary schools, play is increasingly limited to school yards and playgrounds during lunch breaks. It was thus recognised that play equipment and materials in these recess areas should provide quality learning opportunities and pedagogical support, based on empirical research, to complement the achievement of learning outcomes such as the development of collaboration skills.

Loose parts materials were identified as potential play tools for the development of collaboration and relevant literature about loose parts play was reviewed. Additional bodies of literature were examined to gain deeper insight into the research problem, specifically

literature relating to concepts of collaboration in educational settings and literature relating to intersubjectivity, a sociocultural concept suggested as important to establishing collaboration. Identifying an under explored area in the reviewed literature, the purpose of this research study was to explore how play with loose parts materials has the potential to mediate the development of collaboration skills.

Intersubjectivity, a sociocultural concept interpreted as the creation of shared meanings and understandings (Garte, 2015; Ligorio et al., 2005; Stahl, 2016; Whitington & Floyd, 2009) was established through the review of collaboration literature as an influencing factor in the development of collaboration amongst children. Therefore, this study focused on exploring how loose parts materials acted as tools to mediate the development of intersubjectivity during unstructured play between senior primary aged peers. This study further explored how collaborative behaviours subsequently arose as outcomes from intersubjective interactions around those loose parts play materials. Hence the following research questions were examined over the course of the study:

1. How do loose parts play materials operate as tools during outdoor free play to support the development of intersubjectivity?
2. To what extent do the identified occurrences of intersubjectivity lead to collaboration as an outcome of interactional activity?

7.3 Engagement of the research questions

Guided by the philosophical concepts of social constructivism and framed by sociocultural theory, this thesis qualitatively engaged the research questions through a micro-ethnographic approach to methodology. Micro-ethnography was chosen as a methodology because it offered a holistic interpretation of peer interactions as participants co-constructed meaning and context within unstructured play with the loose parts materials. Vygotsky's concepts of tool mediation and zone of proximal development were used to provide a

framework for understanding the complex social relations and development processes enabled by loose parts play materials. Thus, interactions between the participants (subjects) and outdoor loose parts materials (tools) were micro-analysed through video enabled observations, observation notes and photographs to explore occurrences of intersubjectivity (object) leading to collaborative practices (outcome). Video observations, observation notes and photographs were employed as the primary methods of data collection and were subjected to a priori coding during data analysis.

7.4 Overview of the findings

Data analysis generated two key findings, each of which revealed a number of themes relating to intersubjectivity and collaborative type behaviours. Key finding one found that loose parts materials operated as tools to mediate the development of intersubjectivity within three sociodramatic play patterns: trading play, stealing play and protection play. Three themes of intersubjectivity were identified within the sociodramatic play patterns between interacting participants;

1) Intersubjectivity theme one found that trading play necessitated the implementation of maintenance interactions such as trading requests, negotiations and advertising.
2) Intersubjectivity theme two found that coordinated stealing play necessitated the development of maintenance interactions such as explanations and instructions.
3) Intersubjectivity theme three found that protection play necessitated the development of maintenance interactions such as explanations and instructions.

Key finding two showed that within the identified patterns of sociodramatic play, intersubjective interactions mediated by loose parts materials always led to collaborative interactions (interpreted as two or more group members working together on the same task towards achieving a shared intention/goal with the same group of loose parts materials) and

frequently resulted in collaborative outcomes (interpreted as the completion of activities or achievement of shared intentions or goals, or the successful creation of something new that group members could not successfully complete alone when engaged with loose parts materials). Four themes of collaborative interactions and collaborative outcomes were established within this key finding:

1) Collaboration theme one found that collaborative interactions always arose from intersubjectivity in trading play through the development of shared intentions, the use of 'we' statements, the sharing of loose parts materials and through helping other group members.

2) Collaboration theme two showed that collaborative outcomes frequently developed from collaborative interactions through the achievement of shared intentions in trading play.

3) Collaboration theme three revealed that in coordinated stealing play, collaborative interactions always developed from intersubjectivity which then frequently led to collaborative outcomes through the achievement of shared intentions.

4) Collaboration theme four showed that during protection play, collaborative interactions developing from intersubjectivity frequently led to collaborative outcomes such as the achievement of shared intentions and the creation of new ideas.

These findings showed that loose parts materials operated as tools during three patterns of sociodramatic play to positively mediate the development of intersubjectivity amongst groups of participants by promoting joint focus of attention to the materials, meta-communication about the symbolic use of the materials and communication around the materials. In addition, it was established that the three elements of intersubjectivity identified within the three patterns of sociodramatic play always developed into collaborative interactions. The findings also showed that collaborative interactions frequently, but not always, developed into collaborative outcomes.

7.5 Significance of research

This research contributed to knowledge in the following ways:

7.5.1 Contribution to knowledge: methodological approach.

This study provides a valuable approach to establishing methodological boundaries for data analysis. By focusing on the loose parts materials as the major unit of analysis, and not on the participants as in other studies reviewed in the literature, this research offers a novel insight into how the materials acted as mediating tools during the creation of intersubjective play episodes. This approach focused on directly studying the role of loose parts materials in creating intersubjectivity and subsequent collaborative behaviours by analysing the materials in the context of the relationships they mediated. Drawing on Vygotsky's (1967) concepts of tool mediation the materials were analysed to explore the relationships between subjects (peers from the same school year group aged 10-11 years old), object (intersubjectivity created) and outcome (collaborative behaviours arising from intersubjectivity) during unstructured play. Therefore, viewing the actual materials as the units of analysis instead of the children offered a different focus of study providing insight into the mediating properties of those play materials.

This is of academic value and offers an interesting perspective on how loose parts materials supported the development of complex play themes such as trading, stealing and protection during sociodramatic play, around which shared meanings and subsequent collaborative behaviours developed.

7.5.2 Contribution to knowledge: new understandings of how collaborative behaviours can be achieved.

This study illustrates new ways of understanding how collaborative behaviours in the form of collaborative interactions and outcomes can develop amongst older primary aged

children. Suggestive evidence for the potential of loose parts materials to act as tools during play to create intersubjectivity between interacting peers is shown in this research. Findings reveal how the materials were used to establish three elements of intersubjectivity (joint focus of attention to materials, meta-communication; and communication) to negotiate and develop sociodramatic play themes. Intersubjectivity is suggested by sociocultural literature as important to the development of collaboration (Göncü, 1993). This research project substantiates this idea by showing that intersubjective episodes of sociodramatic play mediated by loose parts materials always resulted in the development of collaborative interactions between participants and often resulted in collaborative outcomes. This is of academic merit as the findings indicate a correlation between play with loose parts materials and the development of intersubjectivity leading to collaborative behaviours. Specifically, the findings showed that once joint focus of attention, meta-communication and communication in the form of maintenance interactions within sociodramatic play were observed, then collaborative interactions always followed.

Vygotsky's conceptualisation of zones of proximal development (1967) was evident in this study as interacting peers collectively shared and collectively interpreted imaginative ideas based on the materials, which were necessary to establish common understandings of how to progress play in order to achieve joint intentions and goals. This is significant as it suggests to education practitioners that play opportunities with loose parts materials enables the cocreation of intersubjectivity which in turn can lead to the development of collaborative interactions and collaborative outcomes within sociodramatic play. Such collaborative behaviours can be related to sub-elements of the Personal and Social Capability learning continuum of the Australian Curriculum as discussed in the Chapter Five.

7.5.3 Contribution to knowledge: new understandings of how play can act as a leading activity in senior primary aged children.

Findings, of particular interest from this study, clearly establish that play as a leading activity has pedagogical value to senior primary year groups. This thesis drew from Vygotsky's (1967) conceptualisations of play as a leading activity for pre-school and lower primary aged children (3-7 years old) to argue that Vygotsky's concepts about play can also be applied to older primary children. In this research, senior primary peers interacted with loose parts materials to develop new psychological formations of imagination. Imagination, as a new psychological function, is theorised to express features of the children's consciousness and self-awareness (Edwards, 2011). In this study's age group of participating children, imagination was reflected in the participant's use of complex communication and meta-communication to successfully negotiate shared meanings, which ultimately led to desirable curriculum outcomes of collaborative behaviours.

This study thus substantiates Vygotsky's writings and further suggests to education practitioners that play should be considered as a leading activity applicable to older primary aged children. This research advocates for an elevation in the pedagogical status of play-based learning for older children and calls for increased opportunities for outdoor unstructured play. In addition, recognition of play as an important learning vehicle for older primary children should encourage the provision of play materials which are empirically shown to provide quality learning opportunities. This research supports the provision of loose parts materials in achieving important social management elements of the Australian Curriculum.

7.6 Practical implication of research

The findings of this study offer new ways of understanding how a loose parts play space can promote the development of collaborative behaviours amongst primary aged children. This research shows that loose parts play is a pedagogically useful and cost effective approach to providing opportunities for schools to foster the development of collaboration skills, skills which are recognised globally and nationally as highly desirable learning outcomes for millennium learners. This study substantiates Vygotsky's concepts of play as a leading activity, thus adding theoretical gravitas to the application of play to achieving curriculum outcomes with senior primary students.

These findings are of benefit to educational practitioners, particularly primary teachers and school principals. This research may encourage such practitioners to consider providing play spaces incorporating loose parts materials (subject to relevant Workplace Health and Safety (WHS) risk assessment reviews applicable to their particular institutions). Schools choosing to introduce loose parts play spaces would require minimum funding or budgetary planning as the recycled loose parts materials used in this study were discarded items of no monetary cost. All items were sourced from a range of resource recovery centres, kerbside collections, charity shops or from used giveaway items from local businesses. Schools could also consider reaching out to parents and caregivers for donations of suitable materials, thereby generating school community involvement and community interest in school play spaces.

7.7 Limitations of this study

In an attempt to identify potential limitations that may alter data collection, analysis or findings, this study acknowledged that both the video camera and researcher, as tools of observation, may have influenced the behaviour of the participants and therefore distorted the

data (Jewitt, 2012). This unintentional consequence of participant observations is known as the Hawthorne effect which "concerns research participation, the consequent awareness of being studied, and possible impact on behaviour" (McCambridge, Witton, & Elbourne, 2014). Literature suggests that participants can become acclimatised to the camera over short periods of time, "Throughout our studies of a diverse range of settings and activities we found that within a short time, the camera is 'made at home'. It rarely receives notice or attention and there is little empirical evidence that it has transformed the ways in which participants accomplish actions" (Heath, Hindmarsh, & Luff, 2010, p. 49). Rosenstein and Sheva (2002) similarly recorded experiences of participants behaving self-consciously for approximately twenty minutes before appearing to forget about the camera's presence.

As discussed in section 4.6.1, a familiarisation program was originally planned prior to the commencement of actual data collection. However, due to the richness of data observed during this first familiarising session, it was decided to include the footage in the analysis. Throughout the observations, the researcher was very conscious of the participants observing her, and hence made annotations in the observation notes whenever she noticed a participant glancing at or verbally addressing her or the camera (refer to Table 7.1).

Table 7.1

Observed incidences of camera awareness

Week 1	***Week 2***	***Week 3***	***Week 4***	***Week 5***	***Week 6***
5	*2*	*2*	*2*	*0*	*2*

This table suggests that as the study progressed there were decreased levels of observed camera awareness. Although week six recorded two occasions of camera awareness, both were from a new participant who joined the sessions in week five and therefore was less acclimatised to the camera than the other participants.

Secondly, it was decided not to include interviews in the data collection so as to minimise inconvenience to the school and to the specific year group in the study. To facilitate interviews, children would have been required to miss out on either timetabled free time or timetabled academic learning time. More importantly, it was decided that as the unit of analysis was the loose parts materials, interviews of the participants were unnecessary. Therefore, this study relied on the three described methods of data collection to provide sufficiently rich data sets.

Acknowledged previously in section 4.9, transferability of findings to other studies might possibly be limited as the data generated by this research may deviate from future projects due to different groups of participants co-creating different play themes with the loose parts materials.

7.8 Further questions arising from this study

This study has contributed new knowledge to how loose parts materials are used by children as mediating tools to achieve collaborative behaviours. There is however potential for further research that can extend into other play contexts. It would be of value to expand the research to include other novel play contexts such as outdoor nature play spaces, where naturally occurring loose parts materials (for example, leaves, sticks, logs, stones, seedpods) are incorporated as mediating tools of play during unstructured play. Exploration of the development of collaboration skills along with other important 21st century learning skills such as creativity, critical thinking and communication skills within natural play settings could add to the body of loose parts play and nature play literature.

It would be useful to expand the methods of research in these new contexts to include video simulated recall interviews which invites participants to view themselves in action during play and reflect verbally on their interactions and actions as they occurred. This

technique can provide more insightful data for exploring participant's motivation for use of the loose parts materials and reflections on their own interactional processes.

This current study observed how the loose parts materials were used by children of approximately the same age from the same year group, during timetabled weekly observation sessions. It would be of value to explore if the materials mediate collaboration amongst mixed age children from different year groups, during outdoor free play at lunch times. Research conducted over a wider sample of participants would take into consideration differences in ages, year groups and preferential play choices at lunchtimes. It would be interesting to explore the potential of natural and/or recycled loose parts materials in developing collaboration, as well as creativity, critical thinking and communication skills amongst a mixed sample group of participants.

7.9 A personal perspective

Back in 2016 when I established the Creative Corner, despite noticing that my students became physical engaged with the materials and as a result more physically active, my curiosity was piqued regarding the further possibilities for play with loose parts materials to develop collaboration.

As a practising Health and Physical Education teacher I envisioned the potential value for this type of play in complementing learning experiences relating to social management for primary students. Noticing positive social and collaborative interactions amongst my students at play with loose parts materials within the Creative Corner, I was intrigued as to why the materials facilitated collaborative behaviours and felt that this area of the literature required deeper insight.

This research journey involving a convenience sample of Year Five participants, who were not connected in any way with my Creative Corner students in 2016, has provided me

with this insight and more importantly an appreciation of the power of theory to conceptualise the research problem. As a result of this study, my engagement with the theory has transformed how I think about processes of collaborative interactions in the context of loose parts materials as mediating tools. This study has prompted me to think about the underlying factors which support the development of collaborative behaviours, specifically the cocreation of shared meanings and understandings, and the ways in which primary aged children interact to negotiate these.

Engagement with the theory enabled me to comprehend the broader significance and the interconnectedness of the findings, thus illuminating the externally negotiated process of intersubjectivity, centralised around the mediating materials, leading to internalisation of those co-created understandings and subsequent outcomes of collaboration. I found it inspiring to observe the activation of zones of proximal development between the children as they guided and instructed each other towards mastering key psychological tools around concepts of trading and trading related language, when attempting to create and achieve shared goals.

This study has reinforced and consolidated my beliefs in the role of outdoor play as an important avenue for learning amongst primary aged children. I have found it stimulating to learn that the concept of play as a leading activity, traditionally reserved for younger primary aged students, is also significant to cognitive development in older children. I feel that an understanding of the theory has helped me to contribute to the argument for more outdoor play for this age group, facilitated by inspiring play materials such as recycled loose parts materials as in the case of this study.

As a result of this study, I have changed as an educator and feel that my personal orientation towards play with loose parts materials is pedagogically deeper, richer and more committed. Although this was a small micro-ethnographic study, my hope is that it will

illuminate possibilities for new pedagogies relating to the development of social management skills and be of value to other teachers.

7.10 Conclusion

This chapter revisited the context of the research problem and the two research questions seeking to explore the research problem. A brief summary of the main findings was presented, along with the significance of those findings in terms of contribution to the literature and value to educational practitioners. Limitations to the study were recognised and further research was outlined in order to address those limitations. The chapter concluded with a personal reflection from the researcher as she acknowledged how this research journey had instilled a deeper awareness and appreciated for the processes of collaboration ignited by outdoor loose parts materials in an unstructured play environment.

Postscript

Subsequent to the completion of this research project, I was delighted to receive contact from the principal of the participating school requesting assistance with establishing a permanent loose parts play place for lunchtime play. As a result, I organised the provision of a range materials and a storage solution in the form of large lockable plastic Bunnings weather proofed containers. I also suggested that the principal reach out to the wider school community (parents and caregivers) to donate suitable used materials (subject to inspection by school management) to the play space in order to keep the supply 'topped up'. This has received a positive response with regular donations being received.

Recent email correspondence with the school principal reported the permanent loose parts play space as proving very popular with the children, teachers and parents.

"Loose parts play has been AMAZING!

The kids love it and the teachers think it has been great. Parents also comment on how good it's been. I see the kids interacting with the space and parts every day!"

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Appendices

Appendix A: HREC Approval Letter

AUSTRALIAN CATHOLIC UNIVERSITY

Human Research Ethics Committee
Approval Form

Principal Investigator/Supervisor: Prof. Susan Edwards

Co-Investigators:

Student Researcher: Honor Mackley (Coursework)

Ethics approval has been granted for the following project:
Mediating collaboration through shared meanings, the value of outdoor loose play parts in primary schools.

for the period: 31/12/2018

Human Research Ethics Committee (HREC) Register Number: 2017-349H

This is to certify that the above application has been reviewed by the Australian Catholic University Human Research Ethics Committee (ACU HREC). The application has been approved for the period given above.

Researchers are responsible for ensuring that all conditions of approval are adhered to, that they seek prior approval for any modifications and that they notify the HREC of any incidents or unexpected issues impacting on participants that arise in the course of their research. Researchers are also responsible for ensuring that they adhere to the requirements of the *National Statement on Ethical Conduct in Human Research,* the *Australian Code for the Responsible Conduct of Research* and the University's *Code of Conduct*.

Any queries relating to this application should be directed to the Research Ethics Manager (resethics.manager@acu.edu.au).

Kind regards

K. Pashley

Date 8 03 2018
Acting Research Ethics Manager

Research Ethics | Office of the Deputy Vice-Chancellor (Research)
Australian Catholic University
T: +61 2 9739 2646
E: Res.Ethics@acu.edu.au
W: ACU Research Ethics

Appendix B: Department of Education Approval Letter

Queensland Government

Department of Education

5 March 2018

Mrs Honor Mackley

[redacted]

Dear Mrs Mackley

Thank you for your application to conduct research in titled 'Mediating collaboration through shared meanings, the value of outdoor loose play parts in primary schools'. Research Services has reviewed your application on behalf of the Department of Education and can confirm that the methodology of the study and all associated instrumentation and documentation align with the Department's Research Guidelines.

While this letter confirms that your research is suitable for administration in a school site, it is not official departmental approval to conduct your research. The school principal of the school nominated in your application will need to decide whether or not departmental approval will be granted and will supply you with an official letter notifying you of the final decision.

In the first instance, please provide the school principal with the attached letter which will assist the principal in choosing whether or not to approve your research. As with all research conducted in Queensland State schools, should you be granted approval, you will be bound by the Terms and Conditions of conducting research available at http://education.qld.gov.au/corporate/research/terms_conditions.pdf

Should you require further information on the research application process, please feel free to contact the Senior Research Officer, Strategic Policy and Intergovernmental Relations on (07) 3034 5929. Please quote the file number 560/27/1961 in future correspondence.

I wish your study every success

Yours sincerely

Dr Angela Ferguson
Director
Research Services
Strategic Policy and Intergovernmental Relations

Education House
30 Mary Street Brisbane 4000
PO Box 15033 City East
Queensland 4002 Australia
Telephone (07) 3034 5929
Website www.det.qld.gov.au
ABN 76 337 613 647

Appendix C: School Approval Letter (deidentified)

[redacted]

9 March 2018

Dear Honor

Thank you for submitting an application to conduct research in [redacted]

As your application complies with Department Research Guidelines and has been approved by the Director of Research Services, I am happy to further approve your research, titled 'Mediating collaboration through shared meanings, the value of outdoor loose parts in primary schools' to be conducted in our school during Term 2, 2018.

Yours sincerely

[redacted]

Principal

[redacted]

Appendix D: Class information and safety session

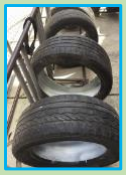
7/1/19

Who am I?
Honor Mackley

- PE Teacher
- Researcher

What is a research study?

- Helps us to learn new things
- Helps teachers and educators to try out new ideas for teaching and learning




How do primary students like you play with fun loose parts materials?

This Research Study

If you decide to be in this research, you would

play with the loose parts

feel OK about me taking video recordings and photographs of you

Important things to know

- **You** decide if you want to take part or not
- You can say NO or you can say YES
- If you say YES, you can always say NO at any time later
- Your de-identified images might be used in publications and presentations
- De-identified images mean your faces are blurred so no one can know it is you

What if you don't want to take part in the research study?

- It's ok not to want to take part
- No one will be upset
- You will stay in a classroom and be supervised by a teacher

1

You want to take part, what do you do now?

1. Read the child assent form and ask me any questions you might have
2. Take your assent form and parent information/consent letters home for your parents or guardians to read
3. Both you and your parents sign the assent and consent forms if you are both happy to take part
4. Bring the forms back to the office by Friday

Important!

You can only take part in the research study if your parents or guardians give their permission

Every week before we start, I will ask you

if you are happy to play and be videoed/photographed

Every Tuesday afternoon during Term 2
2.20pm- 2.50pm

When is the research study?

Let's be safe!

My job

Mr. Shearer's job

- To observe you quietly with the video
- Not to talk to you
- ***Pretend that I am invisible***
- To supervise you
- To answer any questions
- To help you if you get hurt

Appendix E: Child Assent Form

AUSTRALIAN CATHOLIC UNIVERSITY

CHILD ASSENT LETTER

PROJECT TITLE:	**Mediating collaboration through shared meanings, the value of outdoor loose parts play in primary schools.**
HREC REGISTRATION:	**2017-309H**
PRINCIPAL INVESTIGATOR:	**Professor Susan Edwards**
STUDENT RESEARCHER:	**Honor Mackley**
STUDENT'S DEGREE:	**Master of Education (Research)**

Who am I?

I'm Honor Mackley and I'm a Physical Education teacher- I love PE classes!
I also like to do research studies.

What is a research study?

Research studies help us learn new things. We can try out new ways of learning and ideas. This information tells you about my research and the choice that you can make to take part in it. I want you to ask me any questions that you have at any time.

Important things to know…

- You get to decide if you want to take part.
- You can say 'No' or you can say 'Yes'.
- No one will be upset if you say 'No'.
- If you say 'Yes', you can always say 'No' later.
- You can say 'No' at anytime.
- I would still take good care of you no matter what you decide.

Why is Mrs. Mackley doing this research?

I'm doing this research to find out more about how children, just like you, play with fun materials.

What would happen if you join this research?

If you decide to be in the research, I would ask you to do the following:

- Play with your friends in the special playground I have made for your class. You will see recycled loose parts materials in the playground.
  Loose parts materials are things like ropes, car and bicycle tyres, milk and bread crates, tarp, plastic barrels, buckets, wood planks, tubes and lots of other materials. Here are some pictures of the types of loose parts materials:

  You can play with these materials in any fun way you want!

- Feel OK about me taking video recordings and photographs of you when you are playing.

How can this research effect you?

This research is all about you having fun with your friends as you play with the loose parts materials. You can say 'no' to playing with the loose part materials at any time.

What else should I know about this research?

If you don't want to be in the study, you don't have to be.

It is also OK to say yes and change your mind later. You can stop being in the research at any time. If you want to stop, please tell your teacher or Mrs. Mackley.

You can ask questions any time.

Is there anything else?

If you would like to be in the research, please write your name below. This shows that you understand about the research and that you want to take part.

NAME OF CHILD: .....

SIGNATURE: ..... **DATE:** .....

SIGNATURE OF SUPERVISOR: **DATE:** 15/03/2018

SIGNATURE OF STUDENT RESEARCHER: **DATE 15/03/2018**

Appendix F: Parent/Guardian Information Letter

AUSTRALIAN CATHOLIC UNIVERSITY

Parent/Guardian information letter

PROJECT TITLE:	**Mediating collaboration through shared meanings, the value of outdoor loose parts play in primary schools.**
HREC REGISTRATION:	**2017-309H**
PRINCIPAL INVESTIGATOR:	**Professor Susan Edwards**
STUDENT RESEARCHER:	**Honor Mackley**
STUDENT'S DEGREE:	**Master of Education (Research)**

Dear Parent,

Your child is invited to participate in the research project described below.

What is the project about?
This research project investigates the value of outdoor loose parts play in primary schools. It aims to explore if unstructured play with recycled loose parts materials (for example, recycled ropes, car and bicycle tyres, milk and bread crates, tarp, plastic barrels, buckets, wood planks, tubes, pipes and garden water hoses amongst others) develop social skills that are collaborative in nature. Here are some examples of recycled loose parts materials:

What are the benefits of the research project to education in general?
Unstructured loose parts play has been linked to improved physical, cognitive, social and emotional outcomes for children. This study will focus specifically on the social benefits arising from loose parts play with emphasis on how collaborative type behaviours develop through this type of play. The importance of effective collaboration skills is recognised by the Australian Curriculum across all learning areas. The social management component of the Australian Curriculum aims to prepare students to work collaboratively at multiple levels to prepare learners for successful futures in changing work places.
This research project will investigate if simple, easy to implement interventions such as the inclusion of recycled loose parts materials in outdoor school spaces can provide opportunities for children to develop and build collaborative relationships, thus complementing the social management components of the Australian curriculum.

What are the benefits of the research project to your child?
Your child will have the opportunity of actively playing with class peers in a creatively stimulating outdoor play environment.

Who is undertaking the project?
This project is being conducted by Honor Mackley and will form the basis for the degree of Masters of Education (Research) at Australian Catholic University. Honor is a fully registered teacher and a specialist in Health and Physical education with over twenty years teaching experience in both primary and

secondary schools. Honor has an undergraduate degree in Physical Education (University of Limerick, Ireland) and a Master's degree in Leisure Studies (Loughborough University, UK). Honor will be supervised during this project by Professor Susan Edwards (Ass. Dip Arts; BEd (1A Hons); PhD). Professor Edwards is an experienced researcher who has conducted nationally funded research with young children and families. Her research projects have examined young children's play in early childhood settings and the use of digital technologies. She has previously used video research in these studies.

What will your child be asked to do?

Your child will be invited to play with a range of recycled loose parts from 2.20pm – 2.50pm on Tuesday afternoons from Week 3 – Week 9 during Term 2. If you choose for your child not to participate in this study or your child chooses not to participate, alternative supervision will be provided by the school. There are no exclusion criteria for participants.

The children will be observed once a week for thirty minutes over six weeks. Observations will be made using video recordings of play activities. Photographs will also be taken of any structures the children create using the materials. The researcher will use these video recordings and photographs to analyse how the children interact with each other during play with loose parts. Conversations, gestures and physical manipulations of the materials will be closely analysed to look for collaborative behaviours.

All video recordings and photographs of the children will be used strictly for research purposes and will not be viewed or shared with anyone except the researcher and supervisors. Pseudonyms, instead of the children's real names, will be used at all stages of the research project. The play activities and study will take place at an outdoor location on the school grounds.

Are there any risks associated with participating in this project?

Very low risks are associated with this project, risks that are equally applicable to general play activities in any outdoor school playground. These risks include minor injuries such as cuts and abrasions from play materials and insect bites to minimise risks, all materials will be water proof, cleaned and regularly inspected for sharp edges and breakages. In addition, tyres will be painted on the insides using white paint (toxin and lead free) to discourage bugs and spiders, and to make such wildlife easier to detect by the children. Tyres will also contain drill holes which enable water drainage. This prevents the tyres from becoming waterlogged and difficult to manoeuvre or lift, thus minimising injury risk. Basic play guidelines will be outlined to children encouraging the positive (not harmful) use of materials and applying a waist height restriction to stackable items.

Can your child withdraw from the study?

Participation in this study is completely voluntary. Children are not under any obligation to participate. Every consenting child will be asked at the beginning of each research play period if they are still happy to assent to be videoed/photographed through a 'weekly assent form'. Inclusion in the weekly video observations will be subject to that assent. If your child agrees to participate, he/she can withdraw from the study at any time without adverse consequences and all data collected about your child will be destroyed. If you choose to withdraw your child from the study, please inform Mr. Shearer (sshea25@eq.edu.au) of the withdrawal and your child will be supervised in an alternative location.

Will anyone else know the results of the project?

The results of this study will be detailed in a thesis and may be summarised and published in education related academic journals that do not identify the participants in any way. The

summarised results may also be shared with other education professionals at conferences and academic gatherings. Summarised results may also be used as data for future academic studies. However, the identity of the participants will remain confidential at all times. Pseudonyms, instead of the children's real names, will be used at all stages of the research project to protect participant confidentiality. When permission is provided, de-identifying images and recordings of participants may be used in publications and presentations. De-identification means that the images and recordings of the children are blurred to prevent identification.
In other to protect the children's confidentiality, the hard copies of all collected data including video images and photographs will be stored in a secure locked location while soft copies will be electronically stored on a password protected computer only accessible by the researcher and her supervisors. After a period of five years, all data will be electronically deleted and hard copies shredded and disposed of.

Will I be able to find out the results of the project?
The summarised results of will be shared with the school community through the school newsletter.

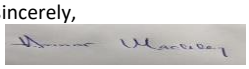
Who do I contact if I have questions about the project?
For any further information, please contact Professor Susan Edwards via email at suzy.edwards@acu.edu.au or by phone at 03 9230 3531.

What if I have a complaint or any concerns?
The study has been reviewed by the Human Research Ethics Committee at Australian Catholic University (review number: 0000021554). If you have any complaints or concerns about the conduct of the project, you may write to the Manager of the Human Research Ethics Committee care of the Office of the Deputy Vice Chancellor (Research).

Manager, Ethics
c/o Office of the Deputy Vice Chancellor (Research)
Australian Catholic University
North Sydney Campus, PO Box 968
NORTH SYDNEY, NSW 2059
Ph.: 02 9739 2519 Fax: 02 9739 2870
Email: resethics.manager@acu.edu.au
Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

I want to participate! How do I sign up?
Please return one copy of the enclosed parent consent form and one copy of the participant assent form to your child's class teacher by February ___ 2018. Please sign both copies of each form, and keep a copy of each for your records.

Yours sincerely,



_____ _____
Honor Mackley

Appendix G: Parent/Guardian Consent Form

Parent/Guardian Consent Form

Please sign and return to the classroom teacher

PROJECT TITLE:	**Mediating collaboration through shared meanings, the value of outdoor loose parts play in primary schools.**
HREC REGISTRATION:	**2017-309H**
PRINCIPAL INVESTIGATOR:	**Professor Susan Edwards**
STUDENT RESEARCHER:	**Honor Mackley**
STUDENT'S DEGREE:	**Master of Education (Research)**

I …… *(the parent/guardian)* have read (*or, where appropriate, have had read to me)* and understand the information provided in the Letter to Parents. Any questions I have asked, have been answered to my satisfaction.

Please tick the appropriate boxes:

- ☐ I **agree** to my child's participation in this research study and to have my child's play activities digitally recorded and photographed once a week for six weeks.
- ☐ **I do not agree** to my child's participation in this research study and to have my child's play activities digitally recorded and photographed once a week for six weeks.
- ☐ I **give my consent** to use de-identified digital images and recordings of my child in publications and presentations.
- ☐ **I do not give my consent** to use de-identified digital images and recordings of my child in publications and presentations
- ☐ I understand that I can withdraw my consent at any time without adverse consequences.
- ☐ I acknowledge that the research data collected for the study may be used in future academic research or may be provided to other researchers in a form that does not identify my child in any way.

NAME OF PARENT/GUARDIAN: ……

SIGNATURE: …… DATE: ……

SIGNATURE OF SUPERVISOR:

DATE: 12/12/2017

SIGNATURE OF STUDENT RESEARCHER:

DATE: 12/12/201

Parent/Guardian Consent Form
Please sign and keep

PROJECT TITLE:	**Mediating collaboration through shared meanings, the value of outdoor loose parts play in primary schools.**
HREC REGISTRATION:	**2017-309H**
PRINCIPAL INVESTIGATOR:	**Professor Susan Edwards**
STUDENT RESEARCHER:	**Honor Mackley**
STUDENT'S DEGREE:	**Master of Education (Research)**

I …… *(the parent/guardian)* have read (*or, where appropriate, have had read to me)* and understand the information provided in the Letter to Parents. Any questions I have asked, have been answered to my satisfaction.

Please tick the appropriate boxes:

- ☐ I **agree** to my child's participation in this research study and to have my child's play activities digitally recorded and photographed once a week for six weeks.
- ☐ **I do not agree** to my child's participation in this research study and to have my child's play activities digitally recorded and photographed once a week for six weeks.
- ☐ I **give my consent** to use de-identified digital images and recordings of my child in publications and presentations.
- ☐ **I do not give my consent** to use de-identified digital images and recordings of my child in publications and presentations
- ☐ I understand that I can withdraw my consent at any time without adverse consequences.
- ☐ I acknowledge that the research data collected for the study may be used in future academic research or may be provided to other researchers in a form that does not identify my child in any way.

NAME OF PARENT/GUARDIAN: ……

SIGNATURE: …… DATE: ……

SIGNATURE OF SUPERVISOR:

DATE: 12/12/2017

SIGNATURE OF STUDENT RESEARCHER:

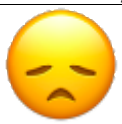
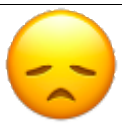
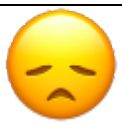
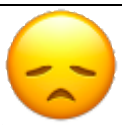
DATE: 12/12/201

Appendix H: Weekly Assent Letter

Weekly Assent Form

PROJECT TITLE: The value of outdoor loose parts play in mediating collaboration in primary schools
APPLICATION NUMBER: 0000021554
PRINCIPAL INVESTIGATOR: Professor Susan Edwards
STUDENT RESEARCHER: Honor Mackley
STUDENT'S DEGREE: Master of Education (Research)

Child's Name: …… Child's Signature: ……

Date	Please circle how you feel today	
Day 1 of research	 Happy to play and be videoed/photographed	 Not interested today
Day 2 of research	 Happy to play and be videoed/photographed	 Not interested today
Day 3 of research	 Happy to play and be videoed/photographed	 Not interested today
Day 4 of research	 Happy to play and be videoed/photographed	 Not interested today
Day 5 of research	 Happy to play and be videoed/photographed	 Not interested today
Day 6 of research	 Happy to play and be videoed/photographed	 Not interested today

SIGNATURE OF SUPERVISOR:

SIGNATURE OF STUDENT RESEARCHER:
DATE: 12/12/2017