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An exploratory study to investigate the use of concrete manipulatives to support language acquisition and vocabulary development in Grade 1 learners

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A research report submitted to the Faculty of Humanities, University of the Witwatersrand, in partial fulfilment of the degree of Master of Education

Supervisor: Dr. K. Dixon

Johannesburg, 2016

DECLARATION

This work has not been previously submitted in whole, or in part, for the award of any degree. This research report is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Education at the University of the Witwatersrand.

_____

Linda Smith

Signed in _____ on this _____ day of _____ 2016.

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ABSTRACT

The aim of this research is to understand how the use and manipulation of concrete tools, specifically six DUPLO bricks, can impact language acquisition and vocabulary development in second language learners. The study works within a social constructivist paradigm and draws on the work of Vygotsky (1978b). This is an exploratory study and the data is gathered from observations, focus group sessions and semi-structured interviews. The research is conducted over a period of 14 weeks with one class of Grade 1 children who are learning through the medium of English but are also second language learners. The selected school was a northern suburbs government school. The findings show that the children did benefit from the intervention and that learning was enhanced through tactile activities and embodiment. The social collaborative learning through play provided the best opportunities for language acquisition and the development of a shared repertoire of vocabulary. The research study has implications for the theory and practice of teaching early literacy in South Africa in particular language learning and vocabulary development.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

LEGO® and DUPLO® bricks have been part of the toy market for many decades and extensive research has gone into the development of various educational sets to provide innovative solutions to classrooms in order to transform the way that learning takes place (LEGO Education, 2014). The LEGO Foundation (LF), a Danish corporate foundation, primarily focuses its work on product donations and training which benefits underprivileged children around the world. The aim of the LF is to build a future where learning through play empowers children to become creative, engaged, life-long learners. LEGO has always been about play and the LEGO Foundation's agenda follows a philosophy of play-based learning and investigating how an informal approach to teaching and learning can promote whole child development.

I work for a LEGO Foundation partner company in South Africa called Care for Education (CfE). CfE is a non-profit organization with a small workforce of educators who developed a programme called "Back to Basics with 6 Bricks". The LEGO Foundation and CfE are working together to look at ways to expand play-based methodologies that engage young children more actively in the learning process. This concept focuses on playful learning using a simple, inexpensive, concrete manipulative to develop and master the emergent literacy, numeracy, physical, social and emotional skills.

Six Bricks (6B) consists of six DUPLO bricks of different colours and quick, simple activities (see Fig. 1.1). DUPLO bricks are used specifically for their size and clutch power thus enabling the user to create and participate in a great number of varied activities. The possibilities of generating activities using just six bricks is vast especially considering that there are 24 different ways to connect two DUPLO bricks but when joining six bricks in different ways, over 900 000 000 combinations are possible (LEGO Education, 2014). The Six Bricks are compact enough to leave on a school desk and this is encouraged, although not always practical. Six Bricks is also a programme which requires the educator to engage the learners in at least one quick activity every day.

Fig. 1.1

What is Six Bricks?



The LEGO Foundation and CfE have both expressed their intention to conduct research into the Six Bricks concept as it fits in with their vision of impacting early childhood development and laying the foundations for life-long learning. In 2014 and 2015, the Six Bricks concept was tested in several schools around Johannesburg. This testing phase focused on teacher training and implementation in the classroom and results indicate that there are several features worth exploring further, in particular the shift in pedagogy for teachers and how a hands-on tool affords children an opportunity to develop perceptual, literacy and numeracy skills. In my experience, Six Bricks has been very useful when training teachers in a play-based methodology which necessitates the involvement of children in oral activities, physical movement and conceptual development. During site visits and follow up training, the Six Bricks activities that the school children were involved in, seemed to have had a positive impact and indications of literacy and numeracy development were noted. But this is all anecdotal and based on individual experiences rather than any systematic research.

Systematic, formalized research is only starting to happen. In 2015 the LEGO Foundation, in conjunction with Training and Resources in Early Education (TREE) and Abdul Latif Jameel Poverty Action Lab (J-PAL) conducted a randomized control trial (RCT) with learners in 120 Grade R classes in KwaZulu-Natal. The RCT focused on the effect of the Six Bricks programme in improving executive function, such as working memory, cognitive flexibility and inhibitory control. The results of this RCT are due to be published in March 2016.

The research on initial exposure to literacy practices using a more informal play-based approach is growing (Excell & Linington, 2011; Goldstein, 2012; Weisberg, Kittredge, Hirsh-Pasek, Golinkoff, & Klahr, 2015), yet teachers often adopt a formal approach to teaching

literacy skills by using worksheets and rote learning. These types of activities are often completed with little or no real understanding by the child. The situation is compounded for second language English speakers (L2) entering the schooling system at a Grade 1 level and has repercussions on the speed and ease with which they learn using a language that is not their mother tongue. Werner (Crain, 2005; Excell & Linington, 2011) argues that we first need to consider how literacy can develop out of rich experiences with oral language and other symbolic activities. I would like to explore this concept of oral language development using the Six Bricks to ascertain whether this type of engagement could encourage children to verbalize symbolic model building to positively impact language development. This could have further significance when considering the methods of teaching and learning for L2 learners. Language provides crucial building blocks for long term literacy competence and as there has been no other specific research into the benefits of a play based approach using Six Bricks on language development, especially in L2 speakers. My interest lies in exploring possibilities that the "Six Brick" (6B) concept may provide in the acquisition and development of language skills.

1.2 Rationale

> There is a critical relationship between children's acquisition of language in their early years and their ability to learn, and this acquisition needs to occur at an early age. Language is the medium through which learning occurs and if either teachers or their learners are not proficient in the language of learning and teaching (LOLT), then learning is extremely difficult. (CDE, 2014, p. 23)

Education is a constitutional right to which every South African is entitled. Access to schooling has increased according to the Education for All (EFA) 2013 report: South Africa (Department of Basic Education (DBE), 2014, p. 24). However, access is not translating to academic achievement. Although a high percentage of children are attending school, the levels of literacy are not showing improved results. According to the 2013 Annual National Assessment (ANA) results, the national average for language is at its highest at a grade 1 level, but then progressively declines in percentage from grade 2 through to grade 9 (DBE, 2013. p. 3). The Progress in International Reading Literacy Study (PIRLS) (Mullis, Martin, Foy, & Drucker, 2012) and ANA results show that there is a problem in children's ability to use and understand language.

The NEEDU report (Venter, 2013) flagged the language of learning and teaching (LOLT) as a potential issue in children's literacy development. A key finding in the report highlights that

the learner population at schools is widely divergent in home background and home language(s), and very often the LOLT is not the home language of many learners at the school, directly influencing language skill and literacy acquisition. Another issue influencing language learning is the quality of teaching. Taylor & Coetzee (2013) call on unions, school leaders and management to address this issue in the hope of improving literacy. The statistics and results from these sources suggest challenges in the teaching and learning of language and highlight a need for the development and mastery of emergent literacy skills. The research also shows that at a Grade 4 and 5 level, as the volume of work and content complexities increase, results decrease. We could surmise that the first three years of schooling, in which children learn to read, do not provide sufficient language building blocks which develop the skills for them to read to learn.

In addition to low literacy rates, there is also increasing pressure on the early years to become more formal. The "schoolification" of early literacy and Grade R is moving away from play based learning to a more formal approach based on the intellectual process (Excell & Linington, 2011), without taking cognizance of the broader context out of which literacy develops.

> Providing young children with many, varied incidental and implicit learning opportunities through a more informal play-based approach towards teaching and learning appears to be the most successful way of nurturing the literacy processes (Riley in Excell & Linington, 2011, p. 28)

This research hopes to present certain benefits to play-based teaching methods which might begin to challenge present mindsets of teachers.

It is important to find ways to strengthen and develop children's language in the early years. There is a body of research (Brown, McNeil, & Glenberg, 2009; Burns, 1996; Christakis, Zimmerman, & Garrison, 2007) that argues the importance of using concrete manipulatives in learning. There is some research in the use of concrete tools in mathematics teaching but there is very little on the value of a concrete manipulative in learning language and literacy acquisition. This research begins to address this gap.

1.3. Research Questions

The primary aim of this research is to complete a preliminary exploratory study to investigate if the use of concrete manipulatives can impact language acquisition and development in

grade 1 learners. Concrete manipulatives in this report refer specifically to the use of six DUPLO bricks. The exploratory study, using a very small sample of participants, does not set out to make major claims but rather to investigate the possible benefits for children's language development by using Six Bricks.

The main research question of this project is:

> *What are the potential benefits of implementing the Six Bricks educational programme, in terms of language acquisition and development in Grade 1 learners, in a South African context?*

The sub questions include:

- What are the children's experiences of using "6 bricks" in communicating and expressing language?
- How does the use of "Six bricks" support language acquisition and development?

1.4. Outline of the Study

This study consists of six chapters. Chapter one provides a general introduction and orientation of the study while chapter two provides the literature review and theoretical framework. Chapter three discusses the design and the fourth and fifth chapter present the findings. The main conclusions drawn from this study, their implications and recommendations for further research are presented in chapter six.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The overarching framework for this study is the social constructivist view (Vygotsky, 1978a) that language develops from social interactions for communication purposes and as a tool to construct meaning. This chapter provides an overview of how language is acquired and developed, the importance of play in language acquisition, and the role of the teacher in this learning process.

2.2 Language Learning

There are large bodies of work on language development and acquisition (Cummins, 1989; Krashen, 1981; Larson & Marsh, 2011; Lightbrown & Spada, 2013) which are relevant to this study. Theoretically, some of this work is located in a social constructivist framework (Bodrova, Germeroth, & Leong, 2013; Vygotsky, 1978b; Wagner, 2015) and my research is underpinned mostly by Vygotsky, who describes issues around learning and the construction of knowledge (Vygotsky, 1978b; Wagner, 2015). His theory of social constructivism is based on the principle of experiential learning being driven by cultural, language and social interaction in the process of making meaning. This theory also impacts second language (L2) learning (Cummins, 1980; Konishi, Kanero, Freeman, Golinkoff, & Hirsh-Pasek, 2014; Krashen & Terrell, 1995; Richard-Amato, 1996) which is also key to this study.

2.2.1 Vygotsky and Language Learning

Vygotsky provides some significant conceptual tools that are relevant to language development, learning and acquisition. These include his notion of what it means to construct knowledge, the zone of proximal development (ZDP) and the importance of scaffolding, all of which promote child focused learning contexts.

Vygotsky's (1978b) theory of language development suggests that children acquire knowledge and language through social interactions and this learning plays an important role in cognitive development (Churcher, Downs, & Tewksbury, 2014). This view is supported by other bodies

of research in which “children learn through their exploration of play, and through opportunities to talk things through with others, usually adults” (Pinter, 2006, p. 5). “The ability to learn through dialogue and interaction with others is central to knowledge generation” (Churcher et al., 2014, p. 27) and encourages children to connect as they spend time together. This connection helps children to internalize language meaning and skills, enabling improved communication and understanding.

Language learning practices are steered through a process of scaffolding by an adult/teacher, addressing children’s learning potential. Learning always involves external experiences being transformed into internal processes through the means of language (Bodrova & Leong, 2003). By interacting with the environment, a child is able to develop on an individual level through dialogue and inner speech. Inner speech bridges the gap between thought and language, ultimately enabling the child to express their thoughts coherently to others. This is helped through processes such as reflection and self-regulation.

According to Vygotsky (1978b), language learning and acquisition involves exposure to words and vocabulary but he also acknowledges that the interdependent growth between thought and language is essential. He believed that with assistance from a more knowledgeable other (MKO), a child has greater potential to master spontaneous concepts. He states that learning occurs with the support of the teacher in the classroom and describes the ZDP as the difference between the child’s independent potential and potential with assistance.

Children feel comfortable when they are taught in their range of ZPD. Learning results from comparing new information with existing knowledge to form new connections and understandings. The ZDP shifts upwards, developing higher mental functions. This can be done through construction rather than instruction, in which teachers make use of scaffolding techniques to keep learners active within their ZPD to foster meaningful engagement.

The concept of scaffolding, although not coined by Vygotsky, is closely related to applying ZPD to educational contexts. Bruner’s theory of scaffolding is used in this research as it closely relates to the social constructivist theory and ZPD. Bruner believed that when children start to learn new concepts, they need help from teachers and other adults in the form of active support (Wood, Bruner, & Ross, 1976). Vygotsky viewed interaction with peers as an effective way of developing skills and strategies (Wagner, 2015). He argued that we learn best in a social environment, where we construct meaning through interaction with others. He suggests

that teachers use cooperative learning exercises where less competent children develop with help from more skillful peers - within the ZDP (McLeod, 2012). Teachers also play a role in determining what interventions will work best to support a child's performance of a task.

2.3 Second Language Learning

2.3.1 Second Language Learners Entering the School System

Language is crucial in children's cognitive, social, emotional and physical development. It is the essential key for learning, for communicating and building relationships with others, enabling children to make sense of the world around them (Brock & Rankin, 2008). Second language English speakers (L2) enter the foundational schooling system with knowledge of the structures and rules of their home language. When the LOLT is different to their home language, a different approach that incorporates a more natural process of language acquisition as well as a conscious process of language learning (Langdon, 2011) is needed.

In the South African context, many children from widely divergent communities begin school without previous preschool experiences. Language issues come to the fore during this time because of the urgency of getting children to a level of proficiency in a second language. This is particularly prevalent in urban Johannesburg for many children who are not privileged to learn in their mother tongue. International and local South African research (O'Carroll, 2012; Snow, 1983; Venter, 2013) indicates that children from disadvantaged communities generally begin school with less well-developed literacy and language awareness than their middle-class peers.

Language learning and acquisition should be a key focus in the school education system as it is "the currency of social interaction and school achievement" (Weisberg, Zosh, Hirsh-Pasek, & Golinkoff, 2013, p. 39). Language learning for children is optimal when interacting with adults and peers in a playful manner (Bodrova & Leong, 2003; Wagner, 2015; Weisberg et al., 2013; Whitebread, Coltman, Jameson, & Lander, 2009) but in many South African schools, the focus is on disciplined, teacher-instructed lessons with few playful learning opportunities (Prinsloo & Stein, 2004). As such, language development, especially in L2 learners, is slow. Insufficient progress is made to advance learners in a school system in which they will cope with academic demands (Taylor & Coetzee, 2013).

Language acquisition in L2 learners can be developed by providing opportunities for listening and speaking. These opportunities must be optimized in the foundational grades as this is the form of communication prevalent for most of the school day. A social constructivist view speaks of children learning most effectively through being involved in rich experiences and practical activities promoted through play (Bodrova & Leong, 2003; Brock & Rankin, 2008; Roskos & Christie, 2013). It is with this intention that this research investigates the possibilities of 6B activities being used to stimulate language acquisition and learning, focusing on listening and speaking.

2.3.2 Theories of Second Language (L2) Learning

Literature shows that when one acquires language in a home language there are stages of unconscious and natural language development (Cummins, 1989; Dickinson, Hirsh-Pasek, & Golinkoff, 2010; Golinkoff, Hirsh-Pasek, & Singer, 2006; Krashen, 1981). Both Krashen (1981) and Vygotsky (1986) talk about children beginning school with a command of grammar in their home language, acquired in an unconscious way as a natural process. In South Africa, the multilingual environment in which language learning takes places requires a closer look at theory around L2 learning which is different to that of L1 learning. Krashen (1981, p.1) explains L2 language acquisition as a subconscious process which requires meaningful interaction "in which speakers are concerned not with the form of their utterances but with the messages they are conveying and understanding". In contrast to acquisition is language learning. This is a conscious process in which 'rules', 'grammar' and error corrections are shown, and according to Krashen (1981), a less effective method than acquisition.

Like Vygotsky's (1978b) concept of ZDP, the Natural Approach (Krashen & Terrell, 1995) to L2 learning focuses on developing language skills in a natural context with assistance. Through interaction in meaningful learning experiences, the teacher provides input in the target language (comprehensible input), then adds new learning to that base.

Cummins (1980), another leading authority on L2 acquisition, focusses on language proficiency, metalinguistic knowledge, task difficulty and bilingualism. He suggests that language develops at either a social or academic cognitive level. Basic Interpersonal Communication Skills (BICS) is language that develops from social activities. BICS social language is context-embedded and comprehension is gathered from modelling,

demonstrations, visual clues and so on. Cognitive Academic Language Proficiency (CALP) refers to abstract, higher-level discourse and includes skills such as listening, speaking, reading, and writing which are more cognitively demanding. This level of language learning is essential for success in school and can take between 5 and 7 years to acquire.

The L2 learning theories discussed above help in understanding how children learn languages and also assist in planning curriculum and pedagogy. This has implications for how language learning is taught. Current thinking (Brock & Rankin, 2008; Krashen & Terrell, 1995; Taylor & Coetzee, 2013) does not discount any of these theories but builds on them to promote and support L2 learning.

2.4 Language Development

Finding ways to address language learning requires an understanding of the stages of speech and language development including how children learn vocabulary. There is agreement that the development of language begins before a baby is born (Parish-Morris, Golinkoff, & Hirsh-Pasek, 2013). Meaning is attached to sounds as the child initially listens to language being spoken within a socio-cultural context. As the child grows, so does language. Meaning is associated with single words and language progresses rapidly up to the age of 4 as sentence construction becomes more complex and vocabulary increases. During this time the child experiments with the production, understanding and function of language (Whitehead, 2010).

By the age of 4 it is generally accepted that children have acquired the basic structure of the language spoken to them since birth. Vocabulary learning continues as the child enters Grade R and formal schooling. Language acquisition from 4 to 5 years is developed in a growing social environment and it is during this stage that metalinguistic awareness or the ability to reflect on and manipulate the structural features of language advances (Nagy & Anderson, 1995). In school, the ability to use language to understand others and express their own meaning, expands and grows (Lightbrown & Spada, 2013). This also extends to vocabulary development which increases rapidly.

2.4.1 Importance of language and vocabulary learning

Vocabulary is central to language teaching as it helps learners understand and communicate with others. Vocabulary can be learned either through focused, conscious activities or unconsciously through listening, reading and cooperative learning (Mehring, 2005). Graves (2009, p. 3) summarizes empirical data-based claims about the importance of vocabulary development which are relevant for children entering Grade 1 in a South African context.

- Vocabulary knowledge in kindergarten and first grade is a significant predictor of reading comprehension in the middle and secondary grades.
- Growing up in poverty can seriously restrict the vocabulary children learn before beginning school and make attaining an adequate vocabulary a very challenging task.
- Lack of vocabulary can be a crucial factor underlying the school failure of many students.

His claims indicate that vocabulary development is a predictor of academic competence and therefore, how it is taught is crucial. Vocabulary learning should include both remembering words and the ability to use them automatically in a wide range of language contexts (Yongqi Gu, 2003). Contextual learning helps learners retain the words and use them more frequently, thus building their shared and individual language repertoire (Mehring, 2005). The 6B research activities aims to develop vocabulary through the symbolic and representational construction of bricks.

The potential of learning vocabulary and spatial language through block play is supported by Ferrara et al.'s (2011) investigation into how play affects variations in language, explicitly referring to how spatial skills develop spatial language in young children. The results showed that the interaction between parent and child, whilst playing with blocks, "naturally elicits elevated levels of spatial language" (2011, p. 150). In using spatial language children naturally engage with the use of prepositions in assisting them to communicate the position of blocks in their play. Ferrara et al. (2011) not only call for further research in the use of blocks in spatial education but also in fusing "together playful learning and spatial education" (2011, p. 150), which this research takes up.

Christakis et al.'s (2007) research identifies similar findings in language and vocabulary development in young children when given access to building blocks such as DUPLO. This study also recommends that further research is necessary to find "practical and actionable strategies" that can be used to "increase language acquisition" (p. 970).

2.4.2 Stages of Language Development for Second Language Learners

The Natural Approach (Krashen & Terrell, 1995) to L2 acquisition proposes a shift from grammar based learning to one based on communicative skills. A formal environment, such as the classroom, has the potential for encouraging both acquisition and learning. Krashen (1995) suggests that teaching should focus on the language needed to understand and communicate content, and on the content itself as a means of increasing academic proficiency. The 5 stages of L2 learning are described below.

Table 2.1: Five Stages of Second Language Learning (Krashen & Terrell, 1995)

Stage 1	**Silent/Receptive or Preproduction** The child does not say much. Initial focus on listening and comprehending. Lasts from beginning of exposure to the language to approx. 6 months after first exposure.
Stage 2	**Early Production** Child communicates with 1 or 2 word phrases and understands a number of different questions. Lasts for approx. 6 months.
Stage 3	**Speech Emergence Stage** Child can use short phrases and simple sentences to communicate. Can also engage in dialogues using longer sentences. Errors still evident. Lasts approx. one year.
Stage 4	**Intermediate Language Proficiency** Child uses more complex sentences. Still asks for clarification. Lasts approx. one year.
Stage 5	**Advanced Language proficiency** Child uses specific vocabulary and participates successfully in the classroom. Lasts 3 – 5 years.

These five stages of L2 learning are relevant to this study and indicate that a L2 learner may need at least an additional 3 - 5 years to become proficient in a new language (Langdon, 2011) and this has implications regarding methodology and content when teaching L2 learners.

For the purposes of this study, L2 learners from a Grade 1 classroom participated in the language learning and acquisition activities using the Six Bricks. Determining where the Focus Group learners are within these five stages of L2 learning, is significant in defining a base line of language competence and in determining whether Six Bricks can support language acquisition.

Another body of work on L2 learning is provided by Konishi et al. (2014) and is key to this study. Their recent article explores how six evidence-based principles of language learning can be used to provide support for L2 children and "fuel language development" (p. 405). The principles incorporate multiple factors that impact language acquisition based on existing research.

Table 2.2: Six Principles of Second Language Development (Konishi et al., 2014)

Principle 1	Children learn what they hear most
Principle 2	Children learn words for things and events that interest them
Principle 3	Interactive and responsive rather than passive contexts promote language learning
Principle 4	Children learn words best in meaningful contexts
Principle 5	Children need to hear diverse examples of words and language structures
Principle 6	Vocabulary and grammatical development are reciprocal processes

The first principle points to frequency. The more children are exposed to new vocabulary and language structures the quicker they are able to process and understand meaning and acquire syntactic structures. This has positive implications for listening and speaking activities. Krashen & Terrell, (1995, p. 21) also support this principle but state that it "is not sufficient for acquisition to take place", therefore the other five principles (Konishi et al., 2014) are important to ensure acquisition manifests.

The second principle advocates that children learn words for things they find interesting. "The learner's interest plays an essential role in any type of learning" (Konishi et al., 2014, p. 407). The third principle calls on providing contexts for learning language that are interactive and responsive rather than passive. To foster L2 development, vocabulary must be presented in a meaningful way which engages children and provides a scaffold to facilitate language acquisition. The third principle is also supported by researchers advocating play-based learning (Bodrova & Leong, 2003; Goldstein, 2012).

On the importance of how children learn words best in meaningful contexts, Konishi et al. (2014, p. 408) quote Neuman & Dwyer (2009) stating “strategies that introduce young children to new words and entice them to engage in meaningful contexts through semantically related activities are much needed”. The fifth principle encourages “diversity in linguistic input” and advocates that learners are exposed to multiple sources of language. The final principle states that vocabulary and grammatical development are reciprocal meaning that “children rarely learn new words and their meanings in isolation” (p.412). This advocates contextually embedded learning experiences.

Konishi et al. (2014), confirm that numerous studies provide guidelines and research to foster language skills in L1 acquisition but little is available on fostering the same skills in L2 learners. They make a call for further investigation into the factors that promote L2 acquisition (p. 406). This research explores whether 6B can support the development language and vocabulary in L2 learners. In chapter 5, further analysis and links to 6B and the six principles will be explored.

2.5 The Importance of Play in Language Learning

Children are intrinsically motivated to play and this revolves around meaningful experiences which keep them engaged. Other research (Christie & Rakos, 2006; Goldstein, 2012; Vygotsky, 1978; Weisberg et al., 2013) linking play and cognitive, social, emotional and physical skills also has significance to this research study.

Play comprises both guided and free play activities that promote the development of social and academic skills (Bodrova & Leong, 2003; Goldstein, 2012; Golinkoff et al., 2006). It enables children to build the foundations of learning including “motivation, meaning, repetition, self-regulation, and abstract thinking” (Goldstein, 2012, p. 11). It is also crucial for cognitive development in “verbalization, vocabulary, language comprehension, imagination” (Smilansky & Shafata, cited in Bodrova, 2003, p. 50).

Weisberg et al. (2013), examine the aspects of play that promote language development. In answering this question, they (2013:40) argue that

> play contains many of the ingredients necessary for optimal language development even though there may be no single element of play that does the majority of the work.

These elements include symbolic play, social interaction, the volume of language input and engaging with others leading to speaking about what interests the children. When investigating this further, we understand that play drives learning as it is an active process and can be used deliberately to accelerate language acquisition and learning.

There are other aspects of play that need to be considered and Weisberg et al. (2015) debate the benefits of guided play over free play and direct instruction. They define guided play as taking place in a structured environment using a "blend of adult initiation and child direction" (2015, p. 9). According to Weisberg et al. (2015), in guided play, adults must carefully prepare the environment and must scaffold children's actions as play unfolds. In preparing the environment, the teacher chooses which toys are to be used in the play session and by scaffolding, the teacher introduces different ways for the child to explore learning. Incorporating elements of "adult structuring of the play environment", allows the child to maintain control within that environment and encourages "self-directed exploration" (p.10). The objectives of 6B activities are to generate an environment in which the teacher can scaffold the learning activity but at the same time, allow the learners to be creative and imaginative in their problem solving and creative solutions.

This literature review opens the door for a closer look at how 'playing' with the Six Bricks, in a variety of activities and contexts, can support language development in a comfortable and safe environment. Key to this study is determining whether Six Bricks can be used as symbolic props to scaffold playful learning and drive language acquisition and development.

2.5.1 Vygotsky and Learning through Play

Vygotsky's (1978b) theory of cognitive development states that information from the external world is transformed and internalized through language (Wagner, 2015) and play is an essential part of both language development and a child's understanding of the external world. Vygotsky viewed play as "an imminently cultural activity with adults assuming a critical role in engaging children in play and in supporting and scaffolding play as it develops" (Bodrova et al., 2013). For Vygotsky, play has three components, all of which are interlinked and do not necessarily follow a specific order:

- imaginary or pretend play (self-gratification) typically emerges when children use objects to pretend they are something else, then evolves into dressing-up and pretending the child is someone else (Bodrova et al., 2013; Goldstein, 2012)

- role or representational play (symbolic play) which involves playing with the variety of 'symbolic' systems that are used to convey meaning, including spoken language (Roskos & Christie, 2013; Vygotsky, 1978b).
- play that follows a set of rules as decided during role play (self-regulation). Games with rules are enjoyed by children especially as they invent their own. When playing games with rules, time and energy is devoted to establishing, agreeing, modifying and reminding one another about the rules. This type of play enables children to regulate their learning and behaviour by restraint and self-control (Bodrova et al., 2013; Vygotsky, 1978b).

Since this study investigates language development, the focus is on how playing with Six Bricks can impact and support language learning. Playing with just six DUPLO bricks calls on children to be creative in their constructions. When children experience a new situation, imaginary play is the means of making sense of new learning. This type of play "allows children to both consolidate their understandings of their world and develop the representational abilities they will use to think through ideas as an adult" (Ackermann, Whitebread, Gauntlett, Wolbers, & Weckström, 2013, p. 16). "Many forms of play enlist symbolic thinking" and this "relationship between a prop and the object it represents resembles the relationship of a word to its referent" (Weisberg et al., 2013, p. 42). Through this type of play, children develop "communicative intentionality" (Mahn, 2013, p. 4) and the initial use of symbols to convey meaning are key to language acquisition. Zigler & Bishop-Josef (2006) extend Vygotsky's notion of symbolic play explaining that, "when children use objects to represent other objects in play (e.g., using a block as a telephone), they inadvertently set the stage for abstract thought" (p. 16). In this process they separate the actual block from its meaning and represent multiple meanings through play with the block. This representational ability then leads to the development of reading and writing where sounds and words are represented by symbols. This type of play enables children to engage in verbal interactions where they are able to practice saying, repeating, creating and communicating language. Pretend and imaginative play allow children to operate in the upper level of their ZPD and to be in control of their own learning. As play becomes more mature, children consolidate their understandings of their world and develop the representational abilities to learn new language and vocabulary.

During imaginary play, children are in constant dialogue with themselves or their peers, developing language and meaning making. This also brings about the development of cognition as play becomes "a 'transition' to the adult capability for abstract thought" (Ackermann et al., 2013, p. 16). During imaginary play, the roles children take on will always

contain a set of rules which in turn regulates the behaviours in play. “An inherent relationship exists between the roles children play and the rules they need to follow when playing these roles” (Bodrova et al., 2013, p. 113).

Bodrova et al. (2013) supports Vygotsky’s theories of self-regulation, collaboration and scaffolding. Through play, which offers scaffolding and support, the child is able to gratify his/her own desires, separate thoughts from actions and objects with the use of symbolic props and gestures and self-regulate (Whitebread et al., 2009). All of this is done by allowing the child to act out behaviours that are normally not possible in the real world. Self-regulatory skills significantly impact learning and cognitive abilities and are shaped by sociocultural interactions (Bodrova & Leong, 2003). The way in which children learn ‘incidentally’ or ‘intentionally’ require self-regulatory skills such as working memory, inhibitory control and cognitive flexibility. When children are involved in a playful task or activity, self-regulatory skills necessitate children to use their memory capacity to hold information in their mind and work with it, over short periods of time. Inhibitory skills can be practiced to master and filter thoughts and impulses and to ultimately resist temptations or distraction. It requires that children pause and think before they act. Self-regulation also allows children the opportunity to plan, follow goals, problem solve and be creative in their learning and understanding (Bodrova et al., 2013). Six Bricks activities have been designed to develop these self-regulatory skills using a tactile tool and playful interaction.

Developing L2 learners’ language also serves the purpose of regulation, or self-control over one's own cognitive processes such as memory and thought. As a child develops, they transition from being other-regulated to being self-regulated in their cognitive processes. Discovering language via play is an essential part of this transition. 6B activities are designed with the intention of practising self-regulation in deliberate and repetitive learning activities.

2.5.2 Play and Peer Collaboration

Collaborative learning requires children to work together towards a common goal in which they are responsible for one another's learning as well as their own (Dooly, 2008). Collaborative learning should be seen as a process of peer interaction, mediated and structured by the teacher. The teacher becomes less of an instructor and moves rather towards facilitated learning in which children are encouraged to learn experientially through discussions, hands-on activities and peer collaboration.

The basis of collaborative learning is constructivism in which knowledge is constructed, interpreted and transformed by children, drawing on existing cognitive structures and developing new ones. Vygotsky (1978b) claimed that children can perform at higher intellectual levels in collaborative situations than when working individually. This notion is supported by other researchers showing that when learning in a cooperative learning environment social interaction inherent in many types of play may also feed language development (Weisberg et al., 2013) and it allows students to learn from peers closest to them (Yongqi Gu, 2003). Researchers have also found that children are more relaxed and learned more from peers since they saw that making mistakes is acceptable, having goals is good, and learning English can be fun (Murphey & Hiroko, 2001, p. 7).

Dooly (2008) presents the advantages of collaborative learning and states that activities carried out in collaborative learning should encourage children to reflect and discuss 'why' and 'how' they came to their solutions. They should learn to listen carefully to their peers to allow for re-thinking. The activities should also encourage opportunities to analyze, synthesize, and evaluate their ideas as a group with the understanding that they all have a role to play in achieving the final outcome.

The context of the playful learning environment and the social support provided by the educator and peers is important. 6B activities have been designed to impact language acquisition and learning with collaboration in mind.

2.6 Play and Manipulatives

There is substantial literature that promotes the use of concrete manipulatives to assist in developing abstract thought (Piaget, 1966; Vygotsky, 1978b) and to positively impact understanding and learning (Burns, 1996, Papert & Harel, 1991). The theory of constructivism, as advocated by Piaget and Vygotsky, allows the child to build knowledge structures based on their experiences in the world. "Better learning will not come from finding better ways for teachers to instruct but from giving the learner better opportunities to construct" underpins Papert's idea of constructionism (Lechner, 1998, p. 22). It also develops the concept that learning happens especially when children are engaged in constructing something in a contextualized situation then moving towards decontextualized. Whilst engaged with this construction, children are simultaneously building theory and knowledge in their minds.

Papert (Papert & Harel, 1991) confirms that for children to learn, there needs to be a construction phase to help make abstract ideas and relationships concrete.

There are numerous research articles (Burns, 1996; Christakis et al., 2007; Ferrara, Hirsh-Pasek, Newcombe, Golinkoff, & Lam, 2011) and multiple perspectives concerning how manipulatives help learners build mathematical concepts but there is very little research in the area of developing language through the use of concrete manipulatives. Brown et al. (2009, p. 163) refer largely to the teaching of mathematical concepts with manipulatives, and refer to the importance of "using concrete materials to develop new knowledge and understanding". This research study looks to evaluate the implementation of 6B and the impact thereof on language and vocabulary development. Given the paucity of research, there are compelling reasons to conduct a unique investigation exploring whether six DUPLO bricks, used as manipulatives by learners, in an iterative process of playing and constructing, can scaffold and support children's language learning.

The importance of tactile learning is shown in a study conducted by Marley, Levin & Glenberg (2010; cited in Wellsby & Pexman, 2014) in which children with low reading skills were read sentences about a series of events. The children, who were assigned to three groups, either used toys to act out the story sentences or watched the person reading the story manipulate the toys and the third group only reread the sentences a second time. The results showed that children in the first and second group, who actively manipulated or observed the manipulation recalled the stories far better than the third group. This implies that the use of manipulatives promotes learning and understanding.

There have also been considerations regarding the type of manipulative that children should use in the classroom. Brown et al. (Brown et al., 2009, p. 161) suggest that "when educators choose concrete materials for classroom use, simple, bland materials" are the best option because "bland materials may allow students the flexibility to assign new meanings to the materials as their concepts change". This implies that the use of six DUPLO bricks, as a bland tool, could help learners assign meaning to their manipulations and builds. Brown et al. (2009, p. 161) also provide guidance for educators on defining the learning environment so that the manipulatives have a "positive instructional impact". Potentially this allows the educator to strike a balance between structure and spontaneity in lessons ultimately helping children learn better and more easily through social or academic processes. The materials

used in the 6B intervention will test the balance between structure and spontaneity in the development of language and vocabulary building.

2.7 The Role of the Educator in Playful Teaching and Learning

Although this research focuses on the children's experiences of learning language, the educator's role is central to language acquisition and development. Understanding the role of the teacher when considering language learning is important and certain factors must be in place in the environment for children to learn. These factors include guiding learners through a process, using Six Bricks as a vehicle for play and playful learning and in so doing, scaffold language structures, vocabulary development, the use of routine and iteration while the children are involved in representational and creative play.

Educators have a role in improving life situations of learners from diverse cultural backgrounds. By its very nature, play helps children learn language as it incorporates social interaction and cognitive development (Weisberg, Zosh, Hirsh-Pasek, & Golinkoff, 2013). This view is supported by Bodrova (2003), Roskos & Christie (2013), Wellsby & Pexman (2014), as they advocate that play and sensorimotor experience have an equally important role in language development through both direct and indirect child environment interactions.

As children grow from infancy through preschool and into primary school, their type of free play changes from "immature play" to "mature play" which Bodrova & Leong (2003) define as having certain characteristics. Of these mature play characteristics, the one relevant to this study, is the extensive use of language in planning, negotiating and acting out playful roles followed by the use of explanations of behaviour and regulation of rules. In their research, Bodrova & Leong (2003, p. 53) noticed that teachers who worked on scaffolding children's literacy development achieved

> best results when they focused on supporting mature play. Children in these classrooms not only mastered literacy skills and concepts at a higher rate but also developed better language and social skills and learned how to regulate their physical and cognitive behaviours.

An investigation into how play affects variations in language was conducted (Ferrara et al., 2011) with 3 groups of children. Each group was assigned different conditions whilst building

and playing with building blocks. The significance of this research showed that the parents and children in the guided play conditions produced higher proportions of spatial talk than the parents in the other groups, pointing to the importance of adult interaction and guidance in play and learning activities. With this research in mind, the role of the teacher in the 6B activities is to provide opportunities for the children to work in a space that is comfortable with his/her support.

2.8 Conclusion

This chapter provides a framework for this research study based on Vygotsky's theory of social constructivism as well as providing an overview of language learning and acquisition, play and language development, and the role of the teacher in this process. This chapter also endeavors to show a connection between the theory of existing research and the learning environment that working with 6B can create.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter describes the qualitative, exploratory research design behind the methodology, and the methods of data collection. Thereafter, the research site and the participants are discussed, and the data analysis techniques are explained. In addition, ethical considerations are reflected on.

3.2 Qualitative Research Design

A qualitative research design was selected to complete an in-depth study using observation techniques, focus group (FG) sessions and interviews to collect data from participants in their natural setting (McMillan & Schumacher, 2014). Qualitative research records "words, pictures, or video as data and identify patterns and themes in those data that result in narrative interpretations that create meaning" (Check & Schutt, 2012, p. 10). This allows the researcher to track progress over a period of time and to ultimately understand and describe rather than explain or predict the data (Babbie & Mouton, 2008).

This is an exploratory study. "Exploration is most often the motive for using qualitative methods" (Check & Schutt, 2012, p. 11) as the researcher begins the initial exploration into a hypothetical or theoretical idea. A qualitative exploratory design was used in this study to "identify themes, ideas, perspectives, and beliefs" (McMillan & Schumacher, 2014, p. 33) that occurred naturally in a Grade 1 classroom in an effort to provide data that explores what happens to children's language development, over a period of time, when exposed to playful learning activities using a concrete manipulative. Rather than comparing data, this design focuses on evaluating the data through qualitative methods using pre-, intervention and post-focus group sessions, whole class observations and semi-structured learner and teacher interviews, allowing for triangulation of data.

Qualitative methods are designed to capture educational reality as the participants experience it, rather than in categories predetermined by the researcher (Check & Schutt, 2012). Although this study makes use of some testing to establish general practices about whether there is development in language, this is not quantitative research through standardized testing. What I am trying to do is explore children's language learning in context of an exploratory study and

ultimately map progress in L2 language over a period of time and lay the groundwork that could lead to future studies.

3.3 Research Site

The Six Bricks (SB) programme was designed by Care for Education (CfE). To test the concept, a handful of pilot sites were selected in Gauteng, 2014, to implement daily 6B activities into the teaching timetable and to provide feedback to CfE on the ease in which 6B could be integrated into teaching and learning. A diverse range of schools were identified and included namely private, Section 20 and 21 schools as well as a number of Grade R[1] classes. The site selected for my research is a Section 21 school, called Bakersfield[2] that I had a working relationship with. The principal knew of the work we were trying to do through our company and understood the potential of implementing concrete manipulatives into the teaching and learning process.

As this study aims to investigate the use of concrete manipulatives on vocabulary and language acquisition in Grade 1 learners, this government primary school was selected as a purposeful convenience research site. The school caters for children from Grade R through to Grade 7. In the Foundation Phase there are 3 classes in each grade. The pupil-teacher ratio throughout the school is 35-1, although some classes have less pupils as a result of Governing Body teacher posts. The school is located in the northern suburbs of Johannesburg and has seen the surrounding neighbourhood become less residential and more commercial. With this change, the number of children entering the school system are not locally based but generally commute with their parents as they go to work. The learners represent a population of lower to middle class urban children. The majority of these children are not first language English speakers. The demographics of the school reflect the reality of many urban schools in Gauteng.

The school had previously received a small amount of training using other manipulatives in the classroom and the principal and teachers were open to a new initiative. Although the Grade 1 children at the school may have played with Duplo at home, the school did not have any LEGO equipment in the classroom and the children had not been exposed to this manipulative before the research study began. This allowed the introduction of 6B to be new and exciting for the children.

[1] Grade R refers to the Reception Year or the year before learners in South Africa start formal schooling.
[2] Bakersfield is a pseudonym

3.4 Research Participants

There are two groups of research participants in this study. The Grade 1 teacher and the Grade 1 class.

3.4.1 The Grade 1 Teacher

The Grade 1 teacher is a white woman over the age of fifty. She is English speaking and has a teaching diploma with over twenty years' experience in the classroom. She had been teaching at the research site for three years. The teacher received training and guidance in the use of Six Bricks. This training was conducted by the researcher and consisted of an initial 60 minute workshop, followed by a further 30 minute session. During the study, additional tips and supports were given. The teacher also received a booklet of Six Brick activities to start the process and to motivate the development of her own ideas to integrate with her lesson preparation. Her experiences and critical evaluation of the Six Bricks concept was invaluable to the exploratory design of this research.

3.4.1.1 Teacher Training with Six Bricks

The teacher training session was hands-on and the teacher practiced each of the activities she was going to use in the first few weeks of the study. With each activity there was a discussion about the skills that were being taught and how these skills could be integrated into the teaching of literacy, numeracy and Life Skills. When 6B was conceptualized, careful though was given to the design of the 6B activities. The activities aim to develop cognition and promote language learning in both literacy and numeracy through social engagement. The strategies a learner uses to develop language and the effectiveness of these strategies very much depend on three measures, namely:

> the learner him/herself (e.g., attitudes, motivation, prior knowledge), the learning task at hand (e.g., type, complexity, difficulty, and generality), and the learning environment (e.g., the learning culture, the richness of input and output opportunities) (Yongqi Gu, 2003, p. 3).

Very seldom, in a classroom situation, are all of these three measures achieved in one activity or learning experience, but with 6B, all three measures are an ideal in the design. An example of this is presented in week 1 of the research study. The teacher completed an

individual 6B activity with the whole class called ‘Discover Six Bricks 1’ (Appendix A). At the start of the activity the learners were immediately engaged and motivated as they spread out the six bricks in front of them. Because they realize that they are about to play, this raises the level of excitement. The learning environment provides rich input and output opportunities for the children to hear, say and learn language. The learning task is quite complex as it involves listening and following instructions, movement, matching and cognitive skills. The teacher asks the learners to close their eyes and shuffle the bricks around on their desk. Without opening their eyes, they pick one brick and hold it up in the air. Only then were they able to open their eyes. This simple 15 second instruction and action called on the children to use self-control and inhibitory control to follow the instructions and to keep their eyes closed. They are also listening and following instructions. The teacher then asked the learners to open their eyes and name the colour of their brick. The children were asked to get up and stand next to a child that had the same colour brick. Although this movement caused a little chaos in the class, especially as this is one of the first opportunities the learners had to play with 6B, they found a colour partner. The teacher then asked each colour partner to name something that they see in nature and that is the same colour as their bricks. The colour partners with a blue brick said the words, sky and flowers and the children with yellow named sun, flowers, and banana. If any pair struggled to give words, the teacher stepped in and asked the whole class to think of words associated to the colour.

3.4.2 The Grade 1 Class

The Grade One class of 27 learners consisted of 13 boys and 16 girls. During the 14 weeks of the study, the whole class was observed engaging with the Six Bricks on a weekly basis (see Table 3.2). During these observations, field notes and some video footage of the children completing whole class 6B activities, was taken.

From this class of 27, a focus group (FG) of 10 learners provided further qualitative data. In consultation with the class teacher, the 10 FG learners were specifically chosen to accommodate varying academic abilities. There was also a combination of learners who had attended Grade R at Bakersfield school and others who had attended Grade R at different institutions. One of the FG children had not attended any Grade R or preschool. Within the focus group of 10 children, there were 4 boys and 6 girls. Eight of the children were six, some turned seven during the course of the study. One child was five years old and another was seven years old at the beginning of the study. Of the ten children in the

focus group (FG), 7 children spoke Zulu as their home language (L1), 2 children spoke Tswana and 1 child spoke Sotho.

This purposeful sampling (McMillan & Schumacher, 2014) was used to ensure that the research participants would provide the necessary information to answer the research question. The table below summarizes the demographic information regarding the ten Focus Group learners. All names are pseudonyms.

Table 3.1: The 10 Focus Group Learners

Name	**Gender**	**Previous Year**	**Age in Feb 2015**	**Home Language**
Lungi	Male	Gr R at present school	6	Zulu
Mbilo	Male	Repeating Grade 1	7	Zulu
Kama	Female	Gr R at present school	6	Tswana
Wilson	Male	Gr R at different school	6	Tswana
Tisa	Female	Gr R at different school	6	Zulu
Noma	Female	Gr R at different school	6	Zulu
Nobani	Male	Gr R at present school	6	Zulu
Ona	Female	Gr R at present school	6	Sotho
Maba	Female	No previous schooling	5	Zulu
Notelo	Female	Gr R at different school	6	Zulu

3.5 Procedures

This qualitative study was conducted from February to June 2015 over a 14-week period. Contact was made with the teacher in the first week of February to discuss the study and what was required of her. The teacher was asked to complete a minimum of two short activities per day and to repeat activities regularly during the course of the study. She was to focus on the playfulness of learning in each of the activities, encouraging the children to explore language and develop the confidence to speak without the concern of reprisal and constant correction.

A week before the study began, I visited the class to introduce myself. During this time, I explained 6B to the children and how they would each receive their own set to use while

they were in Grade 1. It was during this week that 10 Focus Group (FG) learners were identified by the teacher. These 10 learners, in groups of 3 or 4, participated in a pre-intervention FG session.

The study began the following week with whole class receiving their Six Bricks and being introduced to simple, individual activities which then progressed over the weeks to come (Table 3.2).

For the first 6 weeks, observations were conducted twice a week with one of these observations being videoed. For the remaining weeks of the study, observations and video footage were taken once a week. Field notes were taken during observations. Each visit to the classroom lasted between 20 – 45 minutes, depending on the 6B activity. In week 10 and 11, when the bricks were used in the 'Hot and Cold Creatures' activity, visits to the classroom were longer to incorporate observation of the children using language in storytelling. Table 3.2 provides a breakdown showing the nature of the 6B activities covered over the 14 weeks as well as the timeline of the FG sessions.

Table 3.2: The 14 week Six Brick programme for the research study

Week	Date	Data Collection	Aim	Skills
	9 - 13 Feb	Focus Group	Pre-intervention FG Session	Free building, listening & speaking, positional language, visual memory, prepositions
1	16-20 Feb	Whole Class observation	Introducing 6B. Individual activities using individual bricks. Introduce cube	colours, sequencing, ordinal numbers, positional language & prepositions, physical movement with cube
2	23 - 27 Feb	Whole Class	Getting to know the bricks. Individual activities	Build towers, visual memory, patterns, physical movement with cube
3	2 - 6 Mar	Whole Class	Integrating the 6B into teaching of language skills. Individual activities	Positional language and prepositions, visual memory
4	9 - 13 Mar	Whole Class	Using 6B to determine dominance & laterality. Physical activities	Building towers with dominant and non-dominant hands. Towers with eyes closed, blind build
5	16 - 17 Mar	Focus Group	Intervention FG Session	Creative building, listening & speaking, positional language, memory games, prepositions
6	23 - 27 Mar	Whole Class	Working with partners and groups	Auditory skills & sequencing, blind builds, tower building
7	13 - 17 Apr	Whole Class	Working with partners and groups	Sorting activities - stud position, hot and cold colours
8	20 - 24 Apr	Whole Class	Working with partners and groups	Physical movement, memory games, auditory games
9	4 - 8 May	Whole Class	Introduce 6B into a literacy activity that will take 3 weeks to complete. Group work	Brainstorming vocabulary linked to hot and cold colours
10	11 - 15 May	Whole Class	Creating story around hot and cold creatures. Group work	Collaborative learning - building hot or cold creatures and describing them
11	18 - 22 May	Whole Class	Creating story around hot and cold creatures. Group work	Collaborative learning - telling story using the creatures and share language
12	25 - 29 May	Whole Class	Teacher Integrated 6B in daily activities with iteration of activities	Creative building, listening & speaking, memory games
13	1 - 5 Jun	Whole Class	Teacher Integrated 6B in daily activities with iteration of activities	Creative building, listening & speaking, auditory memory games
14	8 - 11 Jun	Whole Class	Teacher Integrated 6B in daily activities with iteration of activities. Included physical games	Creative building, listening & speaking, tactile & memory games, relay games
	15 - 19 Jun	Focus Group	Post-intervention FG session	Creative building, listening & speaking, positional language, memory games, prepositions

The whole class observations examined how Grade 1 learners engaged with the 6B activities and whether the playfulness of these tasks encouraged the learners to verbalize

and use language. The FG sessions were used to track what happened to the 10 children's language over a period of time when exposed to the 6B manipulative in a natural setting.

3.5.1 The Pre-intervention FG Session

A pre-intervention FG session was conducted to establish the level of language and communication used by the learners at the beginning of the study. As an exploratory study, I wanted to get a sense of the children's language ability in a specific context and there was no intention to complete a battery of tests. In this FG session, the learners were provided with a variety of creative DUPLO elements (e.g. flowers, gates, windows, transparent bricks), not just Six Bricks. The emphasis was on exposing the learners to the manipulative and to help them feel comfortable with the activities they were about to participate in.



Figure 3.1 FG learners using different DUPLO elements to build a model during the pre-intervention

Thirty to forty-minute time slots were arranged for each group of learners to complete this initial session. At the start, the FG learners were invited to see the video recording apparatus and permission was asked and received to record the session. They were then given time to experiment and construct a model using any of the available DUPLO pieces. Whilst constructing, and at various intervals, the learners were asked to describe and explain their models. Questions were posed to each learner about their build and short conversational occurrences ensued. On review of the video footage notes were taken on each child's ability to construct sentences using oral language, looking at the number of words used in each sentence or phrase and the number of parts of speech used. The next activity in this session was one on positional language and prepositions. The learners were asked to look at a picture and explain where various aspects of the picture were found. This activity was followed by a visual memory activity in which the learners had to remember a sequence of 2, 3 or 4 numbers. Observations of directionality and dominance were also noted. A copy of the activities and the questions that were asked in this pre-intervention FG session are supplied (Appendix B).

3.5.2 The Intervention FG Session

In the 5th week, after 4 weeks of playing and completing simple exercises with the Six Bricks, the FG learners were asked to complete various activities using only their Six Bricks. The activities once again looked to test the learners' understandings of positional language and prepositions, directionality, visual memory, creativity in their building and sentence construction when they talked about what they built.



Figure 3.2 FG learners using Six Bricks after four weeks of the intervention

Two groups of children worked with a partner in a group of 4 and one group had two children who worked with each other. This intervention FG session was conducted outside the classroom setting where the groups of children could talk and engage freely with the bricks without interruption.



Figure 3.3 FG learners using Six Bricks to complete a visual memory game

3.5.3 Post-Intervention FG Session

After 14 weeks of playful learning with the Six Bricks, the FG learners were re-evaluated on

- Prepositions because of their importance and function in language and meaning making
- visual memory because of its importance in reading, decoding and working memory
- creative building and ability to use language in explanations to note any changes in fluency and extended discourse

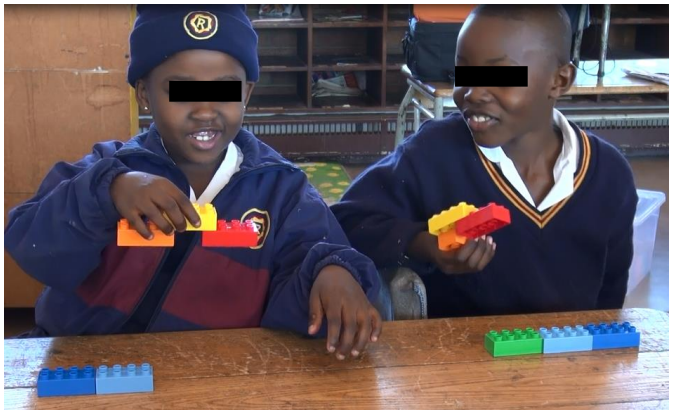


Figure 3.4 FG learners using Six Bricks post intervention

Table 3.3 below provides an overview of the activities that were conducted during the different FG sessions.

Table 3.3: Activities conducted during the 3 FG sessions

Activity	Pre-intervention session	Intervention session	Post-intervention session
Working from L to R and crossing midline	Observed through video footage	Noted L to R movement through positional brick activity. Crossing midline activity using bilateral integration activity	Noted L to R movement through positional brick activity. Crossing midline activity using bilateral integration activity and observation
Question & Answer	Questions asked about the build / model	Questions about favourite and least favourite 6B activities	Children had to ask their own questions to each other about their 'birthday presents'
Visual memory	Number sequence using cards	Colour sequence using the 6B	Colour sequence using the 6B
Prepositions	Ask positional language and prepositions from a 2D picture	Listening to auditory instructions and moving bricks accordingly. Placing finger on bricks relating to ordinal position	Listening to auditory instructions and moving bricks accordingly
Creative Build	Build any model using many DUPLO elements	Building a tower first individually then with a partner using only 6B	Build a birthday present for your partner using only 6B. The partner must guess what the present is before finding out what it actually is

As this is a qualitative study, my focus of research was not on any standardized testing or testing children against each other, rather, my interest was to determine if there was a level

of language improvement over time. In analyzing the data, I comment on data selected from the FG sessions, whole class observations and activities as well as focusing on evidence of complete and coherent sentence structure, the creative use of vocabulary and the emotional journey of the child and the teacher.

3.6 Data Collection Instruments

3.6.1 Observations

According to McMillan & Schumacher (2014, p. 224) observational methods rely "on a researcher's seeing and hearing things and recording these observations, rather than relying on subjects'" responses. As such, I decided on being a participant observer in the Grade 1 class to observe the 6 brick classroom activities and note how the learners engaged with the bricks and with one another. Observations during classroom visits were recorded in the field notes and video. Fourteen whole class activities, one for each week of the study, were recorded.

Before the exploratory study began, I went into the classroom to observe the children during their school day. This had a two-fold purpose; firstly, to allow the children to become comfortable with the presence of someone in their classroom and secondly, to begin identifying the ten FG learners. Observations were key to the classroom visits and the focus group activities but the learners' responses and oral communication in English were central to determining if 6B could act as a catalyst to promote language acquisition and learning. The schedule used for the classroom observations is provided (Appendix C).

3.6.1.1 Video Recording

The use of video recording as a tool for data collection is able to capture the context as well as the action of an event. Rosenstein (2008, p. 23), adds that the "focus of the observation is usually some form of social interaction" allowing for the observation of both verbal and nonverbal cues. The process of collecting data through video observation "is not static" rather "dynamic and provides further information, thus enhancing the original data" (p. 25). Being able to repeatedly view video footage, looking not only and the social interaction of the children but also looking at other cues that stimulate language was crucial to this study.

Video recording was used at two different stages of the study. Firstly, the three FG sessions were recorded in their entirety and secondly, observations of the whole class engaging in a 6B activity once a week were recorded and transcribed.

3.6.2 Interviews

Two sets of semi-structured interviews were carried out, firstly with the teacher and secondly with the FG learners during their FG sessions. The two semi-structured teacher interviews took place during and post intervention, both of which were audiotaped. The schedule used for the interviews is provided (Appendix D).

Informal discussions were also held between the teacher and researcher mostly after observing a classroom 6B activity. The exploratory nature of the research allowed the teacher to share her experiences using the Six Bricks. The discussions were also used to support her during the intervention with help and suggestions on how to engage the children in activities. Data on the teacher and the work that she did was collected but due to the size constraints of this report, the research focus remained on the children.

3.6.3 Focus Groups

During the intervention and post-intervention FG session, the children were informally interviewed by asking questions relating to Six Bricks practice in the classroom. During the intervention FG session the learners were asked about their favourite and least favourite 6B activities. When answers were given the learners were asked to expand their reasoning. The learners were also asked to think up their own 6B activity, to explain and play it with the rest of the group. The interaction between researcher and learners gave insights into how the learners viewed 6B in the classroom and how they felt about playing and completing the tasks. Their responses also provided opportunities to communicate and use language. In the post- FG session the learners were interviewed, again to determine the children's experiences of using 6B.

The FG sessions were conducted either in pairs or with four children at a time. It was important that the children did not feel like they are being tested so these sessions involved playful, hands on activities. The FG allowed the researcher to find information that was specific and relevant to the study and during the individual observations of each child there was time to

evaluate their progress as they engaged with the 6 bricks. The FG sessions were video recorded and transcribed.

3.7 Data Analysis

"Qualitative data analysis is primarily an inductive process of organizing data into categories and identifying patterns and relationships" (McMillan & Schumacher, 2014, p. 395). The data generating instruments, namely the pre-, intervention and post-intervention FG activities and interviews, the whole class observations, and the teacher interviews were chosen for this study in an attempt to provide a triangulated perspective that could satisfactorily answer the primary research question; '*What are the potential benefits of implementing the Six Bricks educational programme, in terms of language development, in Grade 1 learners in the South African context?'* Using triangulation permits "the cross-validation among data sources, collection strategies, time periods and theoretical schemes" (McMillan & Schumacher, 2014, p. 407) in the hope of yielding "different insights about the topic of interest and increase the credibility of findings" (McMillan & Schumacher, 2014, p. 355).

The qualitative data derived from the pre-, intervention and post FG sessions, together with the whole class observations and semi-structured teacher interviews was transcribed, examined, reviewed, and categorized. Using the steps listed in McMillan & Schumacher (2014, p. 397) the analysis involved:

- collecting and organising the data
- transcribing the data into segments
- reading all the transcripts several times and making notes of themes that emerged;
- coding the data/themes
- describing and categorizing the data
- grouping together the data belonging to each category and individually analysing them to develop patterns

The inductive process of analyzing the data allowed me to delve deeper into the data and to develop an understanding of the findings which in turn provided an opportunity for themes and patterns to emerge. I looked for patterns of convergence from the different sources and that related to the conceptual framework of the study. These are explained in the two data analysis chapters.

The focus of chapter 4 addresses the general language development of the FG learners across the 14-week timeline. The focus was on tracking the way in which the FG learners used language in their descriptions and explanations as well as the type of language used. A level of progress was noted and I use Vygotsky's theory of language development and his notion of ZDP in the analysis.

Chapter 5, looks at the language learning and acquisition of the whole Grade 1 class and that of the FG learners. The focus of this chapter is to answer the question '*How does the use of "6 bricks" support language acquisition and development?'* and *'What are the children's experiences of using "6 bricks" in communicating and expressing language?'* The analysis applies the Six Principles of language development (Konishi et al., 2014) and how these manifest whilst the children are engaging in 6B activities. Learning language as an L2 learner is different to that of L1 and as such chapter 5 looks to see if the children's vocabulary improves according to the five stages of L2 learning (Krashen & Terrell, 1995) and what this improvement looks like.

3.8 Ethics and Limitations

Researchers have a duty and obligation to abide by the code of conduct that governs most professions (Babbie & Mouton, 2008). This research study was personally motivated as a result of my life and work experience and academically motivated as I wanted to gain a better understanding of certain educational processes that influence language development in L2 learners. Considerations were made to ensure that I had no influence on the proceedings taking place in the classroom by only being involved in classroom observations and not engaging in any teaching of the children. My ethical responsibility, to act as a mentor when the teacher asked questions about her practice of 6B, was undertaken during break time, after school or at scheduled interviews.

Following the accepted professional ethics of research, an ethics application form was filled in and submitted before the research started. The committee issued consent and approval of the research study (reference number D2015/334). Letters of information outlining the intention of the research project were sent to the principal of the school, the parents/guardians of the Grade 1 children and to the teacher. Consent from the school, teacher, parents and voluntary participation of the Grade 1 learners were obtained. These letters of information and consent are provided in Appendix F. Parents of the Grade 1 class involved in the study completed the consent form which provided permission to take and use video footage and

photographs. Pseudonyms for the school and participants were used when presenting the results and data analysis.

There are limitations with regards to the size of this study as it is very small. This study does not include a control group and therefore I cannot compare the language growth nor claim or measure how 6B can influence language development. However, I can compare the children's language performance against each other over a period of time.

The limitations regarding the data collection must also be noted. Although this research provides anecdotal evidence of language development, one could argue that children in an English learning environment will have increased language growth regardless of specific interventions, so this study would have to be followed by larger scale research incorporating control groups and more participants, perhaps cohorts of schools, in a quantitative design.

CHAPTER 4

RESULTS OF THE FOCUS GROUP PRE-, SIX BRICKS PRORGRAMME AND POST-TESTING

4.1 Introduction

In this chapter the results from the analyses conducted on the qualitative data generated are presented in an attempt to ultimately answer the research question; *What are the potential benefits of implementing the Six Bricks educational programme, in terms of language development, in Grade 1 learners in the South African context?* The focus of this chapter looks at how the Six Bricks programme allows a teacher or researcher to introduce specific linguistic elements, in a scaffolded manner and how the children react to this guided learning experience. The patterns in the children's individual performances are also investigated looking at the quantity and quality of linguistic participation as it plays a crucial role in children's language development (Rowe, 2013). This linguistic input and output is measured in a variety of ways: firstly, by looking at how the FG learners developed directionality skills which included crossing the midline and working from left to right. This was followed by how they applied prepositions and positional language. Visual and working memory was also tested. Finally, an analysis on how the FG learners explained their creative builds was carried out. This analysis included looking at the number of simple and compound sentences and the use of nouns, verbs and adjectives/adverbs each learner used.

4.2 Results of Perceptual Development Activities with Focus Group learners

For children to become fully literate and to use language to communicate, the development of perceptual skills are essential and have long term consequences. Although perceptual skills are not specific to language development they are crucial for literacy (Excell & Linington, 2011) and for this reason I have included the FG learners' ability to cross the midline, work from left to right and visual memory skills in this study.

4.2.1 Directionality - Crossing the Midline and Working from Left to Right

Crossing the body's midline and the ability to consistently work from left to right is an important physical and perceptual skill. Difficulty in these positional movements could pose a problem for a child when tracking a moving object from side to side or from left to right in reading and writing activities. These skills are also important in the development of physical co-ordination, holding body position and in assisting children to recognise the position of letters and numbers, such as b/d, p/q, 2/5, 9/6. Directionality is but one of the processing skills that promotes language awareness and acquisition, and influences comprehension and fluency in a second language learners (Naghidipour, 2015). For this reason, I wanted to exclude this criterion as a possible cause for poor language development, however, I found that from the ten FG learners, there were still some, at the start of the study who could not cross the midline nor work consistently from left to right.

Four of the learners did not spontaneously cross their midline (Figure 4.1). The number of learners crossing the midline dramatically increased five weeks later, only one learner, Tisa, who continued to struggle with this skill.

Figure 4.1: Ability to cross the midline and work from left to right

Pre-intervention		Intervention		Post Intervention	
Crossing Midline	L to R	Crossing Midline	L to R	Crossing Midline	L to R
Notelo	Notelo	Notelo	Notelo	Notelo	Notelo
Kamo	Kamo	Kamo	Kamo	Kamo	Kamo
Maba	Maba	Maba	Maba	Maba	Maba
Noma	Noma	Noma	Noma	Noma	Noma
Lungi	Lungi	Lungi	Lungi	Lungi	Lungi
Nobani	Nobani	Nobani	Nobani	Nobani	Nobani
Wilson	Wilson	Wilson	Wilson	Wilson	Wilson
Mbilo	Mbilo	Mbilo	Mbilo	Mbilo	Mbilo
Ona	Ona	Ona	Ona	Ona	Ona
Tisa	Tisa	Tisa	Tisa	Tisa	Tisa

Achieved
Not achieved

The ability of the FG learners to work from left to right presented some unexpected results. In the pre- FG session, six learners did not work from left to right and displayed inconsistencies in this perceptual skill. In the intervention FG session two of the six learners had corrected themselves, however, an additional learner, Noma, who in the pre-FG session worked from left to right, did not display this same competence as in the pre-intervention session. It was noted with interest that Noma competently moved between the two directions, and starting on the left or right seemed to have no consequence for her. When it was pointed out that she was working from right to left, she was quickly able to compensate, switching and working from left to right. This was however, not consistently followed when doing the various activities throughout the intervention. Noma is one of the top academic students in the class and was able to compensate when reading or writing from left to right but her ability in using positional language and descriptions that involved directional language were impacted.

The Six Brick activities to develop directionality focus on developing an understanding of spatial position and ordinal numbers. In each of the testing situations, the learners had to complete a practical activity, moving the bricks to show understanding of position in space. The learners physically counted the bricks to determine the position but as not all learners worked consistently from left to right, and as this determined the position of bricks, it did cause answers to differ at times.

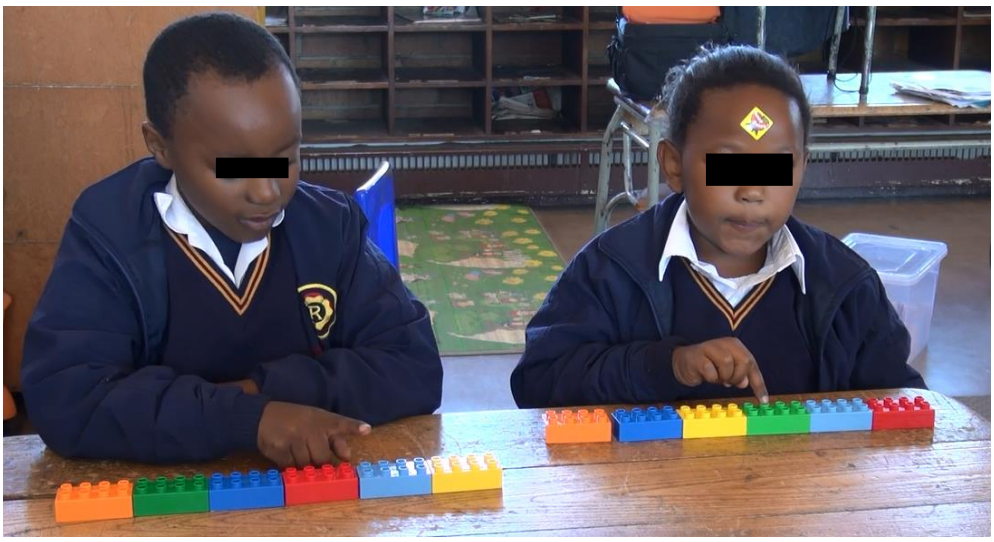


Figure 4.2: Working with ordinal numbers and moving from left to right

Figure 4.2 shows two of the FG learners listening to instructions then positioning bricks accordingly. They were asked to place their finger on the third brick then move that brick to the front of the sequence. For the teacher, the large, colourful manipulatives, allowed for

quick and easy detection in determining if the learners correctly understood what was being asked. The learners were able to complete each task quickly. If a child got an answer incorrect, he/she was asked, “Is yours the same as mine?” followed by “Can you make it the same as mine?” This prompted the learner to look for differences or similarities and make changes. The facilitator did not stress that the answer was wrong or right, she merely directed the learner to self-correct. The overall understanding of position in space and ordinal numbers developed with practice, although it cannot be argued that this is entirely as a result of 6B as the learners would have had mathematical input during this time. During the post FG session, all learners were able to identify and use ordinal numbers correctly.

4.2.2 Visual Memory

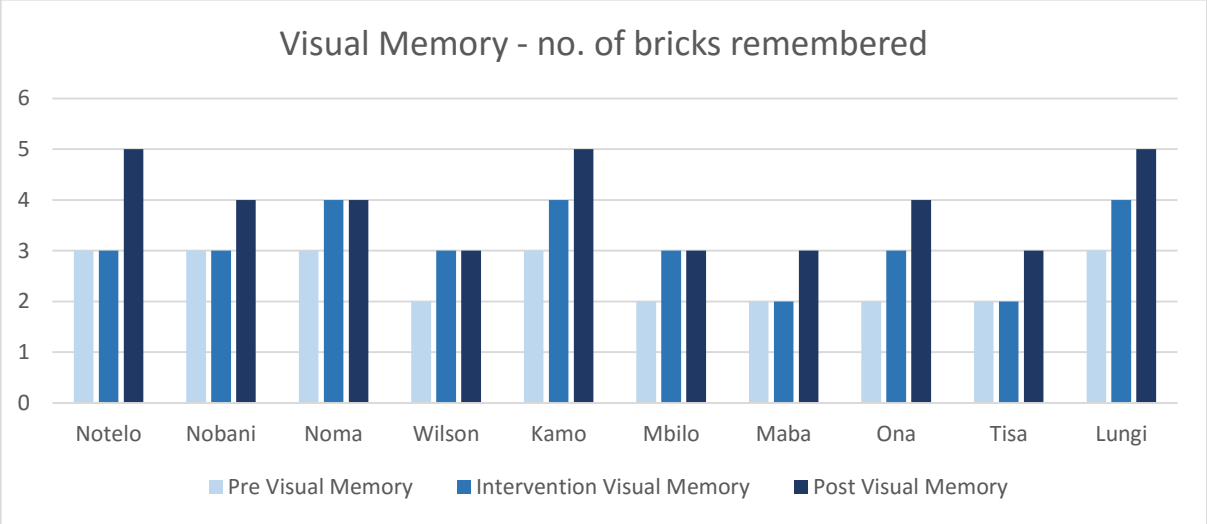
Visual perceptual skills or the ability to acquire and interpret information through the eyes is essential for learning to speak, read and write. Working memory is an executive function which is critical to support learning and development in children, allowing them to retain and work with information in their brains, focus their attention, and filter distractions (Bowne, 2014). Evidence linking performance on working memory tasks to vocabulary acquisition, in addition linking play to verbalization, vocabulary, and language comprehension (Bodrova & Leong, 2003; Gathercole, Lamont, & Alloway, 2006; Smilansky & Shefatya, 1990) provided the motivation to work with learners to develop visual memory through Six Bricks activities. These activities are designed to help the learners self-regulate by practising inhibitory control.

In the pre-, intervention and post- sessions, the FG learners were asked to remember a colour sequence of DUPLO bricks, starting with 2 bricks and potentially working up to 6. Learners had to leave their bricks on the table and they were not allowed to touch them until given the command, “Go”. Besides practising visual and working memory, I was also interested in the development of inhibitory control, a skill vital in assisting children remember the information they need to complete a task, filter distractions, resist inappropriate or non-productive impulses, and sustain attention during a particular activity (Bowne, 2014).
The activity is conducted by the teacher, selecting a number of bricks from the Six Bricks and clicking them together without the children seeing. These bricks are then held up for 8 – 10 seconds. Without touching the bricks, the children try to remember the sequence of colours before the teacher hides the bricks and then gives the command for them to start building. Initially the children tried to remember by repeating the sequence of colours in their heads over and over again. This was noted by some children mouthing the colours as they

repeated them, whilst others stared intently, nodding heads or swaying slightly as they tried to recall the sequence. Once given the instruction to start building the sequence some children would build with the colour at the bottom of the pile while others would begin at the top. Any lapse in concentration caused that repeated mantra going on inside their heads to falter and the children would forget part of the sequence.

The results shown in figure 4.3 indicate the progression of the FG learners over the 14-week intervention and their ability to consistently remember a sequence of colours. By the end of the intervention, all FG learners were able to remember 2 and 3 brick sequences and there was an increase in the number of learners remembering 4 and 5 brick sequences.

Figure 4.3: Visual memory activity for remembering a colour sequence of bricks.



Interestingly, it seems to be a correlation with higher academic performance and the learners who were able to consistently remember 4 or 5 brick sequences (Notelo, Nobani, Noma, Kamo, Ona and Lungi). There is vast literature (Bodrova & Leong, 2006; Cockcraft, 2015; Gathercole et al., 2006) that has already established a clear link between working memory skills and scholastic performance and my research seems to support existing research in this regard.

Figure 4.4 and 4.5 show two FG learners holding up 3 or 4 colours they have remembered. Their facial expressions point to the excitement and "fist-pumping" satisfaction of getting it right. Even if learners did not get the exact sequence, they were able to self-correct by simply re-arranging their bricks. The learners loved this activity and many pointed to it as their favourite game (Vid footage, Mar, 2015). During the second FG session, Noma was criticized

by her partner for getting a sequence of colours wrong. Her reaction was to say “It doesn’t matter” (Video footage, Mar, 2015) and she continued with the activity. She was relaxed and comfortable enough with her peers to voice her opinion since she knew that “making mistakes is acceptable” (Murphey & Hiroko, 2001, p. 7) and part of the learning process. She also knew that there was no negative recourse in getting something wrong, rather, she laughed about it and merely changed her brick sequence to show the correct answer.

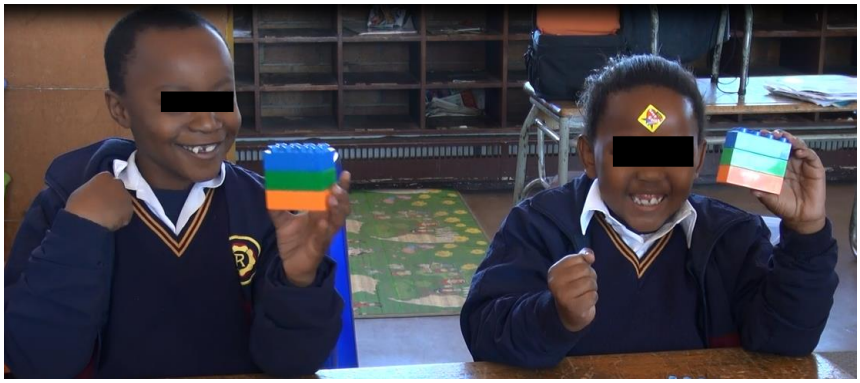


Figure 4.4:

Visual memory activity – remembering 3 colours

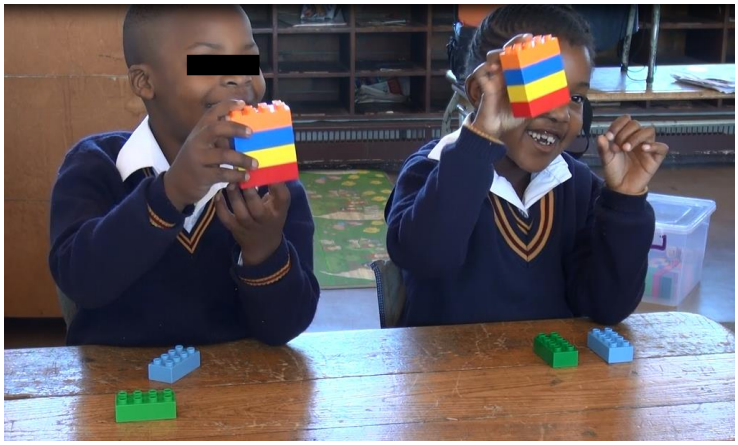


Figure 4.5:

Visual memory activity – remembering 4 colours

Another way in which the children started to remember the sequence of colours was through association. In week 7 of the intervention, the learners were introduced to warm (red, orange and yellow) and cold (green, light blue and dark blue) colours. Following this, when doing visual memory activities, the children started associating the colour sequence to warm and cold colours and this helped them to remember. Using association of colours also helped the learners remember the colour sequence for a longer period of time. An example of this was when the teacher held up a 3 colour sequence with yellow at the top, green in the middle and blue at the bottom. The children were asked to remember the sequence using association. One child remembered the sequence by saying “Yellow is the sun, green is the grass, blue is water” (Field notes, April 2015). Remembering the sequence in this way

allowed her to create a picture in her mind and she was able to hold the information for a longer period of time. This was further highlighted during the post intervention FG session when one of the learners, Kamo, laid out her bricks on the table saying “I am putting it like cold and hot” (Field notes, 2015) in preparation for the visual memory exercise (Figure 4.6). Without any prompting, the boy sitting next to her quickly arranged his bricks in a similar fashion. Kamo was one of the few children to remember a sequence of 5 colours consistently.



Figure 4.6:

Warm and cold colours

4.3 Results of Language Development Activities with Focus Group learners

Research has shown that “learning vocabulary is an ongoing process that takes time and practice”, (Mehring, 2005, p. 3). One of the principles identified by Konishi et al. (2014) is that children learn words best in meaningful contexts. To make learning meaningful, the 6B were used in activities that required the learners to move or construct the bricks to show their understanding of what the educator was teaching.

4.3.1 Prepositions and Positional Language

Prepositions are important in helping learners connect various parts of a sentence and help them understand the space around their bodies. Parish-Morris et al. (2013) explain that “open-class words such as nouns, verbs and adjectives are produced more frequently than closed-class words like prepositions” (2013, p. 876). We also know that prepositions and positional spatial language are key to understanding the relationship between objects, illustrated by words such as behind or next to (Ferrara et al., 2011), therefore, increasing the learners’ understanding and correct use of prepositions was a research criteria.

With this in mind, the learners had to show their understanding of positional language and prepositions by building and moving the Six Bricks. During the pre- FG session, learners were asked simple questions about a picture, noting where various bricks were placed. Eight prepositions were tested, (see Figure 4.7).

Figure 4.7 List of prepositions tested during each FG session

Pre-Intervention	Intervention	Post-Intervention
above	above	above
in front	in front	in front
on / on top	on	on
below	below	below
next to	next to	next to
behind	behind	behind
to the left/right	to the left/right	to the left/right
in	in	in
	in between	in between
	under/neath	under/neath
	above	above
	on top	on top
		against
		before
		after
		over

Of the ten FG learners, Notelo, Nobani, Noma, Kamo and Lungi were able to consistently use these words correctly. In the intervention and post FG session, the learners had to use their Six Bricks to show understanding of the previous prepositions as well as an additional 4 prepositions.

It is also interesting to note the level of increasing sophistication when working with prepositional phrases in context in English. When completing prepositional activities with the bricks, the children were also learning prepositional phrases that incorporated verbs. An example of this is when the children were asked to place a red brick under the blue brick or 'click' the red brick under the blue. The two different ways of completing this instruction provided a level of nuance in which the children could slide the brick on the table to show 'under' or they could lift and click the brick under the blue brick.

Figure 4.8: Results of testing prepositions using the Six Bricks

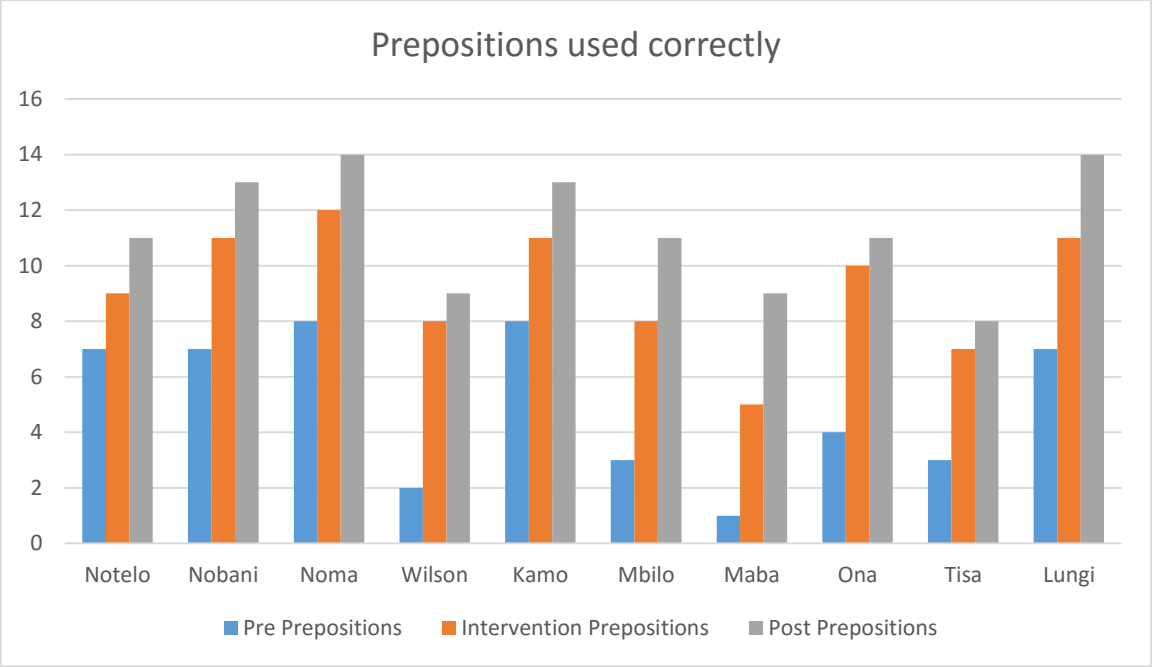


Figure 4.8 shows the progression of the individual learners and their ability to demonstrate their understanding of prepositions. There is a limitation with regards to this claim as there was no control group to validate the finding. However, all FG learners showed steady improvement in being able to position the bricks according to an instruction. A typical instruction given by the teacher would be “Click the green brick under the red brick” or “Place your yellow brick under your desk”. In one activity, the learners played an activity called “Back to Back” in which they had to use language, vocabulary and prepositions to a partner when giving oral instructions. The two learners sat back to back each holding 3 bricks of the same colour. One learner then built a model and explained to his/her partner how to construct it without looking, the partner just had to listen. The transcript and picture (Figure 4.9) of Noma and Wilson completing this activity is given below. Noma had the first opportunity to explain how to build the model. Note her use of prepositions and positional language even as she changes her initial instruction, using two different prepositions to explain the same instruction. She appeared to be happy with the sequencing and position of the bricks that her partner, Wilson, had completed. To her, the fact that the bricks were in the correct position and that he had covered the same amount of studs as her model, even though the position was slightly different, was correct in her eyes.

Noma:	Take your red brick and put your yellow brick under your red brick covering 4 studs anyhow.
Wilson:	Repeat it again Noma.
Noma:	Take your yellow brick. Um - |take your red brick and put your red brick on top of the yellow brick covering 4 studs anyway. *(Wilson covers all 8 studs).*
Wilson:	Covering how many studs?
Noma:	4
Wilson:	4 studs *(Wilson counts 4 using 1 to 1 correspondence then re-clicks the brick)*
Noma:	And then take your light blue and put it on top of your red brick.



Fig. 4.9: Comparing models after completing the back to back activity.

Researcher:	Ok, turn and have a look. You are so close – what is different?
Noma:	That one is dark blue
Researcher:	Yes and what about the bottom brick? What happened there?
Noma:	I said he must cover it anyway.
Researcher:	So you didn't mind if it wasn't exactly the same as yours?
Noma:	Yes

In the post- session, the FG learners used the prepositions previously learned correctly as well as some of the prepositions introduced later in the intervention. Being able to physically manipulate the bricks to show their understanding of positional language, helped the learners describe their world in a more meaningful way. It was also evident, during the post- session, that when communicating verbally, learners were able to use prepositions in context and their sentence construction flowed more smoothly.



Figure 4.10:

Showing understanding of prepositions

Figure 4.10 shows four of the FG learners listening to instructions on what to do with their bricks. An example of an instruction was to "click the dark blue brick under the light blue brick then place those two bricks in the middle of the table on the green circle." It was noted that as the learners became more comfortable with the bricks, they would watch each other intently. Learners very quickly started to realise if their bricks were placed correctly. If they were incorrect the child unclicked, then re-stacked their bricks and there was no need for the teacher or researcher to point out the error. Self-correction and peer participation became a natural process in which all of the learners were able to experience success. This will be discussed further in chapter 5.

4.3.2 Sentence Construction and the Description of Creative Models

When playing with Six Bricks, the learners had to complete activities which required creative thinking, problem solving, using the bricks as symbolic structures, communication to increase concentration and collaboration. It is well researched that children learn most effectively through being involved in rich experiences and practical activities promoted through play (Bodrova & Leong, 2003; Brock & Rankin, 2008; Roskos & Christie, 2013) and this outcome is the ultimate aim of Six Bricks.

The use of the bricks to promote playful learning and language acquisition was tested by allowing the learners to explore their understanding of building creatively with the bricks, sharing experiences through oral communication, and interacting with peers in collaborative learning activities.

Throughout the intervention, the children completed activities either individually or in groups. These activities required them to be creative in their manipulation of the bricks and in their

model builds whilst also trying to interpret, understand and follow instructions. The 3rd principle of Konishi et al. (2014), describing how the interactive and responsive rather than passive contexts promote language learning, manifest in these 6B activities. Whilst engaging in these creative activities, the children communicated orally with each other, listening to and testing new words. In Figure 4.11, Nobani is building a cube and comparing his construction with Tisa's. Tisa is trying to construct the cube while Nobani assisted by providing verbal instructions. Over the intervention, improvements in language structure, sentence construction and fluency of speech were evident.



Figure 4.11:
Nobani building a cube using Six Bricks

To measure if Six Bricks can promote language acquisition and development, I looked at the number of words each FG learner used when describing a creative model that they had built in the pre-, intervention and post- FG session. I also looked at the number of nouns, verbs and adjectives/adverbs each FG learner used in these descriptions. The graph (Figure 4.12) shows the increase in the average number of words spoken in a sentence by all ten FG learners. In the pre-FG session, an average of 41 words were spoken in the model description activity, followed by a slight increase to 48 words in the intervention yet in the post-, an average of 52 words were spoken by each learner. A total percentage increase from the beginning of the intervention to the end of 49.03%.

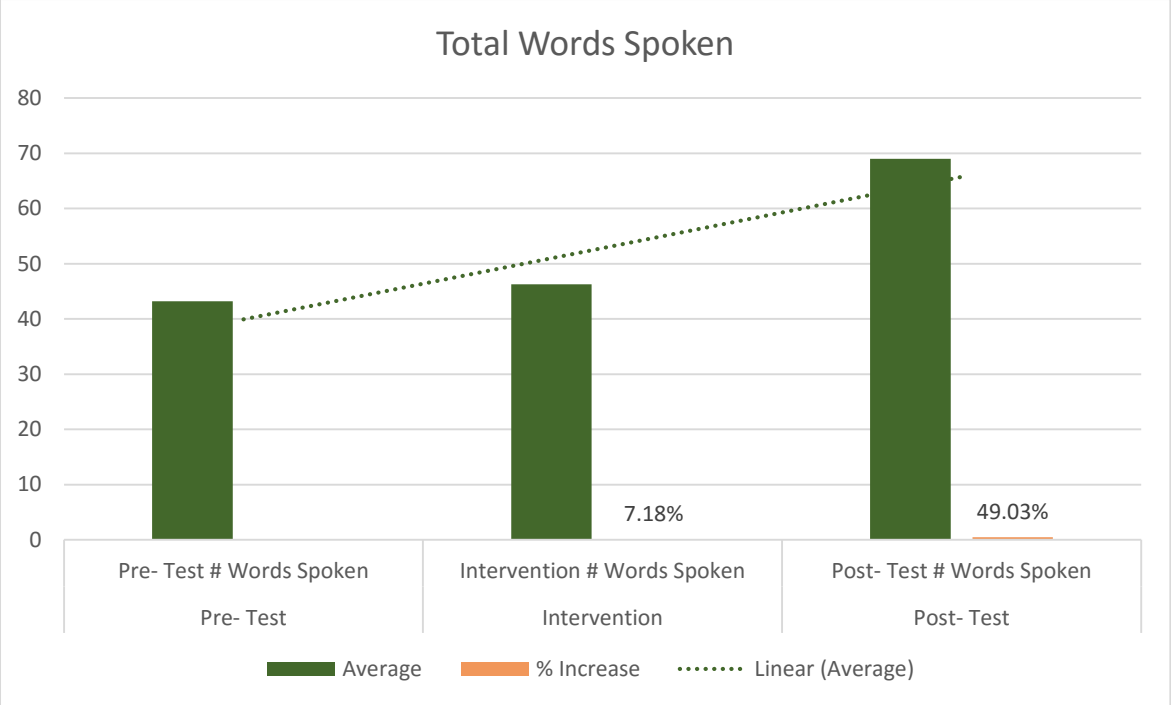
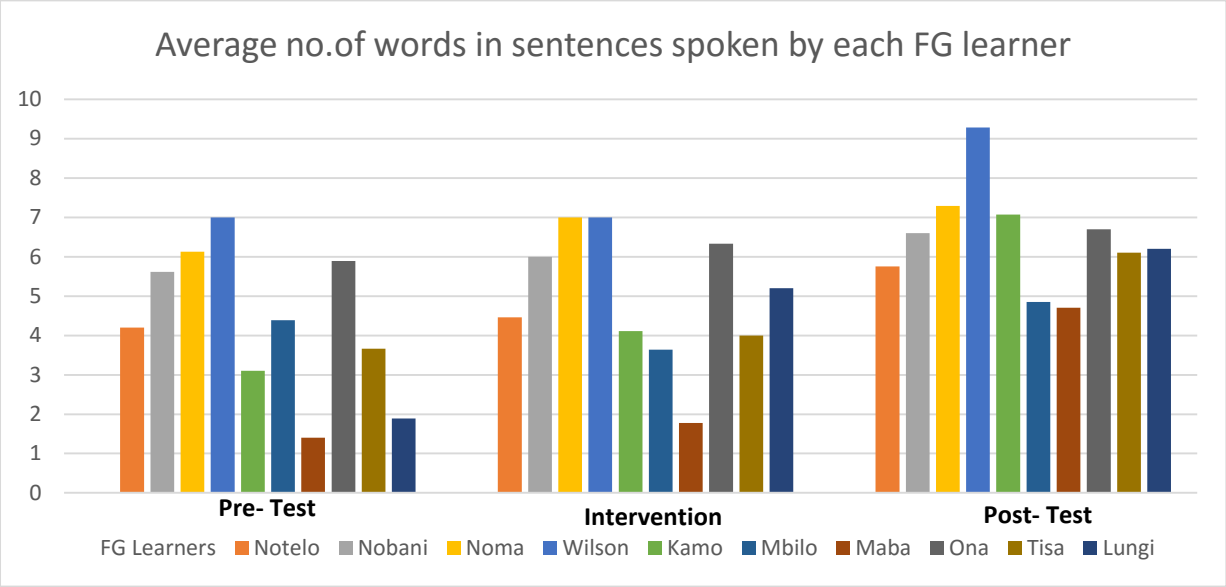


Figure 4.12: Average increase in the number of words spoken by each learner

In Figure 4.13 below, the individual performance of each learner regarding the number of words used in their descriptions were tracked. Although this graph gives an indication of the number of words spoken in each sentence, it does not show the learners' ability with regard to fluency and sentence construction which is also an important aspect of language acquisition. Speaking fluency cannot be taught directly but emerges over time and exposure to a language (Krashen, 1981) and this was evident in the video data collected over the period of the intervention. An example of this is depicted in the graph below – Wilson, in the pre- and intervention, used an average of 7 words each time he spoke and this increased to 9.2 words in the post- FG session, however, his fluency was often fragmented and his sentence construction was not always correct. Noma, on the other hand, spoke clear, concise and cohesive sentences throughout. As her proficiency in L2 was above average, she was able to convey her descriptions in a more concise and efficient manner showing results of between 6 and 7 words in each sentence from the beginning of the intervention through to the end.

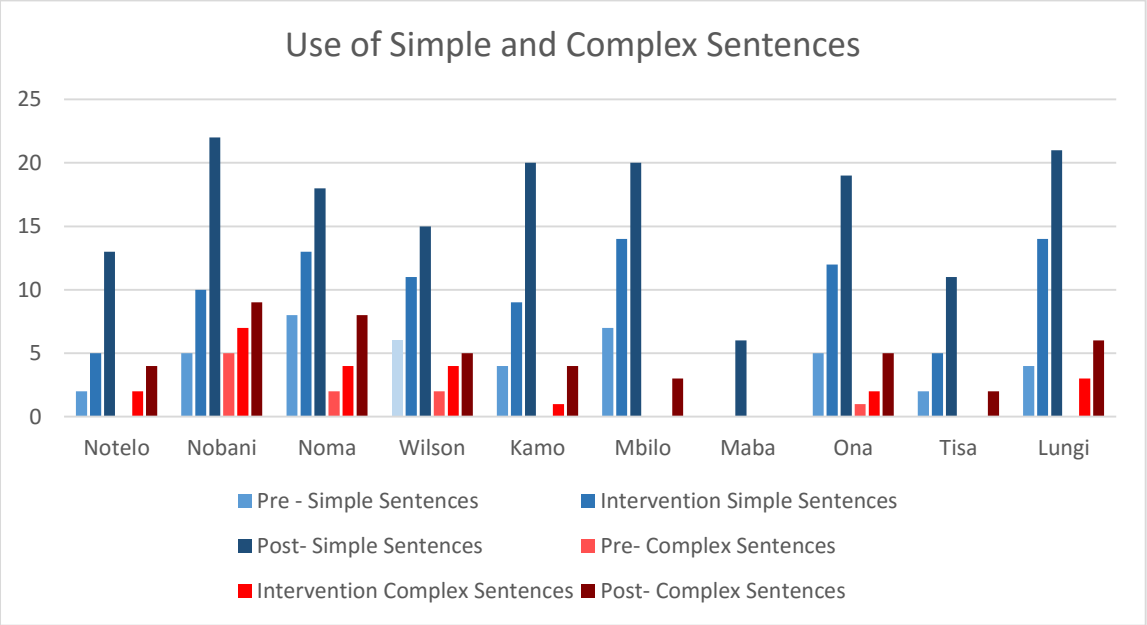
Figure 4.13: Number of words spoken in sentences by FG learners



Another interesting learner was Maba. At the beginning of the intervention she could not converse in English and was only able to say the names of colours when answering questions or when attempting to explain what she had built. In the pre- and intervention FG session, she averaged between 1.2 and 1.8 words every time she spoke. In the post-testing she was averaging 4.7 words when speaking – a dramatic improvement. Overall, the data showed that all the FG learners increased the number of words used in a sentence with Maba, Kamo and Lungi showing the greatest increase.

After looking at the number of words spoken, I wanted to determine if there was any progress made in sentence construction, more specifically, how many times the learners used simple and complex sentences when discussing and describing the models they had built or explaining the processes of building using their 6B. Similar to the improvement in the number of words learners used in sentences, there was also growth in the number of simple and complex sentences. Word count is useful to provide an overview of development but a closer look at grammar and syntax of sentence construction provide additional data. Based on the observations, patterns started to emerge on how the learners approached their creative builds. Seven of the ten FG learners started the school year in preproduction-Stage 1 or early production-Stage 2 of language acquisition (Krashen & Terrell, 1995). This meant that these learners had limited language and focused more intensively on listening and viewing what was happening around them.

Figure 4.14: Number of simple and complex sentences used by the FG learners during the pre-, intervention and post- testing.

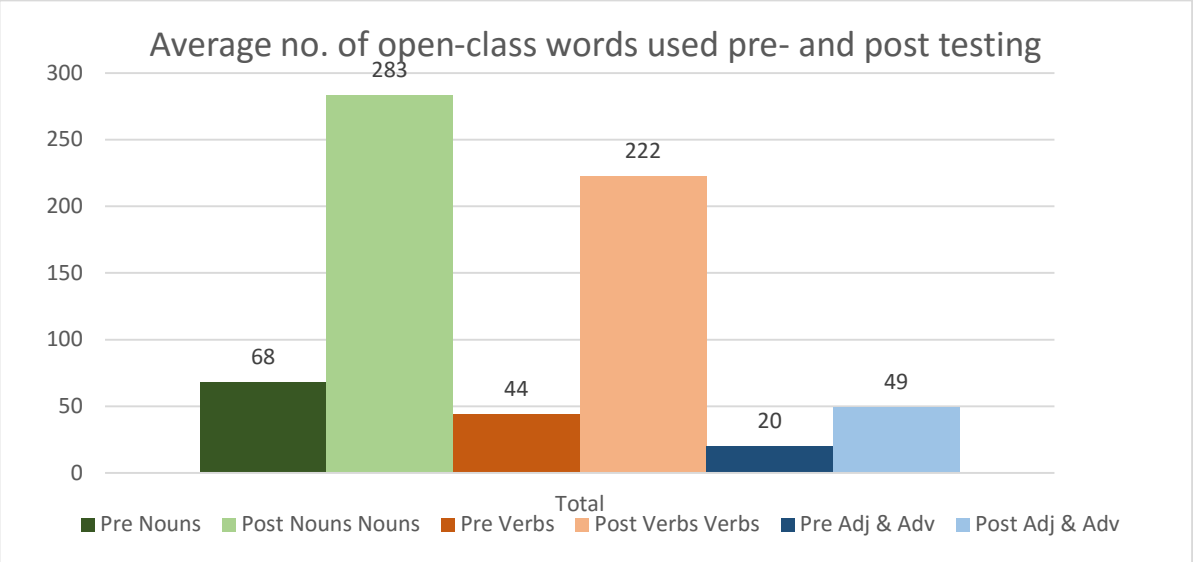


The graph, figure 4.14, shows the number of simple and complex sentences used in the pre, intervention and post- FG sessions. There is a significant increase in the number of simple sentences (blue bars) and complex sentences (red bars) over the intervention for all learners. The sentences show that the children are using contextual language relating to the bricks and to their builds. Their vocabulary and language has expanded and although referring to the clicking together of bricks in different positions or the covering of studs, the learners show understanding and comprehension. An example of this is evident in Notelo's sentences. Initially she built a simple structure by placing the bricks on top of each other and calling it a "big tree" or a "big house". As she played with the bricks over the next few weeks her confidence showed in her building technique and by the end of the intervention she was able to use the bricks to build a variety of models and she was able to use appropriate vocabulary to talk about what she had built. In the post FG session she built a model of different coloured bricks and explained to her partner how to build it. This build was followed by a model of a camera. She explained her camera by saying "It's like a window but it's a camera." The window she was referring to was the hole in the model that you looked through to take a photo. She then said "I would take a picture of my mother" and at the same time using the model to demonstrate how the camera worked, showing her understanding. Although not structurally correct, the sentences Notelo uses over time improved and began to hold more meaning in her descriptions and explanations.

Maba used only individual words in the pre- testing but progressed to using 6 simple sentences in the post- testing however, no coherent complex sentences were recorded during the intervention. Although Maba still needed time to think before she expressed her answers to questions, she was starting to use language to explain herself and what she was doing with the bricks. Only 4 of the ten learners were able to use complex sentences at the start of the intervention but over time, the increase in the number of complex sentences is significant for all learners, expect for Maba.

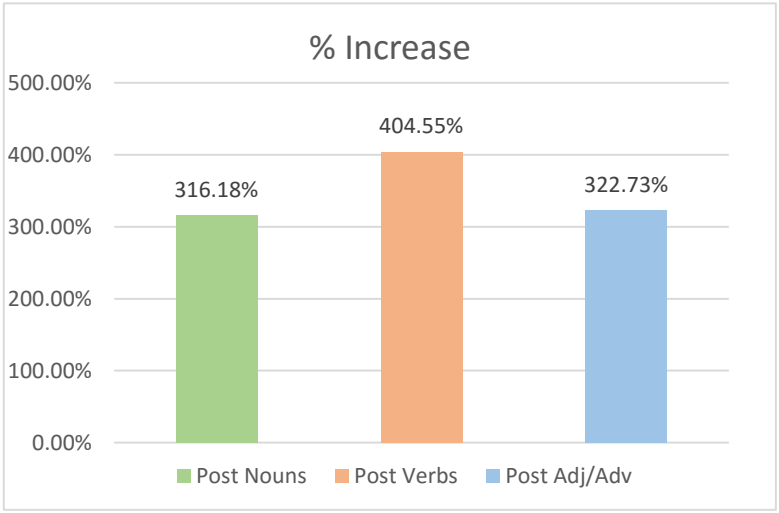
The analysis then focused on grammatical items that the children used in their playful brick activities. Analysing the data obtained from the creative building activities showed an increase in the number of nouns and verbs used by the learners as they built and spoke about their creative models and a smaller increase in the number of adjectives/adverbs. As I was interested in language development, I did not take note of the nouns and verbs that re-occurred in the children's explanations. Once the children had used a certain noun or verb, they were not recounted. The trend of children learning new nouns more rapidly and more easily than new verbs is well researched (Northwestern University, 2013; Parish-Morris et al., 2013) although is not fully supported by the data I collected (Figure 4.15) as there seemed to be a larger increase in the number of new verbs used by the learners. This could be attributed to the amount of language the learners were using to describe the physical manipulations they were making with the bricks. A list of the nouns and verbs that the learners used during their FG sessions is provided in Appendix E. The list of words indicate a shared vocabulary (dragon, aeroplane, carpet, camera, game, play, etc.) that the children use to communicate, explain and make meaning.

Figure 4.15: Number of nouns, verbs and adjectives/adverbs used by the FG learners



Interestingly, although a larger number of nouns were acquired by the learners, the percentage increase of verbs and adjectives/adverbs was greater than that of new nouns. Figure 4.16 shows the use of verbs increased by 404%, followed by adjectives/adverbs at 322% and then nouns at 316%. The way in which the learners acquired this new language and the way in which their language selection became part of a reflective practise will be discussed further in chapter 5.

Figure 4.16: Percentage increase in the number of nouns, verbs and adjectives/adverbs from pre- to post-testing



4.4 Conclusion: "These children have better listening skills"

This chapter has presented some of the data generated in this study. Even though this was a qualitative study, an analysis of the learners' pre-, intervention and post- FG sessions illustrated an increase in the learners' language acquisition relating to the number of new open and closed-class words as well as the number and complexity of words in sentences.

Revisiting the video footage allowed me to look at the interaction of children and to make note of the subtle learning experiences. This data helped to provide insight and confirmation that playing with Six Bricks in classroom activities seemed to stimulate language acquisition by allowing the learners to work with the concrete and to think creatively. The oral communication and interaction between peers seemed to move between building and creating something that was known and the idea of creating something symbolic or imaginative. The learners' speech and language patterns show heightened self-confidence, self-awareness and readiness to use new vocabulary and language structures.

As this is not a controlled study where there is an experimental and a control group, I cannot claim the growth in language is due solely to the intervention of Six Bricks. Children, being immersed in school life and in other children's company will naturally develop language. But there is evidence from teachers to suggest that the intervention has impacted language development and that the children playing with 6B in the Grade 1 class are developing differently to other Grade 1 classes, which I end this chapter with.

> The children in Mrs B's class have better listening skills. I don't have to keep repeating myself like I do with the other classes. Also these children work better together than the other classes. (Informal discussion with FP HOD, May, 2015).

CHAPTER 5

RESULTS ACROSS THE EXPLORATORY STUDY

5.1 Introduction

In the previous chapter, the focus was on language acquisition looking at key developmental areas and how the FG learners progressed from pre to post FG sessions. In this chapter, I focus on how 6B supported language development in meaningful contexts. In analyzing the data, I present themes that emerged based on the teacher interactions with the children, the children's interactions with each other showing how 6B supported language acquisition and development. It must be noted that substantial data was collected on the teacher but due to the constraints of this report, her input has not been included. Rather the focus was on the children and their interactions.

The literature highlights that play-based activities are critical for language learning and increasing vocabulary (Bodrova et al., 2013; Roskos & Christie, 2013). It shows the links between language acquisition and social development and that children who can use language to communicate and explain, do better in a social environment (Vygotsky, 1978a).

Throughout the 14-week interaction, the L2 children explored ways to use the 6B in a variety of playful activities. Each of these activities encouraged them to work with the bricks individually as well as with their peers in verbal, cognitive, physical and social exchanges. The children were required to listen, speak, collaborate, use working memory and verbalize their responses and understanding. Activities were repeated, helping to augment and consolidate language acquisition. During the research several themes developed but I will focus on only two. The first is the embodiment of tactile learning and how this supported language acquisition. The implications of embodied language learning for early literacy is tied to fluency and the development of vocabulary in meaningful contexts which then improves comprehension. The second is the development of oral communication through collaborative learning and how this was supported by 6B.

There is strong evidence in the data that supports Konishi et al.'s (2014: 406) principles as the teacher and children find "ways to augment proficiency in the L2". With this in mind and throughout this analysis, I show how these principles manifest in this learning environment.

5.2 Embodiment of Tactile Learning

Our sense of touch is our most fundamental means of contact with the world around us, and can be considered our most social sense (Nicholas, 2007). It is the only sense that enables us to process, modify and manipulate the world around us (McLaughlin, Sukhatme, & Hespanha, 2002). Using 6B created opportunities for the children to receive tactile feedback. This seemed to stimulate their experiences of the world around them showing that "children's sensorimotor experience and actions towards objects directly influence their word and concept learning" (Wellsby & Pexman, 2014, p. 3).

The multi-sensory approach to 6B activities has implications for embodied and experiential language learning in early literacy. Ord (2012, p.59), makes three assumptions regarding experiential learning, namely:

- Children learn best when personally involved in the learning experience
- Knowledge must be discovered to have any significant meaning
- Commitment to learning is highest when free to set and pursue own learning objectives within a given framework

Ord's (2012) assumptions and the six principles (Konishi et al., 2014) are used as an analytical tool to analyze the data specifically in the observations of the children's interactions with 6B and how language and vocabulary developed over time.

5.2.1 Don't Touch

During the first 4 weeks of the intervention the Grade 1 teacher, Mrs B, used the 6B to complete short, simple activities calling on the children to work, discover and become comfortable when manipulating the bricks. Each activity incorporated elements of play and sensorimotor experiences as they have an equally important role in language development (Roskos & Christie, 2013; Wellsby & Pexman, 2014).

One of the first activities that Mrs B introduced was the visual memory exercise, an important skill to develop decoding skills for literacy. In the script below, Mrs B introduces the learners to the activity and gives oral instructions while demonstrating what to do. The scaffolding, a tool working within the upper limits of ZDP, focused on the dialogue between the teacher and learner. The activity required the teacher to hold up three bricks for 10 seconds then hide them from sight. The learners were supposed to sit with their hands in their laps and not touch their bricks until given the instruction to build. Completing this activity involved listening, touching and speaking and it also required learners to practice self-regulation and inhibitory control by not touching the bricks until instructed to do so.

> Mrs B: Break up your bricks and put them out on your desk. *(waits for noise to subside)*
> Now I want you to put your hands in your lap. *(she repeats this instruction 4 times and has to call on individual children to listen and follow the instruction)*
> I am going to click 4 bricks together and I am going to show them to you *(holds up all six bricks in demonstration*). I am going to count to ten slowly then I am going to hide the bricks behind my back. *(Puts her hands behind her back to show how she will hide the bricks. Speaks to two children who are touching their bricks and tells them not to touch their bricks)*
> No, don't touch your bricks! I haven't shown the bricks yet. (*more than half the class are touching their bricks)*
> Okay, hands on your head everyone. *(trying to gain control of the class - has to repeat this instruction again and waits for all children to put their hands on their heads. She repeats the instructions again and ends with asking the children to put their hands in their lap. Mrs B turns her back and clicks 4 bricks together)*
> Ready? *(She holds the bricks up and starts to count to 10 but eighteen of the children are already touching their bricks. She places the bricks behind her back and stops all the children telling them again not to touch their bricks.) (Vid 9/4, April 2015).*

This activity took a long time to complete because the children kept touching their bricks and were focused only on getting the bricks in the right order with no regard to the actual instructions from the teacher. After Mrs B's initial frustration, this activity was repeated at least three times weekly over the next four weeks and the children became more accustomed to the process. By the middle of the intervention, when the teacher instructed the learners to get ready for the memory activity, the class knew what the process was and were better able to self-regulate. The teacher was still providing the instructions and telling the children to sit with their hands in their laps and wait for the command to build. During an observation of this activity in week 5, it was noted that twelve children in the class still moved their hands before

being given the instruction to build but just over half the class were getting a sequence of three colours consistently correct.

At the end of the intervention, there was a noticeable difference in the way this activity was conducted. The learners were engaged and appeared to be focused on the task, working within their ZDP as they focused on repeating a well-practiced activity.

Mrs B:	Okay, take out your bricks. We are going to do the memory exercise.
Children:	*(lots of "Yes" and smiles)*
Mrs B:	Quickly. Are you ready? *(calls on a few children to get their bricks)* We are going to do four bricks today. Okay, hands in your lap (*waits for all children to comply)* Right, look. *(holds up bricks, counts to 10 quite quickly then hides the bricks behind back.)* No Tapelo and Kgmotso! (*two children started to move their hands)* Okay – build. *(Children click bricks and hold it up).* *(FN/WC, 21/5 May, 2015)*

This excerpt illustrates how the learning had become embodied and the learners did not need the constant verbal instruction from the teacher nor did they need any demonstration. It also shows that children learn what they hear most, the first principle of L2 language development (Konishi et al., 2014) and that "vocabulary acquisition requires continual repetition in order for effective vocabulary learning" (Mehring, 2005, p. 3). The frequency of engaging with this activity exposed the learners to new vocabulary and language structures daily enabling them to process then understand meaning (e.g. visual memory, "don't touch", "follow my instructions"). The instructions that the teacher repeated everyday became embodied and by the end of the 14 weeks it is evident that this understanding had grown by observing the automaticity of following instructions. The teacher's language is compressed and the meaning for the children becomes deeper because instead of five steps to an instruction there is one sentence with inferred meaning.

5.2.2 The Cube: new concept, new vocabulary

During the first week, the educator asked the children to build a cube with the 6B. Initially the children struggled to build a cube that did not fall apart. This was a new word and concept for the learners and they had to be guided in the building instructions, but only once. Mrs B explained that 2 bricks are used at each level and must be placed alternating vertically and horizontally. Built this way the bricks will not fall apart.



Figure 5.1 Building a Cube

The concrete experience of placing the bricks in different directions and seeing that the cube did not fall apart helped the learners internalize the mechanics of building a cube. Thereafter, the learners were quickly able to complete the practical task whenever asked to do so. In one cube activity, the educator asked the children to listen then carry out instructions using the cube.

Mrs B:	Pick your bricks up. *(Children pick up their cube.)* Turn bricks upside down. *(Children placed their cube with the studs down. Some children copied others)*. Now I want you to rotate them – turn them like this. *(She demonstrates. All the children do as instructed.)*
Mrs B:	Now you are going to take the bricks …. What shape is this again?
Children answer:	Square.
Mrs B:	No it is a cube. Say it.
Children:	"cooobe." (Vid 27/2, Feb, 2015)

The hands-on activity, developing problem solving, working memory and self-regulation skills, was repeated often with slight variations on what to do with the cube. The first time the children did this activity they called the structure a square and also repeated the word as "cooobe". Ord's (2012) assumptions and Konishi et al.'s (2014) first principle (children learn what they hear most) and fourth principle (children learn words best in meaningful contexts) manifest in this activity because when the children hear the word "cube" used daily and in different contexts, they are able to correctly pronounce the word and use it to show more than one meaning: "I am building a cube tower" and "I can throw the cube and catch it" (Field notes, May, 2015).

Ord (2012) and Konishi et al. (2014, p. 407) both point to the issue of engagement and suggest that adults who follow children's interest to an object, create a "joint attention situation". In the excerpt above there is a high level of engagement and joint attention. The use of the word

“rotate” was a new verb that the children did not know. Until demonstrated by the educator, this word held no meaning for the children but by watching, then manipulating the cube themselves they learnt what it means to rotate something. There is an operation of BICS (Cummins, 1980) as the teacher uses context embedded language, aiding comprehension by modelling. The scaffolding technique possibly demonstrates Konishi et al.’s (2014) second principle (children learn words for things and events that interest them).

The educator asked the children to complete a number of physical manipulations with the cube as well, moving it around their body and placing it in different positions in relation to their body position. The children started to learn and understand how to find position in space as well as the meaning of prepositions such as behind, above, next to. Figure 5.2 shows the children carrying out an instruction by placing the cube behind their backs.

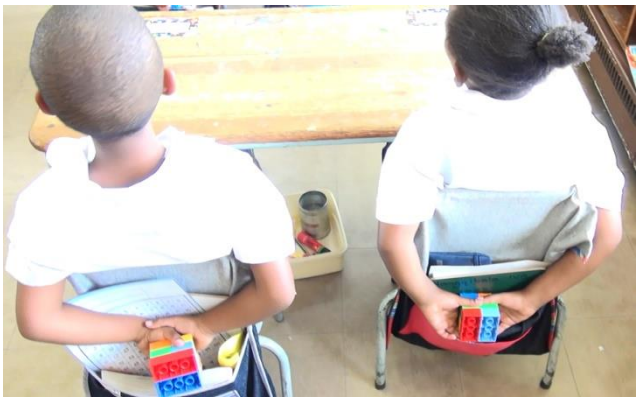


Figure 5.2
Listening to instructions and manipulating the cube

While Mrs B modelled the actions and provided verbal instructions, the learners engaged socially in cooperative or collaborative dialogue (Vygotsky, 1978a). She demonstrated, the children copied and followed her instructions by touching and manipulating the bricks. Over time, and completing daily activities, these actions became habitual. The teacher was initially the more knowledgeable other (MKO) (Vygotsky, 1978a) but after four weeks the children started self-directing their learning and problem solving. When given an instruction from the teacher that they were unsure of, they would look around the classroom, copying others who were being positively recognized by the educator. This became part of a process in which the children were learning by doing and discovery (Ord, 2012) but also learning in a playful manner without constantly being told what was right or wrong by the teacher. Although the lesson activities were initially structured, there was enough spontaneity in the children’s reactions to develop language and use new vocabulary in oral sentence construction.

After the introduction of the 6B cube, the learners were asked every day, during the first 4 weeks, to build their cube. This iteration meant that every child in the class was learning language associated with the cube, position in space and they became more confident in completing physical activities using the cube. “It is largely through physical action that cognitive activity is connected to the environment” (Winn, 2002, p. 12) and these physical activities got the children moving which in turn stimulated the neural pathways leading to cognitive and language learning.

During these physical activities, as learners were asked to listen to instructions, comprehend and perform, the activities became embodied. The habituation resulted in Mrs B not having to use huge amounts of language as the meaning was captured in one sentence, e.g. “Toss the cube up and catch it with two hands”. As the weeks progressed the children showed that they had enough understanding of context embedded language (Cummins, 1980), at a more sophisticated level, to know exactly what they have to do.

5.2.3 Place the Cube



Figure 5.3 Throwing a cube from one hand to the other

Mrs B:	Ok, I want you to take the bricks – watch me. *(demonstrates while saying*) Throw from one hand to the other.
Children:	*(children laughing and having fun. Some struggle to throw – some just pass from 1 hand to the other – some throw – some drop. Children are having fun)* (FN 5/3, 5 Mar, 2015)

In a social constructivist's classroom, children learn most effectively through being involved in rich experiences and practical activities promoted through play (Bodrova & Leong, 2003; Brock & Rankin, 2008; Roskos & Christie, 2013). In Figure 5.3 the learners completed a physical activity as part of a lesson on positional language. The laughter on their faces can be seen but also the concentration as they try to complete the task. Language acquisition and learning is optimal when interacting with adults and peers in a playful manner (Bodrova & Leong, 2003; Weisberg et al., 2015) and where scaffolding is provided during interactions involving "periods of joint focus, positive affect, sensitivity, cooperation and acceptance" (Konishi et al., 2014, p. 408).

This activity also showed how the children were able to use the cube activity to build a conceptual understanding around language and vocabulary. This was evident in a Mathematics lesson (Obs/FN, Mar, 2015) in which the children were able to distinguish between paper and pencil representations and 3D shapes. During the construction activities the children became present and attentive. Being playfully engaged helped to drive active learning and a meaningful experience.

5.2.4 Tower Building

During week 4 and 5, the children started to see the bricks more than just a concrete experience, they started a dynamic process of testing, observing and reflecting on what they were doing.



An example of this was seen in week 4 during a tower building activity. Learners were asked by the educator to build a tower using their 6B. They started by building a tower using two hands, then changed to using their non-dominant hand followed by their dominant hand. In Figure 5.4 the learners are building towers according to the educator's instruction as she uses "practical and actionable strategies" to "increase language acquisition" (Christakis et al., 2007, p. 970) which has communicative intentionality (Mahn, 2013).

Mrs B: Put the hand that you write with behind your back. *(learners place hand behind back – 2 of the learners are left handed*) Now I want you to use your other hand to build your tower. Just one hand. Build your tower the same as you have just done. *(children start building)* No Mbilo, you are cheating! Only one hand, the other hand must be behind your back.

Figure 5.4 Tower building activity using non-dominant and dominant hand

Child 1: My bricks is fallen.

Child 2: I can do it with one hand *(directed at Mrs B as he builds his tower)* I did it with one hand.

Mrs B: Excellent.

Child 3: (big smile) I did it with my left hand.

Child 4: Mrs B – I done it.

Child 5: *(turns to person behind him)* I am done.

Child 2: This is ….. it nearly falls

Child 3: No! (brick tower falls)

The tower building exercise was intended as a means of learning ordinal numbers, sequencing and developing spatial awareness. Mrs B's instructions tested the children's listening skills, self-regulation and inhibitory control as they had to use only their non-dominant hand to build the tower. Their towers would often fall, either from a poorly built structure or from being bumped or knocked by their peers. Each time this happened they would start again, trying to build the tower without it falling. Some of the children would instinctively use their dominant hand to help balance or correct their falling tower. When reminded by the teacher to use only their non-dominant hand, they would refocus their efforts and try again. The complete opposite ends of emotions were seen – the triumph of getting it right to the despair and irritation of seeing the bricks tumble. However, throughout the activity, each child was engaged and involved in a personal monologue with themselves, trying to complete the task (Ord, 2012; Vygotsky, 1978b). It was also observed how they

would look for recognition from the children sitting around them if they succeeded in building their tower and how they would complain if their tower fell. Their use of language to explain their triumphs or failures was anchored in their explanations by building on their own prior knowledge as well as their new experiences.

In Kamo's comments in the last FG session when she explains what she learnt from the tower building activity, principle 4 and 6 (Konishi et al., 2014) are evident.

Researcher:	Are there any activities that are very difficult – that are hard to do?
Kamo:	There is.
Researcher:	Can you tell me which ones?
Kamo:	When you start building up a tower, on the carpet, it just breaks suddenly.
Researcher:	It breaks suddenly! Why do you think it breaks?
Kamo:	Because maybe it's the wind.
Researcher:	Do you think that maybe it could be something else?
Kamo:	Or it can be the carpet. It sometimes is bumpy.
Researcher:	I think so too. Maybe the uneven surface.

The activity enabled active exploration and also allowed her the opportunity to use vocabulary in a playful context. Listen-and-do tasks, such as the tower building, have been shown to be effective in L2 learners developing vocabulary and grammar knowledge and the presentation of new words in different syntactic contexts facilitates this learning (Konishi et al., 2014; Ord, 2012). Kamo thinks initially that the wind could have knocked her tower over but when asked if there could have been something else she surmises that maybe it was the bumpy carpet. When completing the tower building activity, her focus was on the content and purpose of the interaction and not on language, therefore, language acquisition developed naturally and was a subconscious process (Krashen & Terrell, 1995).

5.2.5 Build it

This final example shows the embodiment of tactile learning that surfaced during the FG building activities. Vygotsky (1986) talks about three components of play including self-gratification, symbolic play and self-regulation. In each of the FG sessions, the children

were asked to engage in these three components of play by building a model using the bricks. In the pre- FG session, the learners built their own creation using the bricks as inspiration. During the intervention, they were asked to confer with a partner and to build something collaboratively and in the post- FG session, they had to build a birthday present for their friend, swap the presents and guess their gift before being told what it actually was. Table. 5.1 lists the models the children built at each stage.

Table 5.1: Models built by the FG learners at different stages during the study

Child	**Pre (using any DUPLO bricks)**	**Intervention (using only 6B)**	**Post (using only 6B)**
Notelo	trees	tower	Camera (with space for looking through)
Nobani	monster	camera	trophy
Noma	garden	mountain	dinosaur
Wilson	robot	mountain	road
Kamo	house	camera	aeroplane
Mbilo	gun	gun	phone
Maba	gate	tower	aeroplane
Ona	house	tower	radio
Tisa	girl	tower	aeroplane
Lungi	robot	cube	crown

During the pre-intervention session, in which the learners used a variety of different DUPLO bricks and elements to build their model, it was noted that they built models that were guided by the pieces and elements available to them. These elements included flowers, bricks with faces on them, gates, fences, etc. The learners built a garden or a house because the pieces in front of them sparked the idea. They saw each of the elements as they were intended to be. The trees were DUPLO pieces with leaves attached to them, the flowers were DUPLO flowers, the girl's face was a brick with a painted face on it and the houses were bricks built together to represent a house. Their building was exciting and playful and the children were guided by the objects suggested by the bricks. This links to Vygotsky's (1986) notion of self-gratification and symbolic play.

There was one child however, who built something different in the pre-intervention, something from his imagination. Nobani built a monster (Figure 5.5). In the conversation below, principle 2 (Konishi et al., 2014) operates as Nobani explains what he built. He has a vivid image of what his monster should look like and what it can do. He used plain bricks to create this model and used his imagination to create the story around his build. In asking questions about his model, his story develops in his mind, even to the point of adding appendages to his monster to ensure that it could move. His use of language to explain his monster is descriptive and he draws on what he already knows to develop a credible story and to get his message across.

Researcher:	Tell me about what you have built.
Nobani:	A monster
Researcher:	Show me how your monster moves and what it does.
Nobani:	It kills people and the cameras watch and then they take a bazooka and then they shoot it.
Researcher:	Who shoots with the bazooka?
Nobani:	The police
Researcher:	And who do they shoot?
Nobani:	The monster
Researcher:	Why do they do that?
Nobani:	He is eating the people and scary ….
Researcher:	Which is the front part of the monster? How does your monster see?
Nobani:	*(points to the one side)* It sees here *(points to red bricks).*
Researcher:	Are those the eye?
Nobani:	*(nods)* and two heads
Researcher:	How does your monster move?
Nobani:	*(starts adding bricks under model to resemble legs)* with legs



Figure 5.5 Nobani & monster

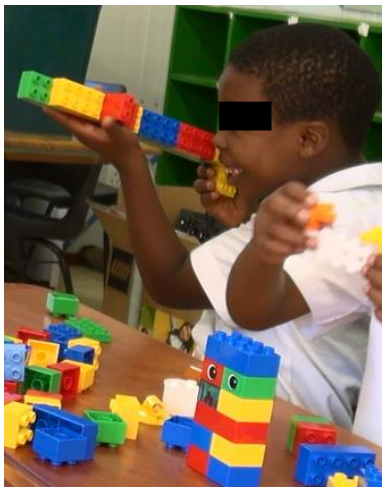


Figure 5.6 Mbilo & gun



Figure 5.7 Tisa & Noma with girl and garden model

During the exploratory study FG session there was a noticeable change in how the learners saw and used the bricks to make meaning. During week 4 and 5 of the study, the children experimented with tower building at least 3 times a week and enjoyed the challenge of going as high as possible, testing their limits. They were also starting to draw on knowledge and experiences they had gained from collaborative learning. Figure 5.8 shows Noma and Wilson's two towers next to each other, but in their minds these were not towers – the bricks had become something entirely different.

The researcher asks Noma and Wilson what they have built.

Noma & Wilson:	We have built the mountain.
Researcher:	Where have you seen a mountain?
Wilson:	I saw the mountain before next to my house far away and you go very big *(stands up and put hands in air to show height)* it looks like a volcano.
Researcher:	And what do you do on the mountain?
Noma:	We climb on it.
Researcher:	What do you think you could see from the top of the mountain?
Noma:	*(shouts out excitedly)* Houses.
Researcher:	And what else do you think you would be able to see?
Wilson:	A dragon and a volcano.

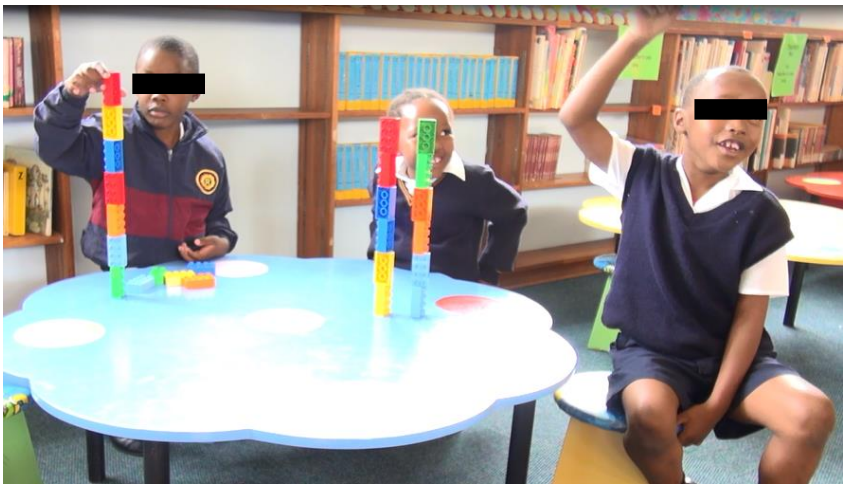


Figure 5.8 Wilson & Noma explaining their mountain

Working in tandem, Noma and Wilson were able to feed off each other and talk about the mountain they had built. The interaction with each other during symbolic play (Vygotsky, 1978b) was a crucial element for critical thinking and learning. The other children in the FG also worked together to build a model that took on meaning beyond the bricks. The 6B facilitated learning through oral communication. The learners were becoming more confident in interacting with one another using language and vocabulary spontaneously and in context. All the children were able to understand the "relationship between a prop and the object it represented" (Weisberg et al., 2013, p. 42) and how this object was something they understood, could name and talk about.

During the 6B activity, Noma's exclamation of "This is so much fun!" (Vid 19/3, Mar, 2015) tells the story about the children's ability to work together and playfully plan, create, build and talk about a model. Their model and story ideas were accepted and working together in a safe environment allowed them to experiment with vocabulary and ultimately learn more (Mehring, 2005; Ord, 2012).

The post FG session again showed a further improvement in the children's ability to use language and talk about what they had built, seeing the bricks as something more than the pieces of plastic they represent. In the final activity, the learners were asked to build a birthday present for their partner using just the Six Bricks. Table 5.1 lists what each child built. Each model required the children to use play, their imagination and recall mental images of possible birthday presents. The playful aspects of this activity used language for the purpose of regulation, or self-control over the children's own cognitive processes such as memory and thought (Bodrova et al., 2013; Vygotsky, 1986). In this symbolic play, the children were using the bricks "to represent other objects in play and they inadvertently set

the stage for abstract thought" (Zigler & Bishop-Josef, 2006, p. 16). This can be seen when Tisa lifts the bricks to her head because they represent the birthday crown that was built by her partner.

Researcher:	Tisa can you guess what Lungi built for you?
Tisa:	It's a remote for playing games.
Researcher:	Wow – a remote. What type of games would you like to play with your remote?
Tisa:	Play Station. *(thinks a bit)* Doras.
Researcher:	Lungi what did you actually build for Tisa?
Lungi:	A crown for her birthday. Your head goes here. *(points to part of crown)*
Researcher:	A birthday crown. That's lovely. Tisa how would you wear that birthday crown. Where would it go?
Tisa:	*(lifts it up and puts it on her head).*
Researcher:	Do you know a birthday song?
Tisa:	Happy birthday to you….. *(starts singing)*



Figure 5.9 Tisa wearing her crown

Even though the models that the children built did not look like the intended item, they were able to be creative and imaginative in their explanations showing understanding of what each model represented. Their play shapes how they make sense of their worlds, how they learn thinking skills, and how they acquire language (Vygotsky, 1986). Their explanations required a certain amount of cognitive dexterity which each learner displayed in differing

degrees of competence. Giving concrete form to abstract concepts encouraged the children to build an understanding of the world around them, giving them the ability to make their own choices and decisions and not rely solely on the educator for the right answers. They were able to articulate independent thoughts using newly acquired vocabulary and language structures (Vygotsky, 1986) and their understanding stemmed from the sensorimotor activities using the Six Bricks.

5.3 Construction of Oral Communication through Collaborative Learning

Oral language is the foundation of all later language and includes speaking, listening and communication skills. Speaking is the most common and important means of communication, especially for L2 children. Speaking skills acquired and developed during primary education are significant with regard to both acquisition and permanence, therefore, it is important that efficient and effective teaching methods are used to improve and develop these skills (Ulas, 2008). Making meaning through speaking or the oral mode of communication can be complex and involves sophisticated thinking and reasoning skills. With this in mind, I discuss an activity that was conducted by the educator during week 5, 6 and 7 of the study which highlights how the children were able to support and extend language through the manipulation of the bricks and the collaborative efforts of team work.

The children's excitement (Field notes, Mar, Apr, 2015) was evident and the atmosphere in the classroom changed completely when they saw me because they knew they were about to play with the bricks. Krashen (1981) claims that learners with high motivation, self-confidence, a good self-image and a low level of anxiety are better equipped for success in second language acquisition and this was definitely evident in the classroom when the children took out their 6B. By week 5 of the study, the children were confident and motivated every time they had to work with their 6B. The educator had also developed her own techniques of including the 6B into her daily activities and her role moved from imparter of knowledge to a facilitator of discovery and learning through the playful manipulation of 6B.

5.3.1 Hot and Cold Creatures

The educator's role in helping the children acquire language was critical and this manifests in one of a variety of activities called "Hot and Cold Creatures". The focus of this activity,

which extended over 3 weeks, was to develop not only language skills through the oral medium and moving towards written, but also to integrate cognitive development and social skills which the educator would scaffold. Understanding that children can perform at higher intellectual levels in collaborative situations rather than when working individually (Vygotsky, 1978a), this activity was not only about the educator giving input and modeling language, it was also about the children working collaboratively, providing input and helping inspire new vocabulary. This period of interaction with their peers was critical for language learning.

The activity began with a number of sorting exercises, separating bricks according to colour or the position of the bricks when they were dropped. One of the final sorting activities required the children to separate their bricks according to "hot or cold" colours. The educator then developed the theme of hot and cold further. The abstract, higher-level academic discourse (Cummins, 1989) allowed the children to unpack new and different concepts delving further into their personal experiences, ideas and thoughts. The advantage of the oral mode of communication is that the children were engaged in the discussions and the 6B gave them the opportunity to build "hot and cold" concepts as they were unpacked. This process did take time ensuring that the children were able to create and refine any new language as well as honing in on the collaborative nature of the activity.

In week 6, the educator introduced the learners to "creatures". This was done through story books, TV shows and films that the children were familiar with. There were discussions about what the different creatures looked like and what they could do. There was also talk about good and evil creatures, what these creatures ate, where they lived, and if they had any special powers. Thereafter, the educator split the class into smaller groups and each group was allocated either the hot or the cold colours. Building on previous knowledge and experience, each group was then given time to build a hot or cold creature. The children were aware that they were going to build and tell a story about their creature. Without the obstacle that written work may impose for some of the learners, the groups were creative and imaginative in their building phase.

Developing the concept of hot and cold creatures used everyday context bound knowledge to work with abstract concepts. Then this concept was applied to creatures developing the children's higher order thinking skills. One of the disadvantages of oral communication is that some children may disengage themselves or withdraw from the activity. In this activity there were some children who initially held back but as the hot or cold creatures started to take shape they became more vocal and shared their ideas. Some children took control of the building, not always allowing their group members to build, but in every group, there was

chatter and conversation in English as they designed their creature. The children went through a process of planning, breaking down and rebuilding using the bricks. While this was happening they were creating, reflecting and re-creating their stories.

The children were observed picking up the hot or cold creature model and moving it in the air or on the ground, imagining what the creature could do. The children made a huge effort to become their hot or cold creature, unleashing their imagination and prompting each member of the group with new ideas. The children were spontaneous in the outbursts, trying to provide ideas on what their creature could do and what the creature looked like. This playful activity deliberately targeted language learning by providing a meaningful experience which engaged the children and motivated them to work with their peers towards one common outcome.

After the building was completed, the groups had an opportunity to present to the rest of the class. The educator then engaged the learners in more specific questioning about their creatures allowing them to brainstorm ideas. These ideas were written up on the board. In order to develop CALP, schools must simultaneously encourage both oral *and* written English language development (Cummins, 1989). There were many questions put to the children, encouraging them to provide new vocabulary that would describe and define their creature. The 'who, what, where, how, when' questions were asked, focusing on expressing different verbs, adjectives and adverbs as well as the structural composition of sentences. Each group took turns and the new vocabulary words were listed on the board. Being able to say the words and see the written words, language learning became more meaningful.

As the groups presented, they held the models in their hands. The group collaboration encouraged the children to reflect and discuss 'why' and 'how' they came to their solutions (Dooly, 2008). There was a tremendous amount of copying ideas and words from group to group, especially if the teacher positively reinforced group members for their contribution. An example which highlights this was given from a "hot" group who explained their creature as being able to 'hover'. This word explains how their creature was able to stay in one place but be up in the sky at the same time. The groups that followed with their descriptions all used the word hover in the hopes of garnering the same positive response. Copying their peer groups was not seen as a negative, rather all groups who copied the word 'hover' were able to hold up their creature and explain their understanding of the word. They were acquiring language in a meaningful way.

To extend this activity, the educator then asked the groups to get together again but this time they were to create a short story about their creature. In their story they had to use the words that were written on the board. Krashen (1995) advocates that we acquire language only when we understand language that contains structure that is a little "beyond" where we are now. The children were being asked to go a step further and to create a story which they would tell to the rest of the class. This was a difficult task for some of the children. Language selection became part of a reflective practice and the children fed off each other's ideas during their collaborative efforts. Although they were working in a group, they also were quick to think individually and add new ideas. Evidence of the children working on their stories, with the teacher using some thought provoking questions, was observed during group work. In the transcript below, one group had built a warm creature and were trying to decide on some ideas for their story.

Nobani:	His name is Lilo.
Thabo:	He walks on the water and he blows fire …. and he flies.
Mrs B:	Why does he blow fire?
Nobani:	Because he is a dinosaur.
Thandi:	And it gets - sometimes he gets angry.
Nobani:	And he's got fire in his throat – that's why he blows out fire because I have watched Tom and Jerry.
Mrs B:	Does he only blow fire when he is angry?
Thabo:	Because, because when he gets angry that's when he blows fire. He blows fire to other people, to other creatures in the water.
Thandi:	No, no he blows fire to other creatures that gets angry.
Thabo:	And that, and that's, and that's like killing them.
Mrs B:	Is he always angry?
All 3 children:	No!
Nobani:	No sometimes he's not angry. He plans it.
Thandi:	(*speaking over Nobani to have her say*) Sometimes when you make him unhappy.
Mrs B:	When is he happy?
Thabo:	Only if you dance with him.

(Vid 30/4, Apr, 2015)

As the groups started telling their stories, a noticeable improvement in their oral narrative skills was observed as they started telling better stories, some even had a moral or social highpoint as shown in the transcript below.

Otile:	Our creature can fly and it can help people go home. (stops talking and thinks)
Mpho:	(continues talking when he sees that Otile is thinking) It can fly and help take people to the doctor – to the doctor to fix their leg.
Tisa:	(immediately starts talking) it can help people – it looks for people – for kids – for small kids. She take care of small kids and, and, and, and find their mother. Then she, she give them their kids back.

(Vid 30/4, Apr, 2015)

Their ability to tell a good story also highlighted an improvement in their articulation and fluency. To develop fluency in a second language, the "hot and cold creature" activity was able to support the five essentials stated by Krashen (1981), namely:

- Attention and concentration
- Expressive language
- Receptive language
- Play skills
- Articulation

The activity also ensured that the children were personally involved in the learning experience. In developing their stories they discovered meaning through language and were able to pursue their own learning objectives (Ord, 2012).

The analysis of time in the video footage shows that at the beginning of the study the children's concentration started waning after 6 - 8 minutes. Towards the end of the study the children worked collaboratively in playful activities and were able to concentrate for longer periods of time, ranging from about 15 – 20 minutes, as they manipulated tactile elements. In the "hot/cold" activity the children were using or being exposed to expressive and receptive language which they then had to articulate in a story (Figures 5.10 – 5.14). The iteration of cognitive, physical and social skills within this activity helped the children to acquire new language quickly yet gave them time to formulate ideas using language to build oral competence.



Figure 5.10 Cold Creature



Figure 5.11 Hot Creature



Figure 5.12 Hot Creature



Figure 5.13 Hot Creature



Figure 5.14 Cold Creature

In the “hot and cold” creature build, principle 4 (Konishi et al., 2014) manifests by integrating a meaningful and playful context and the rich development of vocabulary and language. The guided play environment was designed to stimulate children’s curiosity and acquisition of language (Christie & Rakos, 2006). The conversations between peers and the educator built on the children’s interests and offered them “new lexical concepts that are more likely to be retained than unbidden verbal explanations (Konishi et al., 2014, p. 410).

5.3.2 Maba learning from her peers

Understanding the collaborative learning that 6B engineered can be demonstrated through one of the FG learners, Maba. At the beginning of the study, Maba could not speak or construct sentences in English. In the pre-test, the only words she uttered when asked any questions was to copy words said by her peers or to list the colours of the bricks, yet by the end of the 14-week study, Maba was able to communicate using English vocabulary and had some basic language structures in place to show understanding. After analyzing the data, it was evident that Maba's growth and development in language was largely influenced by the social behaviour of her peers and the bodily interactions with the 6B which facilitated the way she categorized and acquired language.

The first time I met Maba it was clear that she had little proficiency in English. When asked a question, she was unable to converse and one could see that she was trying to think of what to say - her only utterances were long pauses followed by 'um' and sometimes she would try and say a word but would only get the initial sound out (Figure 5.15).



Figure 5.15 Maba during the pre-intervention.

Researcher:	Maba what are you building?
Maba:	Um. *(Long pause - struggles with words – opens and closes mouth without any sound)* Um – house.
Researcher:	Ok show me. (*moves around to the other side of Maba) W*hat are you building here?
Maba:	Gate *(points to gate element*). *(Thinks – pauses. Opens mouth but no sound – puts lips together again*) Fire *(points to a yellow brick*). (*Looks - can see she is thinking of something to say)* Girl *(points to a green brick)*
Researcher:	What is this? *(points to a pink brick)*
Maba:	(*Long pause – opens and closes mouth as she thinks of something to say)* Um – (*pause again) P - p (trying to say a word but only says initial sound)* Pink.

Researcher:	And what are these over here? *(points to yellow 'gate' elements of her build)*
Maba:	*(Long pause 15 seconds - struggles to get a word out) Um ….. mm ..*
Researcher:	And what do these do? Do they move? *(swivels elements)*
Maba:	*(nods head) (long pause again)* yellow *(appears to be trying to recite colours)*

Maba was a very attentive listener (Figure 5.16) typical of a child in the silent or receptive stage (Krashen & Terrell, 1995) in L2 learning. Krashen claims that "the best way to teach speaking is to focus on listening and spoken fluency will emerge on its own" (1995, p. 57). This was evident every time one of Maba's peers spoke. She would look up from her build, watching and listening intently to what was being said. Further interactions with Maba throughout the 14 weeks, showed that this was one of her coping strategies to fit in and be accepted by her peers. Maba was able to concentrate and self-regulate better than any of her peers. Her ability to mimic or copy developed her memory skills and she was able to complete most activities along with her peers except for those that required oral interactions in English. In her first dialogue written above, the words house, gate and fire were said by the children in her group during their explanations of their models. She was able to remember them and use them in her explanation.



Figure 5.16 Maba listening attentively to the children in the group as they explained their models

During the first four weeks of the study, Maba continued to show her ability to listen and copy what her peers were doing and saying. There appeared to be no improvement in her dysfluency and she still had long periods of silence when addressed by the educator. Her ability to copy her peers could be construed as a negative but for Maba it was her key to answering questions and interacting with her peers. It was important for her to learn language so that she could be accepted within the social setting of the class.

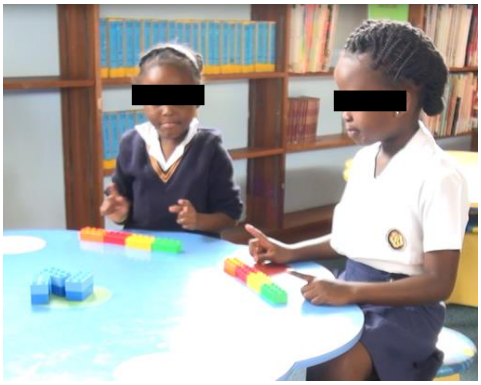


Figure 5.17
Maba copying her partner. She was always a second or two behind her partner in completing the activity.

During the study Maba's verbal interactions were guarded and she still took time to formulate and produce utterances. Her focus remained on listening and comprehending what was being said by those around her. It was towards the end of the study that changes in her willingness to speak were noted. Maba had begun to work in her ZDP that compelled developmental change and directly advances the mental processes essential for literacy learning (Roskos & Christie, 2013).

The unthreatening classroom atmosphere during 6B play encouraged Maba to feel comfortable and accepted by her peers and also allowed her to achieve and complete activities without the stress of having to continually communicate. The level of acceptance by her peers was noted on many occasions and an example of this comradery is shown in Figure 5.18 as her peer whispers into her ear, in English, to include her in an activity, almost sensing her unwillingness to converse.



Figure 5.18
Maba's peer helping her complete an activity

Another example during the post-testing, 14 weeks after starting to play with 6B, showed one of Maba's peers stepping in to account for her lack of vocabulary and accepting that Maba needs more time to verbalize and communicate her thoughts.

Researcher:	Maba, what's fun about playing with 6B?
Maba:	(*no hesitation*) We do …… (*then stops*)
Tisa:	(*steps in when she sees that Maba has stopped*) She's still thinking.

A short while later the researcher again asked Maba what she liked about the 6B. Her answer was staggering:

Maba:	I like it because, because we like to play and then I was finished my work and then I was play with my bricks and then I build something.

Without stuttering or stammering, Maba said more than she had ever said before. She was confident in her response and was able to communicate her thoughts and feelings. Throughout the post-testing Maba continued to show how far she had come using language and vocabulary she felt comfortable with. The development of comprehensible input about her experiences allowed her the opportunities to engage in conversations about her own experience (Krashen & Terrell, 1995) which were about 6B. In the excerpt below, Maba is asked what 6B birthday present she built for Tisa.

Maba:	I build her (*long pause) (doesn't seem to know the word)*
Maba:	I build her a ……. Aeroplane.
Researcher:	Maba what do you think Tisa built for you?
Maba:	Is a camera.
Researcher:	You think it is a camera. What would you do with a camera?
Maba:	I can …. Play with it. (*pause*) And I can click some people.
Researcher:	You can what? Click some people?
	(Tisa imitates a camera with her hands and says "She can" and clicks with her fingers as if she is taking a photo). Click.
	(Tisa leans over to the camera and points to a brick indicating something to press). Click.
Researcher:	Show me how you would use your camera Maba.
Maba:	(*picks up model and holds it to her eye and says "click")*

In a short space of time, Maba had progressed to stage 3 – speech emergence (Krashen & Terrell, 1995) and was able to use short phrases and simple sentences to communicate. There is evidence of the natural order hypothesis (Krashen & Terrell, 1995, p. 56) which allowed "errors to occur without undue emphasis on error correction". This enabled Maba to engage in simple but meaningful conversations. Her peers played a supportive role in encouraging her to engage and participate in oral communication and to feel accepted.

Six Bricks provided a tool to help Maba understand meaning from the way words are used in linguistic contexts which illustrates principle 6 of L2 language learning (Konishi et al., 2014).

The sentence Maba said shows how the word “click” could be used as a verb but when Tisa was helping her explain meaning, she indicated to a brick when saying “click” using the word as a noun. Konishi et al. (2014) suggest ways to facilitate acquisition of grammar and vocabulary using interactive activities that move away from teaching vocabulary as an independent word list and encourage children to experiment with building and vocabulary generation.

5.4 Conclusion

This chapter looked to answer the questions of how 6B supported language learning and what the children’s experiences were when working with 6B. In analysing the data, it is interesting to consider the way in which embodiment works with language development and what the direct implications will be when children are ready to become literate.

The children engaged with the bricks to ultimately reason and express their thoughts and ideas, whilst at the same time, developing more complex language structures and a broader vocabulary than pre 6B intervention. When oral language is in place and the teacher works in a similar way with the printed word, a platform for fluency, which is a key component of learning to read in the early years, can be set.

The playful learning environment which afford learners opportunities to hear vocabulary in context, is vital for language acquisition and retention of new vocabulary. The more learners hear and are exposed to language the more meaningful language and comprehension become.

A further implication is the social constructivist classroom. The teacher, acting as a mediator, plays an important role in creating a rich learning environment that enables language acquisition. This is achieved through modelling, scaffolding and setting up opportunities for collaborative social interaction. When the language development opportunities are in place in a classroom and the teacher can get the children to communicate in particular ways and in different contexts, then this environment will have major implications for early literacy.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter provides an overview of the research study and the findings. As a very small sample was used, the findings cannot be generalized to all school environments, however, it provides interesting avenues to pursue. The findings also indicate areas of future research that were not focused on in this study but would be beneficial to examine.

6.2 Overview of the study

This exploratory research investigated the use of a concrete manipulative, Six Bricks, being used in daily activities and the impact this had on language acquisition in L2 learners. The theoretical framework for the research is drawn from Vygotsky's social constructivist paradigm (Vygotsky, 1978) which investigates the relationship between the learners in a school environment and the development of language in their social context. This learning environment is an important factor, it assists learners construct knowledge and understanding through activities grounded in authentic, real world contexts. The theoretical orientation draws on work in second language acquisition (Cummins, 1980; Konishi et al., 2014; Krashen, 1981). The conceptual framework is drawn from research around play-based learning (Bodrova et al., 2013; Excell & Linington, 2011; Roskos & Christie, 2013; Weisberg et al., 2015) noting that children's cognitive development is best reached through informal, playful approaches to teaching and learning.

The Grade 1 children who participated in this research were from lower to middle income families and English is their second language. A focus group of 10 children were selected for closer, more in-depth analysis of how the 6B supported language acquisition. The grade one class teacher was also a participant in this study.

Data were collected by means of videoing 6B lessons in the classroom and the taking of field notes during observations. The FG sessions were videoed and then transcribed. The teacher and the learners in the FG sessions were interviewed through semi-structured interviews throughout the course of 14 weeks. Data from tactile, hands-on engagement activities with the 6B were collected by constructing and repeating events and practices with the children. The

features of a social constructivist classroom, the principles of second language learning and the theory on play-based learning that emerged from the literature review in Chapter 2 were useful in identifying the practices that enabled language acquisition in L2 learners. I found evidence of a wide range of skills and processes used in the acquisition of language.

6.3 The Research Questions and Findings

The main research question of the study is: *What are the potential benefits of implementing the Six Bricks educational programme, in terms of language development, in Grade 1 learners in the South African context?* Secondary questions were formulated to ensure that the most relevant data were collected. The second research question looked closely at the children's experiences of using Six Bricks in communicating and expressing language. The assumptions made were that the tactile manipulation of bricks and accompanying oral expressions behind these manipulations would encourage children to repeat language they had heard and develop new language. The final research question investigated the ways children used 6B and how this supported language acquisition and development.

6.3.1 The children's experiences

The study found that the children were engaged in active learning whilst completing activities using the Six Bricks. They were playful and their enjoyment of the activities was evident in their responses and interactions. The sensorimotor experiences gained through the manipulation of bricks helped to represent conceptual knowledge whilst developing cognitive skills and language. The sensorimotor information that the children internalized through their building and manipulations was used to show their learning, their understanding and their comprehension of language. The more the children embraced the bricks, the more embodied the learning experience became.

The intervention also appeared to promote the development of emergent literacy skills. Utilizing the bricks, the learners improved their ability to cross the midline, work from left to right, develop working memory, improve visual memory and regulate their impulses and outbursts. These are important building blocks for literacy and language development and for developing habits of learning. The analysis of vocabulary, showed a shared and increased repertoire of nouns and verbs which were instrumental in providing a language for communicating meaning.

The children's experiences also pointed to the value of play and collaborative learning. Play allowed the children to test their capabilities. The peer group activities generated conversations and the resultant listening and speaking encouraged the children to exercise their imagination, while at the same time repeating, sharing and using language. The "hot and cold" creature activity encouraged the children to use play to learn together as a group rather than in a group, whilst fostering creativity, language development, enriching vocabulary, and practising listening and speaking skills.

6.3.2 Supporting language acquisition using Six Bricks

This study shows that language acquisition is essentially a social activity and this type of engagement is critical for L2 learners, especially in meaningful contexts. Language can only be internalized through interactional processes in a relevant, meaningful environment (Richard-Amato, 1996). Engaging and completing 6B activities every day, allowed for effective language acquisition and learning to take place through listening and speaking and collaborative learning. This learning was made possible by providing opportunities for the educator and children to interact with one another. The frequency and repetition of Six Bricks activities encouraged the establishment of habits for learning. This habitual practice not only encouraged children to make meaning of the language they were hearing, it also encouraged them to engage with the bricks and with others, to generate new vocabulary. The interactive engagement, during meaningful experiential learning, allowed the children to independently experiment, discover and elaborate language around relevant topics and contexts. This freedom to experiment encouraged self-directed learning and moves away from the choral chanting present in so many Foundation Phase classrooms.

The playful construction and engagement of 6B activities, and the listening and speaking activities modelled by the teacher, formed a basis for the development and acquisition of language and vocabulary. The study found that the social and collaborative engagement of learners impacted language learning and this manifests in their oral communication. The social engagement allowed opportunities for creative discovery whilst the structure, provided through scaffolding of activities, gave the children the freedom to make sense and challenge their understanding of the world around them. There was a level of attainment that the children mastered drawing on their prior knowledge and experiences before being extended further. It was evident that Konishi et al.'s (2014) six principles of second language development were abundantly applied in this classroom.

Six Bricks can enhance language acquisition and development in Grade 1 L2 learners through the playful manipulation of bricks in a contextualized learning environment. The activities provided opportunities for children to think creatively, imaginatively and authentically whilst supporting an environment in which the children not only acquired language but were able to use language to make meaning. My analysis showed that it was social collaborative learning through play in particular that gave the children the best opportunity for language acquisition.

6.4 Recommendations

Language and vocabulary acquisition is an extremely important part of second language learning and the use of concrete manipulatives as a way of ensuring that this learning takes places has not been widely researched. This exploratory study was conducted to determine if the use of Six Bricks, in the teaching and learning of language, could show positive results which could then motivate further research on a larger scale. There are avenues for further detailed research on Six Bricks, and my recommendations are twofold, firstly looking at teachers and their experiences of using 6B and secondly, completing a larger scale study focusing on tracking learners over time.

6.4.1 Teachers Experiences

Teachers play a critical role in educating L2 learners and the teaching practice used to teach language, especially for L2 learners, presents challenges. We know that teachers do not always take interventions up and changing teacher habitus can be challenging. In this study there is anecdotal evidence of challenging the teacher's mindset and attitudes towards using concrete manipulatives for language teaching and learning, however, this was not the focus of this study. A larger study looking specifically at teachers' experiences could challenge prevailing ideologies or directions that early literacy and L2 language teaching takes.

6.4.2 Tracking Learners over time

As this study was very small and it was conducted over a short space of time, it would be appropriate to undertake similar research on a larger and/or longer scale, e.g. with a cohort of schools, with larger number of children, or with a wider variety of schools. This could be approached in various ways that would involve a longitudinal study using a mixed methods

approach. Tracking one child or tracking a cohort of schools over a number of years could present reliable data showing the impact of a manipulative such as Six Bricks on language acquisition and development. A longitudinal study could provide a case to transform the way young L2 learners explore, think, express and acquire language using creative, collaborative and concrete tools.

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Appendix A: Examples of the Six Brick activities

1. Discover Six Bricks I

Getting started with guided play.

Try this:

- Take your bricks apart – spread them out randomly in front of you.
- Close your eyes and shuffle your bricks around.
- Pick up any brick – hold it up high; open your eyes; look around.
- *Do you see anyone with the same colour brick as you?*
- Run to your colour partners and match your bricks.
- *Are they the same colour? What colour are you holding?*

Variations:

- *Can you give me a sentence in which every word starts with the same letter as your colour brick?*
- Name something that rhymes with your colour brick.
- *Can you make up a rap / jingle about the colour of your brick?*
- Match your brick to something in the room that is the same colour.
- *Can you name something in nature that matches the colour of your brick?*
- *Can you name something that starts with the same sound as your colour brick?*
- Tell me something about the brick you are holding.

Link to mathematics:

- *Look around the group – of which colour is there the most / least? (estimate)*
- *Stack all the same colours together; count the number of each colour brick.*
- *Place the stacks next to each other – compare; discuss – which colour has the most / least / same; how many more / less? Can you order the stacks from smallest to biggest? Which colour is first, second, third … last?*



2. Discover Six Bricks II

Prepare by making a colour sequence using your bricks, putting them short end to short end:



Try this:

- Lay your bricks out in front of you, short end to short end, and copy my colour sequence.
- Place your left index finger on the orange brick and your right index finger on the green brick. Without lifting your fingers slide the bricks and swap the positions of the first and the last brick.
- *Look at the middle of your brick line – can you say what colours are at either end?*

Variations:

- Touch the orange brick with your left hand; move the green brick up / down; turn the red brick over … etc.
- Pick up the light blue brick by holding only one stud with your thumb and forefinger; try with your right hand / left hand; use your thumb and any other finger.
- Use your non-dominant hand to pick up the yellow brick and use that brick to connect all your other bricks into your original stack for storage on your desk.



Link to Literacy:

- *Cross your arms and use both hands at the same time to pick up any two bricks at the same time. What colours did you pick up?*
- *Can you clap the syllables of your name with those two bricks?*

Link to Senses:

- *Close your eyes – pick up any brick; explore the brick with your fingers – can you describe it?*
- *Be as detailed as possible. Open your eyes and add anything else to your description.*

Link to mathematics:

- *See how many different ways you can connect two of your bricks.*
- *What is the purpose of the studs?*
- *Scoop your 6 bricks up in two hands – open your hands and let the bricks fall.*
- *How many bricks are lying studs up / down/ sideways?*

3. TRICKY TOWER

Try this:

- Take your stack apart and place each brick randomly on the desk or floor in front of you.
- Use your non-dominant hand (left for most people) to stack your bricks in a tower.
- *Who can be the first to stack their bricks in a tower, short end to short end?*

Variations:

- Use any hand or both hands, and take your time stacking the bricks.
- Work with a partner to stack all your bricks (12) short end to short end.
  How high can you go? How fast can you make your stacks again?
- Use a peg to grasp and place the bricks to form a tower.
- Work with a partner, each person holds one brick - work together to build any tower by picking the bricks up with that brick in your hand.
- *Can you balance all 10 bricks? Who can build the tallest tower?*
- Use the peg to collect your own 6 bricks again – *how quickly can you stack them?*

Link to mathematics:

- *Work in groups of 3-4 and pool your bricks.*
- *Build a tower with a pattern (colours, shape, symmetry etc.)*
  Can you explain your pattern?
- *Break down your tower and sort the bricks into 3-4 stacks of different heights.*
- *Choose a stack; look for things in the room that you think have the same height – compare.*



4. CAN YOU REMEMBER?

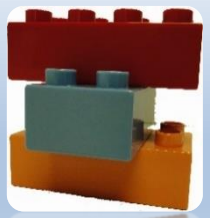
Try this:

- Do this exercise daily – vary the colours and the orientation of the bricks. Prepare by building any three of the six bricks together in a sequence.
- Look at these bricks (the leader then hides the bricks).
- Can you remember the sequence? Build it using the same colour bricks.
- *How did you remember? How did your friends remember?*

Variations:

- For younger children use only two bricks that are stacked directly on top of each other.
- For older children use more than three bricks – try to build them with different spatial orientation.
- *Can you explain how you remembered? Can you try out a different strategy?*





5. BACK TO BACK

Try this:

- Sit or stand back to back with a partner. Each child has the same 3 bricks.
- No. 1 must build any model with his bricks; then explain to No. 2 what and how he has built.
- No. 2 builds the same model following the description from No. 1, without looking or asking questions.
- When No. 2 has finished, the two children compare models and discuss.
- Swop over and repeat the exercise.
- *Did you listen well? Did you explain clearly? How can you help you partner?*

Variations:

- Ask the children to use four, five or six bricks in this activity.
- Allow the listener to ask 2 or 3 questions.

Link to perceptual:

- *Hold up your model.*
- *Can you say which brick is in front / behind / on top / underneath?*
- *No. 1 builds a model with depth with all 6 bricks.*
- *No. 2 copies the model from a distance.*
- *Swop roles.*



6. WHAT CAN YOU BUILD?

Try this:

- Use your six bricks to build any model – this could be linked to a theme or book or story.
- Describe your model (take turns).
- *Does it have a name? What sound does it make? How does it move? Do you have any questions to ask your friend about their model?*



Link to literacy:

- *Can you use a full sentence when you describe your model?*
- *Can you add adjectives and adverbs to your original sentence?*
- *Can you combine your sentences to tell a complete story about all the models in the group?*
- *Can you make up a rhyme about your model?*

Appendix B: Pre Intervention FG Session

Research: Pre-Intervention FG Group Session: Ten Grade 1 learners

This pre-intervention FG session has been designed specifically to determine the language ability of Grade 1 learners when engaged in the following activities:

a. Pronunciation – ability to hear and use sounds when learning new vocabulary
b. Describing a model/build - ability to use language to describe objects, ideas and actions by using nouns, adjectives, verbs and adverbs
c. Using prepositions – looking at pictures
d. Sequencing
e. Visual memory

Section 1-Language usage - Build using the bricks or any elements

a. Ask the children to experiment and play with the bricks/elements to build anything they would like.
b. At various intervals ask the children to tell you about what they have built? Then engage in a conversation about their model.

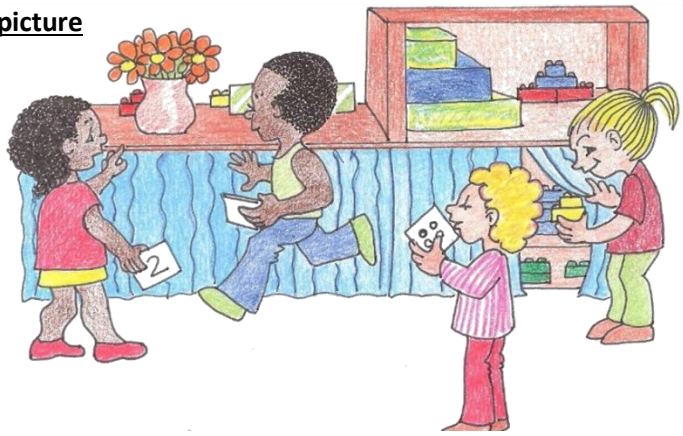
How many descriptive words are used?

	1	2	3	4	5	6	7	8	9	10
Nouns										
Adjectives										
Adverbs										
Verbs										

Does the learner explain and describe clearly?

Does the learner use good sentence construction?

Section 2 -Prepositions – create a large copy of this picture



Look at this picture.

What is this little girl pointing to?

Where is the vase of flowers?

Where are the flowers?

Where are the 2 red bricks? (behind vase)

Look at the blue box. Point to what is on top / below it?

If the boy had to turn around show me in which direction he would be running?

Which child is in front of the boy?

What is the girl doing to the curtain? What is she looking at? Where are the blocks?

Identification of prepositions:	**Excellent**	**Good**	**Fair**	**Weak**

Section 3 - Sequencing

I have 4 pictures with me that tell a story about a 3 kittens. I am going to tell you the story. When I have finished I am going to ask you to arrange the pictures in the same sequence as I told the story.

Section 4 - Visual Memory

1. Give the learner a set of numbers on card from 1 – 6. Check and see if the learner recognizes the numbers.

- Learner has number cards in front of him/her and hands in lap.
- The teacher flashes a 2 / 3 / 4 / 5 number sequence.
- The learner then arranges the number in the correct sequence.

Learner remembers a 2 number sequence	
3 number sequence	
4 number sequence	
5 number sequence	

Researcher looks for the following:

Is the child fidgety?

Is the child able to concentrate for the duration of the activities?

Is the child crossing the midline?

Is the child working from left to right naturally?

Appendix C: Observation Schedule

Observation Schedule

Date: _____

		Yes	No	Comment
1	Timing activity -			
2	Individual or group activity			
3	Type of activity - state specific objective or objectives			
4	Are the learners are having fun - state how this is evident			
5	Learners are engaged in 6 Brick activity and holding concentration			
6	Type of activity - state specific objective or objectives			
7	Are the children using the language structures explained in the activity			
8	Are children communicating with one another using correct vocabulary			
9	Are learners using descriptive language - specifically nouns and adjectives			
10	Are the learners using verbs/adverbs correctly			
11	Are the learners using spatial vocabulary and language correctly			
12	Are the learners using prepositions correctly			
13	Can the learners sequence correctly (visual memory, story, listening instructions)			
14	Are the learners using language and vocabulary in decontextualized situations?			
15	Who is struggling and what are they struggling with?			

Appendix D: Interview Schedule

Semi-Structured Interview Schedule for Grade 1 Teacher

Proposed interview schedule.

1. Are you using the 6 bricks every day? If not, how often?

2. When do you find is the best time to complete an activity using 6 bricks?

   or

3. When / How do you use the 6 bricks?
   - In subject teaching or part of the curriculum?
   - In between lessons or subjects?

4. What changes have you experienced?
   - Yourself
   - Children
   - Parents

5. What have you found to be challenging?
   - In your working with 6 bricks?
   - In the children using 6 bricks?

6. Are the children having fun when using the 6 bricks? How can you tell?

7. Have you noticed any changes in language literacy:

   Speech or oral abilities

   - Pronunciation
   - Using newly learnt vocabulary correctly
   - Ability to describe nouns using correct vocabulary
   - Sequencing a story
   - Ability to give directions accurately

   Language

   - Use of prepositions
   - Sentence construction
   - Giving directions
   - Use of adjectives in sentence construction

Writing

- Reversal of letters / numbers
- Pencil grip
- Speed
- neatness

Reading

- sight / dolsch words recognition
- Fluency
- pronunciation
- physical motor skills

8. How do the children respond to using the 6 bricks?
   - Do they remind you to do the activities every day?
   - Are they enthusiastic about repeating the activities?

9. Do you think doing activities every day is sustainable and beneficial, especially over the full academic year?

10. What kind of support will be helpful for you as a teacher going forward?

Appendix E: List of nouns and verbs

The nouns used by the FG learners during each of the FG Session to describe models they had built.

	Nouns					
	Pre		Inter		Post	
Notelo	tree, flowers, house, table	**4**	something, camera, gun, top, sky, grass, sand, tower	**8**	bricks, desk, studs, camera, plan, picture, mother, window	**8**
Nobani	chimney, Santa, presents, biscuits, reindeer, monster, camera, bazooka, police, head, legs	**11**	camera, tower, dragon, people, colours, back	**7**	bricks, studs, cake, present, trophy, birthday, shelf, camera, pictures, wall	**10**
Noma	garden, flowers, blocks, gates, India	**5**	colours, tower, horse, mountain, house	**5**	bricks, things, game, idea, studs, presents, dinosaur, snake, flower, garden	**10**
Wilson	robot, guns, monsters, sun, space	**5**	dragon, back, towers, mountain, house, volcano	**6**	stuff, bricks, studs, presents, volcanoes, people, dragon, road, car, stairs, buses, trucks, scooters	**13**
Kamo	house, flower, rocks, stairs, gate, circle	**6**	towers, cube, steps	**3**	them, girl, class, house, bricks, tower, steps, carpet, wind, eyes, leg, studs, toys, present, phone, games, plane	**17**
Mbilo	gun, camera, house, someone	**4**	car, gun work, telephone	**4**	them, ship, aeroplane, friends, car, studs, party packs, prize, plane, phone, home	**12**
Maba	gate, fire, girl	**3**	work, bricks, something	**3**	her, aeroplane, camera, people, birthday, present, tower	**7**
Ona	I, girls, things, roof, fire, man, eye, gate, camera, totsies	**11**	bricks, tower, circle, top, sky, light	**6**	work, game, bricks, present, helicopter, sky, dad, family, zoo noise, box, songs, holes, music	**14**
Tisa	house, camera, roof, playground, girl, windows	**6**	house, home, cube, boys, game	**5**	work, bricks, build, game, present, aeroplane, remote, play station	**9**
Lungi	robot, hands, legs, building, eyes, gate, blocks	**7**	patterns, steps, trains, brick, person, ear, today, eyes	**8**	car, game, eyes, brick, present, hammer, bark, house, crown	**9**

The list of verbs used by the FG learners during each of the FG sessions to describe models they had built.

	Verbs					
	Pre		Inter		Post	
Notelo	building, up, is	**3**	building, like, do, enjoy, show, say, remember, make, look, said	**10**	building, do, call, cover, know, going, take	**7**
Nobani	say, is, coming, eat, put, going, fly, kills, watch, shoot	**10**	build, do, start, climb, remember	**5**	build, do, love, playing, call, cover, like, put, close, looks, take	**11**
Noma	trying, is, build, protect, take	**5**	build, climb, remember, try, go, take	**6**	does, have, cover, put, think, catch, said	**7**
Wilson	shoot, go, letting, is, came back, fly	**7**	make, put, wanted, like, doing, look, saw	**7**	play, likes, cover, catch, come, climb, walk	**7**
Kamo	build, climb, comes	**3**	building, make, play, live	**4**	lose, steal, take, likes, build, mix, play, building, breaks, make, close, put, buy, think	**14**
Mbilo	building, shoot, is, coming	**4**	play, finish, touch, copied	**4**	like, play, build, playing, building, putting	**6**
Maba		**0**	falls	**1**	like, play, finished, build, click	**5**
Ona	look, coming, come	**3**	like, fix, build, climb, look, finish	**6**	finished, play, like, hiding, say, fly, going, build, make, take	**10**
Tisa	look	**1**	like, build, doing, show, asking	**5**	done, take, build, building, play, played, thinking, playing	**8**
Lungi	is, building, smiling	**3**	make, build, want, whisper, say, tell, knock, stand	**8**	build, want, move, close, pick, have, hit	**7**

Appendix F: Letters of information and consent

January 2015

Dear Grade 1 Parents

My name is Linda Smith and I am a Master in Education (M ED) student at the School of Education, University of the Witwatersrand. To complete my M ED degree I am involved in a very exciting research project entitled "***An exploratory study into the use of concrete manipulatives to improve language acquisition and vocabulary development in Grade 1 learners***". I approached Mr _____ to complete this research project at Bakersfield Primary as I was previously a teacher at the school. I would like to provide every child in Grade 1 with a set of 6 Duplo bricks. These bricks will be used during class time to help the children develop and build vocabulary and language. The research will be conducted during the first and second term in 2015.

To complete this study I will be observing the children in the Grade 1 class while they use Duplo bricks in language and vocabulary exercises. These Duplo brick exercises will be done every day for approximately 2 – 10 minutes. I will be visiting the class approximately twice a week to observe the learners in the classroom environment. During these visits I would like to document the learners in two ways:

- I would like to interview some of the learners about their experiences using the Duplo bricks
- I would like to video record the children while they are playing and participating in the Duplo bricks exercises and take photos of what the children are doing.

I would like to invite you, as a parent or guardian, to give permission for your child to be part of this exploratory study. I am not assessing children and what I find will not influence their schools marks. Participation is voluntary, and you can withdraw your permissions at any time. Your child will not be affected if permission is withdrawn. There are no foreseeable risks for your child and the names and identity of all learners and the school will be kept confidential at all times. I will be talking to the children in the class about this exploratory study and asking each one if they would like to participate.

Please feel free to contact me via email or by phone should you require any further information.

Yours sincerely,

Linda Smith

Grade 1 Research Project

2015

Please complete the information below and place a cross (x) in the box to give or deny consent.

Child's Name: _____ Class: _____

Permission to participate in the research project "***An exploratory study into the use of concrete manipulatives to improve language acquisition and vocabulary development in Grade 1 learners***"

YES NO

Permission for my child to be video recorded while completing Duplo 6 Brick activities. These recordings will not be made public and will be used merely for analyzing the impact of the project.

YES NO

Permission for my child to be interviewed about his/her experiences when playing with the Duplo bricks.

YES NO

Permission for my child to be photographed while completing Duplo 6 Brick activities. These photos will be used in the final report.

YES NO

Name of Parent: _____

Signature: _____ Date: _____

Letter to the School Principal

An exploratory study into the use of concrete manipulatives to improve language acquisition and vocabulary development in Grade 1 learners

Project Information Statement/Letter of Invitation to School Principal

As you are aware, I am a student in the School of Education at the University of the Witwatersrand completing my M ED degree part time. My research project is entitled "An exploratory study into the use of concrete manipulatives to improve language acquisition and vocabulary development in Grade 1 learners". I am conducting research on language acquisition and vocabulary development in Grade 1 learners under the supervision of Kerryn Dixon. The Provincial Department of Education has given approval to approach schools for my research. A copy of their approval is contained with this letter. I invite you to consider taking part in this research. This study will meet the requirements of the Research Ethics Committee (Human) of the University of Witwatersrand, School of Education.

Aims of the Research

The research aims to:

- Investigate if the use of concrete manipulatives can impact language development in grade 1 learners. Concrete manipulatives will refer specifically to the use of six Duplo bricks.

Significance of the Research Project

The research is significant in three ways:

1. It will provide information on about children's language and vocabulary development
2. It will provide information about concrete manipulative influences on children's language development
3. It will provide the school, teachers and researcher with greater understanding about the influence of concrete manipulatives in teaching and learning a language

Research Plan and Method

The research involves providing the Grade 1 learners with 6 Duplo bricks to use during their school day, for 2 – 10 minutes, in activities that will develop vocabulary and language skills. From this Grade 1 class, with the teacher's guidance, I will select 8-10 children to be part of

a focus group. Before beginning the intervention, I would like the focus group children to complete a "pre-test", to provide an indication of vocabulary and language use.

The Grade 1 teacher selected to use '6 Bricks' in her classroom, will be provided with 6 brick activities and will be given guidance on executing these activities. During this research I would like to visit the Grade1 classroom and observe the teacher and learners using the 6 bricks as well as observe the learners during the school day to determine if they are using language structures and skills developed by the 6 Brick activities.

I would like to interview both the teacher and the children in the focus group as well as video tape the '6 brick' activities I observe during the classroom observations.

Permission will be sought from the learners and their parents prior to their participation in the research. Only those who assent and whose parents consent will participate. All research will be completed by myself and the following timeline is suggested:

Date	Research group
9 – 13 February	Focus Group Activity - No. 1
16 – 27 February	Use 6 bricks (2 weeks)
2 – 25 March	Use 6 bricks (3 weeks) Focus Group Activity – No. 2
20 – 30 April	Use 6 bricks (2 weeks)
4 – 29 May	Use 6 bricks (4 weeks)
1 – 12 June	Use 6 bricks (4 weeks)
15 – 19 June	Focus Group Activity – No. 3
Total weeks	15 weeks

All information collected will be treated in strictest confidence and the school will not be identifiable in any reports that are written. Participants may withdraw from the study at any time without penalty. The role of the school is voluntary and you, the School Principal, may decide to withdraw the school's participation at any time without penalty.

School Involvement

Once I have received your consent to approach participants to participate in the study, I will

- arrange for informed consent to be obtained from participants' parents

- obtain informed consent from the Grade 1 teacher
- arrange a time with the Grade 1 teacher for data collection to take place
- arrange assent with the Grade 1 learners

Attached for your information are copies of the Parent Information and Consent Form, the Teacher Information Statement and Consent Form and also the Learner Assent Form.

Invitation to Participate

If you would like your school to participate in this research, please complete and return the attached form.

Thank you for taking the time to read this information.

_____

Linda Smith

An exploratory study into the use of concrete manipulatives to improve language acquisition and vocabulary development in Grade 1 learners

School Principal Consent Form

I give consent for you to approach learners and teacher in Grade 1 to participate in the "exploratory study into the use of concrete manipulatives to improve language acquisition and vocabulary development in Grade 1 learners."

I have read the Project Information Statement explaining the purpose of the research project and understand that:

- The role of the school is voluntary
- I may decide to withdraw the school's participation at any time without penalty
- Grade 1 learners will be invited to participate and that permission will be sought from them and also from their parents for participation, videoing and photographing the learners..
- Only learners who assent and whose parents consent will participate in the project.
- The Grade 1 teacher will be invited to participate and that permission will be sought from her.
- Observations in the classroom will be videotaped and the interviews with the teacher will be audiotaped.
- All information obtained will be treated in strictest confidence.
- The learners' names will not be used and individual learners will not be identifiable in any written reports about the study.
- The school will not be identifiable in any written reports about the study.
- Participants may withdraw from the study at any time without penalty.
- A report of the findings will be made available to the school.
- I may seek further information on the project from Linda Smith on 0828594133 or at linda@handsontech.co.za

_____ _____

Principal Signature

_____

Date

Teacher's Consent Form

An exploratory study into the use of concrete manipulatives to improve language acquisition and vocabulary development in Grade 1 learners

Project Information Statement/Letter of Invitation to School Teacher

My name is Linda Smith and I am a Masters in Education (M ED) student at the School of Education, University of the Witwatersrand. To complete my M ED degree I am involved in a very exciting research project entitled "**An exploratory study into the use of concrete manipulatives to improve language acquisition and vocabulary development in Grade 1 learners**". I am conducting research on language acquisition and vocabulary development in Grade 1 learners and would like to conduct research in your Grade 1 class of 2015 during the first and second term.

Aims of the Research

The research aims to:

- Investigate if the use of concrete manipulatives can impact language development in grade 1 learners. Concrete manipulatives will refer specifically to the use of six Duplo bricks.

Research Plan and Method

The research will begin in February 2015. Before the research begins I would like your assistance in selecting the children to participate in a focus group. This focus group will be asked to perform 3 activities using the Duplo bricks as a focus group activity. This same activity will also be conducted with the focus group at 4 weeks into the research and at the end of the research. Observations of the children doing the "6 Brick" exercises will be conducted at least twice a week beginning mid-February. During the observations I would like to document the learners working with the manipulatives by videotaping and photographing the observations. These observations will continue until mid-June. I would also like to interview the children in the focus group at three different intervals as shown in the proposed timeline below. My interest lies in watching the children work with the 6 bricks and in no way is there any interest in evaluating your teaching methods or classroom management.

I would like to conduct interviews fortnightly with you to discuss your experiences using "6 Bricks". The interview will be at a time and place that is convenient to you and will take no longer than 30 minutes. I would like to audiotape your interview responses so that I have a record of exactly what you say in order to represent your views accurately. If you are uncomfortable with being recorded you do not have to agree to this. I will also provide you with support on how to implement the 6 brick activities and will provide you with a step by step guide to all the activities that you will use.

Your role in the Research

If you agree to participate your role will be to:

- Receive training from the researcher before the intervention begins
- Assist the researcher in selecting learners from your class to be part of a focus group
- Complete a 6 Brick activity every day during the school day. This activity will take between 2 – 10 minutes
- Consent to the researcher observing the children at least twice a week whilst completing a 6 brick activity
- Consent to the researcher videotaping the observation of the children
- Consent to being interviewed about your experiences using "6 Bricks".

Permission will be sought from the learners and their parents prior to their participation in the research. Only those who assent and whose parents consent will participate. All research will be completed by myself and the following timeline is suggested:

Date	Research group
9 – 13 February	Focus Group Activity - No. 1
16 – 27 February	Use 6 bricks (2 weeks)
2 – 25 March	Use 6 bricks (3 weeks) Focus Group Activity – No. 2
20 – 30 April	Use 6 bricks (2 weeks)
4 – 29 May	Use 6 bricks (4 weeks)
1 – 12 June	Use 6 bricks (4 weeks)
15 – 19 June	Focus Group Activity – No. 3
Total weeks	15 weeks

Participation is voluntary, and permission can be withdrawn at any time during this research without penalty. There are no foreseeable risks for you when participating in this study. All information collected will be treated in strictest confidence and neither the school, nor you, the teacher, will be identifiable in any reports that are written.

Attached for your information are copies of the Parent Information and Consent Form, the Teacher Information Statement and Consent Form and also the Learner Assent Form.

Invitation to Participate

If you would like your school to participate in this research, please complete and return the attached form.

Thank you for taking the time to read this information.

_____

Linda Smith

An exploratory study into the use of concrete manipulatives to improve language acquisition and vocabulary development in Grade 1 learners

School Teacher Consent Form

I give my consent to participate in the research study entitled "**Exploratory study into the use of concrete manipulatives to improve language acquisition and vocabulary development in Grade 1 learners**."

I have read the Project Information Statement explaining the purpose of the research project and understand that:

- My role in the research is voluntary
- I may decide to withdraw my participation at any time without penalty
- Grade 1 learners will be invited to participate and that permission will be sought from them and also from their parents.
- Only learners who assent and whose parents consent will participate in the project.
- Observations in the classroom will be videotaped
- The interviews with myself will be audiotaped.
- All information obtained will be treated in strictest confidence.
- My name will not be used and I will not be identifiable in any written reports about the study
- The learners' names will not be used and individual learners will not be identifiable in any written reports about the study.
- The school will not be identifiable in any written reports about the study.
- A report of the findings will be made available to myself.
- I may seek further information on the project from Linda Smith on 0828594133 or at linda@handsontech.co.za

_____ _____

Grade 1 Teacher Signature

_____

Date